

The background of the slide is a photograph of a dry, hilly landscape with tall, golden-brown grass in the foreground and dark, rocky ground. In the distance, there are rolling hills under a bright, hazy sky. A blue rectangular box is overlaid on the left side of the image, containing the Rio Tinto logo and text.

**RioTinto**

# Welcome to Yandicoogina

Mine site rehabilitation senate visit

Zara Fisher – VP HSE

11 July 2018

# Acknowledgement of Traditional Owners

'Gumala' is the Banjima word for 'all together', and is a reference to the Yinhawangka, Banjima and Nyiyaparli traditional owner groups that are represented under the umbrella of Gumala Aboriginal Corporation (GAC)

GAC entered into the Yandi Land Use Agreement (YLUA) with Hamersley Iron on 1 March 1997 and was the first major agreement of its kind to be signed in Australia. The Agreement area covers the Yandicoogina operations

The YLUA provides a framework for how GAC and its entities interact with RTIO



# We care about your safety

Please observe the following standard site rules during your visit:

- ☐ Follow the advice of your host; visitors are to be escorted at all times
- ☐ Wear safety glasses at all times while outside and hard hats when advised
- ☐ Wear seat belts in vehicles
- ☐ No smoking inside buildings or vehicles
- ☐ Rings and loose necklaces / bracelets are not permitted to be worn on site
- ☐ Stud earrings and a wrist watch are acceptable
- ☐ No photography

**In an Emergency, your host will lead you to the nearest Muster Point**



# Safety Share

## CRM objective – Elimination of fatalities

CRM provides a means to verify that critical controls are well designed, understood, in place and working at the front line – where the risk exists.

### CRM involves:

Every  
Rio Tinto operation



Every  
critical risk



Every  
operational person



**Owns the risk and evaluates the controls**  
via the bow-ties and critical control verification standards (CCVS)



**Owns and evaluates controls**  
via scheduled verifications (desk-top & field) using critical control verification standard (CCVS)



**Verifies controls are in place and effective**  
using critical control field verification checklist (CCFV)



**Implements controls**  
field verification using critical control checklists (CCC) each time a task involves a critical risk (on each shift)

**Standardised process and content, enables efficiencies and learning**

## Contributing to WA for over 50 years

Our 5 priorities



Rio Tinto have been committed to WA for well over

**50 years**



In 2017 we spent over

**\$4.2 billion**

with ~ 2000 local suppliers, incl. \$112 million with Pilbara Aboriginal Businesses



Rio Tinto employ more than

**12,000** people in

WA & nearly 1,000 Aboriginal and Torres Strait Islander People



We have

**19 sites in WA,**

including iron ore, salt, diamonds and exploration



Last year we commissioned

our **16<sup>th</sup> mine**

Silvergrass, in August



We paid

**\$1.8 billion**

in taxes and royalties in WA



Our next major replacement mine Koodaideri will create

**1600** construction jobs and

**600** operational jobs



In 2017 we contributed

**\$20.6 million** in

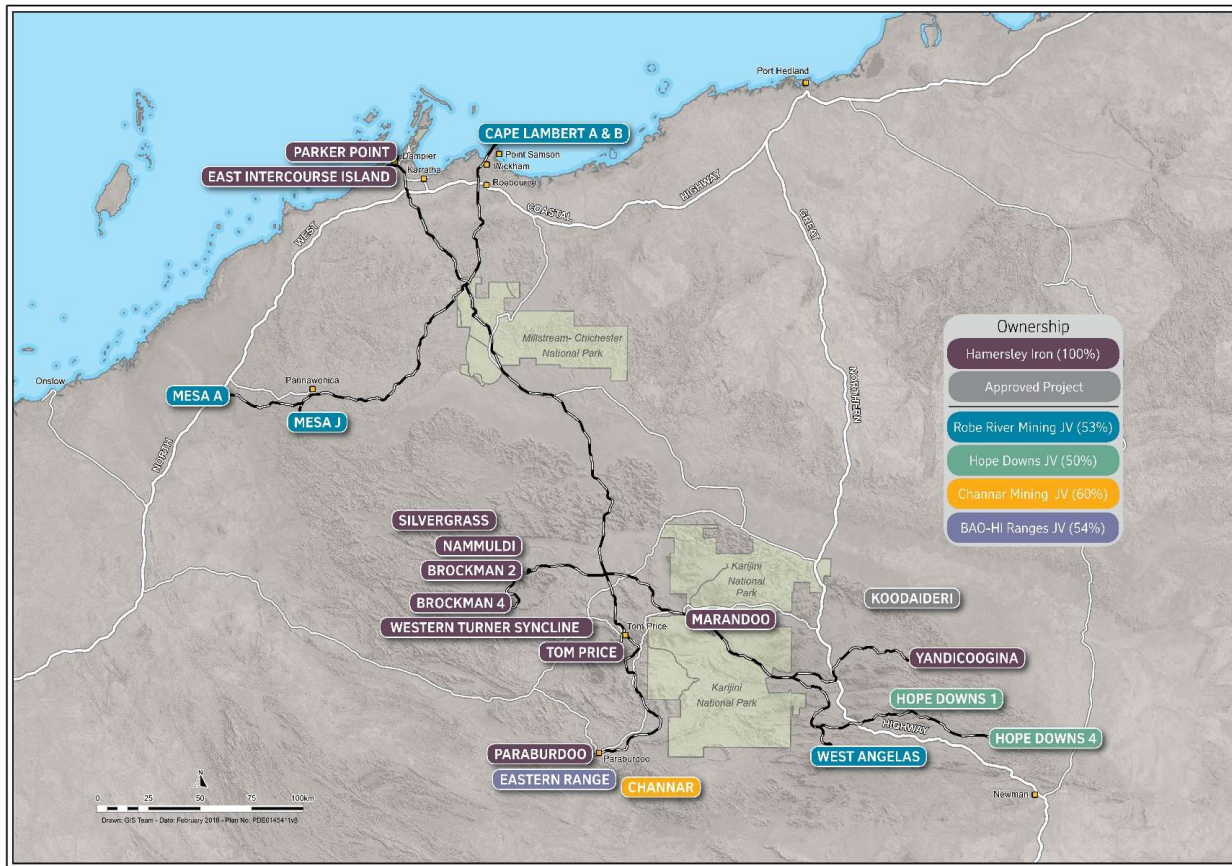
community partnerships & sponsorships plus a further

**\$3.8 million** of in-kind support





# Rio Tinto Iron Ore – Operations

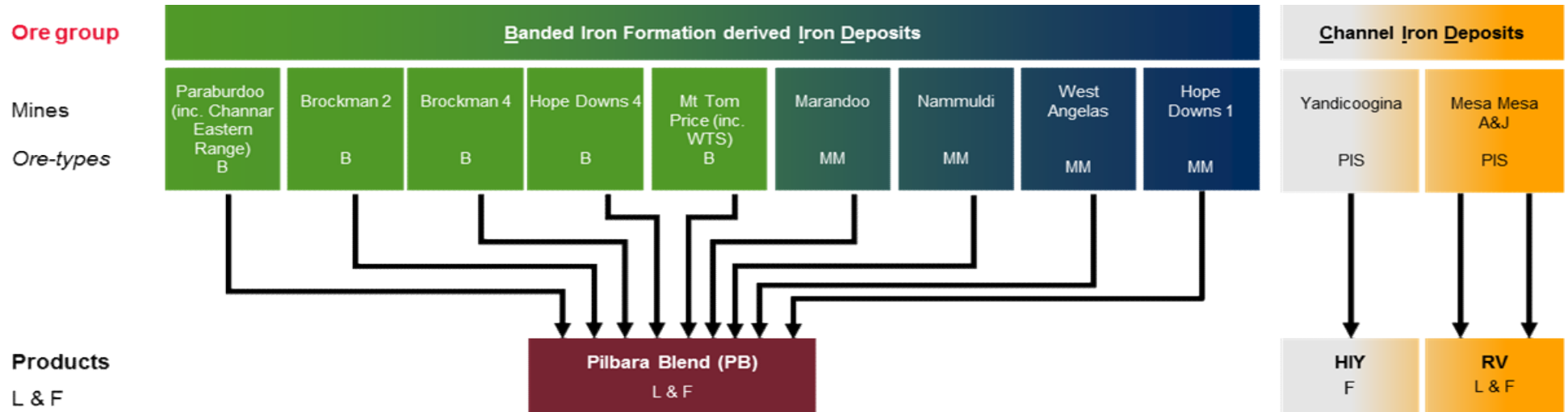


16	Mines
1,700 km	Rail
4	Port terminals
4	Power stations
371	Haul trucks
86	Autonomous haul trucks
55	Production drills
11	Autonomous drills
200	Locomotives
> 100	Global customers

\* Figures accurate as of February 2018



# Our world-class Pilbara iron ore products

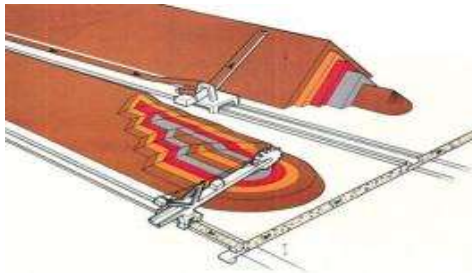


## Products

L & F

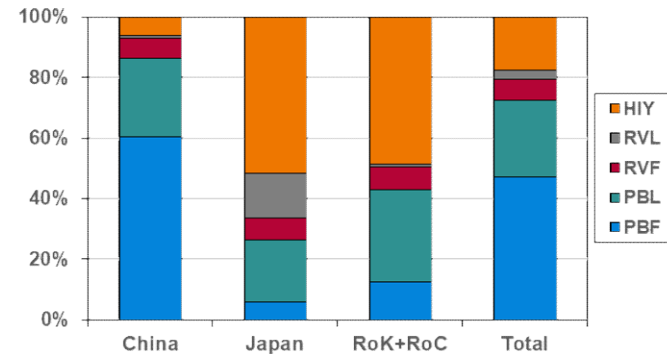
## Ore-types

- B = Brockman Iron Formation
- MM = Marra Mamba Iron Formation
- PIS = Yandicoogina pisolite
- PIS = Robe Valley pisolite



RioTinto

Shipments, by product, by market in 2016



# We produce five products in the Pilbara to meet customers needs



**Pilbara  
Blend Fines**



**Pilbara  
Blend Lump**



**Yandicoogina  
Fines**



**Robe Valley  
Fines**



**Robe  
Valley Lump**



## 2017 shipments by product



■ Pilbara Blend Fines ■ Pilbara Blend Lump ■ Yandicoogina Fines ■ Robe Valley Fines ■ Robe Valley Lump

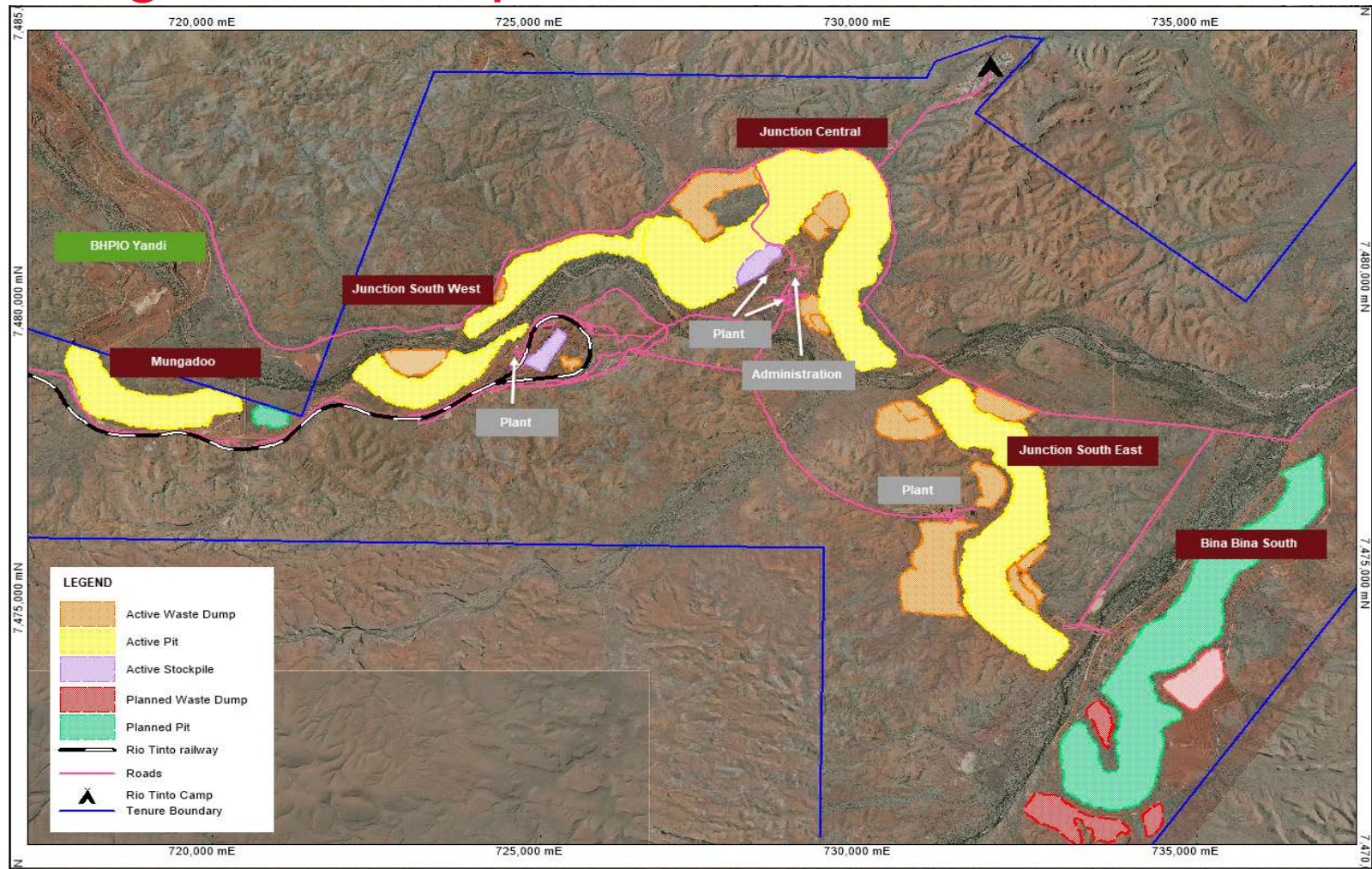


# Yandicoogina Mine Operations



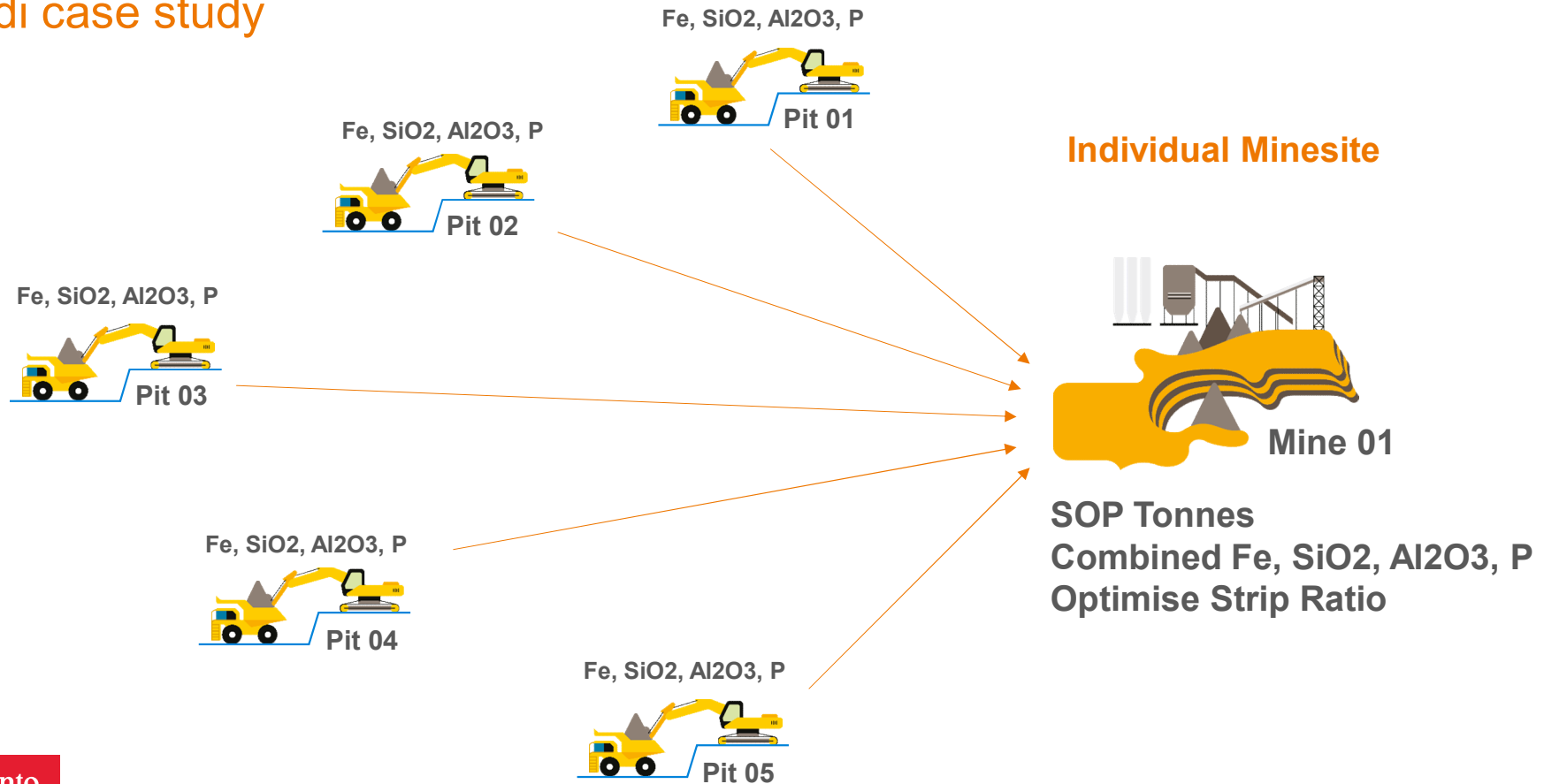


# Yandicoogina Mine Operations



# Integrated Operations

## Yandi case study



# Closure regulation in WA

## Commonwealth

- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Native Title Act 1993*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*

## State

- *Aboriginal Heritage Act 1972*
- *Biodiversity Conservation Act 2016*
- *Conservation and Land Management Act 1984*
- *Contaminated Sites Act 2003*
- *Contaminated Sites Regulations 2006*
- *Dangerous Goods Safety Act 2004*
- *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007*
- *Environmental Protection Act 1986*
- *Environmental Protection Regulations 1987*
- *Environmental Protection (Controlled Waste) Regulations 2004*
- *Environmental Protection (Unauthorised Discharges) Regulations 2004*
- *Health (Asbestos) Regulations 1992*
- *Land Administration Act 1997*
- *Mines Safety and Inspection Act 1994*
- *Mines Safety and Inspection Regulations 1995*
- *Mining Act 1978*
- *Mining Regulations 1981*
- *Mining Rehabilitation Fund Act 2012*
- *Occupiers Liability Act 1985*
- *Rights in Water and Irrigation Act 1914*
- *Wildlife Conservation Act 1950*
- *For RTIO, State Agreement Acts impose an additional layer of obligations relevant to closure and have no effect on the operation of the Environmental Protection Act*



# Closure regulation in WA - cont

## Guidelines and Standards

A list of guidelines and standards is provided below by way of example, but is not exhaustive due to the breadth of the closure planning discipline

- *Guidelines for the Preparation of Mine Closure Plans (2015) Western Australian Department of Mines and Petroleum and Environmental Protection Authority*
- *Leading Practice Sustainable Development Program for the Mining Industry - Mine Closure and Completion (2016) Commonwealth Department of Industry Trade and Resources*
- *Mine Rehabilitation Handbook (1998) Minerals Council of Australia*
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) Agriculture and Resource Management Council of Australia and New Zealand and the Australian and New Zealand Environment and Conservation Council*
- *Mine Void Water Resource Issues in Western Australia (2003) Western Australian Water and Rivers Commission*
- *Contaminated Sites Guideline Series (various) Western Australian Department of Environmental Regulation*
- *Environmental Notes on Mining: Acid Mine Drainage (2009) Western Australian Department of Mines and Petroleum*
- *Environmental Notes on Mining: Waste Rock Dumps (2009) Western Australian Department of Mines and Petroleum*
- *Safety Bund Walls Around Abandoned Open Pit Mines (1997) Western Australian Department of Industry and Resources*
- *Global Acid Rock Drainage Guide (2014) International Network for Acid Prevention*
- *Australian Standard 2601: The Demolition of Structures (2001) Standards Australia*
- *Australian Standard 4976: The Removal of Underground Petroleum Storage Tanks (2008) Standards Australia*
- *Demolition Work Code of Practice (2015) Safe Work Australia*

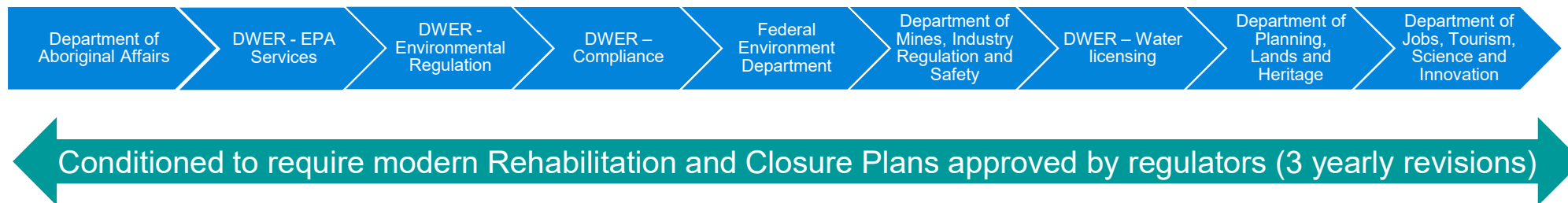
## With comprehensive environmental reporting to match

Report Name	# Reports (approximate) Submitted annually except for Closure Plans
National Pollutant Inventory (NPI)	18 Facilities
Operating Licence Annual Environment Reports (AER)	22 Licences
Operating Licence Annual Audit Compliance Reports (AACR)	23 Licences
Ministerial Statement Compliance Reports (MSCR)	22 Statements
Env Protection & Biodiversity Conservation Act Reports (EPBC)	3 Reports
Mining Act Annual Environment Reports (MA AERs)	112 Tenements
Mine Rehabilitation Fund Reports (MRF)	254 Tenements
Annual Exploration Environment Report (AEER)	19 Permits
State Agreement Annual Environment Reports (SAAER)	133 Tenements
Native Vegetation Clearing Permit Reports (NVCP)	118 Permits
Groundwater Licence Summary	5 Licences
National Greenhouse & Energy Reporting (NGERs)	118 Facilities
Safeguard Mechanism (SGM)	8 Facilities
Closure Plans (EP Act or voluntarily)	Revised Closure Plans submitted 3 yearly (approx. 6 operations/year)

# Yandicoogina regulatory landscape

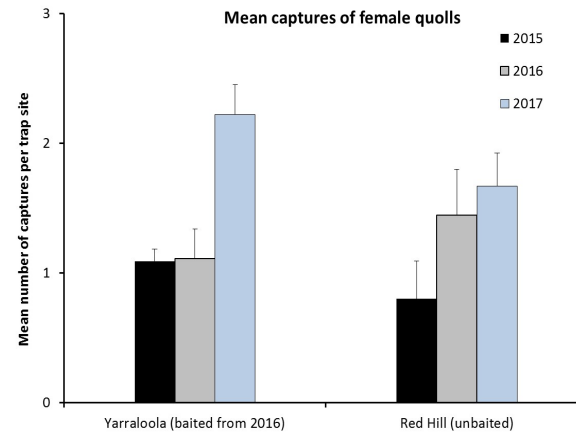
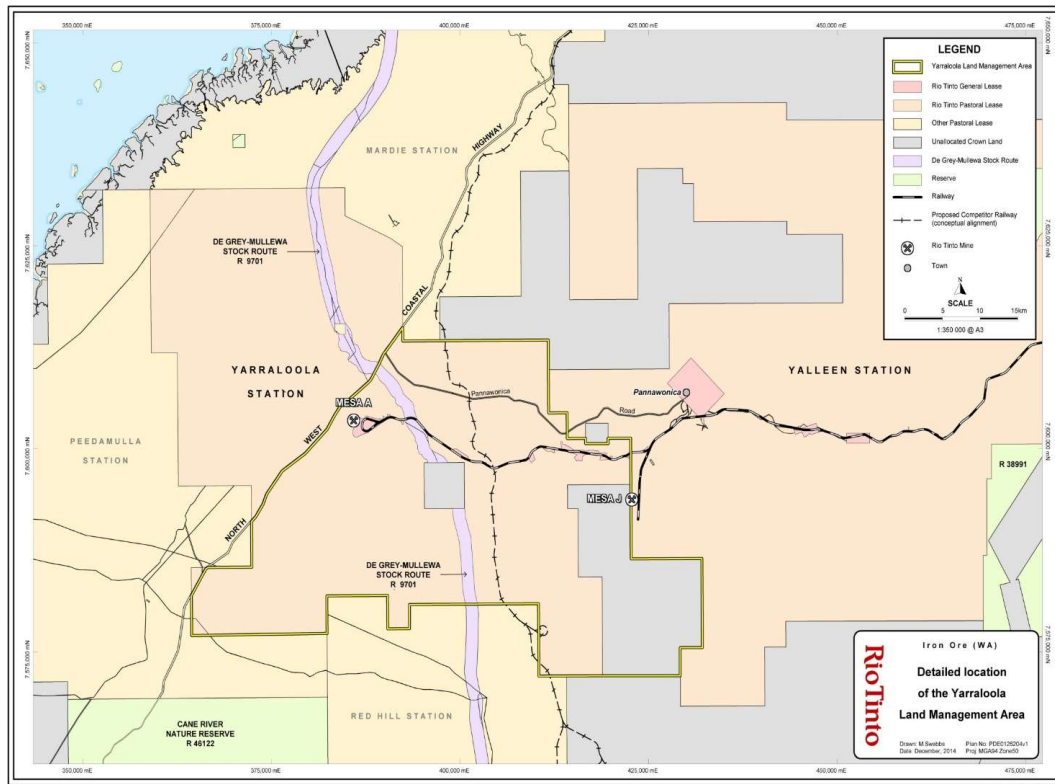
## Yandicoogina key approvals

<i>Aboriginal Heritage Act 1972</i>	<i>Environmental Protection Act 1986</i>	<i>Commonwealth EPBC Act 1999</i>	<i>Mining Act 1978</i>	<i>Mining Rehabilitation Fund Act 2012</i>	<i>Rights in Water and Irrigation Act 1914</i>	<i>Land Administration Act 1997</i>	<i>National Environment Protection Council Act 1996</i>	<i>State Agreement</i>
<ul style="list-style-type: none"> <li>Ministerial Consents (6)</li> </ul>	<ul style="list-style-type: none"> <li>Ministerial Statements (1)</li> <li>Operating Licences (1)</li> <li>Native Vegetation Clearing Permits (2)</li> <li>Closure Plans (1)</li> <li>Inspections (Ad hoc)</li> </ul>	<ul style="list-style-type: none"> <li>EPBC notices (1)</li> </ul>	<ul style="list-style-type: none"> <li>Mining Proposals and Programmes of Work (3)</li> <li>Tenements (~8)</li> <li>Inspections (Ad hoc)</li> </ul>	<ul style="list-style-type: none"> <li>Tenements (~2)</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater Licences (~3)</li> <li>Permits (Bed and Banks, Construction/a lter/ extend well) (~8)</li> <li>Inspections (Ad hoc)</li> </ul>	<ul style="list-style-type: none"> <li>Tenements (~3)</li> </ul>	<ul style="list-style-type: none"> <li>National Pollutant Inventory (1)</li> </ul>	<ul style="list-style-type: none"> <li><i>Iron Ore (Yandicoogina) Agreement Act 1996</i></li> <li>Tenements (~9)</li> </ul>

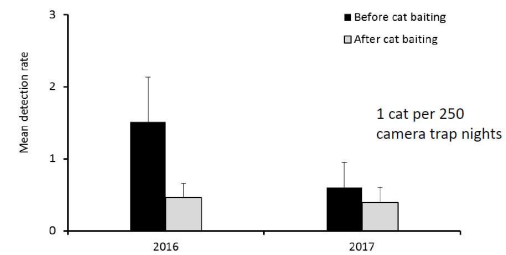


# Offsets

## Threatened Species Offset Plan (TSOP) for Northern Quoll and Pilbara Olive Python

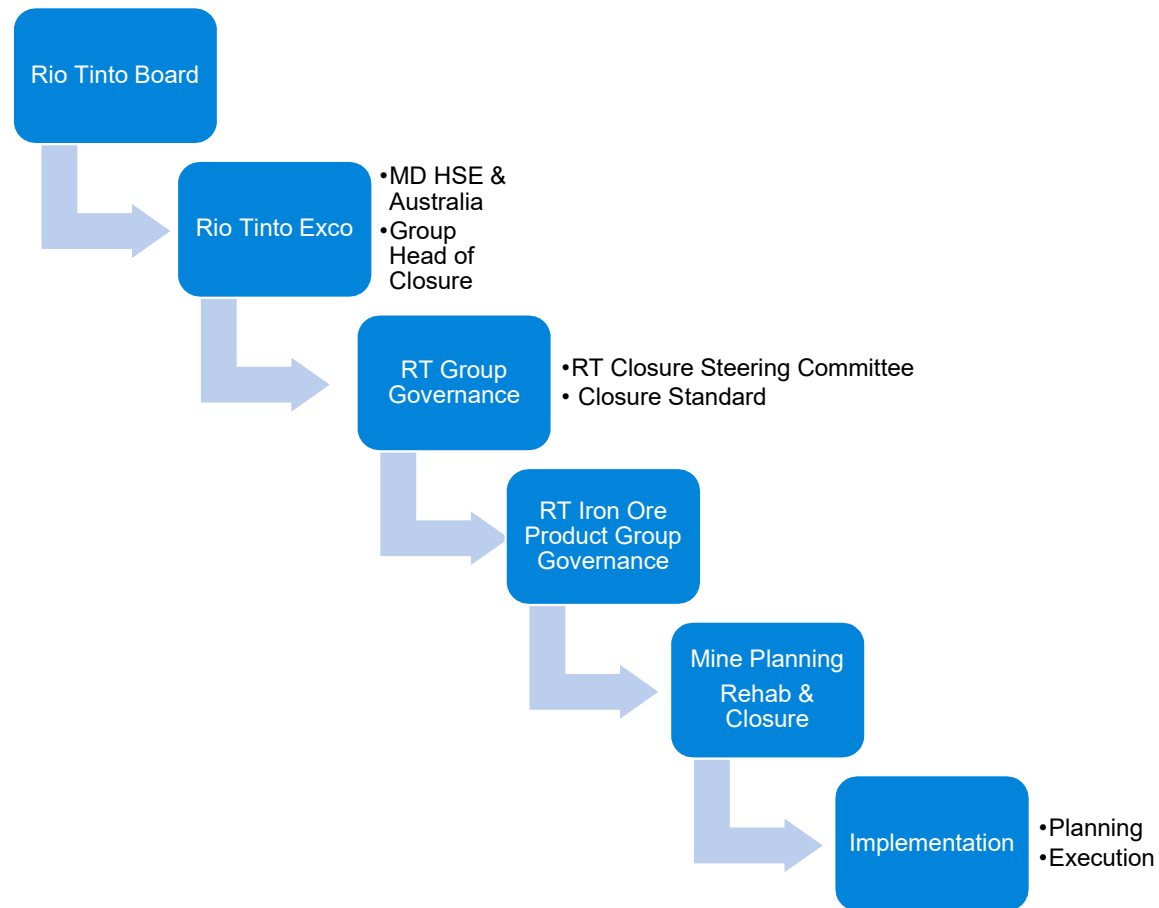


### Cats reduced to low levels

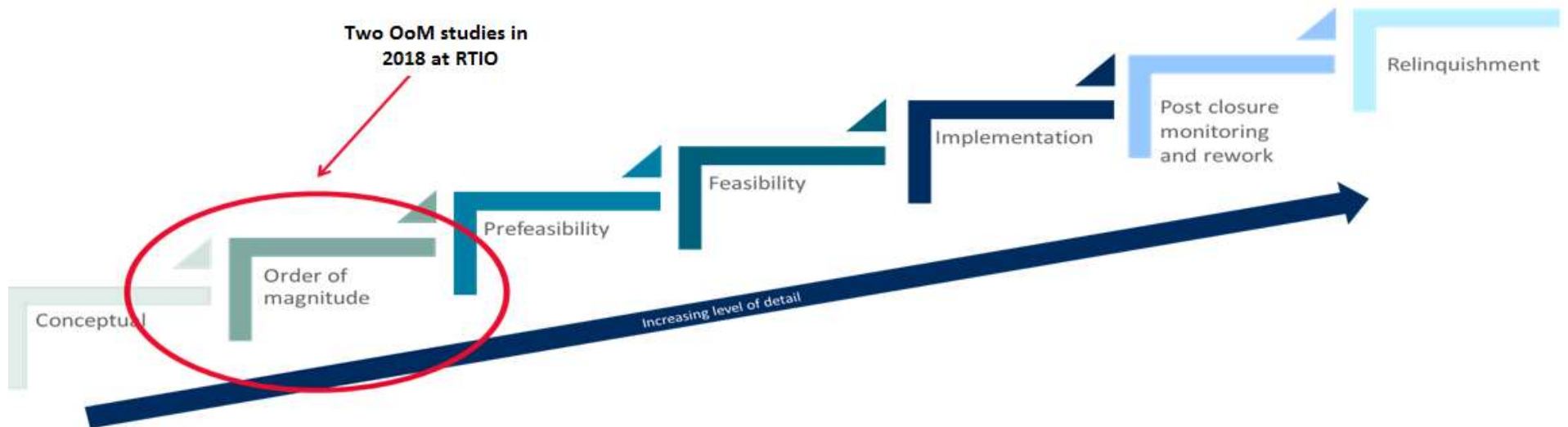




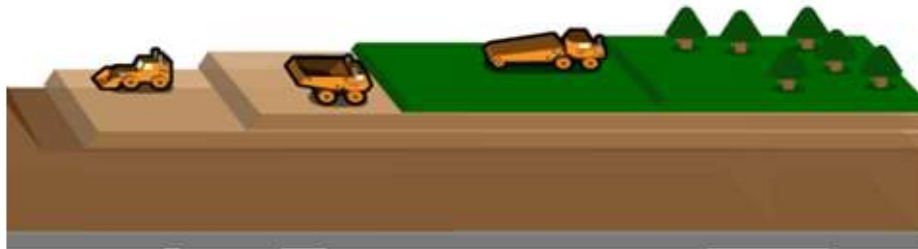
# Our governance of rehabilitation and closure



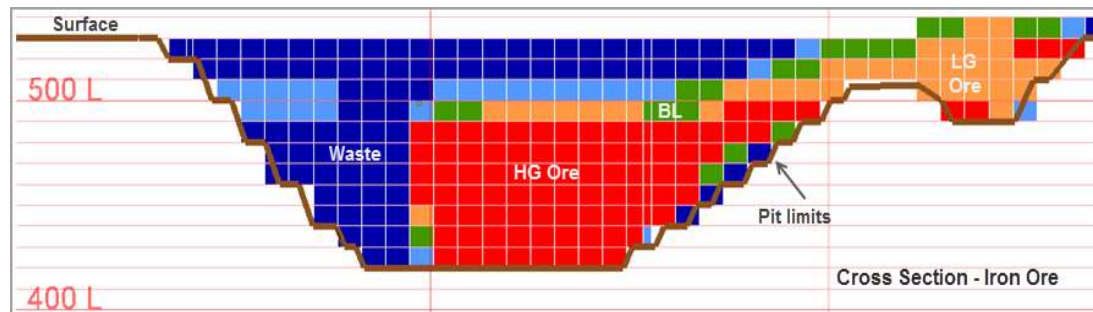
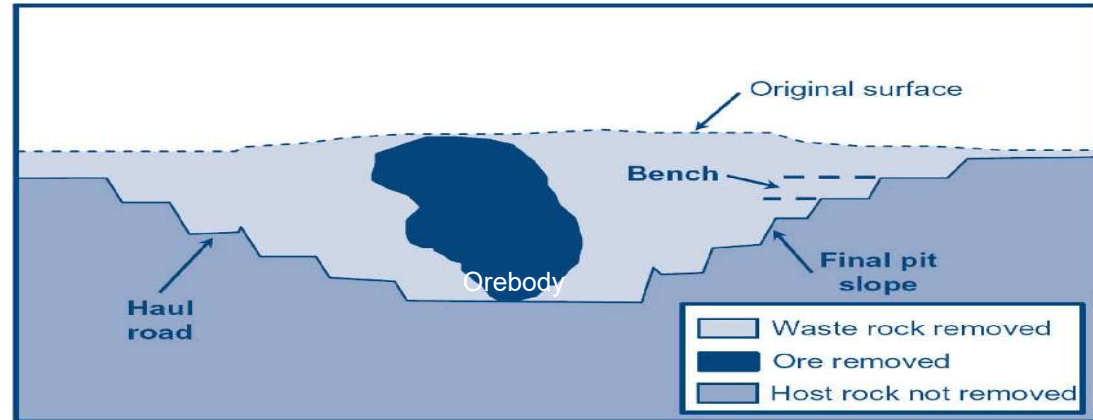
# Closure planning overview



# Progressive rehabilitation in Iron Ore compared to other commodities



Strip Mining (e.g. Coal, gravel, bauxite)



Open Pit Mining (e.g. Iron Ore, Uranium)

# A leader in innovation, technology and R&D

## External projects

- WABSI Completion Criteria
- WABSI Erosion Project
- Management of AMD
- Seed science



Trial on subsoil  
2018 (2 mth old)

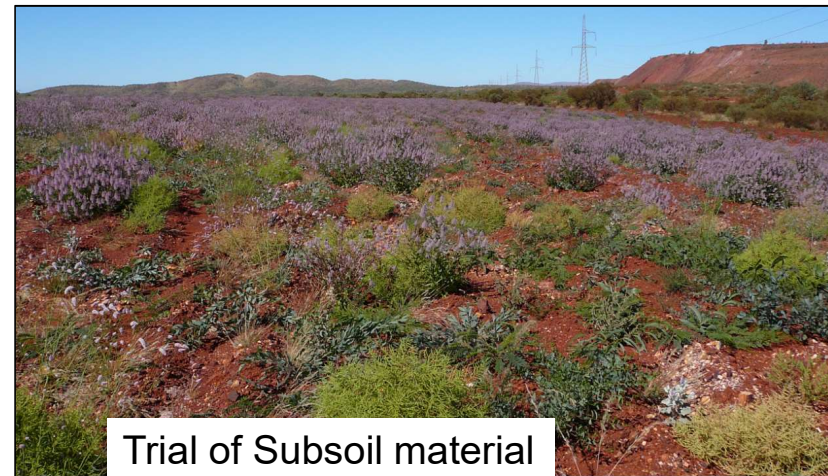


Trial with no topsoil  
2017 (6 years old)

## Internal projects

- Alternative Growth Media
- UAV Survey / 3D models
- 3D models for dozer guidance on rehab
- Concave slopes, rock armouring
- Riparian Vegetation trials

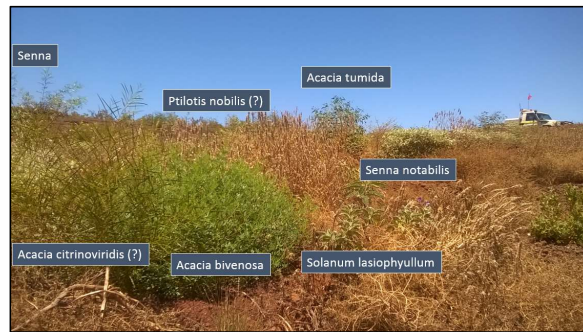
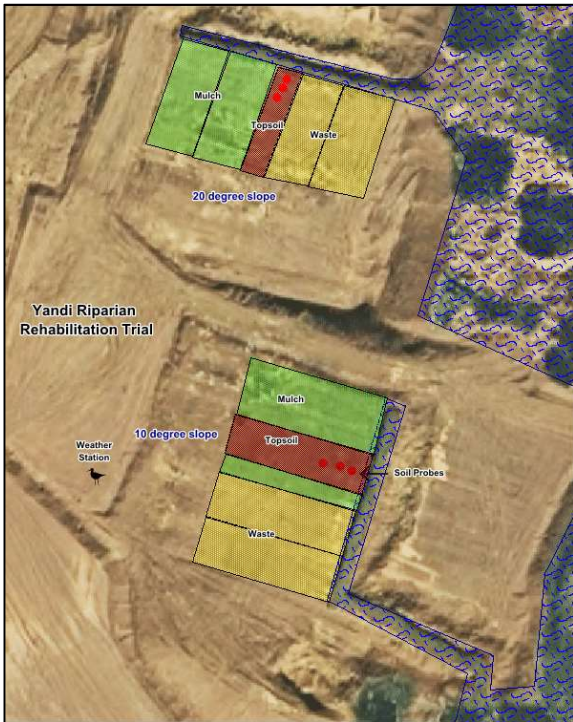
**RioTinto**



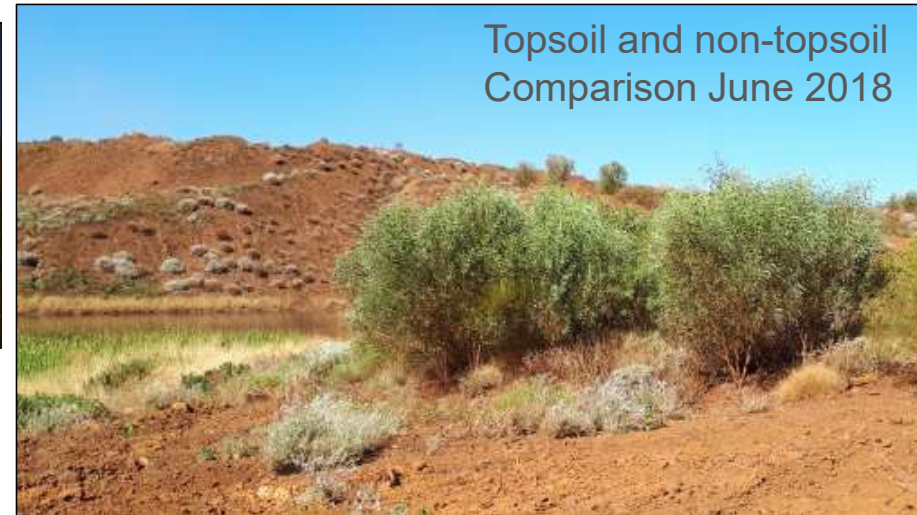
Trial of Subsoil material  
2017 (8 mth old)



# Yandicoogina Riparian Trial



Upper area 10 degrees - 2016



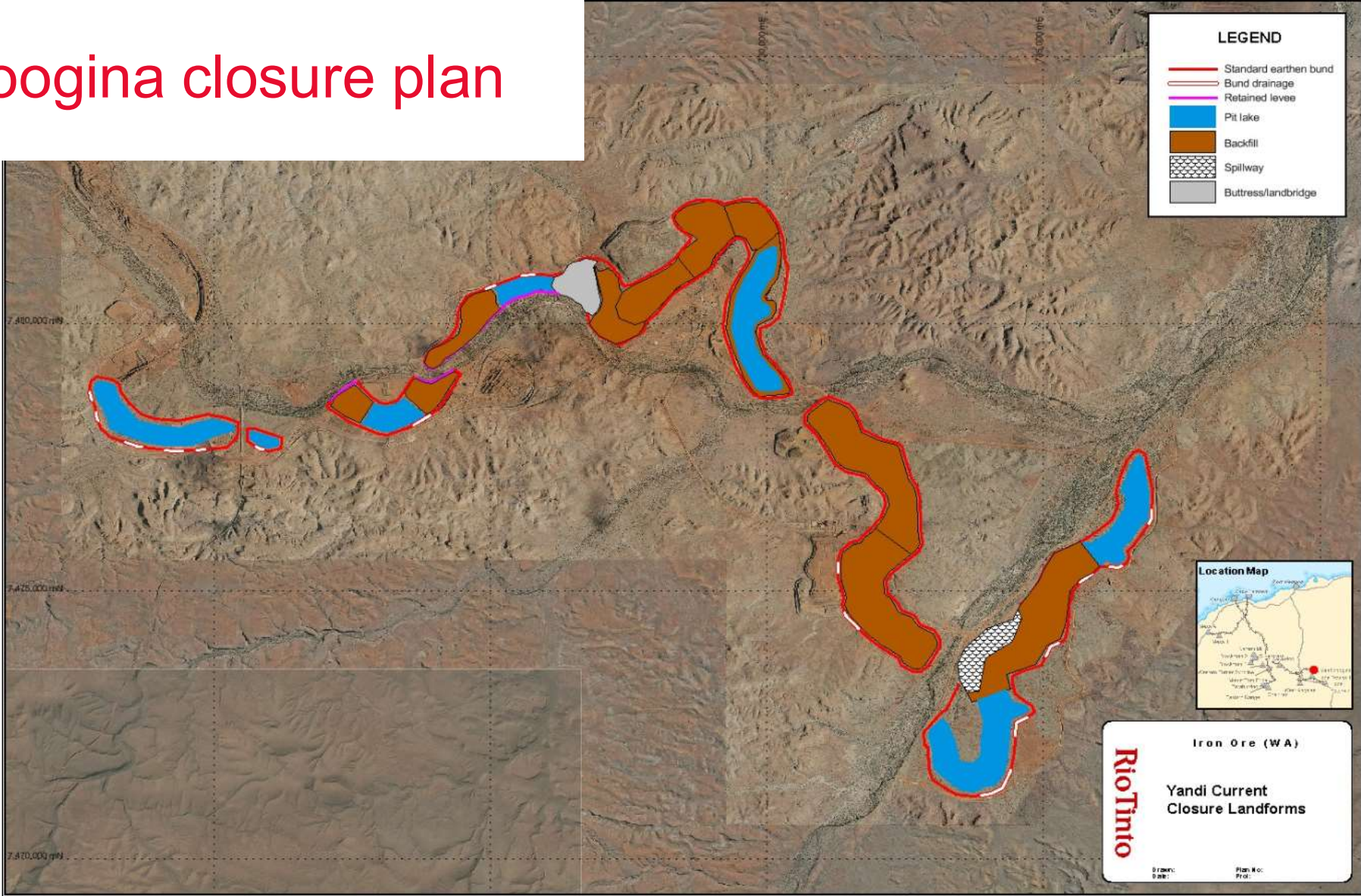
Topsoil and non-topsoil  
Comparison June 2018



Lower area 10 degrees - 2016

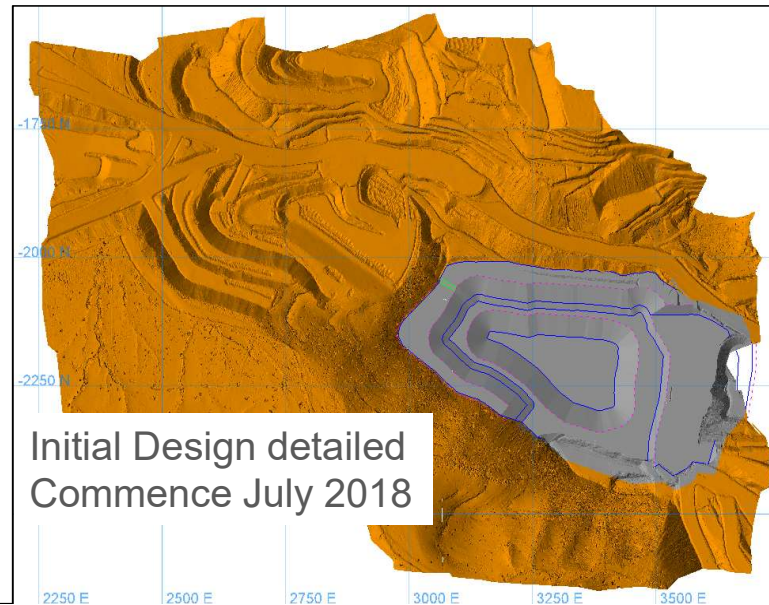


# Yandicoogina closure plan





# Integrated operations Rehabilitation planning



Pushing waste to shape dump  
Completed May 2018

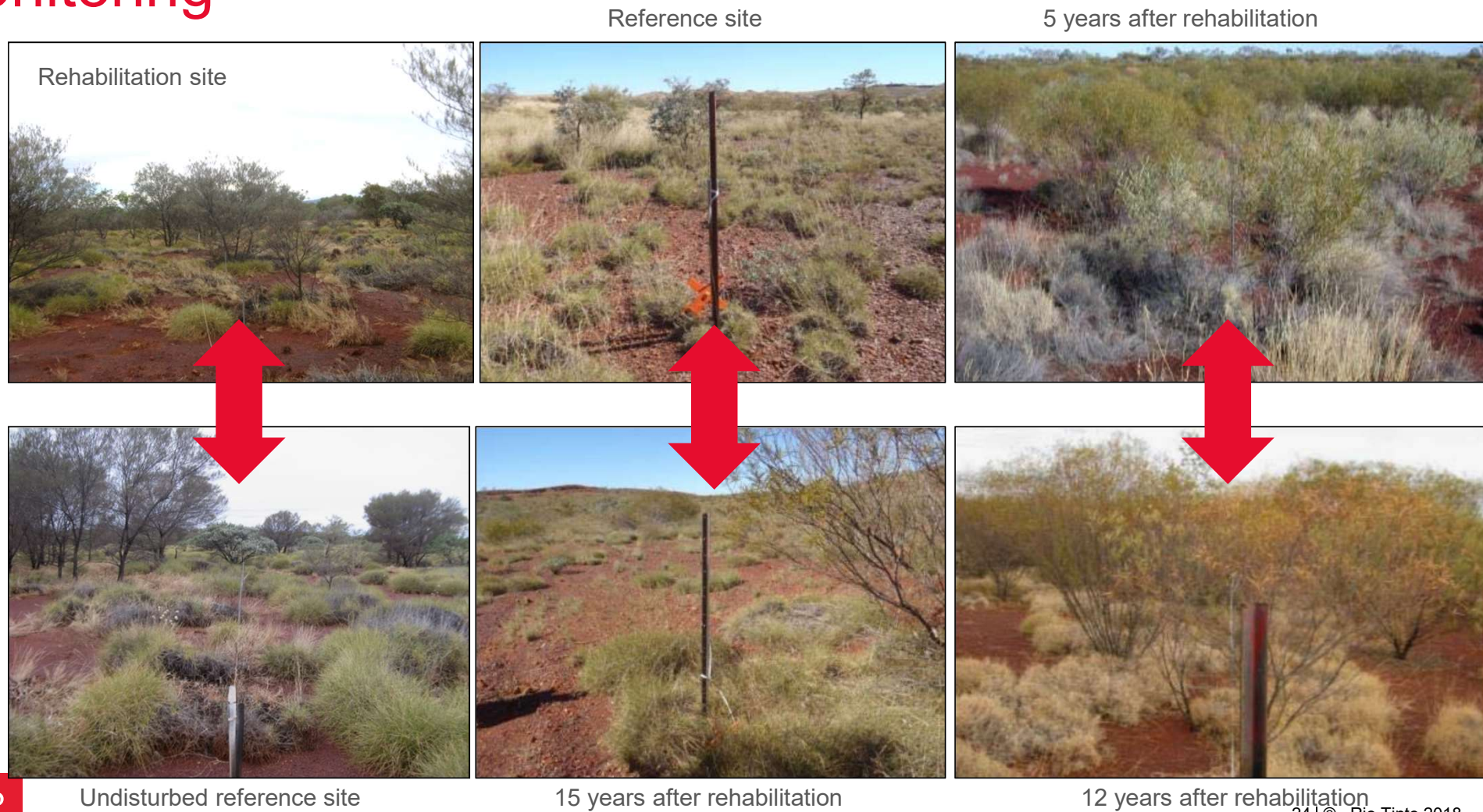
Designs specific to  
Each landform  
Completed Nov 2017

Old laydown area cleared, ripped and seeded  
Photo at end of works (1 month old)





# Monitoring





# Seed management process



Seed collection  
Provenance zones



Seed viability  
tests and  
treatment



Seed  
storage



Seed  
spreading





# Partnering on rehabilitation



Traditional Owner operated grader for flat areas work



Load / Haul to shape landforms



Hand and machinery seeding



Old camp site after rehabilitation



# Rehabilitation projects progression of works – Pit 6 (2017)



Example of how a Rehabilitation project progresses over time

# Rehabilitation projects progression of works – Pit 6 (2017)





## Rehabilitation projects progression of works – Pit 6 (2017)



Shaping by dozer commences at top, pushing down

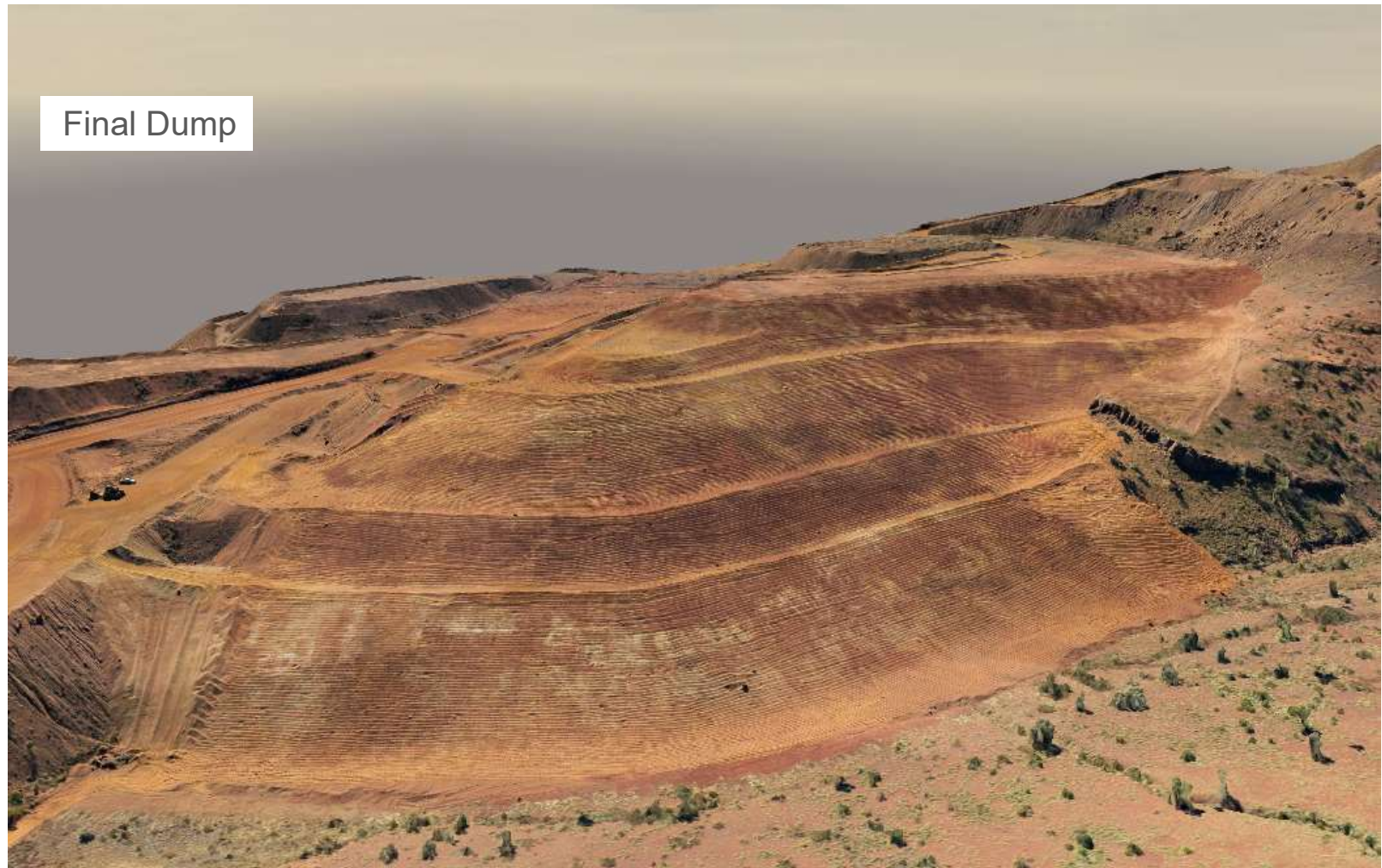


## Rehabilitation projects progression of works – Pit 6 (2017)

Shaping nearly complete,  
topsoil spreading commencing



## Rehabilitation projects progression of works – Pit 6 (2017)



# Questions?