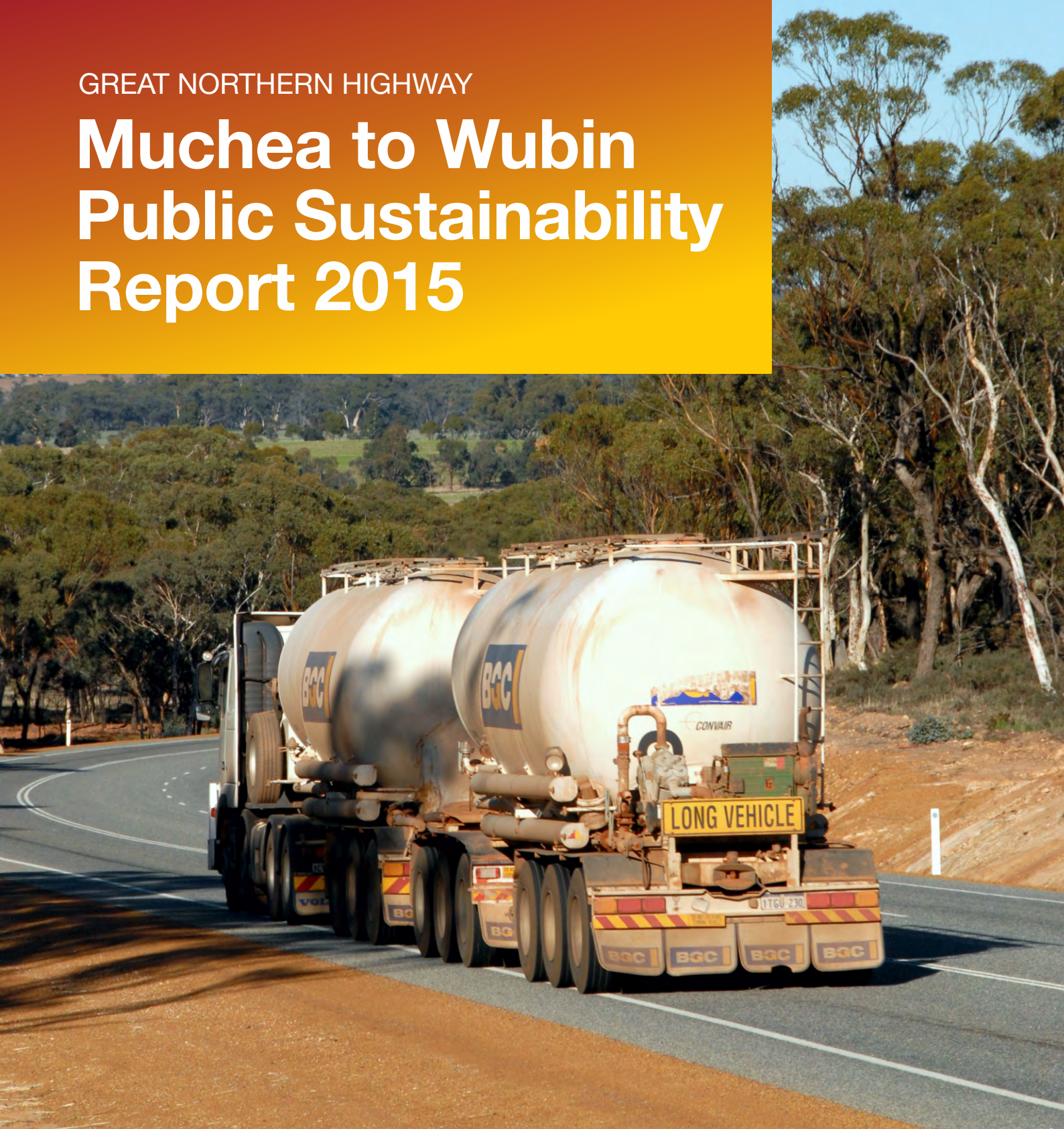




GREAT NORTHERN HIGHWAY

Muchea to Wubin Public Sustainability Report 2015







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Muceha to Wubin Public Sustainability Report

Introduction

The Great Northern Highway (GNH) – Muceha to Wubin (M2W) project is located north east of Perth along the Great Northern Highway road alignment between the town sites of Muceha and Wubin (total alignment length of 218 km).

Main Roads has established the M2W Integrated Project Team, comprising Main Roads and industry partners Jacobs and Arup (Jacobs and Arup JV) to conduct a comprehensive planning review of the full Muceha to Wubin link. This planning review is a critical component of the GNH M2W project, which has been funded with \$384.8 million from the Federal and State Governments. In addition, a further \$40million has been made available for improvements to 11km through the Bindi Bindi curves, which is already underway and due for completion in mid-2015.

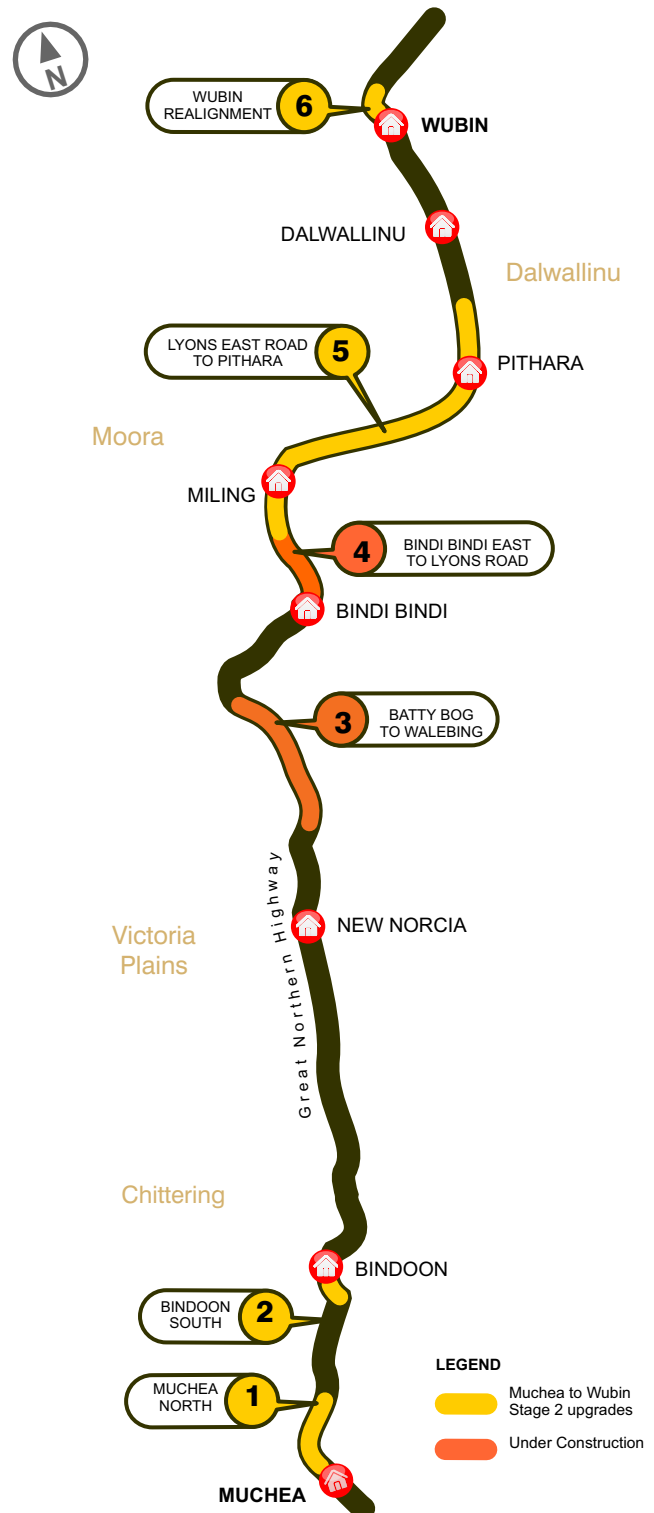
Among the improvements to be considered are more passing lanes, flattening crests and easing curves, safer roadsides, more rest stops and additional facilities for heavy vehicles.

This review will examine the previous upgrade strategy developed in the 1990s and, having carefully considered current requirements for the movement of people and freight, deliver a revised upgrade strategy.

Sections currently funded by the project are:

- 1. Muceha North
- 2. Bindoon South
- 5. Lyons East Road to Pithara
- 6. Wubin Realignment

In addition to the currently funded sections, the planning review work is progressively identifying areas where potential deficiencies could be addressed. As these areas are being identified as possible future work packages, they are being incorporated into the Consolidated Upgrade Strategy for the Project, which outlines all deficiencies along the corridor, and groups them into sections to be progressed as possible future work packages.



The GNH M2W team will then identify and prioritise construction packages to be delivered over the four-year period from 2015-16 to 2018-19, which will include the currently funded sections outlined above.

GNH M2W is using the Infrastructure Sustainability (IS) framework to guide its approach to Sustainable practice. It is registered for an IS rating. Following is a report against on GNH M2W's approach and outcomes for defined sustainability aspects. These aspects are determined by Main Roads.

More project related information is available here: https://www.mainroads.wa.gov.au/BuildingRoads/Projects/Regional/Pages/GNH_Muchea_Wubin.aspx

Water use assessment and management

To ensure water is managed appropriately the GNH M2W Team is taking a proactive approach. The following steps are currently being undertaken:

- Water sources are being identified for the project and during construction will likely be the responsibility of the Contractor.
- A water balance assessment will be completed for each construction package to understand source, use and discharge needs. This will assist in identifying water sources and reduction, management and re-use opportunities. Suitable sources and/or opportunities will then be identified in tender/contract documentation.
- The requirement to report water use during construction will also be included in tender/contract documentation.

The project is also trying to source water use data and information from previously completed construction works for Batty Bog and Bindi Bindi (which are located along the Great Northern Highway alignment between Muchea and Wubin). This will assist with defining 'business as usual' practice and hence opportunities for improvement.

Energy assessment and management

The project is in early delivery stages, just moving from concept (15%) design to definition of construction packages and detailed design as of July 2015, hence energy data is not currently available for the project. The following process is planned to be undertaken with respect to energy use/management for the defined construction packages:

- Energy footprint modelling based on both a reference case and detailed design.
- Use of the reference footprint modelling to inform discussion and assessment of opportunities to reduce energy use, and evaluation of potential improvement through detailed design modelling.
- Inclusion of energy reporting and management requirements in project contracts, including any relevant identified opportunities from the design phase.

The footprint calculations will be undertaken in accordance with and based on the Greenhouse Gas Assessment Workbook for Road Projects and AS ISO 14064.1 – 2006: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals. The Carbon Gauge tool (industry carbon calculator) will form the basis of the energy modelling process, supported with additional calculations for plant and equipment used on-site during construction (derived in accordance with the GHG Assessment Workbook) and vehicles travelling on the road during operation (based on project derived transport data).

Climate Change Risk Assessment

The significant growth in greenhouse gas in recent times has led scientists to believe that things like sea level rise, changed weather patterns, and increasing temperatures are already in the system and will accelerate. While changes in climate are set to continue throughout this century and beyond, impacts are of concern in existing planning and design time-scales. As part of project planning, a Climate Change Risk Assessment was undertaken for GNH with the following high risks identified:

- Rising temperatures (including averages, extremes and an increase in the number of hot days) causing an increased risk and/or severity of bitumen surface seal flushing and leading to a loss of skid resistance and traction for vehicles on the road with resulting safety implications for road users.

- Increased intensity of high rainfall events leads to increased surface runoff in the project area and an increase in the potential safety risk due to aquaplaning.
- More frequent and/or severe fires impacting road user safety and causing road closures through smoke induced visibility reduction and accidents, vegetation falling on the highway from fire damage and personnel being caught on the highway due to fire occurrence and closures.

An adaptation action plan is being prepared for the project to address the risks identified in an aim to improve asset resilience against climate change.

Material footprint assessments

The following process is planned to be undertaken with respect to material use/management for the defined construction packages:

- Material footprint development based on both a reference case and detailed design, using the IS Rating Materials Calculator
- Use of the reference footprint to inform discussion and assessment of opportunities for materials on the project
- Inclusion of materials reporting and management requirements in project contracts, including any relevant identified opportunities from the design phase.

Initiative researched - project use of naturally occurring gravels

The upgrade of the highway will consist of granular pavements constructed using carefully selected granular material. As part of our project the use of the naturally occurring gravels found around the route has been investigated and proved as an alternative to the crushed rock materials used in recent previous works. This investigation included both a Whole of Life (WOL) analysis on the performance and economics of using naturally occurring gravels and an examination and analysis of past natural gravel pavement performance and rutting measured historically on the road.

Results of this analysis show both economically and environmentally the use of natural gravels is advantageous, reducing costs and haulage distances associated with the road materials. The construction contractors will have the option to adopt natural gravels or use crushed rock.

Environmental Management

The importance of the Environment to the project is reflected through the project objective of:

- Enhance the Environment: Undertake practices to help retain and enhance the environmental values of roadsides'.

The Environment and Heritage (E&H) team is an integral part of the project delivery structure. Since the commencement of the project, as part of the planning phase, the project has had a dedicated team working on the project. The team has been involved in driving good environmental outcomes through the following:

- Close work and communication with other team disciplines, including project engineers.
- Feeding into the road upgrade options assessment, including consideration of environmental elements as part of a multi-criteria assessment for the options selection.
- Development and implementation of the project environmental management plan, including team briefings on environmental sensitivities prior to personnel travelling to the project site.
- Consultation and engagement with traditional owners as part of heritage surveys.

The E&H team will continue to be an integral part of the project, including the preparation of required project approvals in accordance with legislation and also interfacing with the project landscape design team around rehabilitation initiatives and heritage promotion opportunities.

In the construction phase, E&H will also be a key consideration for management, with requirements to be reflected through project contract documentation in the procurement phase.

Planned Clearing

Given the early stages of the project, planned clearing is yet to be finalised across all the construction packages. For early construction packages progressing towards delivery, clearing estimates are outlined below:

- New Norcia Bypass - up to 4.5 ha

Planned Rehabilitation

No data to report at this stage, rehabilitation plans for construction packages are still being prepared and finalised.

Planned Environmental Offsets

Given the current stage of the project, plans and requirements for offsets are yet to be determined. No commitments have been made at this stage.

List of significant species/habitat

Environmental features along the project alignment of the Great Northern Highway between Muchea and Wubin include:

- Conservation significant fauna - Black Cockatoos including Caranby's Black cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Black Cockatoo. Vegetation within the project area contains woodland and other vegetation that is valuable as foraging, roosting and nesting habitat for the Carnaby's Black-Cockatoo.
- Environmentally Sensitive Areas (ESAs) - Lake Chittering/ Needonga and other Swan Coastal Plain wetlands.
- Conservation Category Wetlands (CCW).
- Proclaimed Surface Water Areas - Swan River System and Avon River System.
- Proclaimed Groundwater Areas - Gingin Groundwater area.
- Conservation significant flora species (corridor wide).
- Vulnerable and Endangered Vegetation Communities (corridor wide).
- Registered Aboriginal Heritage Sites (multiple).
- Listed European Heritage Sites (multiple).
- Nature Reserves - Barracca Nature Reserve (Class A), Chittering-Needonga Lakes Nature Reserve (Class A), Burroloo Well Nature Reserve (Class C), Seven-mile Well (Class A), Udumung Nature Reserve (Class C), Nugadong Nature Reserve (Class A).

The upgrade works will maintain a strong focus on preserving the ecological value of road reserves, minimising the impacts of new road developments and maintaining existing vegetation and wetlands in good condition. An environment management plan (EMP) will be prepared for the whole project with the objective of minimising and managing the onsite environmental aspects and impacts identified during the design and assessment process, which will be managed in conformance with the relevant requirements, especially during the construction process.

Amount Spent on Environmental Offsets

No data to report at this stage.

Environmental Impact Assessment

Environmental Impact Assessments (EIAs) have been undertaken for each of the work packages on the project. Depending on the level of information available, these have ranged from Preliminary EIAs with recommendations for additional work to be undertaken, to detailed EIAs. The New Norcia Bypass construction package has been subject to a detailed

EIA against impacts to Matters of National Environmental Significance (namely Carnaby's Black Cockatoo and migratory species) and an assessment against the 10 clearing principles defined in the Environmental Protection Act 1986 (WA). Detailed EIA for the Miling Straight construction package is currently underway.

The referral of the New Norcia Bypass construction package under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) is publically available and can be accessed at http://www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=7523

Further referrals will become publically available as they are submitted to the Department of the Environment.

Economic Benefits

The GNH M2W project team comprising Main Roads and industry partners, Jacobs and Arup, was formed to conduct a comprehensive planning review of the full Muchea to Wubin link along GNH to maximise the benefits from any potential upgrades. This planning review is a critical component of the GNH: Muchea to Wubin Upgrade Stage 2, which has been funded from the Federal and State Governments (State: \$70.95m (20%) Federal: \$283.6m (80%)). Among the improvements to be considered are more passing lanes, flattening crests and easing curves, safer roadsides, more rest stops and additional facilities all road users and in particular heavy vehicles.

The review has examined the previous upgrade strategy developed in the 1990s and, having carefully considered current requirements for the movement of people and freight, delivered a revised upgrade strategy. The M2W team will identify and prioritise construction packages to be delivered over the four-year period from 2015-16 to 2018-19, which will include the following currently funded sections: Muchea to Chittering (8 km), Bindoon South (2 km), New Norcia Bypass (6 km), Lyons East Road to Pithara (46 km, including Miling) and Wubin realignment (2 km).

The upgraded road between Muchea and Wubin will provide for better network connectivity for heavy freight travelling between the north and south of Western Australia, along with improved safety for the community. Traffic and freight volumes on the Great Northern Highway - a major freight route between Perth and the State's North-West - have continued to increase. Approximately 30% of traffic at Muchea is heavy vehicles and this increases to approximately 60% of traffic in Wubin. A key driver for this project is to upgrade the highway to cater for 53.5m vehicles travelling to the outskirts of Perth at Muchea in the future.

Economic Impacts from the project

Planned Benefit Cost Ratio

No data to report at this stage.

Number of people employed by project supply chain

No data to report at this stage. This will be tracked and reported as part of the construction phase of the project.

Number of businesses engaged by the project

The following sub-contractors have been engaged in the planning/design stages of the project to date:

- Phoenix Pty Ltd (Flora and Fauna Surveys).
- Big Island (Heritage Survey).
- STATS (Geotechnical Investigation).
- Mining Civil & Geotest Pty Ltd (Materials Investigation).
- Hagstrom (Geotechnical Investigation).
- National Geotech Pty Ltd (Geotechnical Investigation).

Local Spending

This will be captured and measured during the construction phase.

Amount spent Aboriginal Enterprise

No spend on project to date.

Amount spent Disability Enterprise

No data to report at this stage.

Legacy Project

No projects have been confirmed at this stage of project delivery. A key opportunity exists to work with local Shires, to facilitate planning for future land-use or town development. This includes exploring road stop initiatives such as interpretative signage and revegetation options.

Local workforce development

No information to report at this stage.

Value of overall project/contract

The overall value for Stage 1 (planning) of the project was \$10.3 million.

Diversity of entire project workforce

Opportunities in this space will continue to be looked at as the project progresses.

Women in workforce as a percentage

At the time of reporting, the Integrated Project Team is comprised of 45 personnel, working in either full time or part time capacity, of which 18 are women. This comprises a 40% representation of women as part of the main project team in the planning and design phases of the project.

Women in senior positions as a percentage

The Project Joint Management Team is comprised of nine personnel from the Integrated Project Team and Main Roads. Of the nine attendees, three representatives in the team are women. This comprises a 33% representation of women at the management level of the project.

Aboriginals in workforce as a percentage

No information to report at this stage, opportunities in this space will continue to be looked at as the project progresses.

Safety of entire project workforce

The following Cumulative Safety Statistics were reported for the project from 18 August 2014 to 26 July 2015:

- Site visits - 68 visits
- Total hours worked
 - Stage 1 = 35,327 hours;
 - Stage 2 = 4995 hours
- Number of incidents – 0
- Number of near misses - 1 (reported on 08/04/2015)

Types of injury

No data to report

Lost time injury rate

No data to report, no incidence of Lost Time Injury to date on project.

Fatalities

No data to report, no incidence of fatalities on project

Stakeholder Engagement

Engaging with the community and stakeholders is critical to the success of this project. The project has met regularly to date with local government authorities, the Benedictine Community of New Norcia and community members and interested stakeholders. The project team has formed the Heavy Vehicle Liaison Group, comprised of key heavy vehicle industry representatives to assist the team in their planning. In addition to this group, the project team have travelled to a number of communities along the affected corridor to liaise with community members and to solicit their opinions and feedback in relation to the proposed works in their local communities.

In addition, the following consultation has been undertaken to date with both indigenous and other stakeholder groups aligned to the project area:

- Traditional Owners have been involved in heritage surveys along the alignment.
- The project organised a special meeting of the Yued Working Party to discuss the project.
- Initial conversations held with New Norcia Aboriginal Corporation.
- First series of community meetings:
 - Wubin: attended by 32 people.
 - Miling: attended by approximately 34 people.
 - Bindoon: attended by 31 people.
- Second series of community meetings where the project team presented proposed upgrade options based upon feedback received during prior consultations with communities and Heavy Vehicle Industry representatives:
 - Bindoon: attended by 42 people.
 - New Norcia: Two meetings were held attended by 71 people
 - Dalwallinu: attended by 8 people.
 - Wubin: attended by 27 people.

These community meetings were open to all interested residents, business owners and other stakeholders. No additional surveys seeking community feedback have been completed at this stage.

A formal social impact assessment has not been undertaken for GNH M2W.

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