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WESTERN AUSTRALIA

Gateway WA Public Sustainability Report 2015

Gateway WA - Public Sustainability Report

Delivery of sustainable landmark infrastructure

Introduction

Tonkin Highway is a critical link in the Perth Road network helping to form a major ring road system around the eastern side of the city. It carries significant freight volumes and passenger vehicles through all hours of the day and this volume is expected to grow in the future.

This particular area of the network is especially complex. In a distance of just over 8 kilometres, Tonkin Highway intersects with three of Perth's major highways and the access roads to the Kewdale industrial area and airport terminals.

The Gateway WA Project will create landmark road infrastructure around the Perth Airport and the freight and industrial hubs of Kewdale and Forrestfield. Gateway WA is the largest infrastructure project ever undertaken by Main Roads WA and aims to improve the safety and efficiency of one of the State's most important transport hubs, where road, rail and air services connect.

The project involves a major upgrade of Tonkin Highway (between Great Eastern Highway and Roe Highway) and Leach Highway (between Orrong Road and the Perth Airport), including the construction of 5 new interchanges, local road improvements, pedestrian and cyclist facilities, landscaping and urban design.

The $1 billion Gateway WA Project was jointly funded by both State and Federal Governments, with the Federal Government contributing up to $686.4 million.

More project related information can be found here https://www.mainroads.wa.gov.au/BuildingRoads/Projects/UrbanProjects/Pages/GatewayWAPA.aspx

Overall Approach to Sustainability

Gateway WA's mission is to deliver sustainable landmark road infrastructure around the Perth Airport and the Kewdale Freight Precinct. In doing so, Gateway WA is committed to achieving sustainable economic, environmental and social outcomes for the project, from inception through to completion and beyond. This is demonstrated by the projects registration for an infrastructure sustainability rating. Following is a report against Gateway WA's approach and outcomes for defined sustainability aspects. These aspects are determined by Main Roads.

Economic Aspects

The fundamental basis for the project is expressed in contract scoping documents (e.g. Project Objectives; SWTC) and is supported by the Benefits Management Plan and KRA Performance Framework.

Gateway WA has the following key project objectives that are specifically aimed at providing economic benefits:

- Deliver infrastructure that improves the operational efficiency of freight movement through alleviating congestion and improving access to the growing commercial / industrial areas within Kewdale, Forrestfield and the Perth Airport precinct
- Deliver infrastructure that enhances overall road network performance by:
- Increasing capacity and traffic flow on Tonkin and Leach Highways;
- Improving access for cyclists and pedestrians; and
- Improving the overall amenity and aesthetics of the road corridor
- Maximise the economic potential of the State and the Nation by improving and securing access to Perth Airport which complements the airport redevelopment.

Legacy Project
The sporting complex at Gerry Archer Reserve was impacted by the works, and its facilities had to be re-configured within a smaller area. As well as 'new-for-old' replacement (e.g. new grandstand) the new facilities were tailored to community needs through an extensive program of engagement with City of Belmont and sporting user groups. Total cost to reconfigure these facilities was $2.7M.

During construction - KRA Performance Framework:
KRA Network User Satisfaction has a KPI based on actual network performance measured by Intellimatics and SCATS / TOC traffic signals data.

Key Result Area	Score
a) Travel time during construction compared to pre-construction baseline: Tonkin (GEH to Roe), Leach (Orrong to Tonkin)	4.7
b) Consistency of travel time (statistical variance expressed as % of mean)	4.3
c) Intersection throughput during construction compared to pre-construction baseline (Tonkin / Leach; Tonkin / HM / K; Leach / Abernethy)	4.7

Cumulative score as at 30 June 2015, 1 = Very Poor, 5 = Very Good

Extent of Economic Impacts of Gateway WA	
Gateway Vision Project Business Case March 2012 stated Benefit Cost Ratio:	2.8
Employment by project supply chain	
No. of people have been inducted to site	2,000
Average total workforce including subcontractors	700
Businesses engaged by the project	
No. of contracts awarded by the project itself	491
Tier 4 contracts (<$250,000); number	271
Tier 4 contracts (<$250,000); total value	$25m
Buy Local	
Local content (WA):	95%
Procurement from within WA	87%
Dollar spend on registered aboriginal enterprises	$6.8m
Local workforce development	
Priority Start Program - Trainees and Apprentices. Traineeships reported to DTWD; target 80; expected total	167
Professional Development Program - Tailored Traineeships	70

Road Safety

Road Safety is an issue of high priority to Main Roads, the community and its stakeholders. Gateway WA has the following key project objective that is specifically aimed at improving safety:

- To improve safety in keeping with the State Government's "Towards Zero" road safety initiative.

In line with this overall project objective the project translated this for design and set a target for the road infrastructures operation.

- Outcome: significant reduction in crash rates as a result of the project
- Target: 30% reduction in serious crashes measured five years after opening.

The Environment

Gateway WA is passionate about undertaking the Perth Airport and Freight Access Project with environmental care, aiming to minimise any adverse impacts associated with the works. Environmental considerations underpin everything the project does, from planning through to construction and delivery.

The Gateway WA project operates in accordance with a series of Construction and Operation Environmental Management Plans, approved by the Department of Sustainability, Environment, Water, Population and Communities and the Department of Environment and Conservation. These plans can be viewed on the website:

- Construction Environmental Management Plan
- Surface and Groundwater Management Plan
- Rehabilitation and Landscape Management Plan
- Stakeholder Engagement Management Plan
- DotE Annual Compliance Report 2013/2014
- The Way We Operate

Gateway WA had the following key project objectives that were specifically aimed at respecting the environment:

- To minimise adverse impact to the environment, road and path users, and local businesses and residents
- To respect the significance of the natural environment and Aboriginal heritage
- Meet the needs of current and future generations through the integration of environmental protection, social advancement and economic prosperity by way of sustainable planning, design and construction.

For more information on Gateway WA's approach to Environmental aspects of the project go to: http://gatewaywa.com.au/sustainability/environment/

Construction Environmental Management

Environmental clearance process Gateway WA was subject to:

- Main Roads referred the project itself to the WA Environmental Protection Authority (EPA) for determination under Section 39a (7) of the Environmental Protection Act 1986. The Project was determined to not require assessment by EPA
- Gateway WA obtained approval from Department of Environmental Regulation (DER) to clear native vegetation for the purposes of constructing this Project
- The Project was referred by Main Roads to the Commonwealth Department of Environment (DoE). DoE confirmed that the Project was a Controlled Action under the Act, and therefore a PER was required for formal assessment. Approval under the EPBC Act was obtained in February 2013.

Approval Conditions

Both State and Federal approvals are subject to a range of environmental conditions and commitments. In order to comply with relevant environmental legislation, approval conditions and the management of impacts to the local environment, Gateway WA has defined a series of objectives, targets and performance indicators for each environmental issue/aspect. These include:

- Minimise vegetation clearing. No clearing or disturbance during construction outside pre-defined clearing lines, as outlined in EPBC approved area and State Clearing Permits
- Ensure impacts on Threatened and Priority Flora and communities are adequately identified and minimised during construction. Areas containing Threatened and Priority Flora species and communities not to be disturbed are clearly delineated in the field for the duration of the construction works in that area
- Ensure impacts on protected fauna – in particular Black Cockatoo and quenda habitat- are adequately identified and minimised during construction. Protected fauna habitat is marked on design drawings and flagged or fenced off during the duration of construction.

- Avoid the spread of dieback from known areas, and its introduction to un-infested areas, as a result of construction works. No new dieback infestations identified immediately adjacent to the construction area in areas of significance such as conservation zones or TECs
- Maintain existing surface water hydrology. No physical damage to wetlands beyond a maximum of 5/m from the edge of earthworks unless no other means of access or required, or for safety reasons
- Re-use/re-establish Threatened or Priority Flora species within the Project revegetation. Where suitable conditions exist, re-establish Conospermum undulatum and other, relevant, threatened species within the project revegetation area
- Minimise impacts on the environment, community and personnel upon discovery and remediation of contaminated land. Correct removal and disposal of contaminated soils and groundwater.

Vegetation Clearing	Approximately 161.96 ha in total 57.19 ha cleared during 2014-15 financial year Nil temporary clearing within the last financial year
Environmental Offsets	3 ha of restoration/rehabilitation 120 individuals of *Conospermum undulatum* *635 individuals of Macarthuria keigheryi*
Significant species and habitats	Cleared vegetation and that adjacent to the project works has consisted significant habitat for the Black Cockatoos, as well as Threatened Ecological Communities (TECs)
Amount Spent on Environmental Offsets	Not available
Environmental Impact Assessment	Yes. Details above
Results of Environmental Impact Assessment	Public Environment Report Also refer to the Management Plans at the start of the Environment section above

Materials Use

Materials on a highway construction project represent a significant proportion of project costs. A significant effort therefore goes into refining design details and construction methodology to minimise the quantity of materials required, and to maximise re-use of available materials. Gateway WA's approach to sustainable use of materials for its construction activities is governed by its Sustainability Management Plan. This commits the project to:

- ensuring the elements of sustainability are considered during decision making processes
- fostering a culture of sustainability across the project by demonstrating practical, tangible outcomes, particularly in areas such as reducing waste, recycling and reuse of materials.

To support these commitments, the project has set the following targets directly aimed at sustainable material use.

- Recycle significant proportions of spoil, inert waste and office waste generated by the project
- Use recycled sand to supply a significant proportion of uncontaminated fill requirements, subject to available supply
- Remediate a significant proportion of our own waste soils to a level that it is suitable for use as fill and/or landscaping.

These commitments have been incorporated into a number of Management Plans across the project including the Topsoil and Mulch Management Plan. These commitments are represented within the following objectives:

- Minimise the risk of the spread of dieback and weeds due to road construction activities along the project alignment
- Protect and manage natural resources to maximise rehabilitation success, soil seed germination, soil microbial activity and establish vegetation consistent with adjacent communities
- Reduce the potential for soil erosion
- Maximise the conservation and re-use of topsoil for construction purposes.

Examples of reduce and re-use outcomes over the life of the project include:

- Over 100,000 tonnes of crushed recycled construction and demolition waste (CRCDW) was used in embankment and lower pavement layers. This saved on landfill ('normal' destination for CDW) and reduced or deferred expansion of commercial pits and quarries.

- Minimising total earthworks volume by optimising road geometry (e.g. lower embankments, raise cuttings) and minimising imported fill quantity and haul distance (e.g. maximise cut-to-fill and finding closer sources of imported).
- Over 600,000 tonnes of material was extracted from airport development sites very close to the works, reducing the demand on commercial sand pits. Over 200,000 tonnes of crusher dust waste was used in embankments, again reducing the demand on commercial pits.
- Soil and topsoil management - The re-use of degraded topsoil yielded resulted in about 148,000 tonnes of waste soil diverted from landfill and instead reused as embankment material. The degraded topsoil was screened to remove concrete, plastics and other oversized material, then tested to ensure it meets Main Roads' specifications. It was then blended to combine the clean, recycled material with imported fill.
- Treatment of acid sulphate soil from bridge foundations, trenches for drainage pipes, and other construction projects. The soil was treated at a 1.5 hectare dedicated facility with its own licence (a WA first for a construction project). The facility neutralised the acid sulphate soil by lime dosing through a purpose built machine which provided efficiency and consistency with no dust, odour or noise pollution. The material was reused throughout the project as embankment fill or as landscaping materials. This reduced the project's need to send materials to landfill and haulage of imported fill. About 30,000 tonnes was treated.

The combined effect of these initiatives, not only reduce material wastage but additionally have reduced the project's greenhouse (CO2e) emissions by over 10,000 tonnes.

Indicator	Result
Materials used in tonnes – 2014-15	690,765
Total recycled materials used in tonnes – 2014-15	25,153
Total materials planned to be used in tonnes	6.5 million (earthworks, pavement, asphalt, concrete, steel, concrete pipes)
Total recycled materials planned to be used in tonnes	20% of total aggregates earthworks + granular, excludes asphalt)

Carbon Emissions and Energy

Energy on a highway construction project is mainly diesel in plant and trucks, to mix, haul and place a range of materials; this also represents a significant proportion of project costs. A significant effort therefore goes into refining design details and construction methodology to minimise the quantity of materials required, and to source off-site materials as close as possible to site.

Examples of energy-saving outcomes include:

Tonkin Highway / Leach Highway interchange design refinement

Beyond the original design, which provided for free-flow movements to save operational fuel and emissions in the long term, refinements were made through extensive design iterations that resulted in design features such as shallower 'bath' structures which require less dewatering during construction and operation. This was achieved through a combination of varied road geometry, a shallower structural depth on bridges, and gaining approval from relevant authorities for partial penetration of aviation constraint surfaces. The length of concrete bath structures was also considerably reduced, with consequent reduction in demand for high-energy materials such as cement concrete.

Pumping

Drainage along Leach Highway changed from pumped to gravity system, eliminating operational energy requirements in the long term.

High modulus asphalt

The changing of asphalt binder from the traditional Class 320 bitumen to Class 600 was adopted to enable a higher modulus asphalt, which in turn means a thinner deep lift asphalt pavement for the same design life of 40 years. This resulted in an approximate 10 percent reduction in total asphalt quantity for the project. This is not only a significant cost saving but also reduces greenhouse gas emissions.

Earthworks

Minimising total earthworks volume by optimising road geometry (e.g. lower embankments, raise cuttings) and minimising imported fill quantity and haul distance (e.g. maximise cut-to-fill and finding closer sources of imported).

Vehicles

Purchase of two electric cars in the 'pool' fleet to encourage more serious consideration of cleaner, more efficient transport energy sources.

Operational Assets

Use of energy efficient LED streetlights, through the aviation constraints area, rather than traditional HPS luminaires.

Indicator	Result
Fuel use GHG's (Scope 1)	9,710 t $CO_{2\text{-}e}$
Electricity use GHG's (Scope 2)	634 t $CO_{2\text{-}e}$

Workforce

Safety of Project Workforce

The health and safety of our people and the community is the ultimate priority for Gateway WA. Safety considerations underpin everything the project does, from planning through to construction and delivery. Further details on Gateway WA's commitment to safety can be found here http://gatewaywa.com.au/our-commitment/safety

Gateway WA Safety and Health Policies demonstrate management commitment through the creation of compulsory requirements. Overall the project wants to achieve a very good safety record during construction. The project achieves its safety and health objectives by:

- Providing a safe working environment for all employees, contractors and the public
- Encouraging personal responsibility for safety and health behaviour
- Providing a supportive safety and health culture with visible, accountable leadership
- Implementing effective knowledge capture and transfer through lessons learnt and analysis of incidents
- Developing leaders to promote safety and health excellence by consultation that encourages ownership and continuous improvement in safety and health behaviours, practices and outcomes
- Providing rehabilitation support and services to employees who suffer work related injury or illness.

Indicator	Result
Lost time injury rate (LTIFR of less than 1)	0
Total reportable injury frequency rate (target 6) (Scope 2)	6

Diversity

Gateway WA is committed to assisting indigenous communities and their constituents where this is possible and to ensure they benefit from the opportunities available on the project through the creation of opportunities for the communities. In particular, engaging indigenous candidates for roles on the project where the candidate is vetted as being competent and acceptable.

Additionally, Gateway WA recognises and values the role of women and the benefits this will bring to the project. Our success and achievements will be measured by the following key performance indicators:

- 21% female representation across the project
- 10% female representation in Level 4 and above roles.

Indicator	Result
% women in workforce	25% of staff 12% of wages
% indigenous people in workforce	4% of staff 1% of wages

Stakeholder and Community Engagement

The Gateway WA project is a high profile, complex project. Community and stakeholder interest in the project is high, given the surrounding land use, large numbers of stakeholders with a direct interest in the project and the high volume of transport movement through the road corridor. The preliminary risk assessment (undertaken by Main Roads pre-contract award) identified a number of risk events relating to engagement and/or stakeholders that would require managerial effort by the Alliance as part of project delivery.

An approach was adopted to work collaboratively with local businesses and operators to obtain local input to inform the construction methodology, traffic sequencing, consider opportunities to adjust construction methodology to minimise the likelihood or severity of disruption or impact to access and to communicate expected changes to road and traffic conditions early and widely.

In development of the Project Master Plan, the comments and ideas raised by stakeholders and the community helped identify local needs and preferences, and guide the assessment of issues and options developed by the project team.

For more information on Gateway WA's commitment to community engagement go to: http://gatewaywa.com.au/our-commitment/community-engagement

Gateway WA had the following key project objectives that were specifically aimed at ensuring the community impacts were minimised from project activities:

- To achieve strong project support through effective and collaborative engagement with the community and stakeholders
- To minimise adverse impact to the environment, road and path users, and local businesses and residents
- To achieve a high level of road user satisfaction during delivery of the project
- To achieve a high level of community satisfaction during delivery of the project
- Target: average survey global assessment score of 50% for each objective.

Indicator	Result
KRA Network User Satisfaction has a KPI based on degree of satisfaction by survey / enquiry responses from road users. Performance as at June 2015 (cumulative score all data to date, 1 = Very Poor, 5 = Very Good):	4.2
KRA Reputation has a KPI based on degree of satisfaction by survey / enquiry responses from general community. Performance as at June 2015 (cumulative score all data to date, 1 = Very Poor, 5 = Very Good):	4.1
KRA Reputation has a KPI based on degree of satisfaction by survey / enquiry responses from key stakeholders. Performance as at June 2015 (cumulative score all data to date, 1 = Very Poor, 5 = Very Good):	5

Water

Water management for Gateway WA forms part of its overall environmental approvals for the project. A license to extract water as part of project activities has been obtained the Department of Water. The license covers the installation of a network of groundwater production bores to supply construction water needs over the duration of the Project. Gateway WA is responsible for the operation and monitoring of these production bores. All bores are metered and a meter reading is taken at the end of each month and reported annually to Department of Water.

Quantity of abstraction is monitored by flow meter readings and inspections to ensure:

- Abstraction does not exceed Department of Water license quantities
- Water is used efficiently for construction purposes, and not being wasted or used for unlicensed purposes.

Indicator	Result
Scheme/potable water - urchased from the scheme in kilolitres	6,980
Ground water - pumped from bores in kilolitres	423,502
Surface water - pumped from rivers, lakes or harvested in litres	Nil
Recycled or waste water use in kilolitres	Nil

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