



## CASE STUDY

# MINING AREA C

Pilbara region, WA, Australia

Tunnel  
TechSpan®  
Headwalls & Wingwalls  
TerraMet®

Owner: BHP Billiton

Engineer: GALT

Contractor: Decmil

Construction: The Reinforced Earth Company from November 2013 to March 2014

### Background

Mining Area C is a BHP Billiton open cut iron ore mine in the iron ore rich Pilbara region of Western Australia, 120 km north-west of Newman. It is one of seven iron ore mines BHP Billiton operates in the same region, and has the capacity to produce approximately 23 million tonnes of iron ore annually.

For this project, BHP required a haul road tunnel to support iron ore laden dump trucks, which would facilitate an unobstructed system of transportation from the pit to the crushing facility.

The Reinforced Earth Company (RECO) had previously successfully completed a project for BHP Billiton at Packsaddle Mine, also in the Pilbara region. Impressed with their previous experience with RECO, BHP Billiton and our client Decmil sought to replicate the experience at Mining Area C.

Our TechSpan® system is the leading precast concrete arch system in Australia and New Zealand today. Its funicular shape, custom design and three pin arrangement provides a reliable, unique and adaptable solution for tunnels, where each tunnel is specifically tailored by RECO

engineers to account for variable foundation conditions and in-service loads. TechSpan® is optimised for transportation and installation for a cost-effective tunnel.

### Design, supply and construction

BHP Billiton required the durability of concrete arches, fast construction, and an identical clearance envelope to the prior Packsaddle project. Previously, that tunnel was constructed with 44 metres of RECO's TechSpan® TSAC arch shape.

RECO had retained the project specific moulds previously fabricated for Packsaddle and was able to recommission them for this project. In addition, since undertaking the previous project for BHP, RECO had opened our own precast facility at Landsdale north of Perth and was able to precast the arch elements ourselves.

The main contractor, and our client on the project, Decmil, was also very keen that RECO take on the arch installation. Whilst arch installation is not complicated or requiring of specialist skills, RECO were very pleased to take on the installation scope, allowing a completely streamlined design, supply and install contract.



**Main picture:** The completed structure at Mining Area C.

**Above first picture:** RECO team onsite, installing our own product for the very first time.

**Above second picture:** Construction team on completion of TechSpan® arch structure.



**REINFORCED EARTH**  
SUSTAINABLE TECHNOLOGY

Mining infrastructure



**Left:** Installation of the TechSpan® arches by RECO  
**Above:** TerraMet® Head and Wing Walls  
**Below Left:** Completion of TechSpan® Tunnel

### Special Features

For The Reinforced Earth Company, this project marked the first time that we have taken on the design, fabrication and installation scope for an arch.

### Project Challenges

The challenge of adhering to a very tight schedule for design, fabrication and installation is always a feature of these types of projects when following trades and processes are reliant on the on time arrival of the arch elements and trouble free installation in a very remote location.

BHP Billiton also rightfully had high expectations of quality and rigid safety requirements that had to be fully lived up to.

We are confident our clients were satisfied with RECO's performance on the project.

### Project specifications

<b>System</b>	TechSpan®
<b>Finish</b>	Smooth Grey
<b>Structure</b>	Tunnel
<b>Span</b>	12.6 m
<b>Length</b>	44 m
<b>Max. Height</b>	7.8 m
<b>Design life</b>	50 years
<b>System</b>	TerraMet®
<b>Finish</b>	Plain
<b>Structure</b>	Wing Walls
<b>Area</b>	1105 m <sup>2</sup>
<b>Length</b>	75.5 m
<b>Max. Height</b>	11 m
<b>Design life</b>	50 years

