

## Commitment to Sustainability



Gateway WA has been working on its mission to safely deliver sustainable landmark infrastructure around the Perth Airport and the Kewdale Freight Precinct.



The construction of infrastructure is made more sustainable through decisions and practices that seek environmental, social and economic benefits. These benefits exist while a project is in progress and into the future long after construction ceases.

Gateway WA is committed to contributing positively towards the local environment, the community and the greater economic development of the state across the life of the infrastructure.

As the project advances, results from sustainable benefits will continue to develop. Sustainability highlights from Gateway WA so far include a number of case studies.

### URBAN DESIGN

The Grand Gateway at the Tonkin Highway / Leach Highway interchange will be the first and last impressions of many people visiting the state, so the urban design in this area, as well as throughout the Gateway WA project scope, was an important consideration for the Gateway WA project team. Social benefits stem from sustainable decisions made so the aim of the overall design impact is to enhance social well-being by providing a more pleasant road user experience.

continued on page 2

continued from page 1

The Grand Gateway design incorporates uniquely Western Australian themes in 'way-finding' landmarks. Features representing 'earth', 'sky' and 'landscape' use modern hard landscaping materials to complement local and regional plants and soils for a low maintenance, high impact gateway.

The design will represent the Gateway WA project for years to come so it was important that the vision of the urban design was developed with a long-term social benefit in mind.



## MANAGEMENT OF SOIL

The sustainable reuse of soil by the Gateway WA project team is yielding top results with a large amount of waste avoiding landfill and being recycled on the project. Improving topsoil productivity and recycling soil for further use was an early opportunity identified by Gateway WA as part of undertaking the project with environmental care.

Degraded topsoil is subjected to two rounds of screening to ensure the soil meets Main Roads' specifications for use on the project. The soil is then tested and blended with imported fill to meet standards.

The treatment of unsuitable soil excavated on the project takes place at a licensed facility. A 1.5 hectare dedicated treatment pad hosts a purpose built machine that neutralises the soil with no dust, odour or noise pollution.

The material is reused as embankment fill or as landscaping materials.

The sustainable reuse of degraded and other unsuitable soil has many benefits, particularly from an environmental perspective. Gateway WA reduces the project's impact of sending materials to landfill and reduces reliance on imported fill brought in for the project. This, in turn, means less haulage and congestion which is environmentally beneficial.

## FOREVER PIPE

The protection of Tonkin Highway from a break ever occurring in the Canning Trunk Main was a challenge overcome through design innovation on the Gateway WA project. This has led to sustainable benefits going forward which can be replicated elsewhere.

A break in a water main can lead to major service disruption and inconvenience for residents and businesses in the vicinity of a failure. A multi-disciplinary team from Gateway WA formulated a design idea for protecting water mains by developing a steel fibre-reinforced concrete encasement sleeve that acts as a second pipe. The sleeve encloses the main pipe and operates as a barrier if failure occurs.

Gateway WA's forever pipe solution was new to the Water Corporation and as a result of its success, the approach will become the new industry standard when protecting water mains under major roads. A roll-out of this design innovation will lead to future mains' failures being contained, and residents and businesses being undisturbed if a break in a nearby water main occurs.

## REALIGNMENT OF THE GERRY ARCHER RESERVE

The realignment of the Gerry Archer Reserve was undertaken to accommodate the Leach Highway / Abernethy Road interchange.

The Gerry Archer Reserve is an important community facility which is used by a variety of clubs in the area. Gateway WA worked with the City of Belmont and user groups of the reserve to ensure the needs of those closely involved with the facilities were identified.

As well as realigning the reserve's oval, many of the existing facilities in the Gerry Archer Reserve were replaced, including new turf and a new turf oval track, a modern grandstand with tiered seating, a new equipment storage area and new sport lighting.

The improvements were carried out to meet future demand of the reserve and to ensure the benefits of this collaborative project would be enjoyed by the community over the next decade and beyond. The project illustrates the commitment of the Federal, State and Local governments to work together with the community to create a positive and sustainable outcome for the reserve.



Gateway WA is committed to making decisions that contribute positively towards the local environment, the community and the greater economic development of the state across the life of the infrastructure.

## INTERCHANGE DESIGN

Making changes to the design of road features can lead to sustainable outcomes during the construction of a road network. An example of this on the Gateway WA project was the refinement of the design for the Tonkin Highway / Leach Highway interchange.

The interchange involved the construction of baths which are special concrete structures that provide waterproofing where a road is below ground water level. The design team looked at ways to make the three baths required at this interchange as shallow as possible. By implementing a shallow design, less dewatering was required during construction of the interchange.

A combination of varied road geometry, a more efficient structural depth on bridges, and gaining approval from relevant authorities for partial penetration of aviation constraint surfaces allowed the design of these shallow baths to be achieved and less water being displaced.

As a result, there was a sustainable benefit met through the review of the design which supports Gateway WA's commitment to implement sustainable solutions where possible.

Another example of this are the two single point urban interchanges which have been designed for Leach Highway / Abernethy Road and Tonkin Highway / Horrie Miller Drive / Kewdale Road. A single point urban interchange enables a single set of traffic signals to safely control each pair of opposing right turn movements at the same time. This significantly improves efficiency compared to the traditional split diamond interchange and reduces traffic signal phasing. This is the first time this type of interchange design is being used in Western Australia.

## NOISE / SCREEN WALL CONSTRUCTION

As part of the Gateway WA project approximately six kilometres of new noise / screen walls are being installed to mitigate traffic noise and provide privacy screening for local residents. A number of properties along Tonkin Highway, which required new noise / screen walls, had existing limestone noise walls in place. These walls needed to be raised in height to meet noise level requirements for Gateway WA.

In order to minimise disruption to residents, Gateway WA developed a solution to incorporate the walls already in place. The existing walls were retained as the bottom half of the noise wall, and new wall panels were constructed directly in front to form the top half. This adaptive method was less intrusive on the properties affected, and provided some noise protection during construction.

The height of the new noise / screen walls is designed to cater for traffic expected in 2050. This goes beyond what is required by policy but has been implemented by Gateway WA to avoid disruption to residents for the next 30 years and more.

There will be six kilometres of noise / screen walls constructed as part of the Gateway WA project.

## USE OF MATERIALS

The substitution of materials used on Gateway WA was another way the project team derived sustainable benefits for the project. The project team looked at materials used for road construction to see if sustainable benefits could arise from the replacement of one material for another.

In road construction higher modulus equals greater strength, which in turn means a thinner deep lift asphalt pavement that achieves the same design life of 40 years. The changing of asphalt binder from the traditional Class 320 bitumen to Class 600 was adopted by the project and this enabled a higher modulus asphalt to be obtained.

The result of this is an approximate 10 percent reduction in total asphalt quantity for the project overall. Not only is this a significant cost saving for Gateway WA but it also reduces greenhouse gas emissions so derives both economic and environmental benefits.



*Asphalting work underway on Gateway WA*

## WANT TO KNOW MORE?

If you would like to know more about the key features of the project and the changes that may occur in your area as a result of the Gateway WA project please visit our website at [gatewaywa.com.au](http://gatewaywa.com.au)

## CONTACT US

Email: [admin@gatewaywa.com.au](mailto:admin@gatewaywa.com.au)  
Freecall Information Line: **1800 420 421**  
Web: [www.gatewaywa.com.au](http://www.gatewaywa.com.au)