



mainroads
WESTERN AUSTRALIA

NorthLink WA Central Section: Annual Project Sustainability Report 2018



This annual report covers the period from July 2017 to June 2018. A previous annual sustainability report was prepared for the project for [2016-2017]

About this Report

This report has been prepared by the Great Northern Connect (GNC) project team on behalf of Main Roads Western Australia. This report covers the period from July 2017 to June 2018 and forms part of Main Roads' annual sustainability reporting which is integrated into its Annual Report. The report content is prepared in accordance with the Global Reporting Initiative principals. Main Roads processes determine which aspects are Material and to be reported on by the project.

Introduction

NorthLink WA is a state building road project which will provide a more direct route for freight and traffic between regional areas north of Perth and the key industrial, logistics and commercial centres of the metropolitan area. It will also remove the bulk of heavy trucks and freight traffic off the significant tourist routes through the Swan Valley and dramatically improve travel times and reduce congestion for commuters from Perth's north eastern suburbs. Providing grade separations for intersections that were previously traffic black spots also improves safety for road users and the community.

NorthLink Central Section (NLCS) is the portion of NorthLink WA that will extend Tonkin Highway from the new Reid Highway and Tonkin Highway interchange to Ellenbrook and provide new interchanges at Hepburn Avenue, Gnangara Road and The Promenade in Ellenbrook. Flyovers will be constructed over Marshall Road and Beechboro Road North and the section of Reid Highway from Altone Road to Malaga Drive will be upgraded to dual carriageway.

To contribute toward a more sustainable transport system and enhance connectivity between urban areas a four metre wide principal shared path (PSP) will be constructed along the length of the alignment with six underpasses and three pedestrian bridges linking the north and south-bound sides of the path.

NLCS is being delivered in line with the Infrastructure Sustainability (IS) framework for sustainable infrastructure projects and will achieve an Excellent IS rating for both the Design and As-built phases. In doing this GNC must focus on achieving sustainable outcomes in key performance areas such as environmental management, community and stakeholder engagement and economic development. Some of the key areas where the project can leave a lasting legacy and improve the long term sustainability of the project include:

- reducing lifecycle impacts of the materials used in construction and maintenance of the asset and the resources and energy used in construction and operation
- maintaining positive engagement with the community with the view to enhancing community satisfaction with the project
- carefully managing the sensitive habitats and environmental features the project interacts with and implementing an extensive revegetation and rehabilitation program
- constructing a dedicated fauna bridge north of Ellenbrook to maintain connectivity between fragmented habitats – the first such structure in WA
- providing an improved transport route that will contribute positively toward improved productivity and economic outcomes
- enhancing connectivity between communities.

Overview

Northlink WA forms part of the Perth to Darwin National Highway and is jointly funded by the Federal and State Governments. The Project is being delivered by a joint venture called Great Northern Connect (GNC), formed between Laing O'Rourke Australia Pty Ltd and BGC Contracting Party Ltd and has a contract value of \$417 m.

Linking in with the southern and northern sections of the overall Northlink Project, NLCS is approximately 20km long and will provide a free-flowing freeway link from Reid Highway to Maralla Road north of Ellenbrook, widening of Reid Highway to dual carriageways to Altone Road, and a four metre-wide shared pedestrian and cycle path. The location of NLCS is shown in **Figure 1**.



Figure 1 - The NLCS Project location plan including major road intersections (In Green).

Design for NLCS began in October 2016, with onsite works starting in April 2017. Significant progress has been made, with some portions of the road being near completion and on track for a mid-2019 finish.

NorthLink WA will result in improved safety for all road users, reduced traffic congestion, fewer trucks on local 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. Once complete, NorthLink WA will result in the following benefits:

- halving the 25 minute travel time between Ellenbrook and Morley
- travel time reduction of 10 minutes between Kewdale and Muchea.
- avoids up to 16 sets of traffic lights.

More information about NorthLink WA is available at www.northlinkwa.com.au.

Highlights

1ST FAUNA BRIDGE IN WA

244 ha
REVEGETATION TO RESTORE NATURAL HABITAT



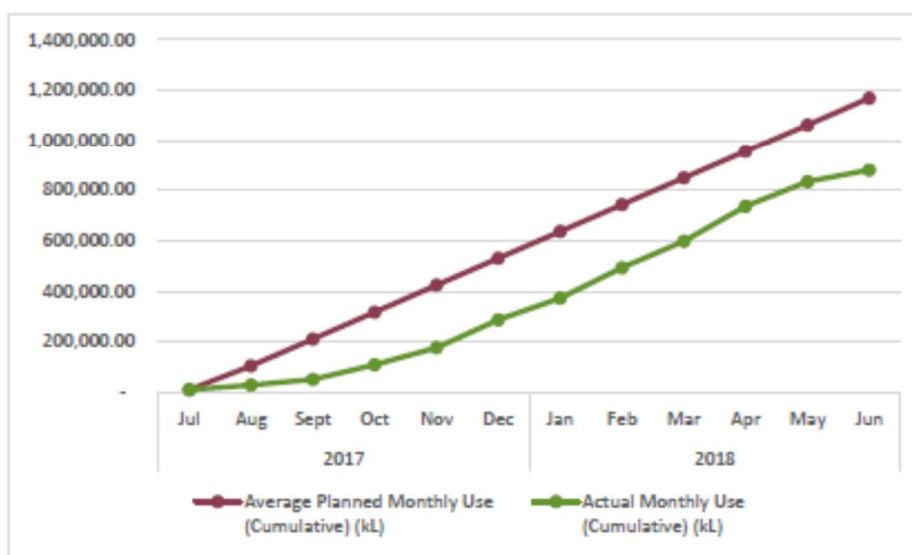
Clearing of **natural fauna habitat** was **reduced** by **22.2%** from the approved clearing footprint.



SQUARE METRES OF NATIVE VEGETATION SAVED AT COMMUNITY REQUEST



HOURS OF TRAINING CONDUCTED DURING THE COURSE OF THE PROJECT



To date, GNC has used **25% less water** than was projected during planning.

Overall approach to sustainability

GNC has developed a Sustainability Position Statement for the design and construction of NLCS and builds upon the intent of both the Main Roads and Laing O'Rourke sustainability policies. The Sustainability Position Statement commits the GNC team to the delivery of the NLCS in a way which seeks to enhance economic and social development while minimising negative impacts on the sensitive natural, built and social environments between Reid Highway and Maralla Road. These are reflected in 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.

The Sustainability Management Plan prepared for the project notes the key sustainability management objectives for NLCS are to:

- consider social, environmental and economic matters to ensure the project works are consistent with sustainability principles
- promote a culture of shared responsibility for achieving improved sustainability outcomes
- minimise negative impacts of our activities and maximise positive opportunities through value engineering and challenging outdated construction processes
- successfully achieve a target 'Excellent' IS accreditation rating for Design and As-built with the Infrastructure Sustainability Council of Australia
- develop sustainability best practices throughout all phases of the project to improve project sustainability performance
- establish proactive and positive relationships with key stakeholders, the local community and future user groups
- incorporate environmental, social and economic aspects into procurement and purchasing decisions for the project
- promote and facilitate education and knowledge sharing relating to infrastructure sustainability within the project team and supply chain
- leave behind a positive legacy for sustainability at NLCS.

It is recognised that in order to achieve the sustainability objectives the leadership of the senior management team is critical, as is the support of key managers within the delivery team. The GNC management team will achieve the overall desired sustainability outcomes for the project through engaging project personnel and seeking commitment and accountability from the entire GNC team. Sustainability responsibilities are included in the roles of GNC management team members and appropriate resources are assigned to provide sustainability advice throughout project delivery.

Main Roads has registered the NorthLink WA project with the Infrastructure Sustainability Council of Australia (ISCA) to achieve an Infrastructure Sustainability (IS) rating for the design and construction phases of the project. NLCS is targeting the achievement of an Excellent rating utilising the IS tool to assess sustainability performance. In order to be awarded an Excellent rating, the project must achieve an IS score of 50 points or more by utilising the IS scorecard to measure sustainability performance for both the Design and As-built (construction) phases.

As of the end of June 2018, GNC was preparing the submission of the sustainability assessment to ISCA for the Design rating, with the IS score tracking positively toward achieving the targeted Excellent rating.

Environmental Aspects Performance

At a glance

Performance against key environmental aspects is summarised in the table below.

Aspect	Year to 30 June	Total for Project
Clearing planned (ha)	162	162
Actual clearing to date (ha)	33.03	143.94
Rehabilitation/revegetation planned (ha)	244	244
Actual rehabilitation/revegetation to date (ha)	0	0
Environmental offset via Monetary contribution actual (\$) ¹	0	0
Total Water Consumption to date (kL)	880,748.11	883,576.11
Total GHG emissions (scope 1 & 2) to date (t CO ₂ e)	10,261.24	10,680.45
Total energy consumption to date (mj)	144,655,785	150,248,531
Total quantity of recycled content used in project (t)	Nil	Nil
Total imported materials used in project (t)	3,487,329	3,502,667
Total waste generated by project (t) ²	6,943.77	6,945.71

¹ A comprehensive offsets program has been implemented by Main Roads including land acquisition and management programs in order to compensate for the clearing undertaken for construction of the project

² Includes 6,379.15 T sent for recycling

Environmental context

Construction of NLCS will result in impacts to flora and vegetation, terrestrial fauna, hydrological processes, inland water quality, Aboriginal and European heritage sites, and visual/public amenity. In addition, embedded Matters of National Environmental Significance (NES) (*Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*) will be affected.

The maximum construction footprint for NLCS is 378ha, including up to 162ha of intact native vegetation that may be cleared. The construction footprint contains:

- threatened and priority listed species of flora (of which three species are of NES);
- threatened ecological communities (TECs), including two TECs that are of NES, and priority ecological communities (PEC);
- habitat which supports conservation significant fauna;
- 31 ha of groundwater dependent ecosystems (GDEs)
- parts of conservation areas including portions of Class A Nature Reserves; part of the Gngangara-Moore River State Forest and parts of seven Bush Forever sites.

The carnaby's black cockatoo and forest red-tailed black cockatoo have both been recorded within the construction footprint and are both listed as species of NES. These species can utilise over 100 ha of the proposed 378 ha NLCS construction footprint, including 66 ha of eucalypt/ corymbia woodland, wetland and modified vegetation offering potential breeding, roosting and foraging grounds, and 57 ha of banksia woodland providing potential quality foraging habitat. Habitat removed for the project constitutes significant impact criteria for the two black cockatoo species.



The design takes into account the environmental significance of the project area including proximity to the Gnangara mound, habitat clearing/fragmentation and impacts to flora and fauna, however a variety of impacts are unavoidable in such a significant road reserve project.

To compensate for any residual environmental impacts from implementing the project, a comprehensive ecological offsets strategy is being implemented by Main Roads, including property acquisition and ongoing management. In addition, GNC is planting 244ha of local native vegetation which, on maturity, will represent an increase of more than 50 percent of intact native vegetation within the project development envelope.

Environmental management

A Public Environmental Review (PER) including both the northern and central sections was completed during the project development phase for NorthLink WA. The PER provided the basis for assessment of the environmental risks presented by the proposal as required by Western Australian and Commonwealth environmental legislation.

Ministerial Statement 1036 (MS 1036) was issued for conditional approval of the project, and the Office of the Environmental Protection Agency (OEPA) subsequently approved the suite of Condition Environmental Management Plans prepared to govern the management of environmental aspects and impacts on the project.

During the design and construction phases of NLCS, environmental risks are managed through a comprehensive project risk management process which is managed and reviewed by senior management on the project. A Construction Environmental Management Plan (EMP) has been prepared in line with the approved Condition Environmental Management Plans to describe the environmental management framework for the detailed design and construction phases of NLCS. The EMP is available to community and environmental interest groups on request, subject to approval by MRWA.

The project has implemented a number of initiatives which target environmental protection, conservation and enhancement. Environmentally focussed initiatives implemented by GNC include the design and construction of the first ever land bridge for fauna crossing in Western Australia, the inclusion of fauna underpasses to maintain ecological linkages, a considered design that minimises the area to be cleared, an extensive program of rehabilitation and revegetation and the inclusion of water sensitive urban design principles to treat stormwater and run-off prior to infiltration to groundwater.

Water management

The NLCS construction footprint is within or in close proximity to the catchment areas of significant surface water features. Two of the largest are Ellen Brook and its catchment area, and the Bennett Brook catchment. Other hydrology features intercepted by the NLCS Project area includes Conservation Category Wetlands (CCWs), other wetlands of lesser conservation significance and a portion of the

Gnangara Underground Water Pollution Control Area. Over half of the NLCS construction footprint is located in the Priority 1 Public Drinking Water Source Area of the Gnangara mound. The range of potential impacts to receiving waters due to the project makes managing receiving water quality one of the most important sustainability issues for the project.

The project includes the implementation of water sensitive urban design features including vegetated biofiltration basins and swales that have been included to:

- minimise interruption to existing drainage systems and surface-flow patterns
- avoid water ponding on the road surface and paths and adjacent to the road formation
- prevent scour, erosion and sediment transportation
- avoid adverse impacts on water quality
- allow for the effects of any existing drainage features on or adjacent to the project site
- maintain the existing flow regimes and water balance of the site.

Road construction is heavily reliant on water, with the major uses for water being dust suppression along with soil conditioning and compaction. The project is largely reliant on non-potable groundwater sources for supplying construction water needs and must manage the resource carefully.

GNC has committed to incorporating water saving initiatives into the construction program and maintaining the quality of groundwater and surface water so that the natural environmental and social 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 and Priority 1 Public Drinking Water Source Area.

A Water Quality, Erosion and Sediment Control Management Plan (WQESCMP) has been developed as a sub-plan to the project EMP in order to:

- guide operations/activities associated with construction in minimising impacts to surface water and groundwater
- ensure compliance with the conditions set out in the project approvals and NLCS contract
- describe how the project will monitor surface waters and groundwater
- provide employees and subcontractors with a clear and concise description of their responsibilities in relation to managing water quality
- consider all relevant legislation, standards and technical guidelines when developing preventative controls
- define trigger and threshold criterion and the related contingency actions.

Lifecycle project footprint

GNC has modelled the expected volume of water required for construction activities, including dewatering required during construction. Opportunities to reduce the volume of water needed across the life of the project have been identified and implemented in order to reduce water demand:

- dust suppression agents including Hydromulch and Dustex applied to 55ha of the project
- the early application of mulch planned for the entire alignment has progressed across much of the project.
- water use actively monitored against modelling to identify opportunities to reduce water demand
- water abstracted from dewatering activities used for dust suppression
- the main site office and other accommodation fitted with water efficient fixtures and fittings, including dual flush toilets and waterless urinals.

Consumption during the reporting period

Since commencement of the project, including office based design and construction planning activities, around 14,234,000 litres of scheme water (potable) and 869,342,110 litres of non-potable ground water have been sourced from bores. Monitoring indicates that actual consumption is broadly in line with the modelled predictions for water use reductions.

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.

Source	Year to 30 June	Total for project
Water purchased from the scheme in litres	11,406,000	14,234,000
Water pumped from bores in litres	869,342,110	869,342,110
Water pumped from rivers, lakes or harvested in litres	0	0
Recycled or waste water use (typically from another industry) in litres	0	0

Carbon emissions and energy

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 construction 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

The 2017 - 2018 reporting period has focused on detailed design, early works for construction, and major construction works. With activities such as clearing, bulk earthworks and bridge construction progressing through the reporting period, 10,154 t CO_{2-e} is estimated to have been generated from activities.

Lifecycle project footprint

The modelling and monitoring of carbon emissions has been undertaken for the project, including fuel consumption and electricity use. This covers the design, construction and operational phases of NLCS. In developing the modelling, the project team has been guided by the *Greenhouse Gas Assessment Workbook for Road Projects (Transport Authorities Greenhouse Group, February 2013)*, the international standards associated with greenhouse gases (ISO14064) and the *National Greenhouse and Energy Reporting Act 2007*.

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

- using an established building nearby the project as the main project site office, avoiding the transportation and assembly of prefabricated offices on site, and the use of diesel powered generators to provide electricity
- making design changes to reduce maintenance requirements through the operational life of the asset
- having parts of the restricted access vehicle (RAV) network revised so that larger loads can be hauled shorter distances and less fuel is needed to import sand for fill into the project
- installing LED lights on principal shared paths, some with motion detectors, reducing the amount of electricity purchased each year
- conducting an adaptive lighting trial along a section of the highway to determine the best technology to be used to optimise lighting levels and energy use for road lighting
- optimising and reducing land clearing required to construct the road

- utilising LED lighting for mobile construction lighting towers
- sourcing plant for the project that is no more than five years old and undertaking plant emissions testing to ensure emissions remain within acceptable limits,

Renewable energy options

Renewable energy options for the project were investigated during the early design phase, including an assessment of opportunities to use wind energy, solar energy or biomass to generate electricity for construction of the highway and lighting once the highway is operational.

Biomass and wind opportunities were not progressed beyond the options assessment report. The potential installation of solar photovoltaics on the project was considered with several ideas added to the sustainability initiatives and innovations register including:

- incorporate photovoltaic system into noise walls to produce electricity for operational lighting
- install solar powered signals at intersections
- incorporate solar road technology on a portion of the road or PSP

Further analysis of the initiatives ultimately determined that none were feasible for implementation.

Source	Year to 30 June	Total for project
Energy usage by source in mega joules	144,655,785	150,248,531
From fuel use (mj)	143,900,800	149,304,800
From electricity (mj)	754,985	943,731
Energy saved (mj)	16,464,390	20,584,758

Materials and recycling

Highway construction projects require the use of large amounts construction materials. Managing the environmental impacts associated with materials is important for NLCS. During the reporting period material usage increased substantially on the previous 12 months as construction progressed.

The most significant materials to be used on the project include sand for fill (a large proportion of which comes from cut to fill on site); limestone and crushed rock; asphalt, bitumen and emulsion; concrete and steel. Materials are closely monitored, and quantities used on the project are reported monthly.

Design development has been progressing during the reporting period, with a number of design features implemented that will provide savings of material usage, with a focus on reducing quantities of and the environmental impact associated with fill, asphalt, concrete and steel.

Wastes are also monitored closely and reported monthly with an emphasis on recycling wastes wherever possible. NLCS has reused 100 percent of spoil removed during bulk earthworks and has diverted more than 90 percent of construction and demolition waste from landfill, by sending for recycling waste streams such as asphalt, scrap metal, paper and cardboard, plastic and PVC, wooden pallets and concrete.

Lifecycle project footprint

Modelling for the anticipated material footprint was largely completed during the reporting period, based on progress made in the detailed design for the project. During the detailed design, the project team identified and implemented a range of opportunities for reducing the materials footprint for the project, including:

- savings in the full depth asphalt design quantities which provide lifecycle savings when considering the full pavement replacement each 40 years
- custom concrete mix designs included, noting reduced cement and water quantities
- maximising the use of on-site cut material to aid in the construction of the project, thereby reducing the quantity of off-site fill required
- reducing volume of off-site 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 instead of an underpass to reduce the need to reconstruct Gnangara Road and offering greater visibility and reducing the opportunity for anti-social behaviour
- Gnangara Road to be left in its current state, reducing need to reconstruct an existing road, thus reducing duration of construction and minimising the volume of waste originally anticipated
- 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
- use of HDPE pipes in place of concrete pipes in approved locations for improved health and safety outcomes and lower energy input during construction
- identifying and implementing opportunities which increase the design life of components
- widening of Tonkin Highway median within super elevated road sections to remove requirement for pit and pipe drainage
- removal of pit and pipe drainage along Tonkin Highway, The Promenade and associated ramps through the removal of kerb or use of kerb openings and inclusion of swale and or basins to maintain surface flow where practical. PSP underpass and Water Corporation services combined within one PSP underpass structure with The Promenade earthworks embankment instead of additional structure for access to water main services offering reduction in construction activities and materials required
- reduction in project barrier requirements through location of roadside hazards outside of clear zone where practical.

Material and waste statistics

Imported Materials	Year to 30 June	Total for project
Sand (t)	1,784,505	1,784,505
Limestone (t)	166,302	177,948
Crushed Rock (t)	211,169	214,861
Asphalt (t)	256,537	256,537
Concrete (incl reinforced and pre-cast concrete) (t)	39,344	39,344
Steel (t)	2,051	2,051
Emulsion (t)	514,402	514,402
Bitumen cutter (t)	135,410	135,410
Bitumen (t)	373,187	373,187
Other (t)	4,422	4,422

Waste	Year to 30 June	Total for project
Unsuitable fill moved offsite (t)	Nil	Nil
Landfill (t)	9.34	9.34
Sewage (t)	475.79	475.79
Concrete rubble (m ³)	All concrete rubble re-used on site (negligible quantities)	All concrete rubble re-used on site (negligible quantities)
Pavement rubble (m ³)	All pavement rubble re-used on site (negligible quantities)	All pavement rubble re-used on site (negligible quantities)
Unsuitable material (m ³)	Nil	Nil
General/Green Waste (t)	79.49	81.43
Unsuitable fill used for rehabilitation purposes (t)	Nil	Nil
Recycled		
- Scrap metal (T)	42.76	42.76
- Paper & cardboard (T)	3.68	3.68
- GNCJV comingled (T)	13.71	14.19
- Plastic & PVC (T)	0.3	0.3
- Wooden pallets (T)	82.5	82.5
- Concrete/sand	46.2	46.2

Imported recycled content	Year to 30 June	Total for project
Sand (t)	Nil	Nil
Road Base (t)	Nil	Nil
Asphalt/Profiling (t)	Nil	Nil
Steel (t)	Nil	Nil
Concrete (t)	Nil	Nil
Other (t)	Nil	Nil

Noise and vibration (from construction and future operation)

Noise and vibration was identified as a key amenity issues in the Public Environmental Review. In order to avoid or minimise the impact to sensitive receivers GNC has prepared and implemented a Construction Noise and Vibration Management Plan (CNVMP) that includes mitigation and management measures that can broadly be summarised as:

- restricted operating hours and approval processes for out of hours work
- scheduling of works to minimise simultaneous noise and/ or vibration generating activities
- equipment selection, operational practices and methodology to reduce noise and vibration
- installation of permanent noisewalls ahead of other noise generating works
- at receiver or source acoustic shielding
- 100m buffer between works causing vibration and sensitive receivers (wherever possible)
- equipment location and orientation
- behavioural actions, training and awareness
- noise and vibration monitoring nearby sensitive receivers and during high noise risk activities.

Construction noise monitoring

Noise is continuously monitored at various locations along the project alignment in relation to active construction activities. Noise monitoring of construction activities occurs on the project boundary adjacent to the closest identified sensitive receiver. When expected noise levels are calculated to exceed construction noise goals during works within construction hours, or when there are approved out of hours works, noise monitoring equipment is positioned in locations adjacent to identified receptors.

Regular monitoring is also undertaken through weekly environmental inspections which includes the monitoring of on-site environmental conditions and controls including implementation and compliance with noise management requirements.

Construction vibration monitoring

Potential receivers to vibration include premises and places within 100m of the project boundary. Residential properties dominate the volume of expected receptors and are generally distributed closer than other receptors identified. The vibration monitoring regime during the construction phase includes the following:

- continual monitoring is undertaken with up to five vibration sensors during construction works
- baseline vibration monitoring is undertaken at two locations at start of construction
- vibration trials conducted prior to vibration intensive activities near sensitive receptors to gauge potential equipment setbacks and/ or start-up locations
- where specific monitoring is required, such as in response to a complaint, monitoring equipment shall be positioned, with landowner's permission, on or in the property of interest adjacent to vibratory construction works.

Complaints

All complaints are handled in accordance with the GNC Community and Stakeholder Engagement Plan. Where a noise or vibration complaint is received, GNC responds to the complainant and notifies Main Roads within 24 hours of receiving the complaint. The complaint will also be recorded in the project's public complaints register and *Connect*, which is the Main Roads' customer relationship management system.

Where a complaint is identified as being a direct result of a non-conformance or incident, GNC investigates further to identify and amend existing procedures and implement appropriate actions.

Potential contingency actions include the following:

- record the complaint in complaints register and *Connect*
- investigate and identify source of noise and/ or vibration levels
- assess location of noise and/ or vibration monitors
- respond to complainant and report to Main Roads within 24 hours
- request vibration monitoring with landowner at complaint origin
- modify the methodology, employ controls i.e. dampeners/buffers, screens substitute the source of the vibration/noise, or stage the works during times which are less disruptive.

There were 47 complaints relating to noise and vibration during construction works in the reporting period, made up of 30 noise complaints and 17 related to vibration. All of these complaints have been resolved to the satisfaction of the complainant.

Operation noise goals

Operational noise goals for the project have been defined for the project based upon the requirements of the WA Planning Commission's Road and Rail Noise Policy (State Planning Policy 5.4, SPP 5.4).

Time period	Noise target	Noise limit
Day (16 hour) 6:00 am to 10:00 pm	L_{Aeq} 55 dB(A)	L_{Aeq} 60 dB(A)
Night (8 hour) 10:00 pm to 6:00 am	L_{Aeq} 50 dB(A)	L_{Aeq} 55 dB(A)

Table 1 – Noise level objective targets and limits

Mitigation and management measures

The mitigation and management for operational noise impacts from traffic using NLCS can be broadly classed as:

- locating the alignment as far as practicable away from sensitive noise receivers within the project development envelope, particularly at the northern end near Ellenbrook
- selecting road surfaces to minimise noise generation
- constructing noise walls, ranging in height from 2.4 metres to 5.0 metres, in residential areas.

Operation vibration goals

During operation, ground vibration originating from road traffic is considered unlikely to be detectable and will not result in vibration impacts to people or damage to structures.

It is still possible, however, that vibration from heavy vehicles (trucks) using the Tonkin Highway once NorthLink WA is completed may be perceptible. Tonkin Highway may have a high number of heavy or restricted access vehicle movements. Heavy or restricted access vehicle movements are subject to a permitting system in Western Australia, which requires the completion of a restricted access vehicle roads assessment, including the assessment of vibration impacts.

Where maintenance activities are required, for example resurfacing works, vibration goals nominated for construction and relevant control measures would be applied.

Discharges and spills

The release of material (in particular liquids), even in very low volumes, to or near a site vulnerable to pollutants can cause long-term degradation to local ecosystem processes, flora and fauna communities, surface/groundwater quality and visual/public amenity. NLCS runs through and adjacent to a number of sensitive environmental receivers including conservation category wetlands (CCW), Ellen Brook, Twin Swamps Nature Reserve, and the TEC of Mound Springs Claypans of the SCP. In addition, the footprint intersects the Gngangara underground water pollution control area (GUWPCA) and well head protection zones (WHPZs) including portions of Priority 1 and Priority 3 public drinking water source areas (PDWSA) which are linked to more than 40 percent of Perth's drinking water. The prevention and reporting of spills on the project is managed according to the following:

- fuel and chemical storage areas must be located above the 100 year ARI flood level
- activities or actions which may result in the spillage of any solvent must not be carried out near any wetland or drain or floodplain
- storage sites for oil and other contaminant materials and plant maintenance areas must be confined to specially defined areas away from drains, water courses, wetlands and floodplains. These areas must be constructed with a storage bund to ensure that any spillage is confined and adequate quantities of suitable material to counteract spillage must be kept on hand.
- storage of hazardous materials, sewage, waste, waste fuels and lubricants in a declared PDWSA must comply with Department of Water and Environmental Regulation (DWER) requirements. Construction laydown areas (including stockpiles, hazardous materials storage

and refuelling activities) must be located at least 50m from CCWs to mitigate potential water quality impacts.

- storage of hazardous materials is not permitted within the Priority 1 PDWSA.
- fuel storage within the Priority1 PDWSA must be approved by DWER. Fuel must be stored outside the WHPZs and at least 100m from all CCW to mitigate potential water quality impacts. Fuel must be stored in double skinned tanks with separate bunding a minimum of 750 mm above ground level so the underside is visible for inspections.
- spill response kits must be available during refuelling
- refuelling must not be conducted inside WHPZs
- mobile refuelling activities must only be from trailers fitted with double skinned tanks and separately bunded. All refuelling must have spill protection in place (i.e. drip trays at fuelling point).
- any spills, including hydrocarbons, within the WHPZs and the Priority 1, 2 or 3 Source Protection Area of the GUWPCA must be cleaned up immediately, reported to and investigated.

GNC maintains a no-blame/positive culture around reporting of spills. Between July 2017 and June 2018 there was a total of 48 spills reported, 27 of which occurred within the GUWPCA. The largest volume released was approximately 110L. Some spills relate to refuelling and several are associated with theft/vandalism, however the vast majority relate to the failure of hydraulic lines / fittings on plant during operation. GNC uses toolboxes and pre-start notices to raise awareness of the importance to:

- carry out thorough pre-start inspections of all vehicles, plant and machinery
- ensure that maintenance schedules are followed
- only operate plant and machinery within designed working limits.

It is a project requirement that all spill impacted soil be excavated /collected. During the initial part of this reporting period, GNC implemented a process of stockpiling impacted material on a dedicated treatment pad for remediation. However due to space and distance constraints, this practice has been discontinued for portions of the project being completed by sub-contractors. Sub-contractors are required to dispose impacted soil to a licenced waste recovery facility.

Impacted material from spills within the portions being delivered by GNC (Tonkin-Reid Highway interchange and Marshall Road Bridge) is still directed to the treatment pad. Options for final disposal of remediated soil are still being assessed.

Light spill

There is potential for nearby sensitive receptors (residential) located along the length of the project development envelope to be impacted by construction activities. Temporary construction lighting may cause an environmental nuisance to sensitive receptors nearby to construction works, or impact nocturnal or diurnal fauna communities (e.g. nesting birdlife, native marsupials, frog choruses in the Wetlands), or create a potential hazard to motorists if poorly directed.

Planning for site set up and construction works considers all reasonable actions necessary to prevent, or otherwise minimise, nuisance generated by construction activities. In particular measures are put in place to reduce light spill from the alignment, construction works and vehicle/machinery movements into adjacent residences or natural habitat where practicable e.g. site entry and exit design, barricading, light positioning/directional lighting etc.

Where work is permitted to occur outside the normal daylight hours, night works management plans identify mitigation measures to prevent light glare to nearby traffic and adjacent residences. Light spill monitoring is conducted opportunistically during the project's night works to confirm that lighting is facing downwards and away from the project boundary and sensitive receptors.

Complaints related to construction lighting are handled in the same manner as described in the noise and vibration section of this report.

Economic Aspects Performance

At a glance

Economic Aspect	Year to 30 June	Total for project
Funding		
No. of vehicles per day	NA	NA
Travel Time Saving	NA	NA
Increase of vehicle capacity	NA	NA
<i>Workforce and Supply Chain</i>		
Number of people employed by supply chain at various stages of project	1794	2072
Total number of suppliers engaged	200	200
Total number of Indigenous Enterprise	4	4
Total number of Disability Enterprise	0	0
Buy Local Spend (to date) (Pre-Qualified Contractors)	\$200M	\$350M

Economic context

The local economic context for NorthLink WA is of critical importance to the overall success of the project. Economic aspects were a key consideration through the project development, and will remain as significant considerations throughout project delivery. During project development, the business case prepared by Main Roads to justify the NorthLink WA project showed a very positive benefit cost ratio (BCR) in the range from 4 to 8. This was considered to be as a result of the much improved travel times for freight and commuter traffic

NLCS has a number of active stakeholders that represent local business interests including the Ellenbrook Chamber of Commerce and Community, Landcorp (Meridian Park Industrial Estate), LWP Property Development (Ellenbrook Joint Venture) and the Malaga and Districts Business Association. Various other retailers, service providers and industrial businesses are also located within the catchment area for NLCS.

The project operates under a buy local policy which targets local procurement of goods and services. The key objectives of the procurement process are to ensure that the following areas are considered during the entire procurement process and in contract award:

- scope (i.e. what is to be delivered)
- cost
- time
- quality
- sustainability, including social, local economic and environmental benefits
- innovation, encouraged through the use of performance based, rather than prescriptive based specifications (including the use of method specifications and value engineering (where approved by MRWA))
- meeting and where possible exceeding community or stakeholder needs and expectations



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). There was a staff of 105 on the project during the reporting period.

During the reporting period 2288 people have been inducted to conduct full-time work on site, and a further 627 people have been inducted to conduct short work on site. There has been 9387.5 hours of project-related training provided during the period. Since commencement the project has delivered 10682 hours of project-related training to subcontractors, operational personnel and staff.

Supply chain

Two hundred contracts to the value of approximately \$350 million have been awarded to date, and the 'buy local' spend during the reporting period has totalled approximately \$200 million to Western Australian companies or those with committed presence in WA.

Aboriginal enterprises

Four contracts to the value of approximately \$400,000 have been awarded to an Aboriginal-owned enterprise to date.

Disability enterprises

No disability enterprises have been engaged by the project. GNC has collaborated with Alta-1, a school for disadvantaged young people. Through this collaboration, GNC has taken on a student with a disability, providing a supportive environment to gain experience in the workplace.

Climate change assessments

A number of climate change studies were undertaken by Main Roads during the project development phase to consider the climate change risks to their assets. Projections for the years 2030, 2050 and 2070 have been adopted. These time horizons coincide with the project case being built by GNC, design to meet network requirements to 2031 (ie 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).

A multidisciplinary team including representatives from the project team and Main Roads WA undertook a risk assessment and identified a number of adaptation approaches specific to the NLCS project. As the NLCS project area is not a coastal asset or within the floodplain of the Swan-Avon catchment, sea level rise predictions have not been considered, however the potential increased bushfire risk due to higher average temperatures and lower average rainfall has been assessed. Adaptation measures, including gates to be installed at junctures along the road reserve fencing to allow emergency vehicle access to bush reserves and vegetated areas, have been included. The potential increased risk of flooding of the asset and immediate surrounding areas due to higher intensity rainfall and storm activity has been considered with adaptation measures included in the drainage design for the project.

Sustainable transport

NorthLink WA will provide a transport corridor designed to accommodate anticipated growth in the regional freight transportation to and from northwest WA, and urban traffic demand up to 2050. The end result of establishing the new transportation corridor will be to provide greater efficiency, safety and travel time reliability for freight and general motorists, with the added beneficial outcome of diverting traffic away from the existing Great Northern Highway through the Swan Valley tourist precinct and residential areas.

A key outcome of the project is the provision of an extensive, continuous and interconnected principal shared path (PSP) network that encourages active transportation options, such as cycling and walking, and improves the connectivity between communities previously disconnected from one another by major road infrastructure. The provision of the PSP network and associated connections will also substantially increase the provision of cycling and pedestrian routes that exhibit a low 'level of traffic stress' (LTS), consequently encouraging greater use of the network and contribution to community uptake of sustainable transport options.

Social Aspects Performance

At a glance

Social Aspect	Year to 30 June	Total for Project
Community Satisfaction to Project	92%	92%
No. of complaints	241	250
No. of traffic safety incidents within project boundary	1	1
% of women in workforce	6.45	6
% indigenous in workforce	2.08	2.08
LTIFR	6.7	0.8
No. of hours training during project	9387.5	10682
No. of development employees and apprentices on the project	45	54
No. of employees (FTEs) sourced from local community	This project is a metropolitan based project with no fly in/fly out or remote drive in/drive out. All personnel are Perth/surrounding area based resulting in 100% employment from local community	

Social context

Stakeholders to the project include the local community; elected representatives of state and federal parliament; local governments; local business groups; state and federal government departments and agencies; road users; environmental groups; recreation groups; pedestrian and cycle groups; community groups; indigenous groups and emergency services (see list in appendix for a detailed listing).

Approach to community and stakeholder engagement for the project

The project has a dedicated community and stakeholder engagement team that works closely with all interested and affected residents, businesses and stakeholder groups. A construction reference group (CRG), consisting of members of the local community, government and stakeholder groups, has been meeting with the project team and Main Roads every three months to be updated on issues that may be of particular interest to community and stakeholder groups such as design of noise walls, landscaping, urban aesthetics and the PSP.

NorthLink WA is expected to:

- deliver improved cycling connectivity from the PSP network to and through Whiteman Park;
- harvest and re-use select species rather than clear and dispose of vegetation within the approved clearing footprint
- retain existing vegetation to the greatest extent possible as a visual buffer between houses abutting the road reserve and the highway.

Key topics or concerns raised by the community

- impacts of the redistribution of local traffic
- impacts of the reduction in passing trade for existing businesses, and in particular the two shopping centres located on Beechboro Road North

- Additional travel distance for residents of Beechboro and Bennett Springs as a result of lost connectivity
- The unmet need for complementary local road modifications to accommodate changing movement patterns.

Opportunities given to stakeholders to influence the project

- Ellenbrook noise wall, resident-facing side of wall colour vote
- plant salvage for Friends of Lightning Swamp group (FOLS) before vegetation was cleared
- reduction in size of retaining wall – stone-pitching method used instead, instigated by FOLS
- location of path connection points in Ellenbrook
- location of noise wall in Ellenbrook
- size of water basins to reduce clearing in Ellenbrook
- alignment of noise wall along Tonkin Highway – changed to accommodate a group of marri and paperbark trees;
- Cullacubardee community art project on Baal Street bridge abutments

Top priority issues or challenges of the local community captured in local government documents (i.e. strategic plans)

The provision of improved cycling and pedestrian facilities is identified as a priority issue in strategic community plans developed by local government authorities, and network connectivity is also recognised state government agencies including Transport WA and Main Roads as critical to encouraging more cycling, particularly for people less confident of cycling on busy roads. The current level of mode share for cycling in Perth is thought to be approximately 6 percent, clearly emphasising the need to improve cycling facilities to encourage more people to use cycling for regular transport.

In response to this important issue, an extensive four metre wide principal shared path (PSP) will be constructed along the entire road reserve with the addition of bike paths and new connection points to major roads from minor roads. This will provide considerable improvement to the cycling and pedestrian infrastructure and connectivity between communities presented by the project.

Once NLS2 is complete, access to the Cullacubardee community will be changed as the Tonkin Highway will be built to the west of the community and Beechboro Road North will become a shortened service road for a limited number of users.

An underpass will be built to take Baal Street under Tonkin Highway and provide access into the community. The Baal Street entrance to the community will be upgraded and improved.

In addition, GNC approached Cullacubardee elder Julie Lewis about establishing an aboriginal art project along the Baal Street bridge abutment walls. Julie indicated that her community would appreciate the opportunity to lay tribute to culturally significant art work at the community entrance. GNC has provided the details of the bridge abutments to the community for consideration in planning the art work and are continuing discussions.

A third priority issue for the community concerned the need to improve road safety conditions in an area where two of the State's most dangerous intersections are located.

A major benefit of the project is the creation of safer roads and intersections for motorists, with traffic diverted from local roads onto Tonkin Highway. This means smaller roads which experience too much traffic and reduced safety conditions will be used primarily for local traffic, and commuters who live and work locally will experience a safer journey in a shorter time. The project will also provide an efficient alternative freight route, which will divert many heavy vehicles off Great Northern Highway in the Swan Valley and onto the Tonkin Highway. With fewer heavy vehicles on local roads, motorist safety will improve as the potential for motor accidents will decrease.

NLCS will result in the removal of the intersections at Tonkin Highway/Reid Highway and Beechboro Road North/Gnangara Road, and replace them with safer interchanges.

The Reid Highway/Tonkin Highway intersection will be transformed into a free flowing, freeway-to-freeway interchange which means that traffic will not be required to slow down and stop. In doing so, the

design has eliminated the potential for nose-to-tail and right angle incidents that are common at traffic lights and significantly improves journey times.

At the current Beechboro Road North and Gngangara Road intersection, approximately 2100 vehicles travel westbound on Gngangara Road during week day peak hour periods. The newly designed interchange eliminates the Gngangara Road/Beechboro Road North intersection altogether and provides free flowing on and off ramps between Gngangara Road and Tonkin Highway. This will result in fewer stops and for a shorter duration, which in turn means improved travel times, improved intersection performance, reduced congestion and a reduction in both nose to tail and right angled incidents along Gngangara Road.

Heritage

Northlink WA values cultural heritage and recognises the importance of careful management of sites of significance. A number of Aboriginal and European heritage sites are distributed within and adjacent to the PDE. Known Aboriginal sites within and nearby the PDE range from registered to newly identified sites of archaeological and ethnographic significance, and European sites recorded in the area include locally-listed heritage places, significant estates and minor historic infrastructure. 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.

Consultation was undertaken with Aboriginal groups and representatives, community groups, residents, businesses and others through the project planning and development phases. Following on from this, Aboriginal sites have been 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.

Section 18 consent has been issued for the project to disturb DPLH site 3692 [Bennett Brook], DPLH site 20058 [Temporary Camp] and DPLH site 21393 [NOR/02 – Lightning Swamp])

A Heritage Management Plan has been developed for the project with the overall aim to undertake construction activities related to the NLCS Project in a responsible manner, allowing for the protection and avoidance, where practicable, of all known and unknown heritage listed (Aboriginal and European) places and objects.

To achieve this, the Plan aims to:

- Minimise the impacts to heritage places and ensure protected heritage values remain intact; and
- Ensure that appropriate controls and procedures are implemented during the construction phase, to ensure the protection of all heritage places and objects known and unknown.

Qualified archaeologists and trained members of the Noongar community have been present during all clearing, grubbing and earthworks in identified 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.

Traffic management

The general road network approach that GNC has adopted as part of the temporary traffic management staging on the project is to minimise the interface between vehicular traffic and construction activities whilst still 'keeping traffic moving'. This approach results in a positive response from the general community regarding the management of the project and confidence from Main Roads WA that the traffic management is being managed effectively.

To ensure traffic is kept moving and unacceptable delays are not incurred, GNC has undertaken a number of strategies that have minimised the impact of the traffic management on the road network during the project construction:

- geometric design to meet acceptable temporary design standards to Main Roads WA for temporary alignments that maintains suitable speed limits and traffic capacity
- traffic analysis undertaken prior to significant modifications to the road network including intersection layout, lane configurations and road closures
- a safe systems approach for selection and design of temporary intersections and temporary alignments on high speed roads has led to the replacement of signalised intersections with temporary roundabouts at significant locations to reduce:
 - the number of points of conflict in the intersection,
 - conflict angles between conflicting vehicle movements in the intersection,
 - actual travel speeds through the intersection,
 - the likelihood of severe or fatal injuries as a result of the above points.
- inclusion of bypass lanes where possible to reduce the number of vehicles required to enter temporary intersections
- complete separation of construction activities from active traffic lanes where possible by means of road/carrageway realignments and installation of suitable temporary work zone barriers.
- complete separation of construction activities from active traffic lanes where possible by relocating existing intersections either away from significant construction areas or towards already completed roads.

In general, temporary intersection modifications on the project to date have led to improved travel times through the project or improved overall intersection performance as compared to pre-existing conditions.

Where required, lane closures and road closures have been designed to have as small an impact on road users as possible.

Where active temporary traffic management is required, additional safety measures have been incorporated to minimise risks for motorists, construction workers and for traffic controllers. These include:

- the use of truck mounted attenuators “TMA’s” to act as a physical protection for both workers and traffic controllers
- replacement of on foot traffic controllers using stop bats with portable traffic signals to minimise the risk of a traffic controller being struck by a vehicle
- the development of “fatal & sever risk” (FSR) activities and controls have been included in traffic management implementation controls
- road closures have been developed for works to eliminate the interface between construction activities and live traffic.

Workforce safety

NLCS involves a high frequency of defined high risk construction activities which includes (but not limited to) use of mobile plant, cranes, working at heights, and working in confined spaces. Works also include management of asbestos found within the site boundary (typically waste material dumped by members of the public). Injuries commonly seen in delivery of a project of this nature are related to manual handling with crush and cut injuries to hands, muscle strains and foreign objects in eyes.

Highest risk activities the workforce is exposed to is activities requiring working at heights or working where a potential for dropped objects exist, works around mobile plant and works in proximity to live traffic. Specific system elements and risk assessments are implemented for these risks and captured in Safe Work Method Statements owned by each work team.

The Great Northern Connect team set several key objectives and associated targets to be achieved during delivery of the project. These are listed in the table below.

Objective	Target
Eliminate the occurrence of a Class 1 (fatality) and disability	Zero fatalities and non-fatal permanent disabilities.

Project Senior Management to engage with the workforce	In accordance with Leadership Engagement procedure (SR07), the type of engagement activities available include the following: Facilitate a Collective Insight Conduct a Fatal and Severe Risk Assessment Facilitate formal HS engagement forum with the supply chain Facilitate a Positive Investigation Conduct a Leadership Engagement Visit
Site Induction	100% completion
Alcohol and Drug Testing	100% daily alcohol breath test for all persons prior to construction works Random monthly drug screen for personnel working at the site To comply with PS18 Fitness for work as well as Building Code 2013 requirements
All permanent personnel attend Next Gear engagement workshop (4 hrs)	100% completion

A project specific Health and Safety Management Plan was developed for the project capturing these objectives and targets. The plan outlines the method for monitoring and review of target achievements which are through audits, inspections, Key Performance Indicator tracking. The plan also outlines communication and consultation methods including forums, daily pre-start and toolbox meetings, and site alerts and noticeboards.

The primary initiative used by the project to help improve safety of the workforce is the implementation of the Next Gear Safety Management System. This commences with a four hour workshop conducted by trained facilitators to explain and demonstrate the tools used within Next Gear. On site Next Gear tools such as Collective Insights and Fatal and Severe Risk reviews are completed with team members are then used to engage with the workforce to hear the views and learn where improvements can be made.

In the past year the project has successfully had more than 2000 people attend the workshop and Collective Insights and Risk Reviews continue to be conducted in all areas of the project.

One lost time injury has occurred on the project resulting in a Lost Time Incident Frequency Rate (LTIFR) of 0.94. There have been a total of 214 reported incidents since project commencement which includes all non-work related events (i.e. members of public contacting road barriers etc.) and damage events with no risk potential to humans (i.e. damaging concrete service pit lids).

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. For the period of this Annual Report:

- 28 full time equivalent female staff were inducted on site as part of the construction team
- One woman held a senior management position on the project.
- Two full-time equivalent staff members who identify as Aboriginal or Torres Strait Islander were employed on the project through the reporting period
- 35 people who identify as Aboriginal or Torres Strait Islander were inducted to site.

Appendix 1 - List of Protected Areas

Project interfaces with:

The project area interfaces with:

- 12.5 km² of Gnangara Underground Water Pollution Control Area (12 km² in Priority 1 area)
- Ellen Brook and its catchment
- Bennett Brook Catchment
- 5 conservation category wetlands (CCWs)
- Two threatened ecological communities (TECs), being the Mound Springs (buffer) of the SCP and SCP20a are of NES and intercept the NLCS.

Appendix 2 - Protected fauna and flora species and habitat

The project area interfaces with:

- Portions of Class A Nature Reserves
- The Gnangara-Moore River State Forest
- Seven (7) Bush Forever sites
- 12 Multiple Use Wetlands (MUW)
- 2 Resource Enhancement Wetlands (REW)
- Three Priority (DBCA) listed species of flora:
 - *Millotia tenuifolia* var. *laevis* (Priority 2)
 - *Anigozanthos humilis* subsp. *chrysanthus* (Priority 4),
 - *Hypolaena robusta* (Priority 4)
- Five Priority Ecological Communities (PECs) SCP21c, SPC22, SCP23b, SCP24 and Banksia dominated woodlands on the SCP, respectively.
- Four species of conservation significant fauna have been recorded within the NorthLink construction footprint:
 - Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Endangered, Schedule 1)
 - Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable, Schedule 1)
 - Australian Bustard (*Ardeotis australis*) (Priority 4)
 - Southern Brown Bandicoot (*Isodon obesulus fusciventer*) (Priority 5).
- Seven conservation significant species (of which three species are of NES) are likely to occur in the NorthLink project area:
 - Great Egret (*Ardea alba*) Migratory (EPBC Act) (Schedule 3)
 - Cattle Egret (*Ardea ibis*) Migratory (EPBC Act) (Schedule 3)
 - Rainbow Bee-eater (*Merops ornatus*) Migratory (EPBC Act) (Schedule 3)
 - Western Carpet Python (*Morelia spilota imbricate*) (Schedule 4)
 - Black-striped Snake (*Neelaps calontos*) (Priority 3)
 - Jewelled Sandplain Ctenotus (*Ctenotus gemmula*) (Priority 4)
 - Western Brush Wallaby (*Macropus Irma*) (Priority 4)

Appendix 3 – List of Stakeholders to the project

Elected representatives and local governments

Federal – Office of:

- Perth – Mr Patrick Gorman MP (ALP)
- Hasluck – Hon Ken Wyatt AM MP (LIB)
- Cowan – Dr Anne Aly MP (ALP)
- Pearce – Hon Christian Porter MP (LIB)
- Moore – Mr Ian Goodenough MP (LIB)

State – Office of:

- Morley – Hon. Amber-Jade Sanderson MLA
- Bassendean – MR David (Dave) Joseph Kelly MLA
- West Swan – Hon Rita Saffioti MLA (ALP)
- Swan Hills – Ms Jessica Jane Shaw MLA (ALP)
- Minister for Transport; Planning; Lands – Hon. Rita Saffioti MP
- Shadow Minister for Infrastructure, Transport, Cities & Regional Development
- East Metropolitan Region – members of the Legislative Council

Local

- City of Swan
- City of Bayswater
- Town of Bassendean
- Eastern Metropolitan Regional Council (EMRC)
- WA Local Government Association

Government departments, agencies and statutory bodies

Federal

- Department of Infrastructure and Regional Development
- Department of the Environment and Energy
- Treasury
- Australian Communications and Media Authority
- Infrastructure Australia

State

- Department of the Premier and Cabinet
- Department of Planning, Lands and Heritage
- Department of Water and Environment Regulation
- Department of Fire and Emergency Services
- Department of Local Government, Sport and Cultural Industries
- Department of Biodiversity, Conservation and Attractions
- Department of Transport
- Water Corporation
- LandCorp
- WA Police
- Tourism WA
- Road Safety Commission WA

Road users

- Motorists
- Transport Forum WA Inc
- WA Road Transport Association
- Freight and Logistics Council WA
- WA Farmers Federation
- Livestock and Rural Transport Association
- Royal Automotive Club of WA
- WA Pilot Drivers Association
- Planning and Transport Research Centre
- Heavy vehicle operators

Business groups

- LWP Property Group – Ellenbrook
- Swan Valley Progress Association
- Swan Chamber of Commerce
- Cyrenian House
- Country Values Real Estate
- Muchea IGA
- DSY Engineering
- The Chittering Chamber of Commerce
- Brigadoon Progress Association
- Chamber of Commerce and Industry WA (CCI)
- Local Business Enterprise Centre/s (BEC)
- Local Business Advisory Group/s
- Directly affected commercial properties
- Bayswater Industrial Area
- Malaga Industrial Area
- Swan Valley Tourism Council
- Ellenbrook Place Office
- Keith Main Centre
- Malaga and Districts Business Association

Environmental groups

- Conservation Council of Western Australia Inc
- Whiteman Park
- Friends of Whiteman Park
- Ellen Brockman Integrated Catchment Group
- WA Wildflower Society
- Regional NRMs
- Urban Bushland
- Regional Natural Resource Management agencies (NRMs)
- Urban Bushland Council
- Bells Rapid Preservation Group
- Friends of the Lightning Swamp Bushland

Recreation groups

- Aeromodellers of WA
- Horsemen's Pony Club
- International Pistol Club
- WA Shooting Association
- WA Gun Club
- WA Transport & Infrastructure Group,

- Lightning Park complex

Pedestrian and cycle groups

- Bicycling Western Australia
- Cyclesport WA
- Pedbiketrams WA
- Bassendean Bicycle User Group (BUG)
- Bayswater BUG
- Perth BUG
- Bicycle Transport Alliance
- Mainroads Disability Advisory Group
- Visibility (Formerly the Association for the Blind of WA)

Community groups

- Vines Residents Association
- Bullsbrook Residents & Ratepayer Association
- The Lakes Estate Ratepayers Group
- Swan Valley Ratepayers & Residents Association
- Local Rotary, Probus, Senior Citizens, APEX and other community groups
- Places of worship

Indigenous representation

- South West Aboriginal Land and Sea Council (SWALSC)
- Cullacabardee Aboriginal Community

Emergency services

- Department of Fire and Emergency Services
- WA Police
- St John Ambulance