NorthLink WA Southern Section: Annual Project Sustainability Report 2017

About this Report

This report has been prepared by the NorthLink WA Southern Section (NLSS) project team on behalf of Main Roads Western Australia. This report forms part of Main Roads' annual sustainability reporting which is integrated into its Annual Report. The report content is prepared in accordance with GRI principles. Main Roads processes determine which aspects are material and to be reported on by the project.

Overview

NLSS is a $180m project located on a 6km length of Tonkin Highway between Guildford Road and Reid Highway. It is one of three projects to deliver the overall NorthLink WA program which will provide a vital, state-of-the-art transport link between Morley and Muchea. It will reduce travel times and congestion, and provide significant productivity benefits to the economy, industry, motorists and local communities. This project is being delivered via a design and construct contract.

NLSS will upgrade Tonkin Highway to a freeway standard with six lanes between Guildford Road and Reid Highway with new interchanges at Collier Road and Morley Drive, and a flyover at Benara Road. The project includes:

- Upgrading Tonkin Highway to a six lane freeway between Guildford Road and Reid Highway.
- Constructing a new interchange at Collier Road (Collier Road will be realigned and raised to go over Tonkin Highway, with on and off ramps connecting the two roads).
- Constructing a new interchange at Morley Drive (this includes a roundabout at ground level on Morley Drive that will connect with a raised Tonkin Highway).
- A flyover at Benara Road over the Tonkin Highway.
- New cycling and pedestrian facilities including a four metre wide shared path alongside Tonkin Highway.

Undertaking these works will improve freight capacity, efficiency and productivity and reduce urban congestion now and in the future benefiting both local commuters and the economic health of Western Australia. The upgrade will also improve road safety along this route in line with the State's 'Towards Zero' policy. The project aims to maximise sustainability through economic, social and environmental responsibility and improve amenity for the community, tourists and road users.

Overall approach to sustainability

This project is committed to sustainability and creating lasting benefits through an integrated consideration of social, environmental, and economic aspects in all its activities. It is registered for an Infrastructure Sustainability rating and obliged to achieve at least an IS Design Rating and IS As-Built Rating of Excellent. The project has developed a Sustainability Management Plan which specifies the sustainability requirements the project must meet in order to enhance its sustainability performance.

Overall responsibility for Sustainability sits with the Project Manager with responsibility delegated to a number of area leads including Sustainability, Commercial, Design, Construction, Community and Stakeholder Engagement and Environment

Environmental Aspects Performance

Environmental management

The NLSS project area identified 14.27 ha of suitable foraging habitat for the Forest Red- Tailed Black Cockatoo (Calyptorhynchus banksii naso) and the Carnaby's Cockatoo (Calyptorhynchus latirosris). Potential Black Cockatoo breeding trees (106) were also identified within the project boundary, the majority of which were young Marri (Corymbia calophylla).

To manage the legislated environmental conditions that construction projects are subject to, an ISO 14001 certified Environmental Management System (EMS) has been implemented. This includes a detailed Environmental Management Plan to manage significant environmental aspects of the project.

The project also commissioned an Ecological Impact Assessment. This assessment suggested that project construction activities would result in 33ha of vegetation being cleared and 35.6ha of vegetation being planted. To date, monitoring indicates that actual overall clearing is broadly in line with these predictions. The project has a planned habitat offset of 45 Ha

NLSS has been referred to the Environmental Protection Authority. Further information is available here.

Water

NLSS has developed a water sensitive approach to carrying out project activities. Water used by the project for material compaction and dust suppression must be obtained from sources other than scheme water, existing wetlands or the Swan River, unless it is not practical or feasible for the project to do so. Additionally, the project is legally obliged to obtain a license to extract any water required from Department of Water under the Rights in Water and Irrigation Act 1914.

To identify an approach to reducing the built infrastructure's dependence on water use a full lifecycle analysis was undertaken in accordance with ISO14044 and EN 15978. An initiative under consideration includes designing out reticulated landscape treatments. Water modelling indicates improvements between the reference design and the final design has resulted in the demand for construction water being reduced from 502,212kL to 478,452kL with 99.9 per cent being supplied from non-potable groundwater sources. Additionally, it is estimated that demand for operational water has reduced from 975,000kL to 412,500kL with 100 per cent being supplied from non-potable groundwater sources.

To date, monitoring indicates that actual consumption is broadly in line with the modelled predictions

Carbon emissions & energy

NLSS has been actively reducing its impact on carbon emissions and energy throughout the infrastructure lifecycle. A full lifecycle analysis was undertaken in accordance with ISO14044 and EN 15978 to identify elements that could lead to significant reductions. This process identified the three most significant contributors as follows:

- Operational energy associated with lighting is the biggest direct environmental impact from the project.
- Energy use associated with road users i.e. traffic, is very significant, and is the biggest indirect environmental impact from the project.

- Construction energy from diesel combustion is also significant.

A number of initiatives have been developed that target reducing energy use in the three areas above. For operational energy, LED lighting, adaptive lighting and dimming are under consideration. Use of a single point urban interchange, roundabout interchange and flyover have been incorporated into infrastructure design to address traffic flow and congestion which will also reduce energy use from the road user. At the project level, a minimum specification of emission standards for construction plant and equipment was implemented. This is the first time this has occurred on a project in WA.

Emissions modelling indicates significant reductions have been achieved between the reference design and the final design.

- Demand for construction diesel has reduced by 13.5 per cent (reduced from 3275kL to 2831kL or a saving of 1200 t CO_2-e.)
- Electricity consumption has reduced by 2 per cent (reduced from 372,490 to 363,364 kwh or 6.9 t CO_2-e.

Overall, it is estimated that lifecycle emissions have been reduced by 28,000 t CO_2-e (Scope 1, 2 and 3).

A small quantity of renewable energy is used on the project. Solar powered lighting and variable message signs have been utilised. It in only expected to be a fraction of overall energy usage.

Materials

Managing environmental impacts associated with materials is important to NorthLink WA due to the significance of those impacts. The project has focused on managing asphalt, concrete and steel. These materials also form a significant portion of the costs associated with this project.

In an effort to understand the opportunity to reduce environmental impacts of the significant materials consumed by the project ,a full lifecycle analysis is being undertaken in accordance with ISO14044 and EN 15978. This provided direction on where to focus efforts to reduce material use. In all cases initiatives are being pursued to reduce demand for materials through lean design and the use of site-won materials, seeking alternative lower impact materials via suppliers and to increase the durability of installed materials beyond the specified design life.

It is estimated that a 21 per cent reduction in material lifecycle impacts has been achieved including a reduction in t CO2-e associated with materials of approximately 25,000 t CO_2-e.

Recycled materials

Recycling materials is important in conserving non-renewable materials that road projects use. It is a project policy that all asphalt will include 10 per cent recycled asphalt pavement and all site won eligible topsoil and mulch will be reused on-site.

It is standard practice of road projects to utilise on site road building resources. This is done through balancing the amount of material that needs to be ‘cut’ away, with the amount of material that is required to ‘fill’ depressions in the road profile. A total of 629,000m3 of cut will be reused onsite.

NLSS has the following targets that are aimed at minimising waste generated from the project:

- 100% of spoil will be reused
- >90% of Construction & Demolition waste will be diverted from landfill
- >60% of Office waste will be diverted from landfill

Economic Aspects Performance

Following is a snapshot of the economic impact and performance of NorthLink WA Southern Section.

Economic Aspect	Impact
Preliminary cost benefit analysis of all sustainability initiatives.	
Capital expenditure savings	approximately $11,000,000
Expected operational expenditure reductions	$42,744,631
Workforce and Supply Chain	
Total number inducted to site	1454(as of 30/6/17)
Total number of suppliers engaged	Suppliers – 11 Sub-Contractors – 60 Hire – 19 Consultants – 6
% of expenditure on local suppliers (Local being Perth, WA)	100%
Indigenous Enterprise	2
Disability Enterprise	1

Climate change

Climate change has been considered in project design. Climate change risks were identified by Main Roads' processes. Through design, all extreme and high risks have been mitigated and moderate risks have been suitably addressed. There are no residual risks greater than moderate.

Sustainable transport

There are a number of features included in the road design which support sustainable transport. These include the ultimate design allowing for rail infrastructure within median and the existing bus routes/stops being maintained. NLSS will provide additional and larger underpasses, shared paths, principal shared paths and connections compared to existing and reference scenarios.

Social Aspects Performance

Community & stakeholder engagement

To ensure the impacts of the project on the community are appropriately managed a Community and Stakeholder Engagement Plan has been implemented on Northlink WA Southern Section. The plan aims to foster communication and co-operation with the community and stakeholders, including the Construction Reference Group, Local Government Authorities, government departments and people with disabilities. The plan is aligned with Main Roads' Community Engagement Policy and Western Australian Government's Sustainability and Citizenship Strategies.

NLSS routinely surveys its identified stakeholders and community. The top topics or themes raised by the community related to access, nuisance or design queries. As at May 2017 the performance statistics suggest:

- awareness of NorthLink WA is very high with almost nine in 10 people surveyed aware

- more than half agree that project communications are useful, timely, objective and easily accessible.
- eight in 10 feeling positive about NorthLink WA
- six in 10 feel they have received enough information
- impact levels are currently low and seven in 10 have not had any concerns. If they have, feel they have been addressed.
- 87 per cent of community interactions had been satisfactorily resolved.
- 1.58 per cent were overdue, with the remainder in progress.

Heritage assessments

The project has been informed by a number of heritage assessments with include a desktop Aboriginal Heritage Report, Ethnographic Report and an Archaeological Assessment of NorthLink WA.

Road safety

A key project priority is Roads Safety. NLSS aims to improve road safety along the route and contribute to the State's 'Towards Zero' policy. To support this, the overall infrastructure design is subject to road safety audits in accordance with Austroads' Guide to Road Safety – Part 6: Road Safety Audit. These audits are undertaken at the following stages:

I. completion of 15 per cent of design;
II. completion of 85 per cent of design;
III. completion of 100 per cent of design for any elements that change from the 85 per cent design;
IV. immediately prior to opening to the public of any section of road for the continuous unrestricted passage of vehicles; and
V. within two weeks after the road being opened to the public for continuous passage of vehicles.

To date the design has been audited and approved from a road safety perspective as per project commitments. Examples of specific road safety treatments along the route include:

- the selection of a single point urban interchange and the use of RAB?
- additional barriers and segregation in the road design.
- crime prevention through environmental design principles have been used to inform all designs.

Legacy aspects

Through a process of research, opportunity scanning and consultation, priority issues of impacted communities and stakeholders were determined. The priority issues and treatments identified included:

Issue	Treatment
Tree canopy retention in the local area	Conservation of additional trees over and above the permitted clearing envelope
Water quality of drainage to Swan River	Focus on onsite infiltration and vegetated treatment systems
Improving walkability, cycling facilities, active transport and liveability	Additional and larger underpasses, shared paths, principal shared paths and connections compared to existing and reference scenarios
Noise and air quality	Additional noise barriers, achievement of State Planning Policy Noise Goals for 2040 traffic and improvement compared to reference scenario

Diversity

NLSS is committed to building, valuing and promoting diversity and inclusiveness across our business. We know that diverse perspectives result in greater innovation and will help us to remain one of Australia's most recognised and respected construction brands.

Key statistics

- 61 women have been inducted to site, i.e 4.2 per cent of site personal inducted are female. It is noted however that 21.6 per cent of Jon Holland project staff are female.
- 36 aboriginal people have been inducted to site, i.e 2.5 per cent of site personal inducted are indigenous.

Workforce safety

John Holland's AS/NZS 4801 certified Workplace Health and Safety Management System manages workplace safety on site which is informed by a detailed Safety and Health Management Plan. The project is committed to having one health and safety representative per work group. There has been no Lost Time Injuries to date.