

Star safety ratings drive improvements on risky roads

By Vic Rechichi

The Hay Point Expansion Stage 3 (HPX3) mining project is the winner of the 2013 3M-ACRS Diamond Road Safety Award presented at the Australasian College of Road Safety (ACRS) conference in Adelaide.

The project has had a positive impact on the safety of all workers and the general community who use the Hay Point Road and is an excellent example of a company making a major contribution to public road safety. This article describes the work undertaken in this award-winning project.

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Introduction

BHP Billiton has a strong global focus on safety, with the company taking a Safe Systems approach to safety across its operations. For example, insisting on five-star safety-rated new vehicles promotes safe vehicle use and investing in safer roads and roadsides reduces injuries and fatalities.

Many of BHP Billiton's operations are based in rural, regional and remote Australia. As such, employees travelling to and from work along minor roads are one of the safety risks the company faces.

This case study focuses on the work by BHP Billiton Mitsubishi Alliance (BMA) to help mitigate the risk at the HPX3 Project in central Queensland. The Project has worked together with the International Road Assessment Programme (iRAP) to examine road safety risks and dangers on the road that leads to the Port of Hay Point and the Project has committed \$17 million to help minimise one of the safety risks to employees. The road assessment demonstrated that one of the highest risks to employees was simply getting to and from work.

Organisation overview

BMA is a 50/50 joint venture between BHP Billiton and Mitsubishi. BMA is Australia's largest metallurgical coal miner and exporter. The company operates seven mines in central Queensland along with the Hay Point Terminal near Mackay.

The International Road Assessment Programme (iRAP) is a registered charity dedicated to preventing the 3,500 road deaths that occur every day worldwide. Its vision is a world free of high-risk roads. iRAP works in partnership with government and non-government organisations to inspect high-risk roads and develop star ratings and safer roads investment plans. Assessment programmes are active in 70 countries, including in Australia through the AusRAP

initiative. As part of AusRAP the safety of 30,000 km of roads has been assessed and given a star rating.

The RAPs are designed as a catalyst for change, providing political leaders, policy makers and road builders with the social, economic and engineering evidence needed to improve road networks. The plans demonstrate that by investing in safer roads, the social and economic burden on families, communities and workplaces can be significantly lessened.

Star ratings for road safety

Just as the Australasian New Car Assessment Program (ANCAP) provides star ratings indicating the safety of vehicles, the road assessment programmes provide a star rating score outlining the safety of specific roads and roadsides. Reflecting a Safe Roads and Roadsides approach, the star ratings assessment system is an objective measure of the safety performance of the road infrastructure and the resulting likelihood of a crash occurring and its severity. The assessments draw on road safety inspection data and the extensive real-world relationships between road attributes and crash rates. By measuring the risk associated with the physical road engineering and roadside features, star ratings can provide a basis for targeting high-risk sections of road for improvement before people are killed or seriously injured.

Research shows that the risk of death or serious injury is highest on a one-star road and lowest on a five-star road. A five-star road will provide road users with the safest form of design standards in road cross-section, layout and roadside environment; and a one-star rating represents a road with relatively poor road infrastructure design.

The assessments examine run-off, head-on and intersection risks taking into account specific factors for each category such as speed, lane width, road condition and curvature. RAP inspections use specially-equipped vehicles to collect



The Hay Point Coal Terminal

digital panoramic images or videos of roads. These images are then used to record road design attributes that are known to influence the likelihood of a crash and its severity. The inspections create a permanent record that can be reviewed easily by local engineers and planners.

Hay Point: rating the risk

BMA is increasing the capacity of the Hay Point Coal Terminal through a third expansion, known as the HPX3 Project. This will increase port capacity from 44 million tonnes per annum (mtpa) to 55 mtpa and reduce storm vulnerability of the coal terminal. There are two coal terminals located within the Port of Hay Point – BMA’s Hay Point Coal Terminal and the Dalrymple Bay Coal Terminal. A number of small communities are also located in the area.

Hay Point Road is the only road in and out of the Port of Hay Point area. People living in the small local communities near the Port of Hay Point, the employees and contractors working at the coal terminals and the Project; all commute to and from work along the road.

As part of the HPX3 Project, BMA commissioned a road safety plan to assess and improve overall road safety

outcomes surrounding the project. The subsequent star rating assessment examined Hay Point Road and gave its entire length just one or two stars; indicating a road with poor infrastructure that could benefit from infrastructure-related improvements.

Taking action

With the initial assessment showing that the personnel risk was high, a road safety audit was then performed. This closer inspection of problems resulted in a list of recommendations and an investment plan outlining measures to improve Hay Point Road’s safety performance and reduce the risk to the community and employees. The audit’s recommendations also examined the safest modes of transport for staff in getting to and from the site.

Using the findings of the audit, the Project and the Department of Transport and Main Roads worked together to undertake safety improvements along Hay Point Road. The Project funded nearly \$2 million in improvements including road surface modifications and improved line marking, including edge lines and curve delineation.

Other key recommendations being implemented to improve the safety of the road environment include:



Providing safe roadsides by installing safety barriers and removing unforgiving roadside objects;

Regular cleaning of debris on Hay Point Road, installing new highly-reflective signs and removing surplus signs that were simply acting as roadside obstacles;

Reviewing and providing proper bus stops and bus stop warning signs; and

Reviewing the signal timings of the traffic signals and installing a monitoring camera at the Bruce Highway/Hay Point Road intersection.

A different approach

The possibility of employees being transferred to the HPX3 Project by company bus, rather than each commuting individually in a private vehicle, was also investigated as part of the road safety plan. The study showed the Project could significantly reduce the risk to its staff by providing the opportunity, and encouraging them, to travel to work by bus. In fact, the study showed bus was the safest way to get to and from work; with a 6.7 times lower risk if staff travelled by bus over self-driven private vehicles. It also

meant that a professional non-fatigued driver was in charge of the vehicle, and each bus trip removed up to 40 private vehicles from the road – vehicles often driven by people who had just finished a day's work.

The increased safety of providing a company bus is reinforced by crash data analysed as part of the BMA Hay Point Road Safety Plan statistics showing that the most dangerous time to drive on Hay Point Road is during the morning peak at 7am to 8am and the evening period between 4pm and 6pm; and that driver fatigue and inattention were identified as significant causes of crashes.

Relax; I'll be your driver today

The HPX3 Project has implemented the bus option recommended in the road safety plan at a cost of \$14 million over the life of the project. A central bus service runs from Mackay in the morning to Hay Point and then back after work, and shuttle buses operate continuously to ferry workers around the site and between four satellite sites within a five kilometre radius. The project has also invested a further \$1.1 million to build a car park with the local council at a central bus pick-up point in Mackay.



Proportion of injury crashes by time of day

(Crash data analysis, performed as part of BMA Hay Point Road Safety Plan)

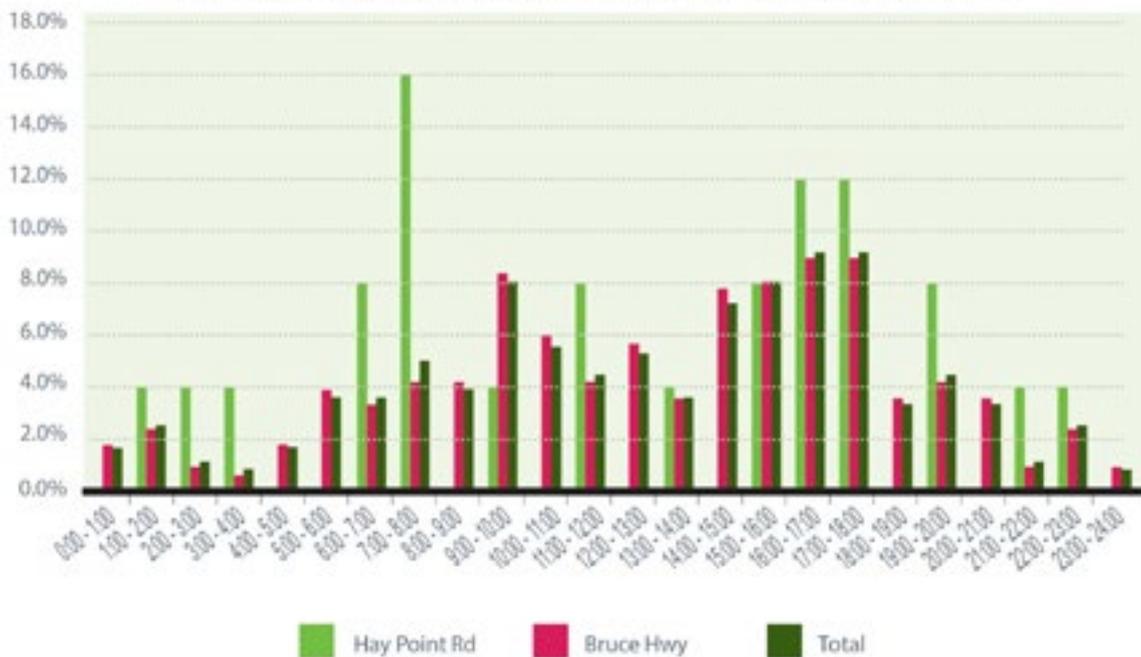


Figure 1: Proportion of injury crashes by time of day (Crash data analysis, performed as part of BMA Hay Point Road Safety Plan)

The bus service has removed hundreds of vehicle trips from Hay Point Road per month.

While taking the bus has many benefits – it's free, is safer, saves on fuel costs and free Wi-Fi is available on selected buses – it faces some logistical challenges in increasing patronage. For example, passenger pick-ups on the way mean the bus takes an extra 15 minutes compared to car, and as most employees live in Mackay or Sarina, rather than a mine camp, many need to drive to the central bus pick-up point in Mackay. Overcoming a mindset of 'I need to come and go as I please' has also been an issue.

The project has been proactive in addressing these challenges and as a result bus patronage continues to increase.

One of the key lessons learnt by the project is that to improve bus patronage, in turn a focus on road safety, employees must apply the same rigour to safety outside work as they would on-site. It requires a change in mindset.

As such, to encourage people to take the bus, the project has created road safety videos that are shown in new employee inductions. The videos feature employees who have crashed on Hay Point Road on their way to or from

work discussing their experiences; reminding viewers that injury does not discriminate between whether it occurred at work or on the way to work.

Results of the star rating assessments are used to demonstrate to employees that their chances of getting to and from work safely are much higher on the bus. The project reinforces that the bus is the safest way to get to work through reminders at toolbox meetings and conducting incentive programs.

Lessons and challenges

The initiatives implemented by the HPX3 Project demonstrate the importance of a coordinated Safe Systems approach to road safety, with all those using Hay Point Road now negotiating a much safer road environment thanks to the implementation of the bus service and improvements to the road and roadsides that diminish the risk of a crash and reduce the severity of injury, or the risk of a fatality, when a crash does occur. Receiving the 3M-Diamond Road Safety Award recognises the contribution this project has made to road safety.

For further details, see the NRSPP website at <http://www.nrspp.org.au/CaseStudies#case296>.

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