



Notice to ASX

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## **Presentation for Financial community visit to Pilbara**

9 October 2023

Attached are the presentation slides for the presentation by management at the site visit for the financial community to its Pilbara operations in Western Australia. The presentation will be webcast at 13:45 AWST / 06:45 BST and can be found on our website at: <https://www.riotinto.com/en/invest/presentations>

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This announcement is authorised for release to the market by Andy Hodges, Rio Tinto's Group Company Secretary.

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RioTinto

Pilbara Site Visit  
October 2023



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Examples of forward-looking statements include those regarding estimated ore reserves, anticipated production or construction dates, costs, outputs and productive lives of assets or similar factors. Forward-looking statements involve known and unknown risks, uncertainties, assumptions and other factors set forth in this presentation.

For example, future ore reserves will be based in part on market prices that may vary significantly from current levels. These may materially affect the timing and feasibility of particular developments. Other factors include the ability to produce and transport products profitably, demand for our products, changes to the assumptions regarding the recoverable value of our tangible and intangible assets, the effect of foreign currency exchange rates on market prices and operating costs, and activities by governmental authorities, such as changes in taxation or regulation, and political uncertainty.

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## Mineral Resources

The Mineral Resources reported for the Rhodes Ridge Joint Venture between Rio Tinto (50 per cent) and Wright Prospecting Pty Ltd (50 per cent), on slide 18 form part of the Pilbara Mineral Resource estimates reported in Rio Tinto's 2022 Annual Report released to the ASX on 22 February 2023. These Mineral Resources are not materially different to the breakdown of the Rhodes Ridge Mineral Resources reported in Rio Tinto's 2020 Annual Report released to the ASX on 22 February 2021.

The Competent Persons responsible for reporting these Mineral Resource estimates were Mr P Savory, who is a Fellow of The Australasian Institute of Mining and Metallurgy, and Ms N Brajkovich, Mr C Kyngdon, Mr M Judge and Ms A Latscha who are Members of The Australasian Institute of Mining and Metallurgy. Rio Tinto is not aware of any new information or data that materially affects these Mineral Resource estimates and confirms that all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed. The form and context in which the Competent Persons' findings are presented have not been materially modified from when they were reported. Mineral Resources are quoted in this release on a 100 per cent basis, as dry in-situ tonnes.

Rhodes Ridge contains 6.8 billion tonnes of Mineral Resources at an average grade of 61.6% Fe; comprising 0.8 billion tonnes of Indicated Mineral Resources at an average grade of 62.4% Fe and 6.0 billion tonnes of Inferred Mineral Resources at an average grade of 61.5% Fe.

These Mineral Resources include:

- 0.6 billion tonnes of high grade Brockman Indicated Mineral Resources at an average grade of 63.9% Fe and 0.03 billion tonnes of high grade Detrital Indicated Mineral Resources at an average grade of 61.3% Fe.
- 5.3 billion tonnes of high grade Brockman, Marra Mamba and Detrital Inferred Mineral Resources at an average grade of 62.2% Fe.

# Agenda

<b>Time</b>	<b>Topic</b>	<b>Presenter</b>
<b>Session 1</b>		
13:45 – 13:55	Safety and Cultural Share	Cecile Thaxter
13:55 – 14:25	Iron Ore	Simon Trott
14:25 – 14:45	Pilbara Mines	Matthew Holcz
14:45 – 15:00	Rail, Port & Core Services	Richard Cohen
15:00 – 15:10	Operational & Technical Support	Stephen Jones
15:10 – 15:25	<b>Break</b>	
<b>Session 2</b>		
15:25 – 15:35	Markets	Will Millstead
15:35 – 15:50	Steel Decarbonisation	Simon Farry
15:50 – 16:05	Financial Performance	Rowena Albones
16:05 – 16:15	<b>Break</b>	
16:15	Q&A	Panel
<b>17:00</b>	<b>End</b>	

# Cecile Thaxter

Vice President,  
Health, Safety, Environment & Communities

# Fatality prevention

The leading causes of fatalities across the mining industry in 2022<sup>1</sup> are **risks that our people face today...**

**Mobile equipment**

**Falling objects**

**Working at heights**



# Integrated approach to preventing fatalities

-  **Managing fatality risks**  
Ensuring critical controls are well designed, understood, in place, and working at the frontline
-  **Shifting mindsets & behaviours**  
Through leadership & engagement and the Safe Production System
-  **Building capability & learning**  
Applying innovative and inclusive methods to train, communicate, and share critical learnings
-  **Assessing maturity – continually**  
Leading practice Safety Maturity Model to assess performance in key areas

Safety Maturity Model pillars





# Nammuldi cultural heritage incident

## August 2023

Identified dislodgement of Pilbara scrub tree and ~1m<sup>3</sup> rock

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## Cultural heritage management

Design, implement, monitor & optimise critical controls

Engagement on Country and operating parameters

Monitoring blast operations in real time; analyse and update models and designs

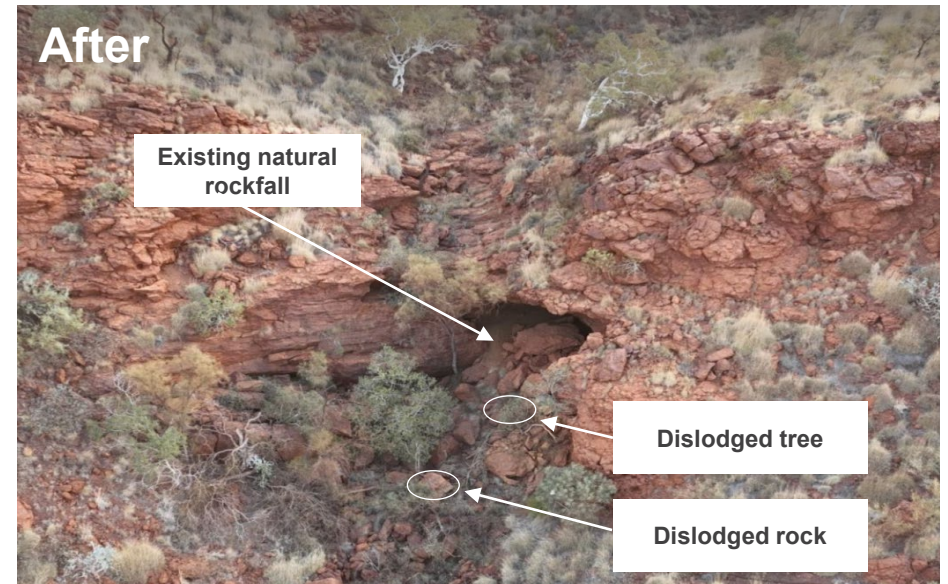
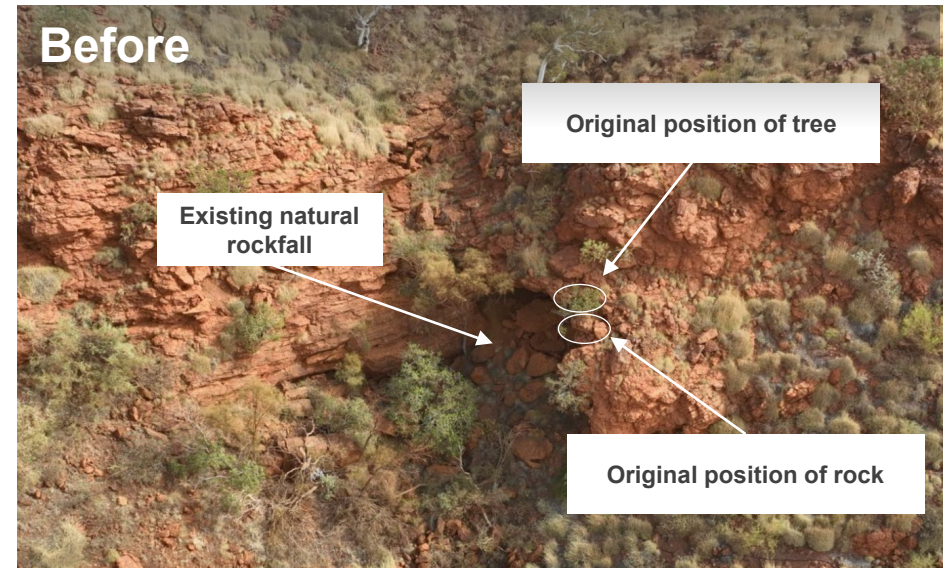
Review underway to identify learnings

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## Site visit

Assessment found no structural damage and no damage to cultural material

We continue to work closely with Traditional Owners



# Simon Trott

Chief Executive, Iron Ore



# Acknowledgement of country

We acknowledge the Yaburara and Ngarluma People on whose Traditional Lands Dampier is located and pay our respects to Elders past and present.

We extend that respect to all Aboriginal and Torres Strait Islander peoples on the lands where we operate.



# Presenters



**Simon Trott**  
Chief Executive,  
Iron Ore



**Cecile Thaxter**  
Vice President,  
Health, Safety, Environment &  
Communities



**Matthew Holcz**  
Managing Director,  
Pilbara Mines



**Richard Cohen**  
Managing Director,  
Rail, Port & Core Services



**Stephen Jones**  
Managing Director,  
Operational & Technical Support



**Will Millstead**  
Head of Market Analysis



**Simon Farry**  
Head of Steel Decarbonisation



**Rowena Albones**  
Chief Financial Officer,  
Iron Ore

# This week's programme

## Dampier

Our world class port and autonomous rail

Ports capable >360 Mtpa



## Gudai-Darri

We continue to excel in development

Applying co-management



## Rhodes Ridge

The best undeveloped project in the Pilbara

Large, grade-advantaged & close to infrastructure



# Nothing is more important than the safety and wellbeing of our people

## Fatality prevention

Life Saving Commitments

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Critical Risk Management

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Safety Maturity Model

## Everyday respect

Embedding respectful behaviours

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Inclusion and respect

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Supportive leadership programmes to help support a mentally healthy workforce

### In the last 5 years

**Fatality-free<sup>1</sup>**

↓ **80%<sup>1</sup>** 0.03<sup>2</sup>

Potentially Fatal Injury rate

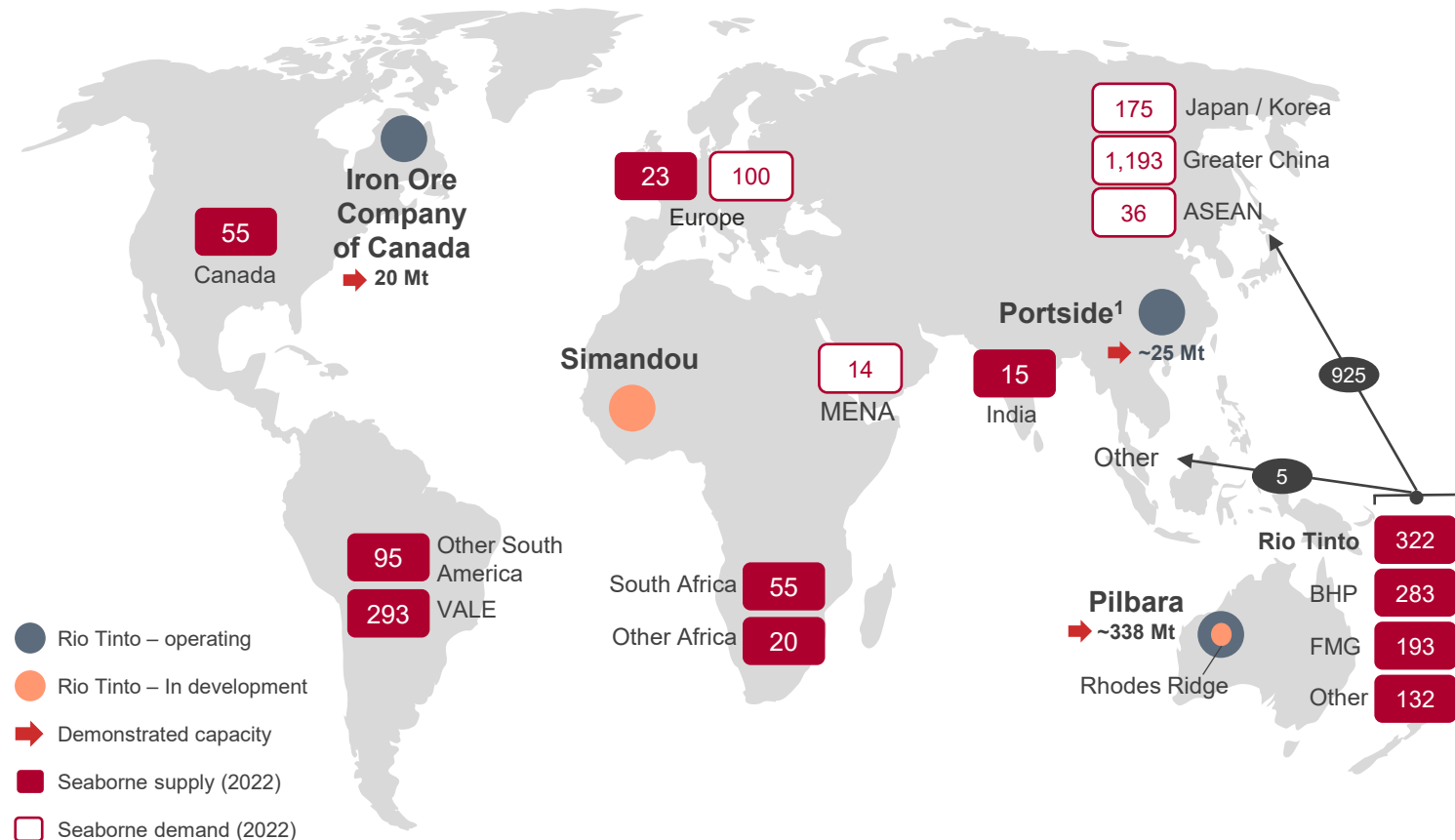
↓ **11%<sup>1</sup>** 0.57<sup>2</sup>

All Injury Frequency Rate



# We have a compelling global iron ore portfolio

Our portfolio includes the world's two best undeveloped projects



## Access to global markets

Iron ore projects on three continents

## Rhodes Ridge & Simandou

The best undeveloped projects globally

## Portside blending

Capability to de-risk supply chain

## Resilient resource portfolio

Resources compatible with a low CO<sub>2</sub> future

# Proven record of outstanding Pilbara financials and a strategy that will deliver into the future

**68%**

Average Pilbara EBITDA margin, 2013-2022

**\$82bn**

Free cash flow, 2013-2022

**\$39bn**

Corporate Tax, 2013-2022

**53%**

Return on Capital Employed, 2013-2022

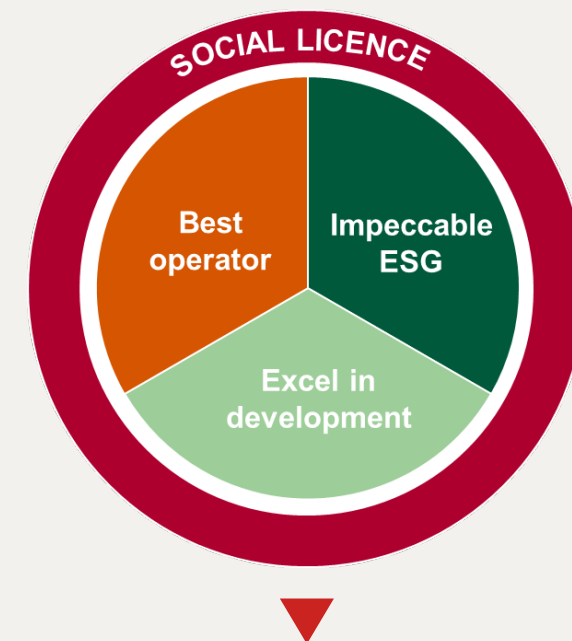
**A\$0.6bn**

Spent with Pilbara-based businesses, 2022

**A\$9bn**

Spent with suppliers in WA, 2022

We aim to be the 'Most Valued' resource business



**Superior & sustainable  
shareholder returns**



# Our strategy is realising tangible results across the value chain

## 2023 Focus areas

## 2023<sub>YTD</sub> Outcomes

### Best operator

5 Mt uplift from Safe Production System (SPS)  
320 to 335 Mt 2023 original shipments guidance

>

2023 forecast to be upper half of guidance with SPS 5 Mt uplift on track  
2023 Q3 results – Production 83.5 Mt<sup>1</sup>, Shipments 83.9 Mt<sup>1</sup>

### Impeccable ESG credentials

Progress towards a lower cost renewables-powered business  
Developing green steel pathways at the next level of scale

>

Climate Change partnership signed with Baowu  
Water stewardship and Dampier desalination plant investment

### Excel in development

Mine developments for replacement and growth  
Rhodes Ridge will underpin our competitive position for decades

>

Gudai-Darri reached nameplate within 12 months of commissioning  
Rhodes Ridge Order of Magnitude study underway and Western Range on schedule

### Social licence

Positioning for a future defined by access to Country

>

Progressing mining co-design with Traditional Owners across the Pilbara

## Values-based performance culture

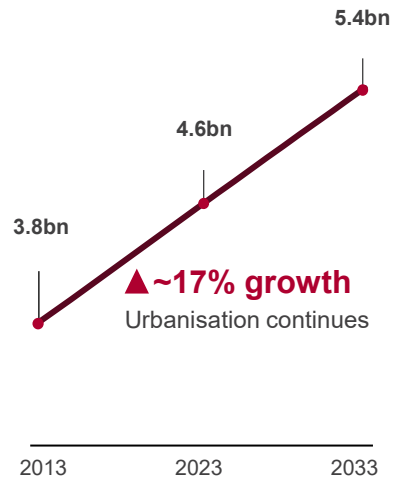
# Three global forces define our strategic context

## 1 Global steel demand

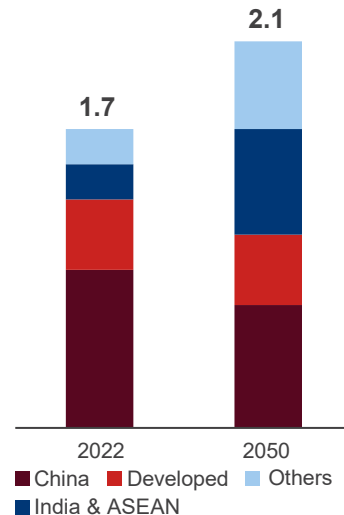
▲ **~24% growth by 2050**

Driven by emerging markets with maturing Chinese steel industry

Global urban population<sup>1</sup>



Regional steel demand<sup>2</sup>  
Bt

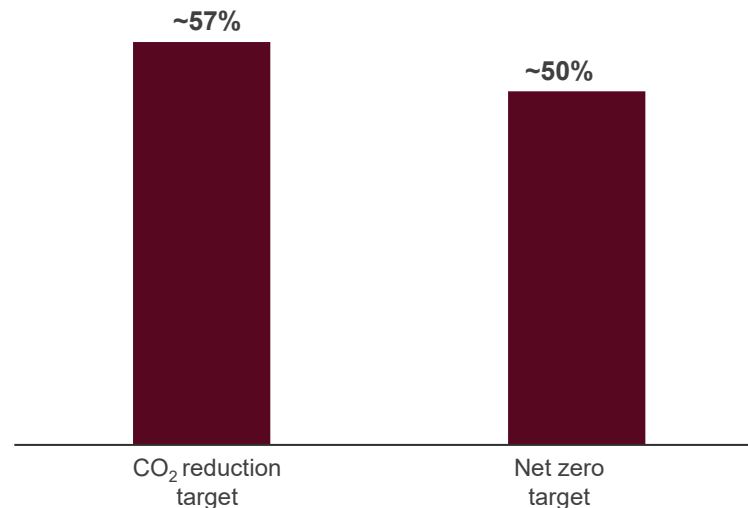


## 2 Decarbonisation

~50% with net zero targets

Based on 2022 iron ore sales volumes

Share of customers<sup>3</sup> with...

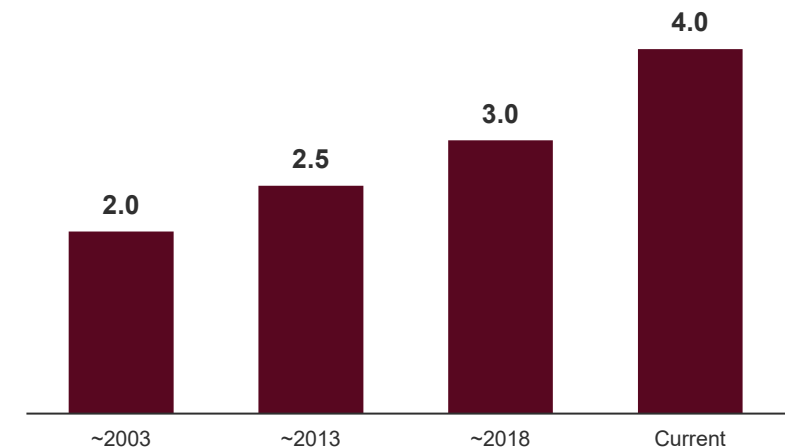


## 3 ESG Stewardship

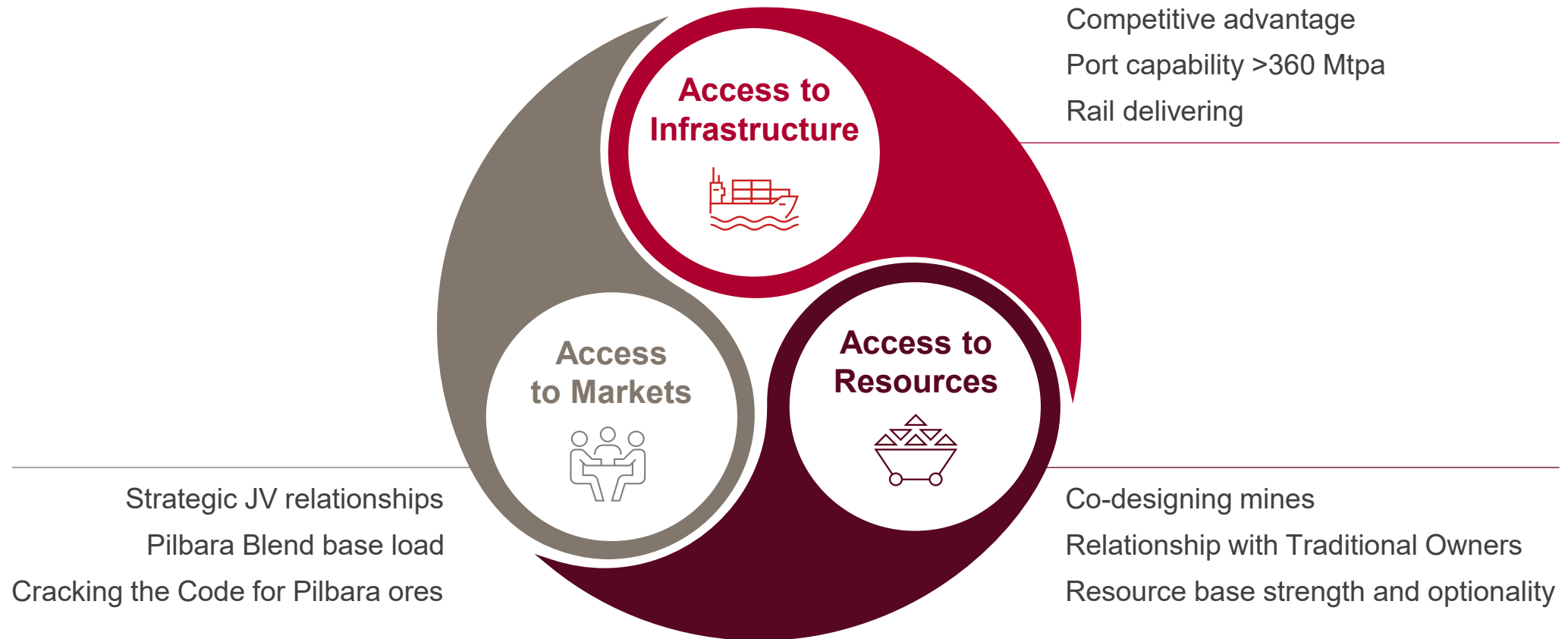
**+12-18 months since 2018**

Increase in Western Australian mining approvals timeframes

Average industry environmental approvals time<sup>4</sup> (years)



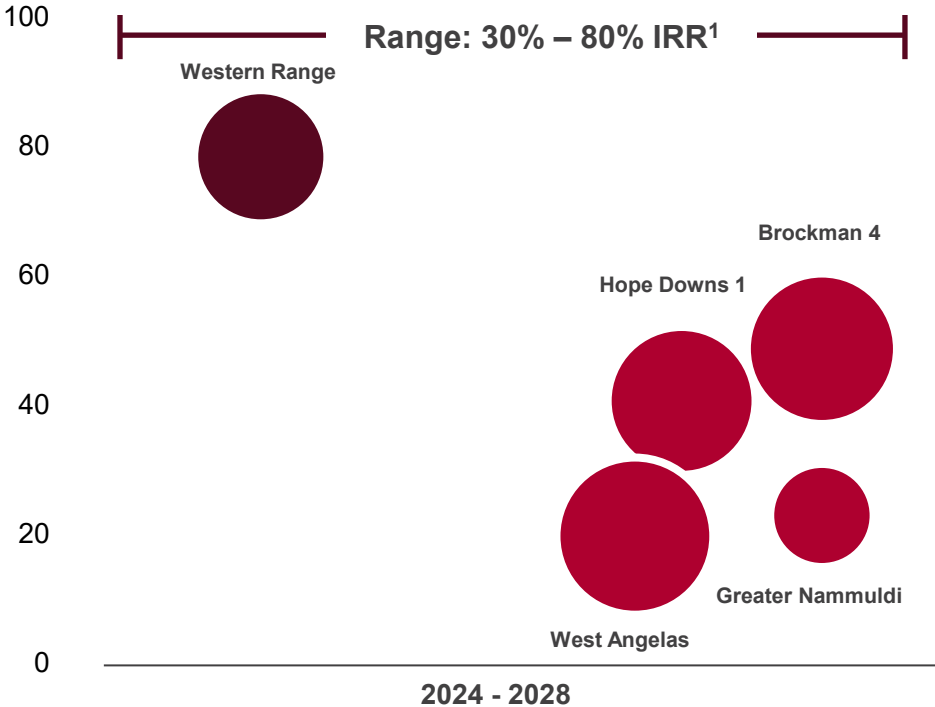
# The next 10 years will be defined by access to infrastructure, markets and resources



# Generating robust returns from disciplined capital investment

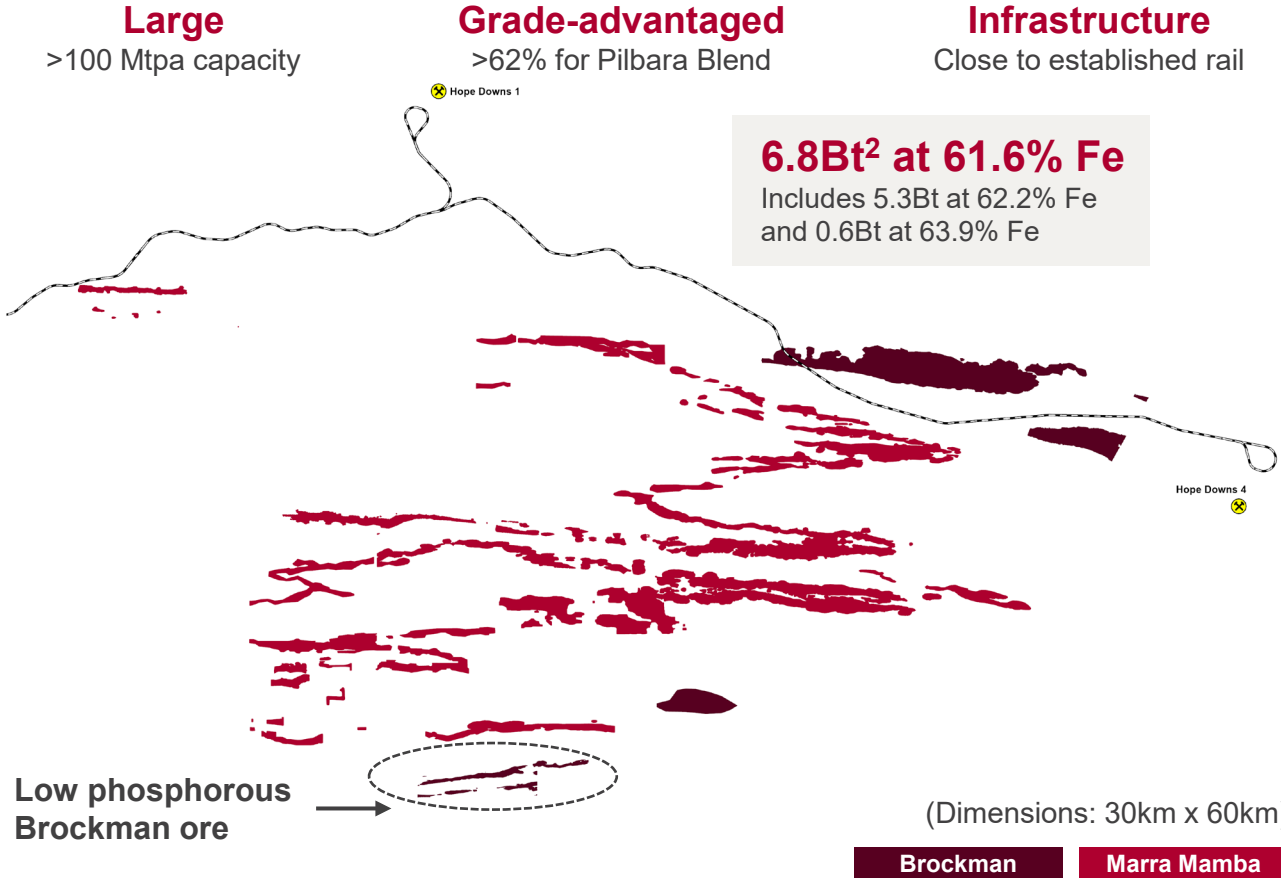
## Mine capital intensity outlook

(\$/t installed capacity)



■ In development ■ Study phase

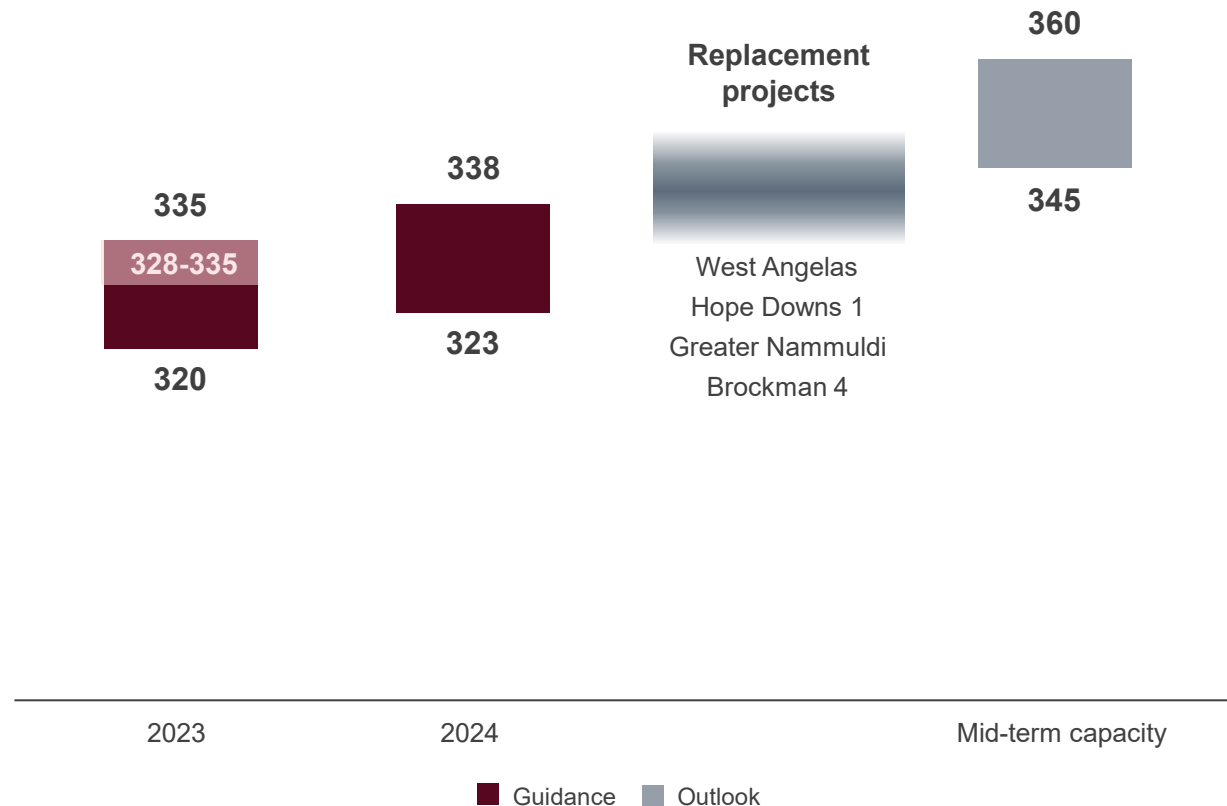
## Rhodes Ridge: the best undeveloped project in the Pilbara



# We have production momentum, targeting a higher range in 2024

## Shipping guidance

(Mt, 100% basis)



## Guidance

On track for upper half of guidance in 2023

323 – 338 Mt in 2024

## Equity

Equity tonnes 84%<sup>1</sup> in 2022

Effective equity share of free cashflow remains stable at >85%<sup>2</sup>

## Product mix

45 – 50 Mt of SP10 in 2023 (13 – 15% of shipments)

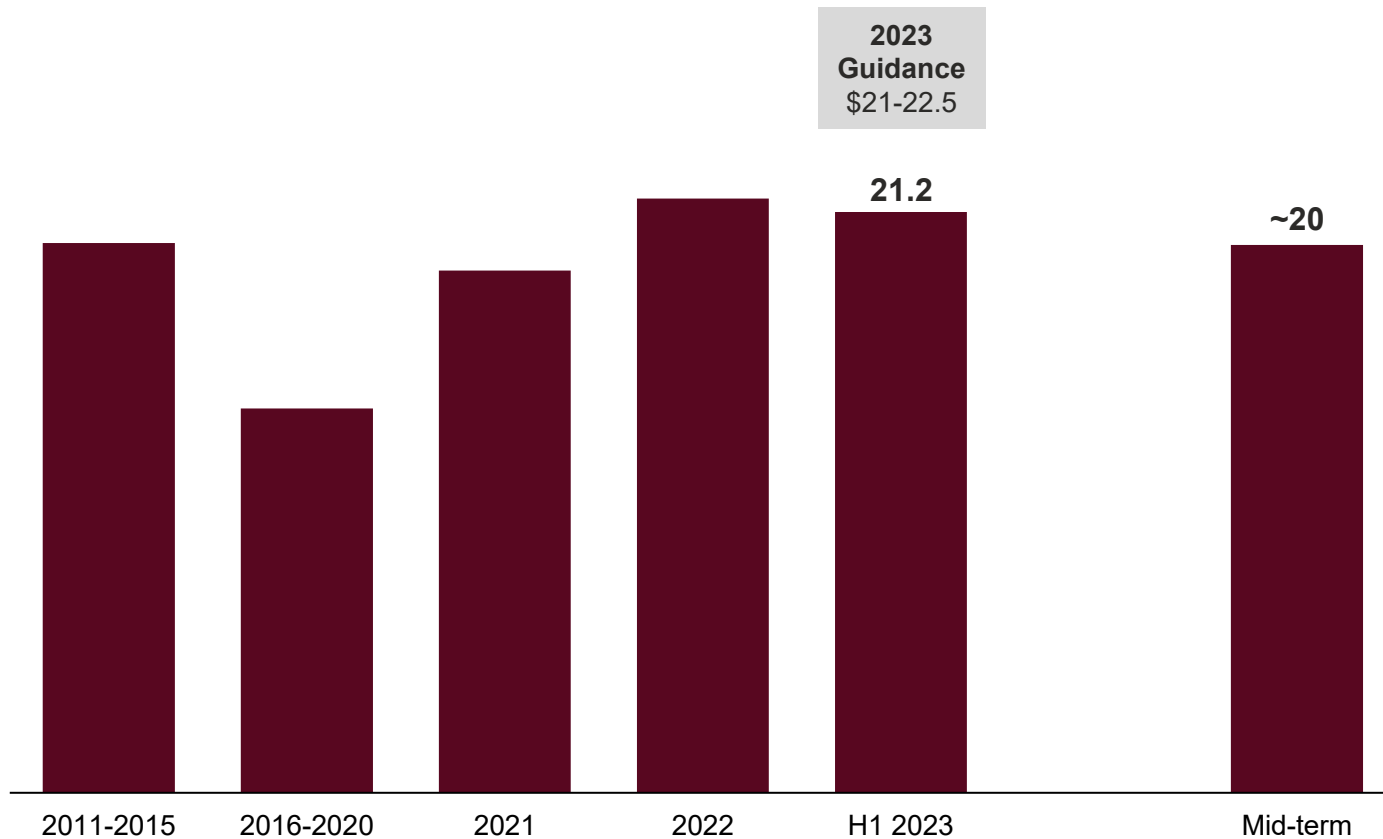
SP10 to remain elevated until replacement projects delivered

Rhodes Ridge re-orientes Pilbara Blend to >85% of shipments<sup>3</sup>

# Volume and productivity to enable cost improvement

## Unit costs

\$/t shipped



**~\$20/t mid-term unit cost target<sup>1</sup>**

Volumes increasing



Productivity improvements



Work index rising



Reduces unit costs from current

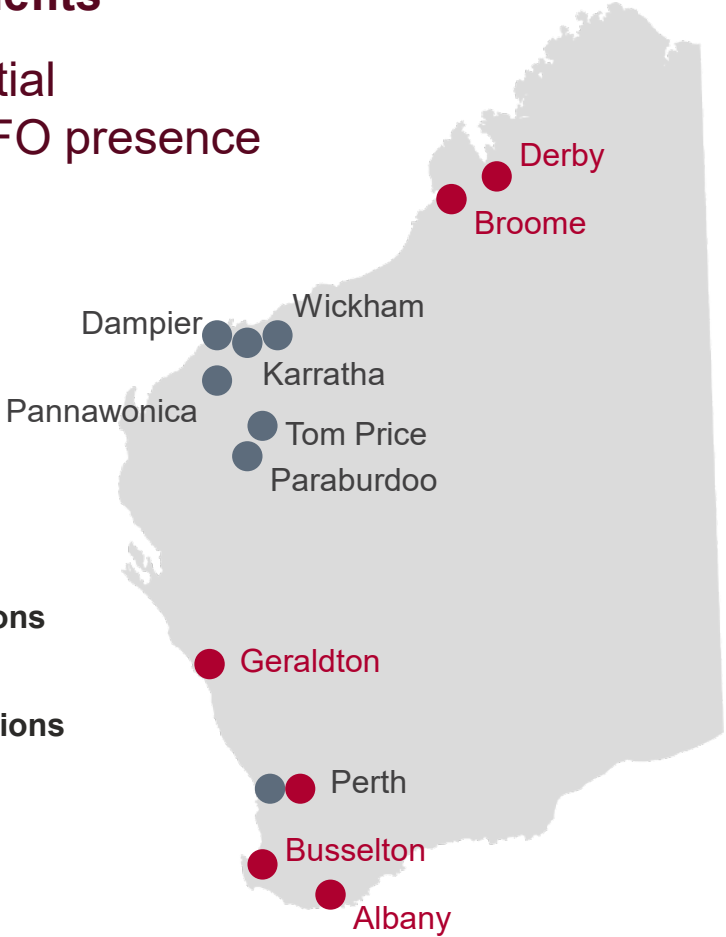


Increases unit costs from current

# Building valued partnerships across our business

## State-wide benefits

Largest residential and regional FIFO presence



**7 Residential locations**  
~4,000 workforce<sup>1</sup>

**6 Fly-in fly-out locations**  
~10,000 workforce<sup>1</sup>

## Working to build healthy, resilient communities and strong local economies



<sup>1</sup> In 2022. Residential workforce excludes Perth workforce of ~3,000.

# Positioning for a green future



**Existing pathways**  
Ongoing



**Emerging pathways**  
<10 years to commercial scale



**Future pathways**  
>10 years to commercial scale

## Scope 1 & 2

### Reducing operational emissions

Progressing a renewable-powered business with options for expansion

Piloting electrification technologies on Rail and in HME

## Scope 3

### Pathways to producing low CO<sub>2</sub> steel

Lower the carbon impact of existing Blast Furnace steel making technology

Leverage our high-grade iron ores to participate in DRI-EAF technologies

Unlock new economic pathways to produce low CO<sub>2</sub> steel using Pilbara ores





# A proven record and a strategy for the future

## Best operator

2023 volumes at the upper half of guidance

Maximising productivity with our Safe Production System

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## Impeccable ESG

Safety and wellbeing of our people

Partnering on low CO<sub>2</sub> technologies for Pilbara ores

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## Excel in development

Gudai-Darri at nameplate within 12 months

Progressing Rhodes Ridge to pre-feasibility

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## Social licence

Extending co-management

Building thriving communities



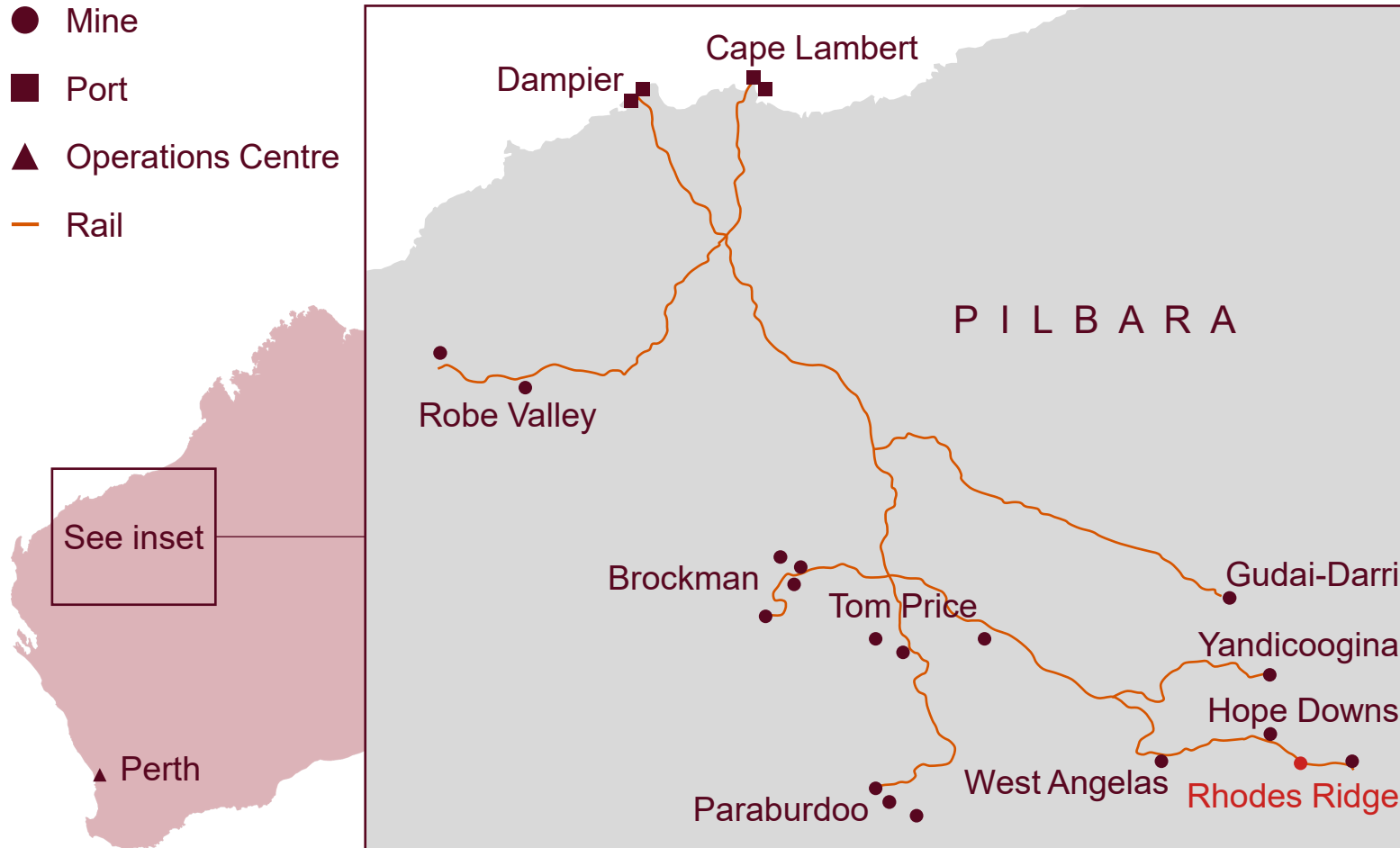
# Matthew Holcz

Managing Director,  
Pilbara Mines



# A globally significant bulk commodities business

- Mine
- Port
- ▲ Operations Centre
- Rail



<b>17</b>	Mines
<b>430</b>	Haul trucks (361 automated)
<b>60</b>	Production drills (34 automated)
<b>17</b>	Processing plants (7 wet plants)
<b>1,900</b>	Rail network distance (km)
<b>220</b>	Locomotives (13,500 wagons)
<b>7</b>	Car dumpers
<b>4</b>	Port terminals
<b>4</b>	Gas-fired power stations
<b>1</b>	Solar farm (34 MW)
<b>&gt; 100</b>	Global customers

# Building resilient and reliable performance

		2018	2021	2023 <sup>1</sup>	Today
<b>Volume</b>	Shipments	338 Mt	320 Mt	328–335 Mt <sup>2</sup>	<b>Volume recovering</b>
<b>Mine Health</b>	Mine spatial conformance <sup>3</sup>	<1.00	1.25	1.33	<b>Mine health restored</b>
	Blasted stocks	103 Mt	110 Mt	142 Mt	
	Run of mine stocks	12 Mt	15 Mt	30 Mt	
<b>Asset Health</b>	End-to-end process maturity <sup>3</sup>	1.00	1.35	1.41	<b>Asset health improving</b>
<b>Customers</b>	Shipment quality variation <sup>3</sup>	1.00	0.83	0.76	<b>Quality control restored</b>
<b>Heritage</b>	Volume mined with BMP <sup>4</sup> (%)	0	~6%	~31% <sup>2</sup>	<b>Leading practice</b>
<b>Projects</b>	90 Mtpa brownfield extensions plus Gudai-Darri. Total capacity of ~130 Mtpa.				<b>Projects delivered</b>

<sup>1</sup> YTD to 30 September 2023 unless noted | <sup>2</sup> 2023 full year guidance | <sup>3</sup> Internal metric, indexed to 2018 | <sup>4</sup> Blast Management Plans; one of the ways to protect heritage

# Blast Management Plans are designed to protect heritage sites

## Design

Detailed understanding of the heritage site and surrounding areas

Technical analysis defining exclusion zones and operating parameters

Final review of drill pattern and blast design

## Implement, monitor & optimise

Monitoring of blast operations and heritage sites in real time

Data analysis and benchmarking to update models and designs

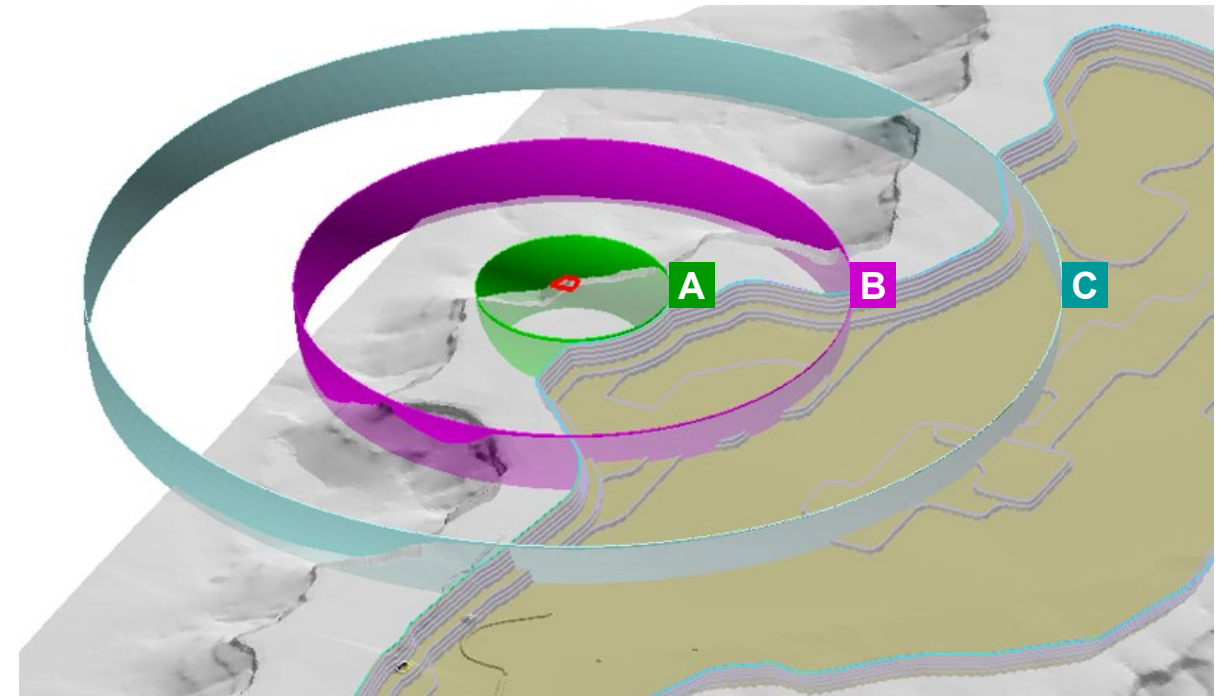
>1,800 controlled blasts undertaken over the past three years

◇ Heritage site

**A** 70 metre exclusion zone

**B** 200 metre blast management zone

**C** 350 metre blast management zone

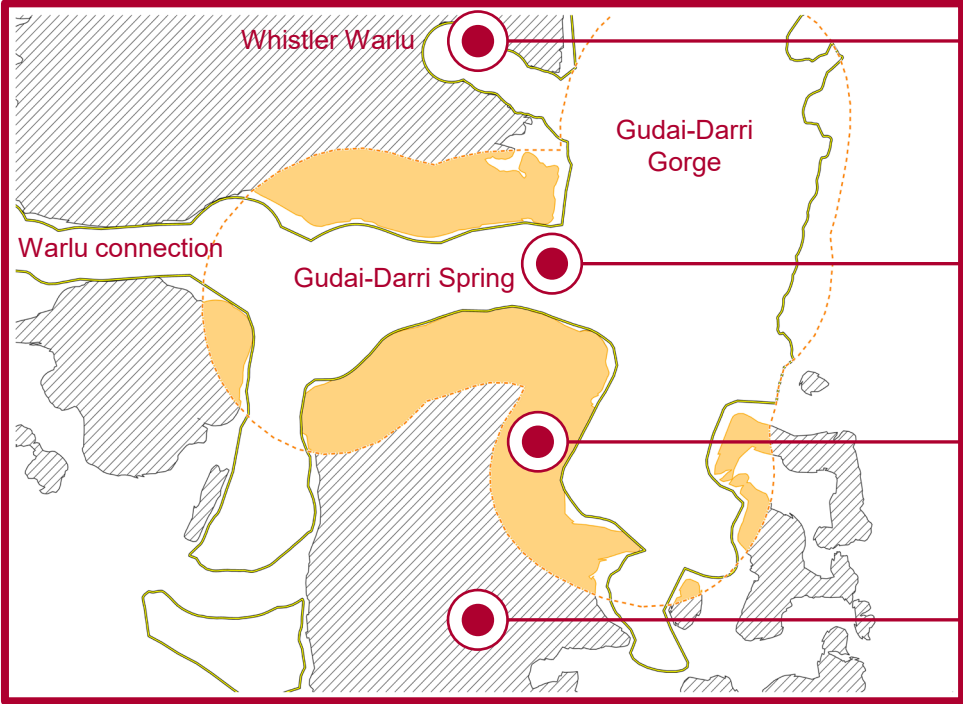
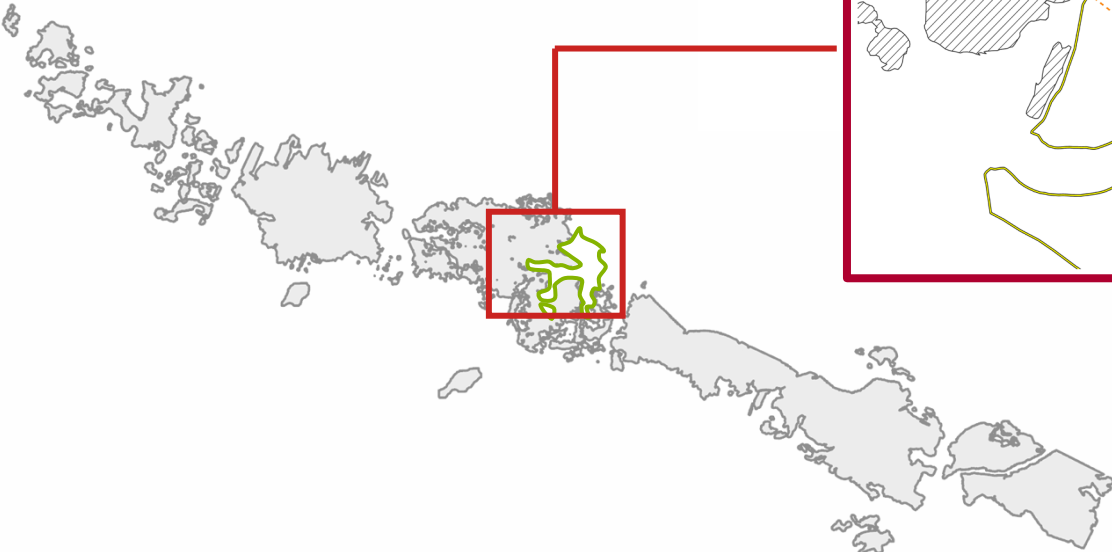


# Embedding co-management across our business

## Gudai-Darri case study

### Changes to mine plan

- 10% reduction in ore reserve from Kara deposit
- 12% of production to date is SP10
- 53% of Kara pit mined with blast management plans



### Employee cultural awareness

Warlu hole identified by operator following cultural awareness training

### Protection zones

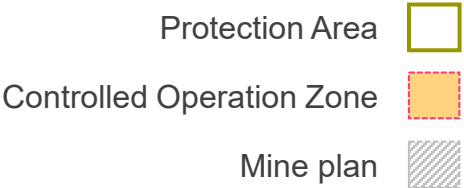
Protected zones established where no mining will occur

### Controlled operating zones

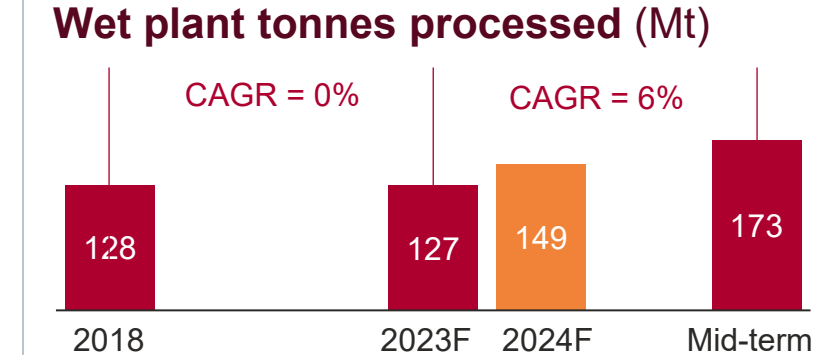
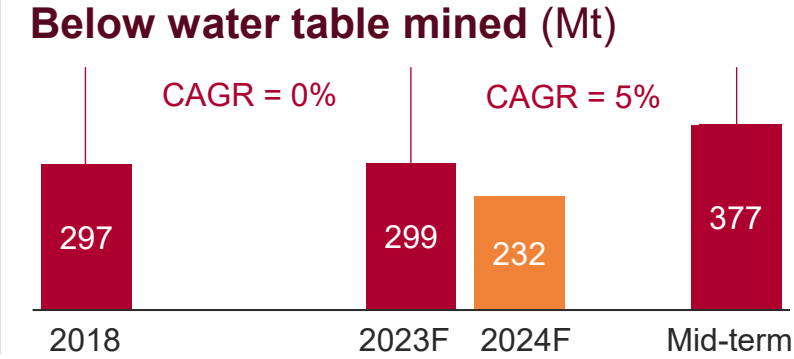
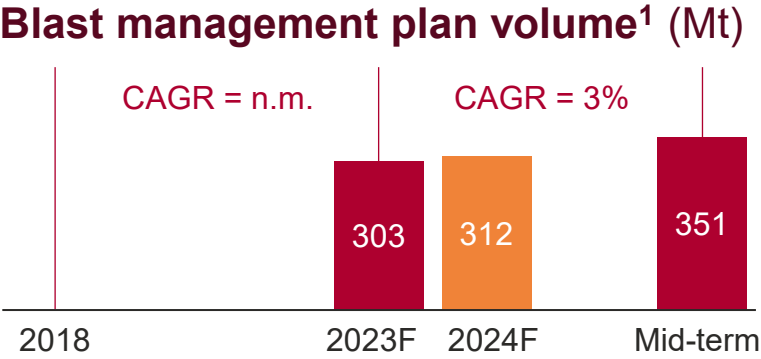
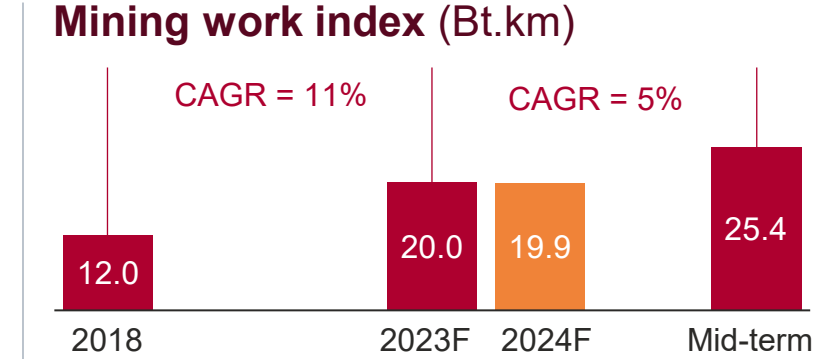
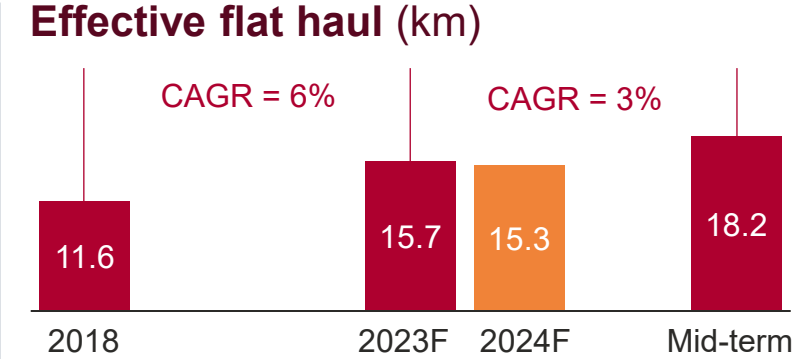
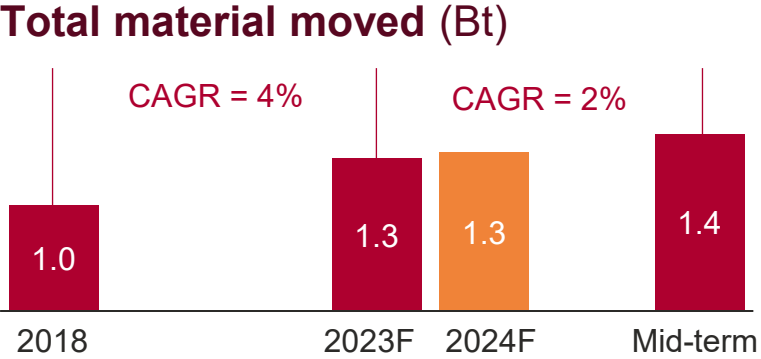
Operational controls in place to reduce impact on protected areas

### Iterative mine planning

Retrospective redesign of mine to protect significant sites



# Mining work index continues to increase but at a slower rate



## Project delivery

**2018 to 2023** 3 x Brownfield and 1 x Greenfield projects executed  
~130 Mtpa total capacity

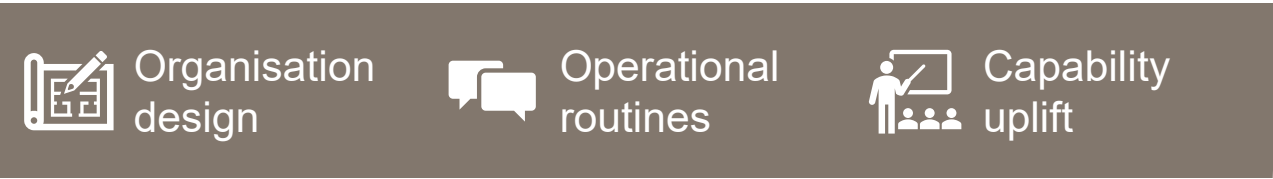
**2023 to 2028** 5 x Brownfield projects to be developed  
~130 Mtpa total capacity

# Pathway to Best Operator

## Safe Production System



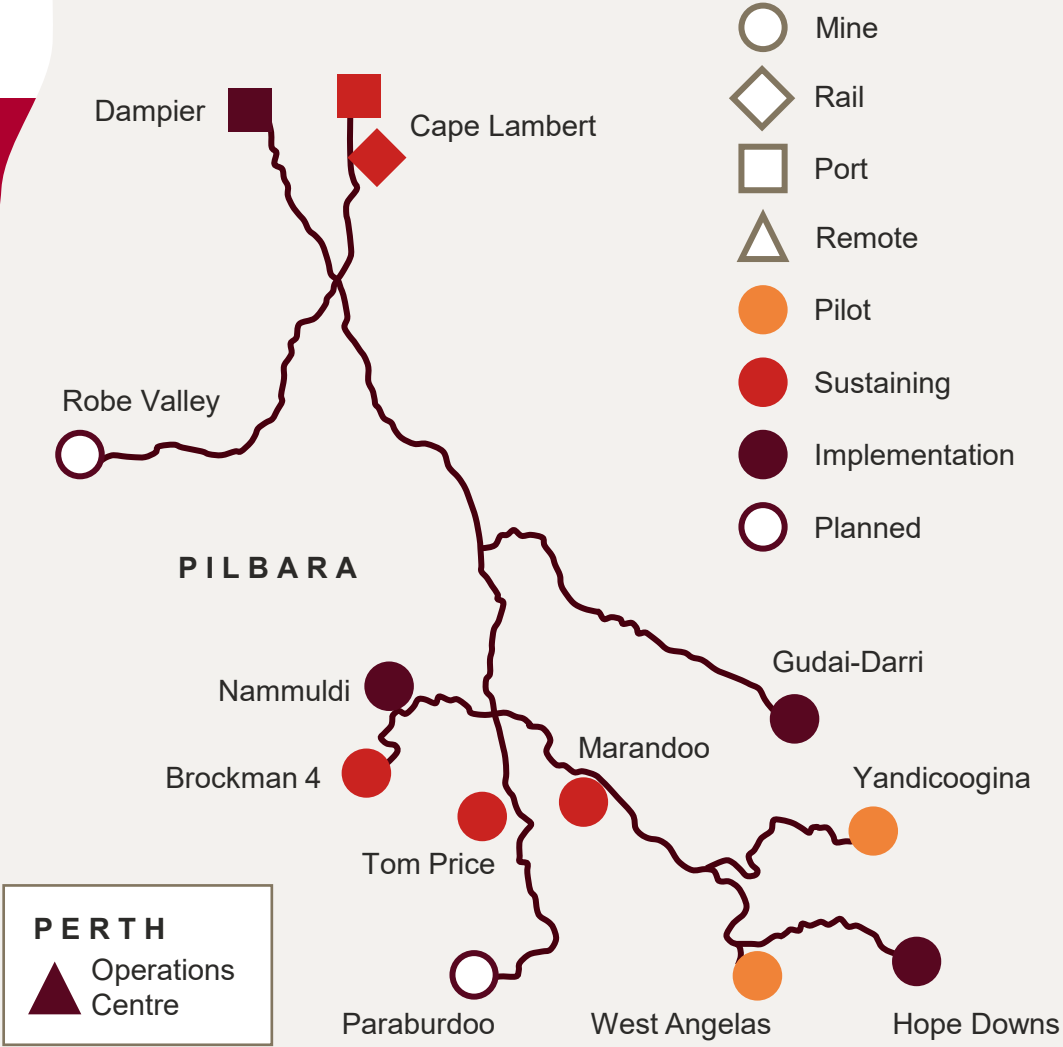
## Key enablers



## Focus areas

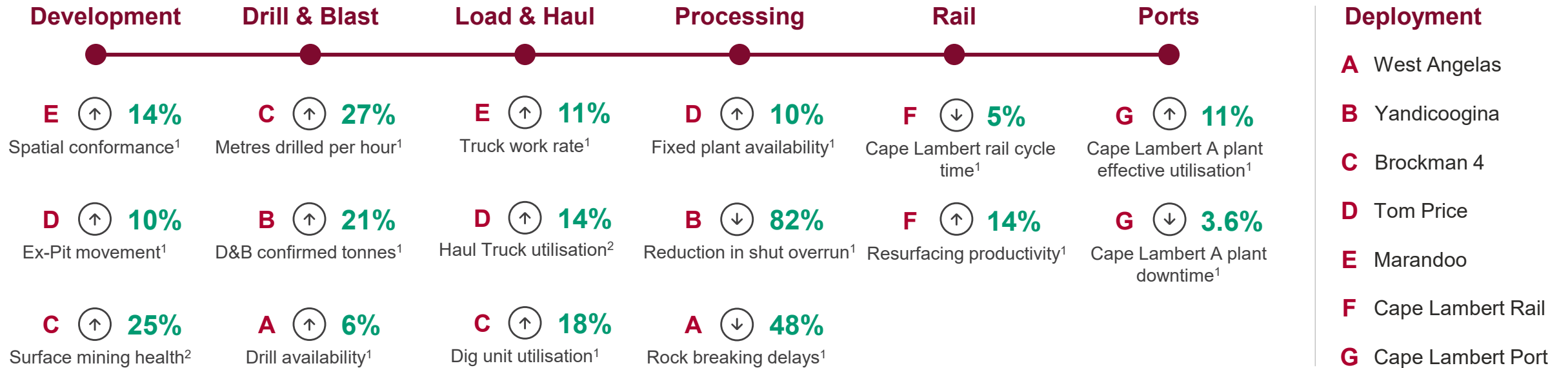


## Safe Production System deployment





# Safe Production System is delivering: 5 Mt uplift in 2023 on track



## Focus on front line engagement is delivering results



**4,332** Increase in ideas from front line<sup>2</sup>

**2,196** Increase in ideas actioned<sup>2</sup>

**4%** reduction in all injury frequency rate<sup>1</sup>

**25%** increase in People Survey participation<sup>2</sup>

**Highest** employee satisfaction since survey began in 2018

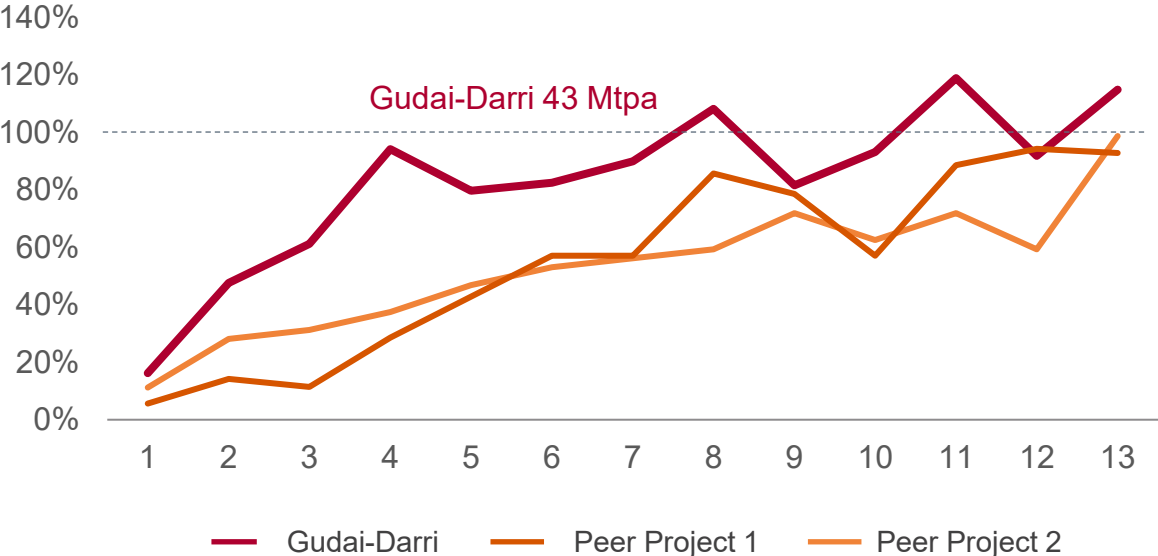
**4%** increase in employee<sup>2</sup> productivity per tonne of saleable ore<sup>1</sup>

# Gudai-Darri: Pathway to Best Operator

## Phase 1: Ramp-up achieved within 12 months



Annualised monthly production<sup>1</sup> (% of nameplate capacity)



## Phase 2: Creep capacity towards 50 Mtpa Pathway

- Chute and conveyor belt upgrades to main plant
- Additional mining fleet and rail stockyard expansion
- Leverage incremental crushing and screening facility
- Deployment of Safe Production System

### Co-commitments

- Co-design water management plan with Traditional Owners
- Engage with Banjima on cultural heritage mapping
- Additional biological survey work and required approvals

### Opportunity

- 7 Mtpa** Uplift in annual production capacity
- ~\$70 M** Incremental development capital<sup>2</sup>
- <\$12 /t** Maintain operating cost per tonne

<sup>1</sup> Indicative only, based on publicly reported data on peer greenfields projects; <sup>2</sup> 7Mtpa incremental capital, not including ongoing resource development

# Disciplined approach to deliver resilient and reliable performance

## **Volume recovering**

Mine health, product quality and heritage management

---

## **Continue the momentum**

Drive productivity and overcome work index challenges

---

## **Safe Production System**

Productivity pathway embedded and delivering



# Richard Cohen

Managing Director,  
Rail, Port & Core Services



# World class infrastructure



**Our mines are serviced by a fully integrated supply chain, supported by our Operations Centre in Perth**



## **Extensive rail network**

~1,900km of privately owned rail  
AutoHaul® delivering safety and efficiency



## **Port competitive advantage**

Unencumbered, low risk, port facilities  
4 Port terminals; 7 shiploaders; 7 car dumpers



## **Supporting infrastructure**

4 power stations; 3 bulk fuel distribution hubs  
Water, gas & telecommunication systems



## **Accommodation**

3,000 houses across 6 Pilbara towns  
FIFO to 24 villages via 120 flights per week from 15 airports

# Reliable rail and port infrastructure already supports 360 Mtpa



Existing capacity 350 – 360 Mtpa<sup>1</sup>

~330 Mtpa average weekly performance<sup>2</sup>

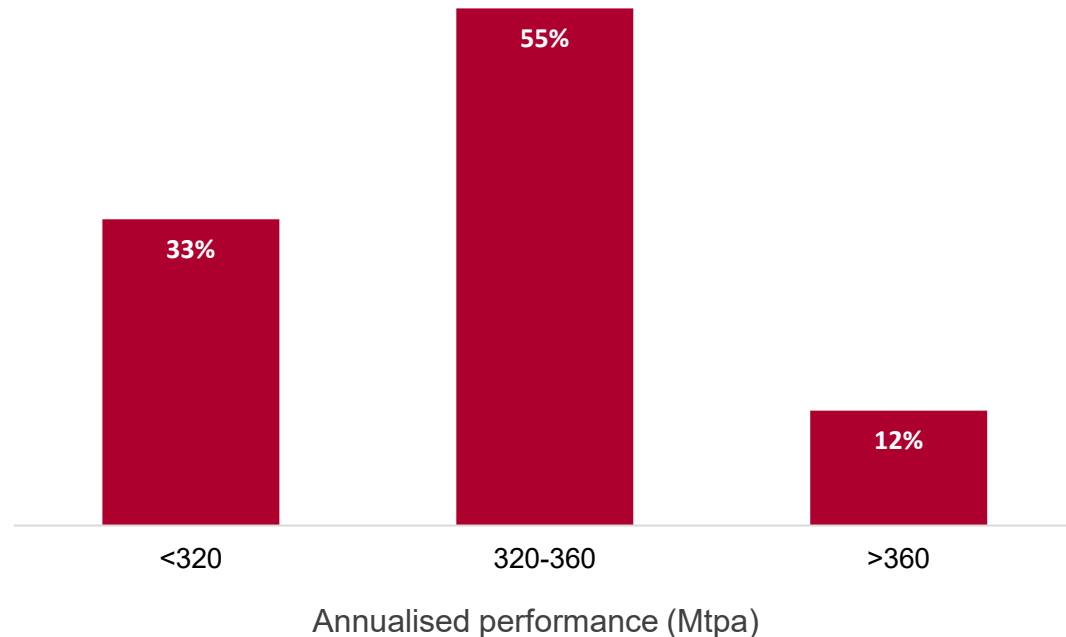


Existing capacity >360 Mtpa<sup>1</sup>

~330 Mtpa average weekly performance<sup>2</sup>

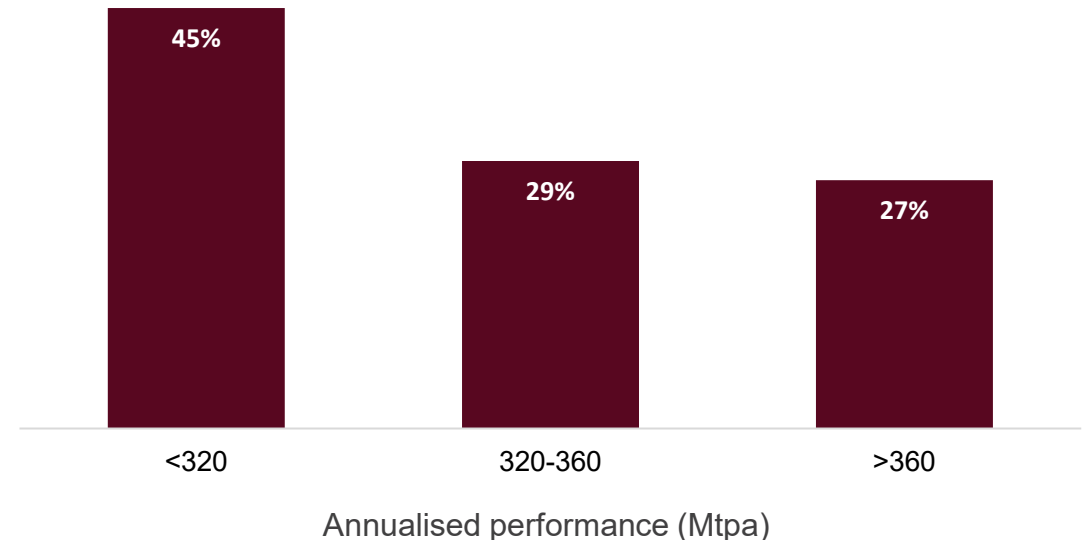
## Rail performance

Weekly annualised actual performance from H2 2022 to H1 2023



## Port performance

Weekly annualised actual performance from H2 2022 to H1 2023



# We have unrivalled port capacity

## Our ports offer a competitive advantage



### Two berths per shiploader

Maximising utilisation of our shiploaders

### Dedicated shipping channels

Maximising tonnes loaded and ships moved

### Port improvements

Dampier reclaimer replacement

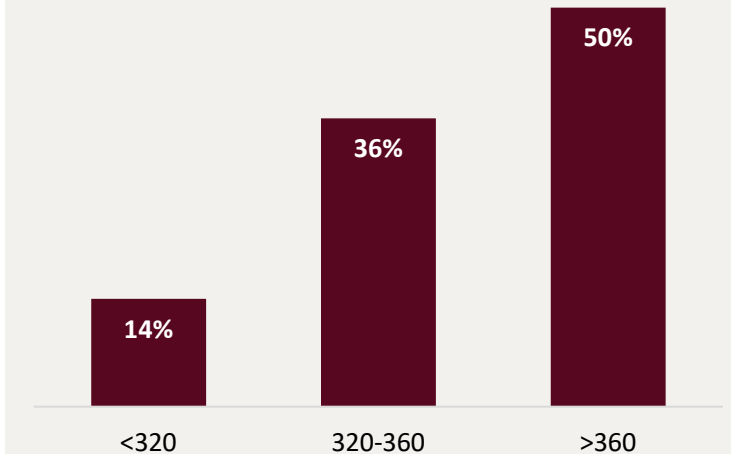
Product flexibility

## Existing capacity >360 Mtpa

Demonstrated port capability above 360 Mtpa

### Weekly outload capacity<sup>1</sup>

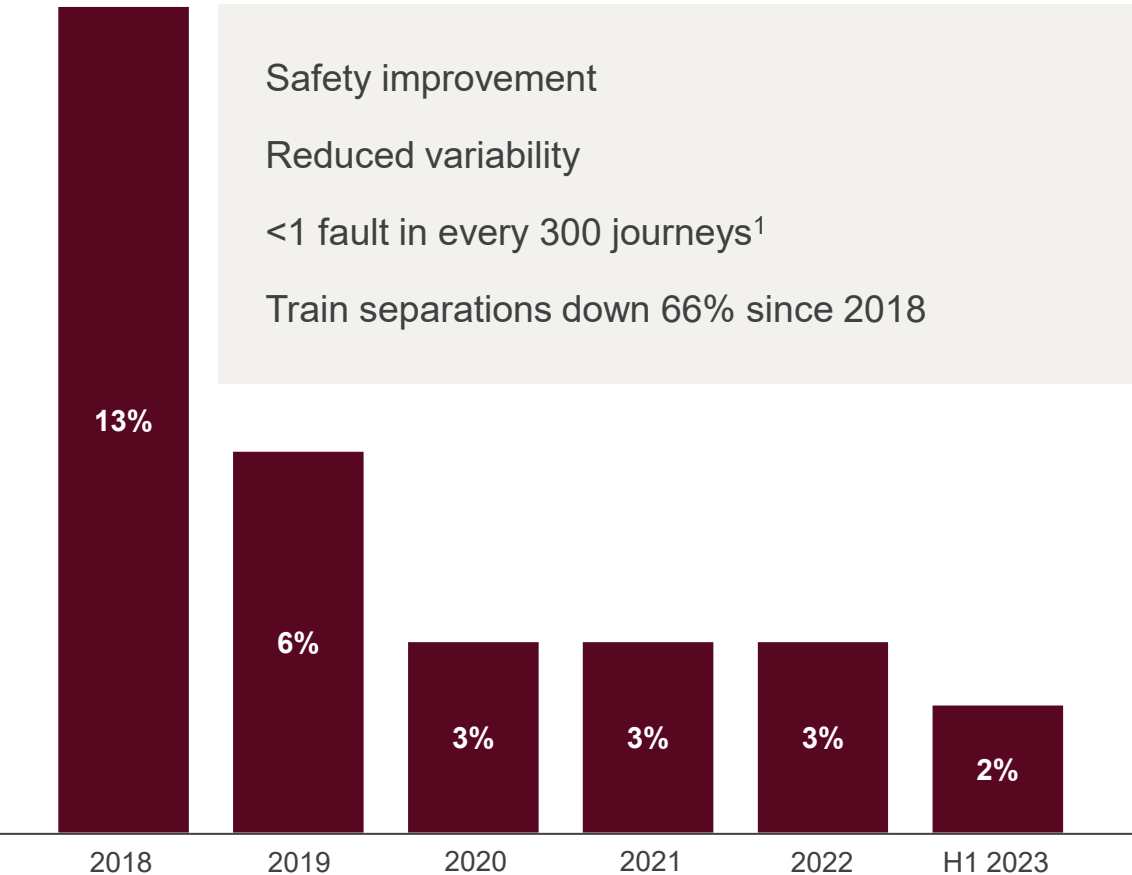
2018-2023, Mtpa annualised



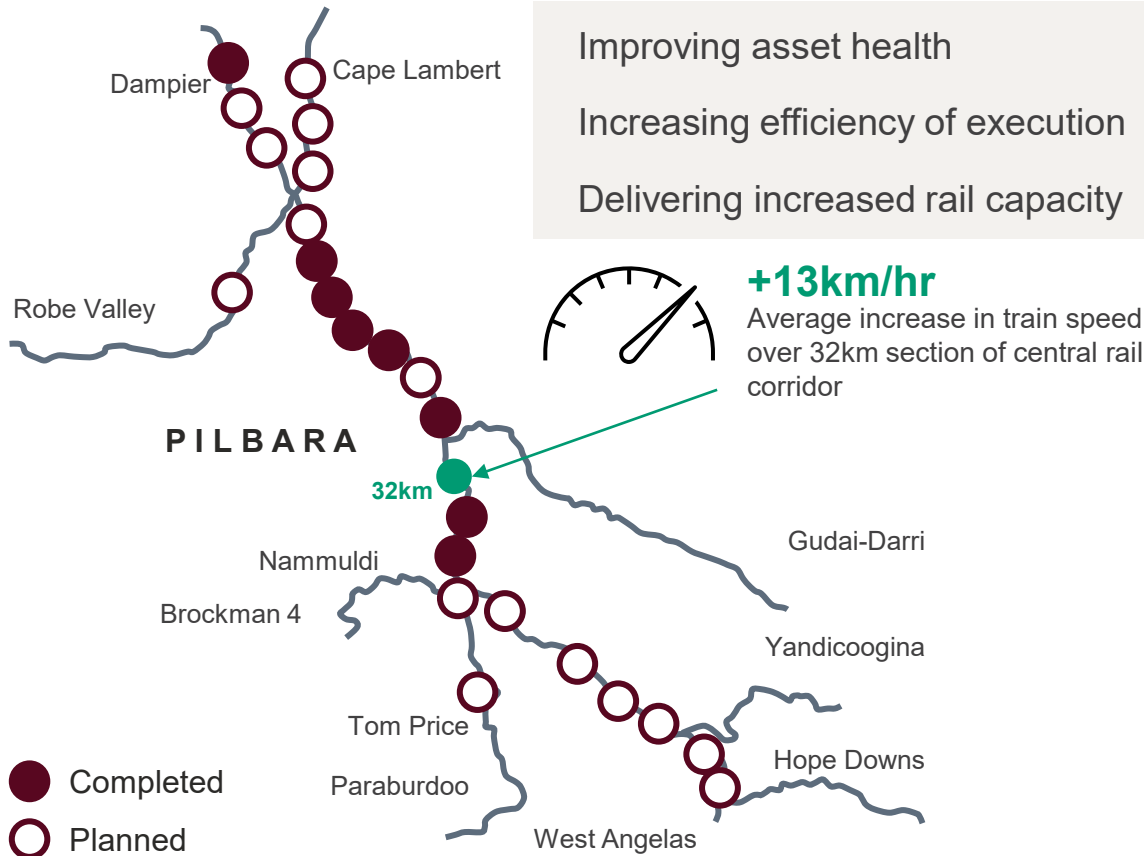
# Increasing rail capacity towards 360 Mtpa

## Improved AutoHaul® performance

Percentage of time a train driver responds to a train in the field



## Rail track renewal progress





# Our Safe Production System will build on our downstream advantage

## Ports

### Dampier

↓ 23%

Unscheduled loss compared to 2022

### Cape Lambert

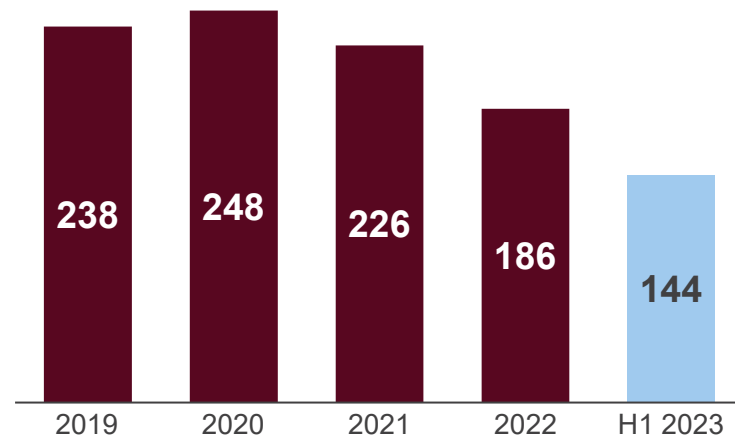
↑ 11%

Cape Lambert A plant effective utilisation



### Dampier Port unscheduled loss

Minutes by month



## Rail

↓ 5%

Cape Lambert yard cycle time

↓ 60

Less wagons called for service every week



**The voice of our people**



*We are clear on our purpose and our priorities*



- Superintendent, Cape Lambert Port



*The upside opportunity is staggering*



- Maintenance Planner, Rail

# Safe, respectful and inclusive communities at our villages & towns



## Safety and security

Improvements in lighting, CCTV and village security



## Infrastructure modernisation

Room and housing refurbishments, enhanced dining and gym facilities



## Thriving communities

Partnerships to deliver infrastructure projects, local services and events



## Social connection

Creating spaces and optionality for human connection



## Village committees

Residents driving improvements that matter

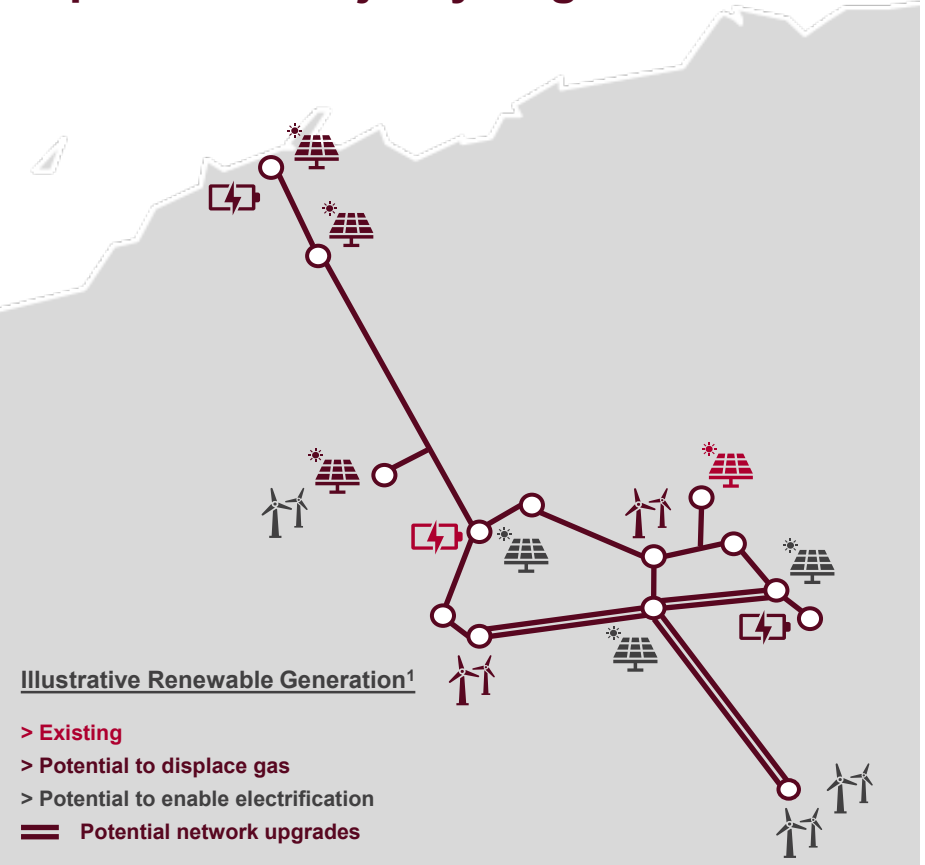


## Wellbeing




Introduction of psychologists on site, social officer trial

# Decarbonising our Pilbara supply chain

~600MW of renewable generation will displace the majority of gas use



## A strategic Integrated System Model optimises our renewables pathway as options and technology develop

-  34MW of solar farm built at Gudai-Darri  
45MW Battery Energy Storage Systems in commissioning  
300MW of solar energy in advanced study  
Wind monitoring commenced
-  Engaging with partners to progress land access & approvals  
Expanded engineering capability de-risks construction schedule
-  Battery Electric Haul Trucks and Train development continues  
Preparation underway for pilots in 2024-2025

<sup>1</sup> This figure above does not represent the actual location of sites being considered by Rio Tinto and is provided for illustrative purposes only

# Advancing our rail and port advantage

## Unrivalled port capacity

Port infrastructure above 360 Mtpa

---

## Safe Production System

Building on our network efficiency

---

## Safety & wellbeing

Improving safety and amenity at villages and camps

---

## Scope 1 & 2

Decarbonising our Pilbara supply chain



# Stephen Jones

Managing Director,  
Operational & Technical Support



# An extensive geoscience, planning and research capability



## Resource development

Acquire and interpret geological information to define our extensive resource portfolio



## Mine planning

Design and optimisation of our new and existing portfolio of mines



## Integrated planning

Connect our people and systems to produce an optimised, flexible and feasible physicals plan



## Studies & capital projects

Responsible development of high value infrastructure and mining projects



## Research & Development

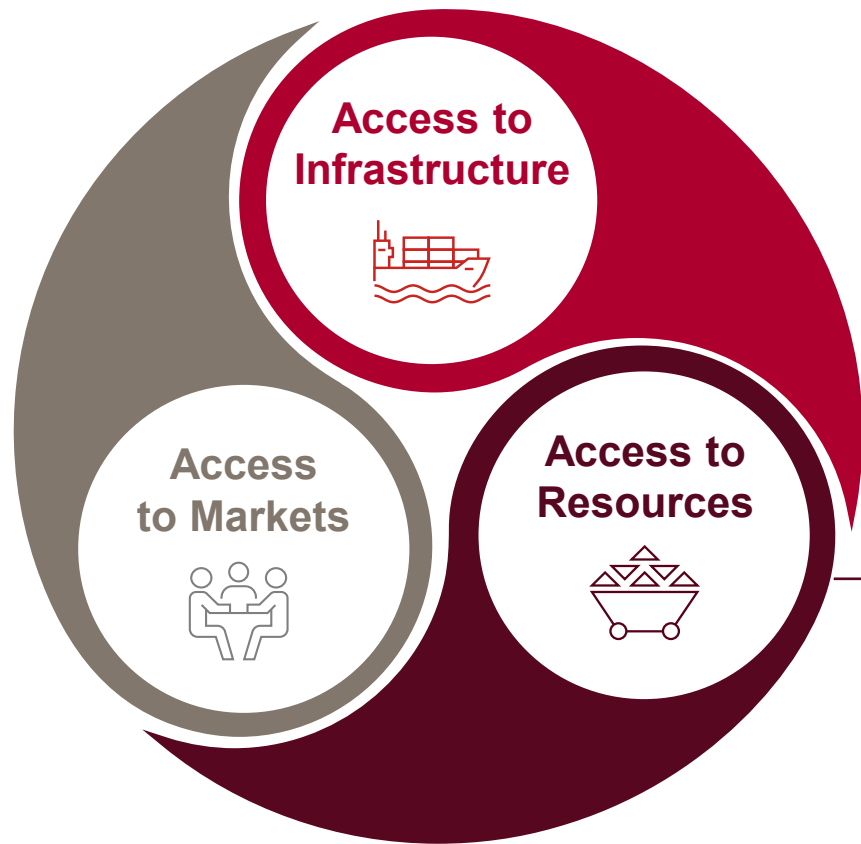
Transform our ways of mining with a focus on water stewardship and reducing our impacts



## Engineering

Drive performance improvements through maintenance planning and process engineering

# Designing a mining portfolio that is compatible with the environmental and heritage values of the region



## **Co-design of mines**

Investing in genuine engagement with Traditional Owners  
Protecting culturally significant areas

---

## **Water stewardship**

Preservation of areas of cultural significance  
Maintaining healthy aquifers that sustain regional biodiversity

---

## **Resource strength and optionality**

Opening up a large and grade advantaged mining region at Rhodes Ridge  
Reducing mining footprint and impacts

---

## **Opportune use of SP10**

SP10 to remain elevated until sustaining projects are delivered  
Levels potentially higher if replacement projects delayed

# Our next replacement projects are in progress

## Replacing existing production



### Co-design with Traditional Owners

Developments compatible with regional heritage values



### Sustaining Production

Mine extensions at West Angelas, Hope Downs 1 and Brockman 4 leveraging existing infrastructure



### Growing our Pilbara Blend profile

Greater Nammuldi, West Angelas and Hope Downs 1 providing low phosphorous resources to support Pilbara Blend

### West Angelas

Pre-Feasibility Study

First ore 2027

### Hope Downs 1

Feasibility Study

First ore 2027

### Greater Nammuldi

Feasibility Study

First ore 2028

### Brockman 4

Feasibility Study

First ore 2028









# Rhodes Ridge is a world class mining hub in the making

## 'Big Rock' Choices

Scale	Resources	Processing	Product
1 Hub	Brockman	Dry Crush & Screen	Pilbara Blend contributor
2 Hubs	Marra Mamba	Wet Processing	Other products (high-grade and/or discrete low-grade)
Staging		Concentration	

## Transforming our ways of mining

	Water stewardship		Reduced mining footprint and impacts
	Orebody knowledge approach		Protecting heritage values
	Capital intensity opportunities		Move towards a regional approach to environmental management and approvals

## Large

>100 Mtpa capacity, scalable

## Grade Advantaged

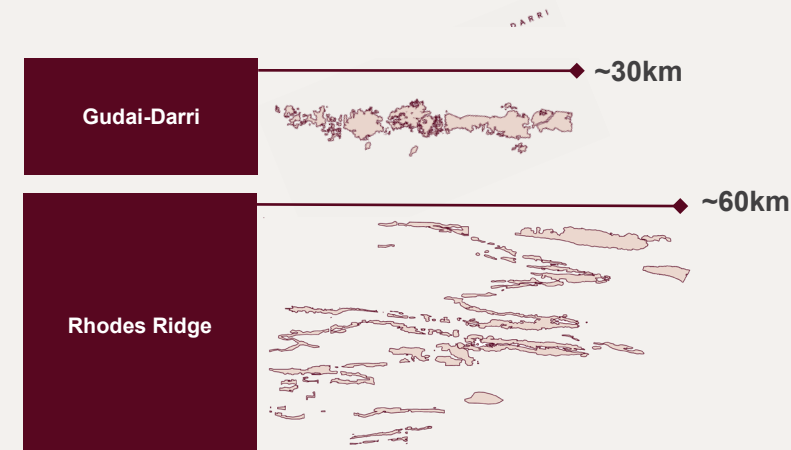
Re-orientate mix to Pilbara Blend

Well suited to a green iron future

## Infrastructure

Close to established rail

Existing rail & port infrastructure



# Advancing a more sustainable and lower cost business

**Reshaping our  
orebody knowledge**



**Using technology to shape timely  
and effective orebody knowledge  
programmes**

**Remote operations &  
automation**



**Digital programmes to support and  
optimise our workforce**

**Lower cost & lower impact  
mining methods**



**Progressive rehabilitation  
Sustainable water management**

**Processing options**



**New processing options for the  
resources of today and tomorrow**

# Designing the future mining portfolio

**Driving a sustainable and respectful future in mining**  
Co-designing mines

---

**An extensive development pipeline**  
Replacement projects commencing construction in 2024

---

**Rhodes Ridge**  
A world class mining hub in the making



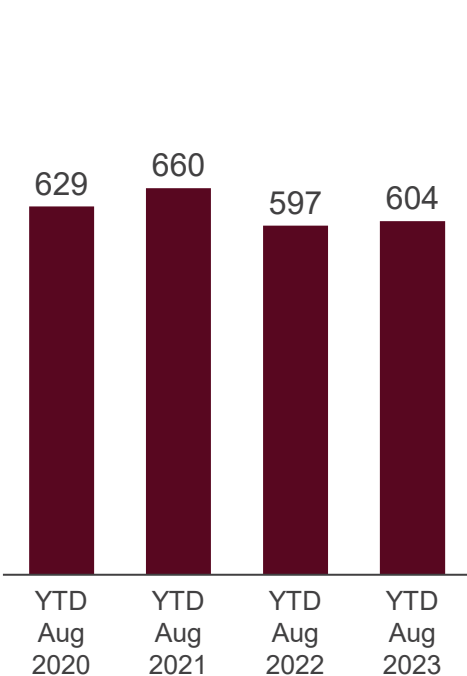
# Will Millsteed

## Head of Market Analysis



# China steel demand resilient as growth drivers shift from property to other sectors






## China finished steel demand\*, Mt







\* Excluding steel exports. Chart includes data in each year from January to August

## Weak property market more than offset by ...







### YTD Aug 2023 growth

-  Property FAI<sup>1</sup> **-9%**
-  Floor space (FS) sold **-9%**
-  Commodity building FS starts **-25%**
-  Commodity building FS under construction **-7%**
-  FS completion **+19%**

## ... resilient infrastructure and manufacturing investment ...

-  Transport FAI **+11%**
-  Utilities FAI **+27%**
-  Manufacturing FAI **+6%**
-  Grid investment **+1%**

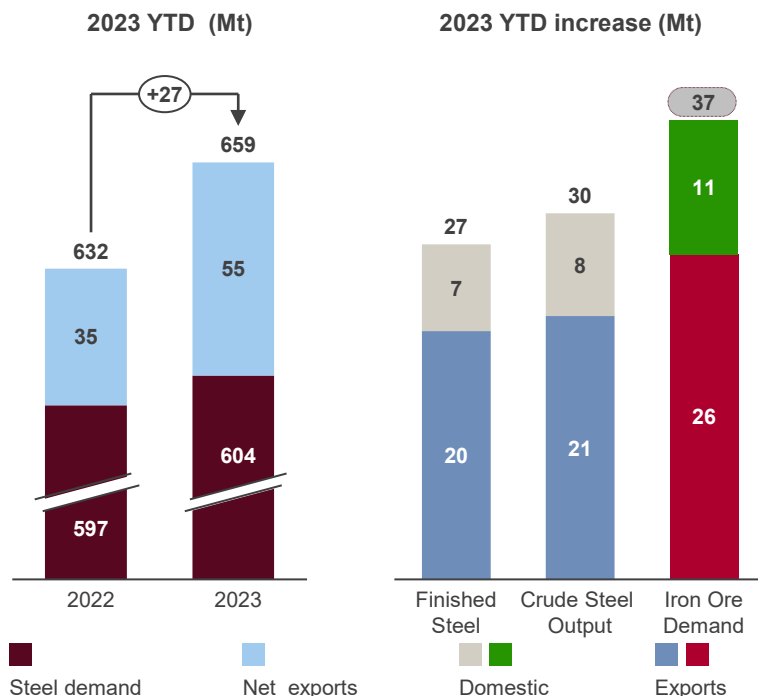
## ... and robust increase in manufactured goods

-  Auto production **+7%**
-  A/C production **+16%**
-  EV production **+37%**
-  Refrigerator production **+17%**
-  Shipbuilding completion **+16% (July)**
-  Washing machine production **+20%**

# Incremental iron ore demand met mainly by higher cost seaborne supply growth

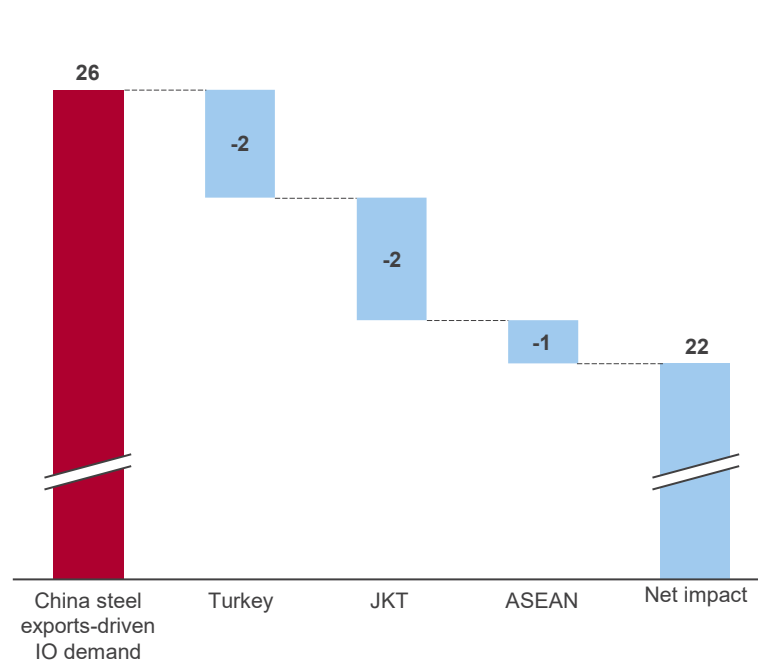
## China's steel demand and trade

Jan-Aug'23	Mt	YoY
Finished steel demand	604	+8Mt 1.3%
Net steel trade	55	+20Mt 57%
Finished steel production	659	+27Mt 4.3%



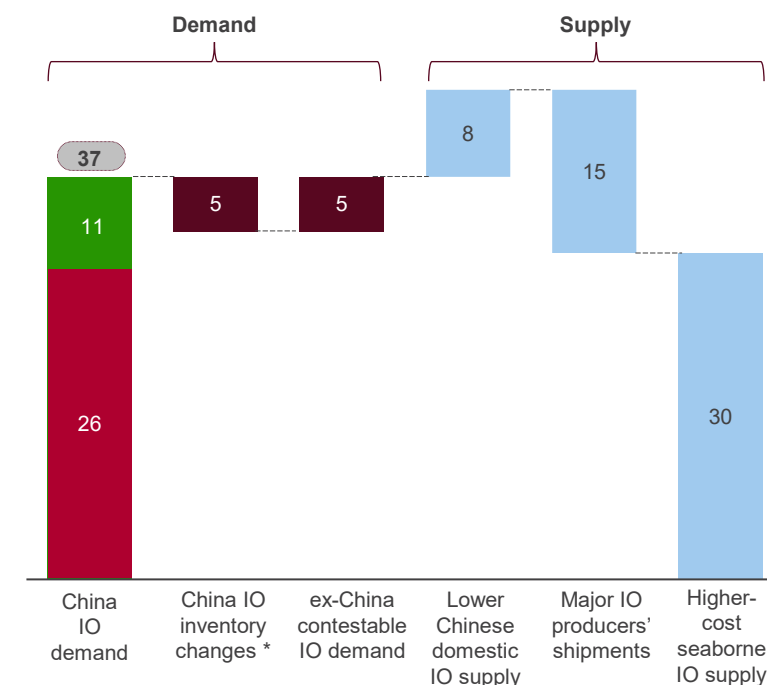
## Impact of Chinese steel exports on iron ore demand

Jan-Aug'23	Mt	YoY
IO in China steel exports	73	+26 56%
Ex-China crude steel output	543	-15Mt -2.8%
Ex-China pig iron output	277	-5Mt -1.9%



## Global iron ore market balance

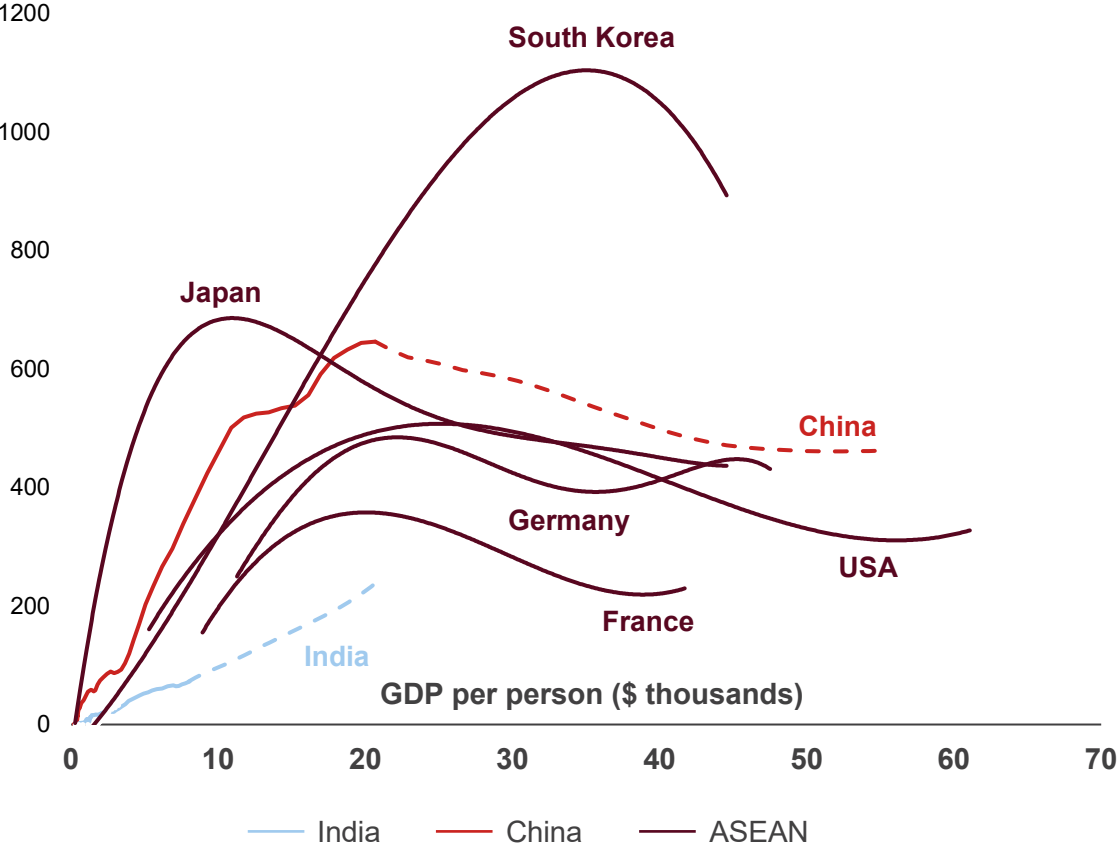
Jan-Aug'23	Mt	YoY
China IO demand	996	+37 3.9%
Major producers' supply	795	+15 1.9%
High-cost supply	209	+30 17%



# Global steel demand growth is driven by emerging markets

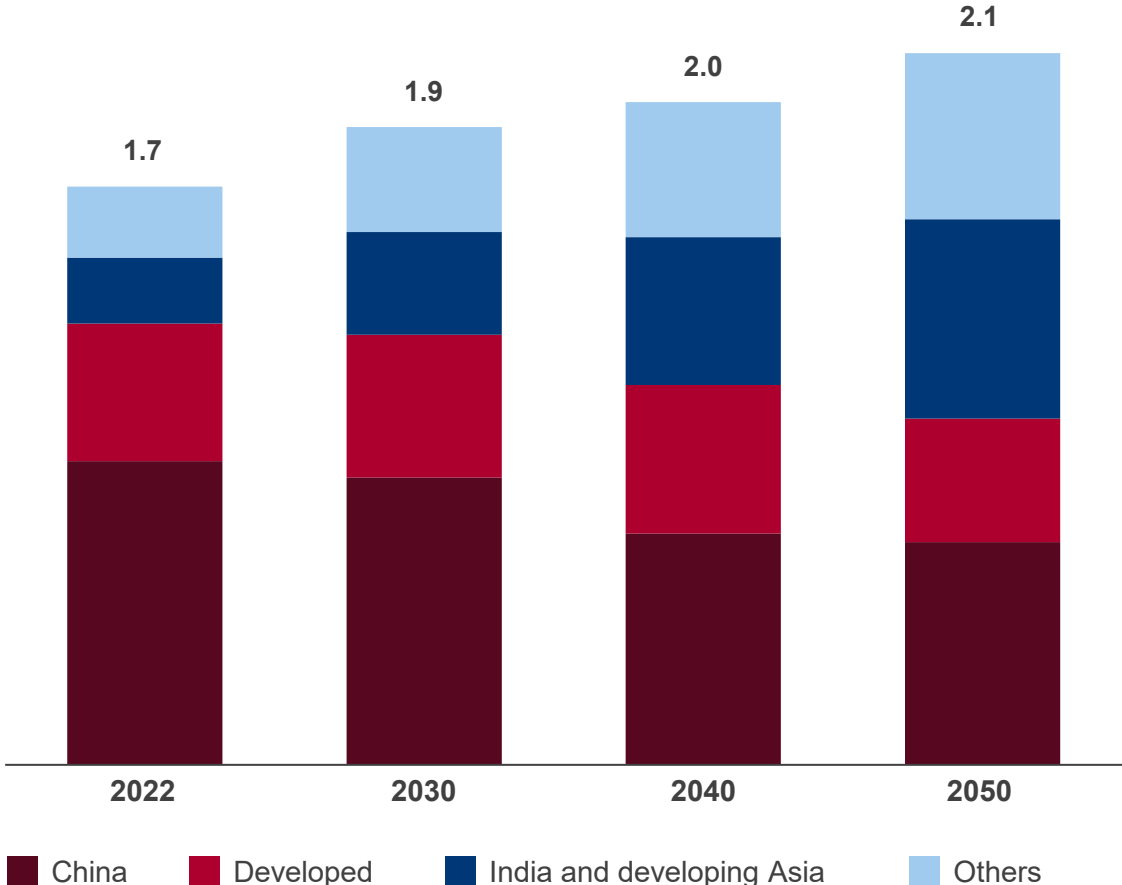
## Steel intensity curves by region

Finished steel consumption per person (kg)



## Finished steel demand by region

(Bt)



# Decarbonisation drives potential for segmented steel value chains

## Western hemisphere

~25% of 2040 iron ore demand

**Robust future demand for high grade iron ores (DRI → EAF pathway)**

Policy incentives in US, EU<sup>1</sup> supporting decarbonisation and clean energy

Gas → Green H<sub>2</sub> advantages in MENA / Americas

Proximity to high grade ores and premium scrap

## Eastern hemisphere

~75% of 2040 iron ore demand

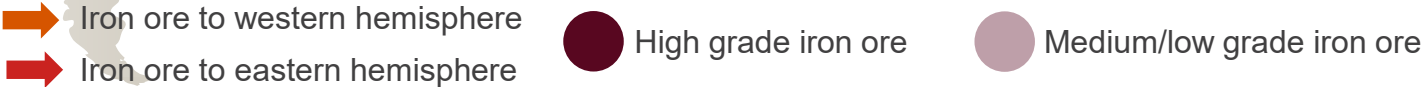
**Robust future demand for all iron ore grades + scrap**

Less progressive carbon and energy policies

Proximity to mid-grade iron ore

High BOF steel share in China and east Asia

Preference for liquid iron solutions<sup>2</sup>



<sup>1</sup> EU policies include binding target of 55% GHG emission reduction by 2030, and 2050 net-zero target, supported by industry level targets, removal of free allowances, implementation of CBAM and green energy subsidies. US Inflation Reduction Act offers generous subsidies and rebates for clean energy including up to \$3/kg tax credit for green hydrogen and up to \$85/t CO<sub>2</sub> for CCUS |

<sup>2</sup> Refers to any technology that abates CO<sub>2</sub> emissions from and upstream of the melting separation of slag from hot metal. This includes BF+CCUS, DRI-BF-BOF and DRI-electric melting furnace-BOF



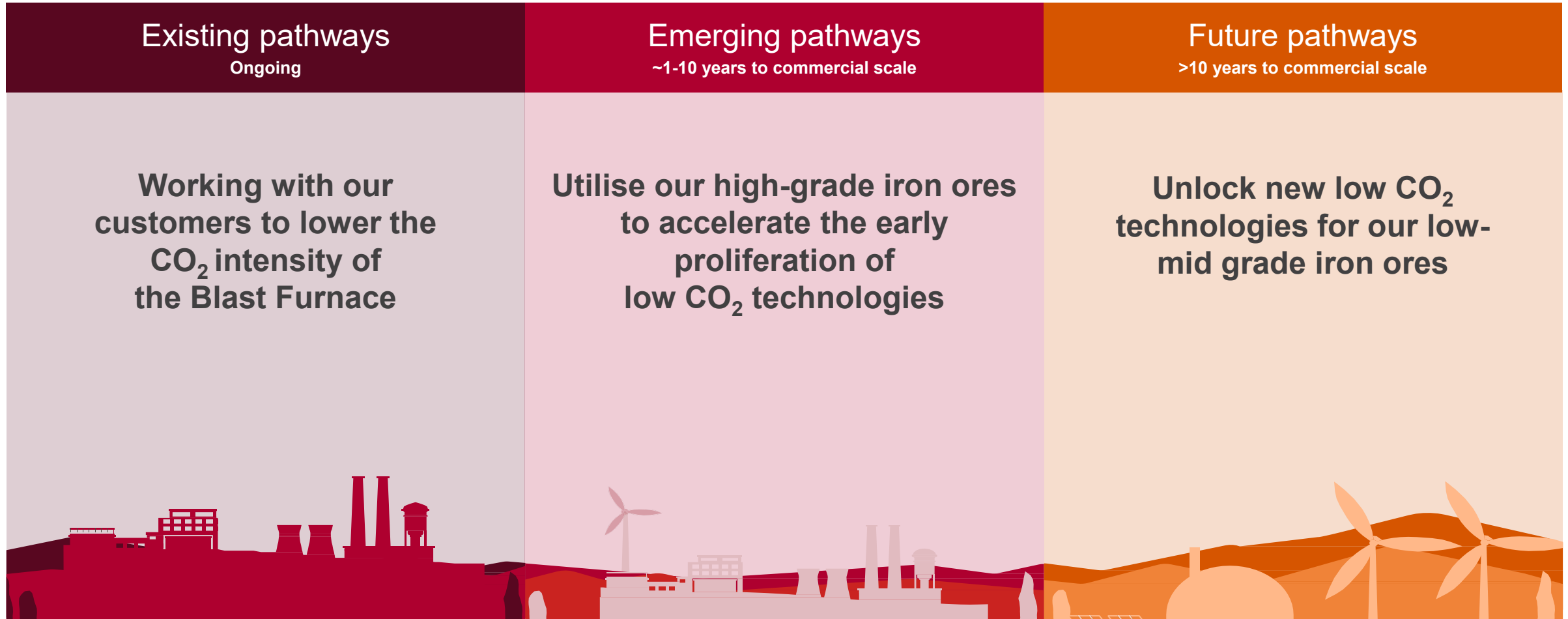
# Simon Farry

## Head of Steel Decarbonisation



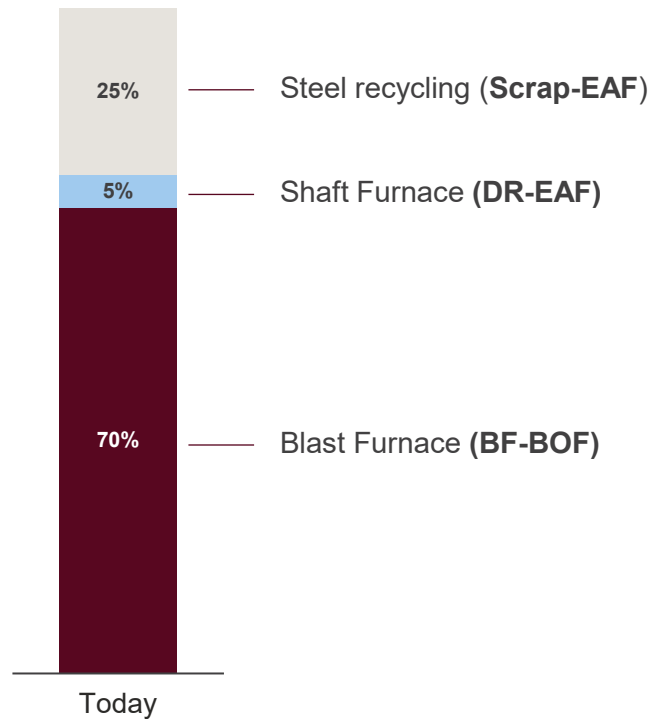
# Our approach spans 3 time horizons and the full steel value chain

We are working with ~40 partners, across ~50 projects in 10 countries

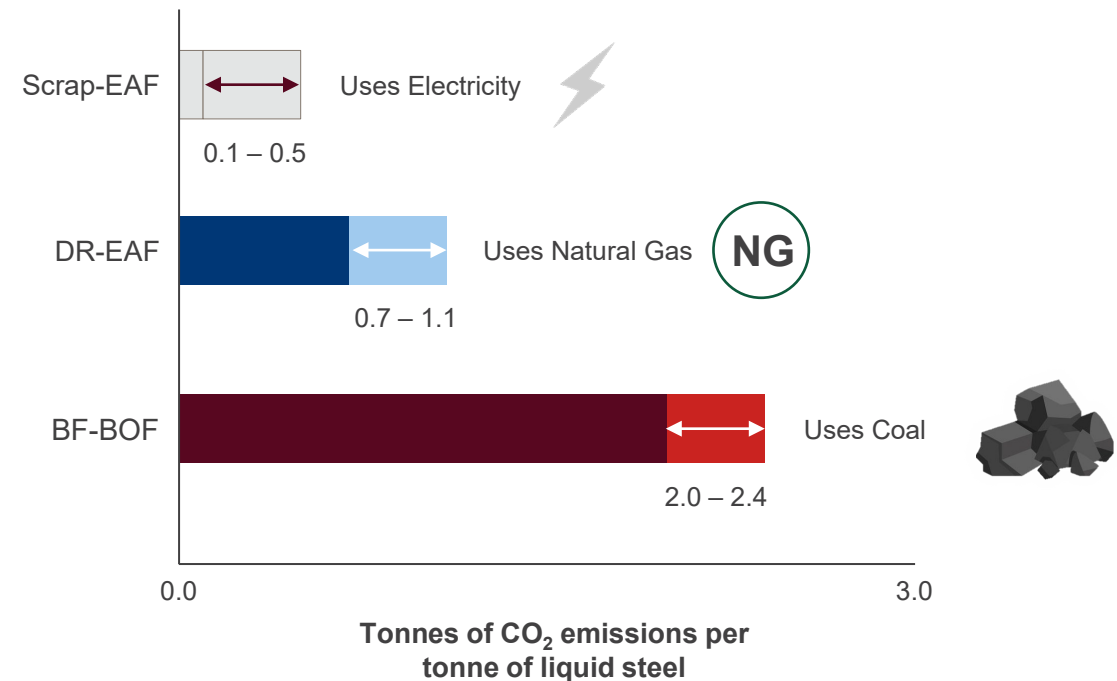


# Majority of steel is produced today via the Blast Furnace – Basic Oxygen Furnace (BF-BOF) route, reliant on coal

## Today's steelmaking production routes

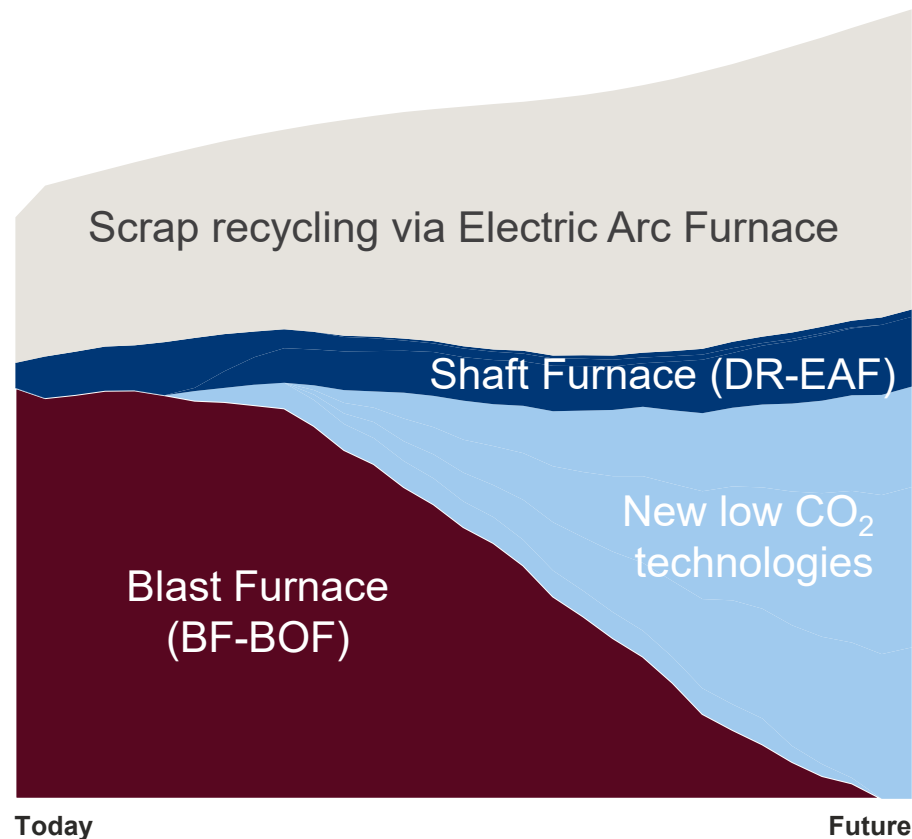


## Carbon intensity and energy source of each production route



# A range of new technological pathways are emerging to produce low CO<sub>2</sub> steel, transitioning away from fossil fuels

**Global steel produced by technological pathway**  
(in tonnes) (representative only)



**01 Existing pathway (BF-BOF)**

Blast Furnace is being optimised but will eventually be substituted with lower CO<sub>2</sub> technologies

→

**Carbon-intensive energy / reductant source**  
 **Coal**

---

**02 Emerging pathway (DR-EAF)**

DR-EAF technology will increase, limited by availability of scarce high-grade pellets


→

**Low-carbon energy / reductant source**  

NG **Natural Gas**

H<sub>2</sub> **Hydrogen**

 **Biomass**

 **Renewables**

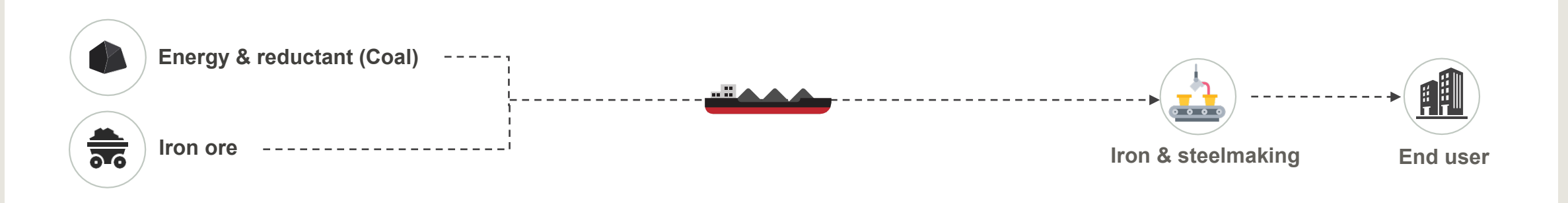
**03 Future pathways (New low CO<sub>2</sub> technologies)**

Range of new low CO<sub>2</sub> technologies suitable for Pilbara type iron ores

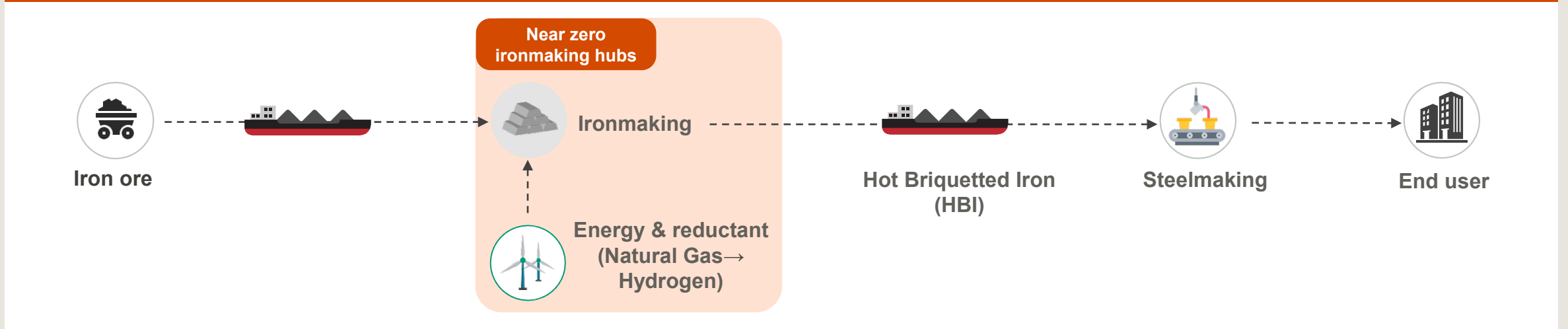
# Ironmaking will likely dislocate from steelmaking, moving to advantaged energy locations, with near zero hubs emerging

\* Illustrative only


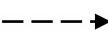

## Today's supply chain

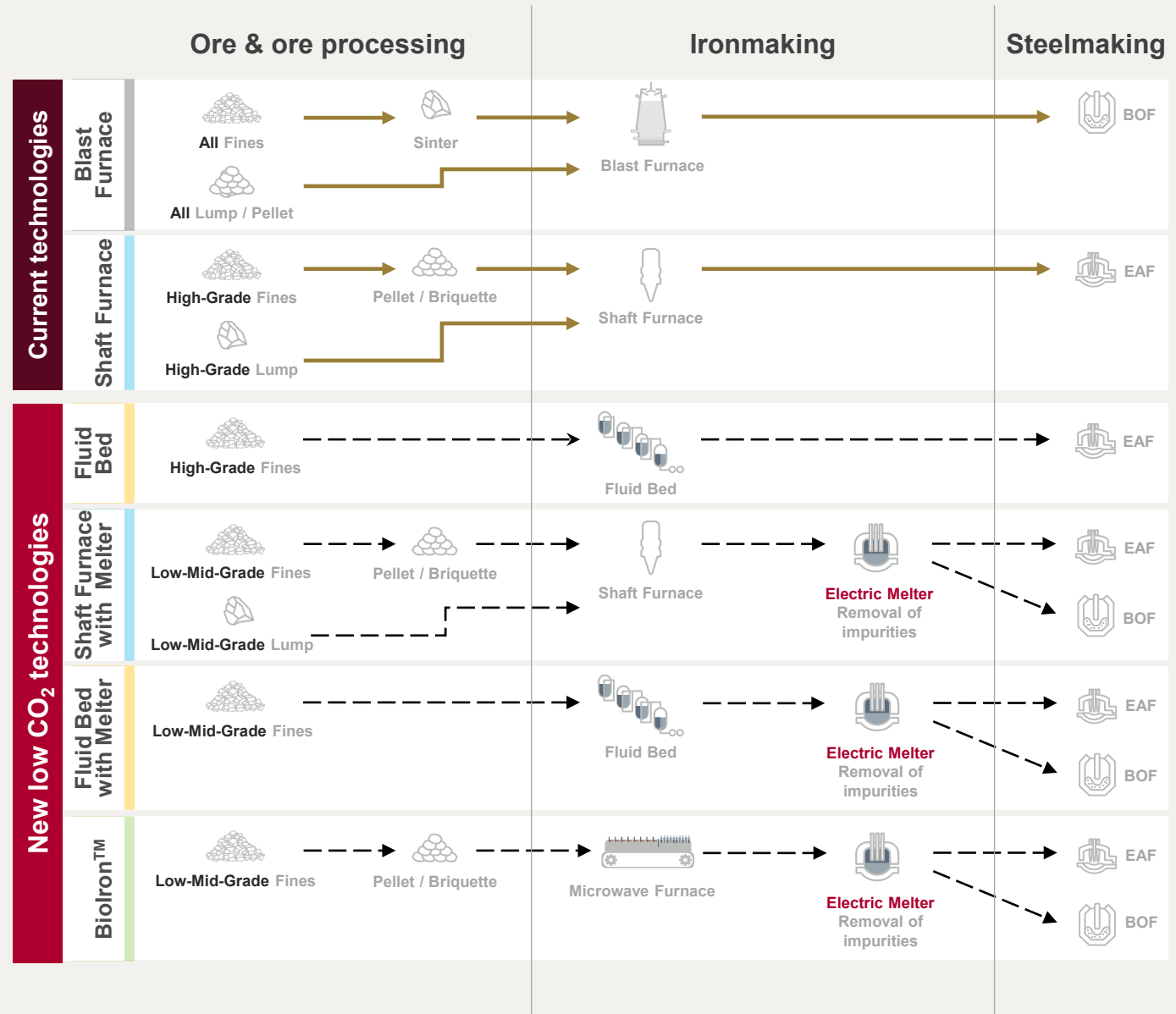


## Future supply chain



# Work is underway across a suite of new low CO<sub>2</sub> technologies suitable for Pilbara ores

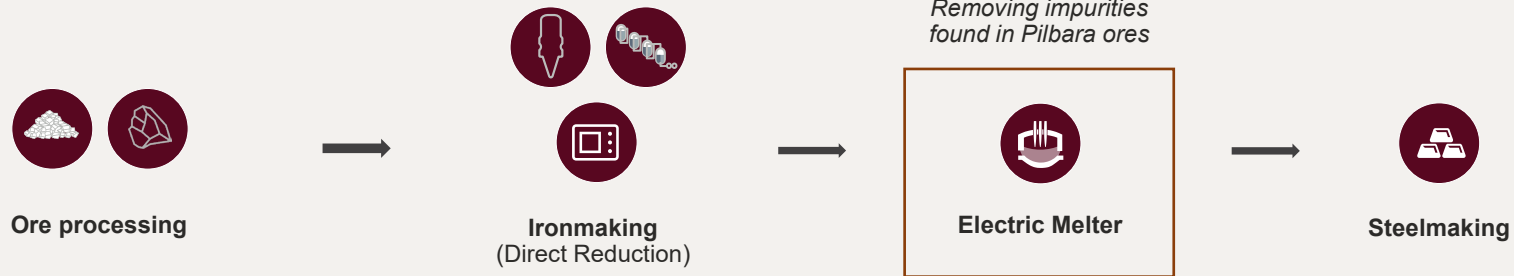
-  Existing pathways
-  New low-carbon pathways under development
-  Upgradeability work underway to improve the grade of our Pilbara iron ores



# Melter programme - unlocking new low CO<sub>2</sub> technologies for Pilbara iron ores

## Developing a process step to remove impurities from Direct Reduced Iron (DRI) made with Pilbara ores

*Simplified illustration*



## What is exciting

1. Unlocks pathway for producing low CO<sub>2</sub> steel with > 80%<sup>1</sup> of the world's iron ores
2. Effective at removing contaminants found in low-mid grade iron ores
3. Widely used in Ferro Alloy and Ilmenite (titanium) industries
4. Produces a more sustainable by-product which can be used in construction

## Progress and Partners



- MoU signed in 2021
- Concept studies complete
- Next steps include laboratory testwork and pilot detailed design

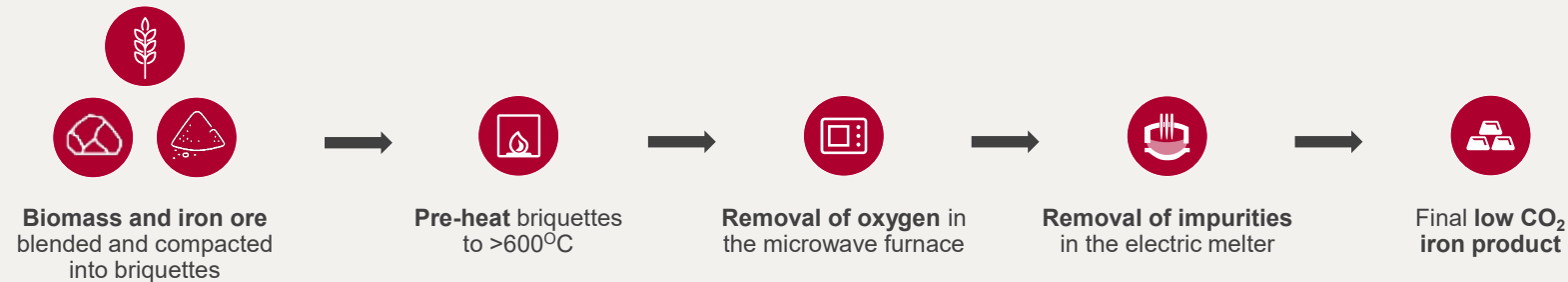


- MoU signed in 2023
- Targeting to build a pilot scale melter in China by 2025

# Biolron™ - unlocking new low CO<sub>2</sub> technologies for Pilbara iron ores

**Biolron™ is Rio Tinto proprietary technology which uses sustainable biomass and microwave energy as alternatives to coal in steelmaking**

*Simplified illustration*



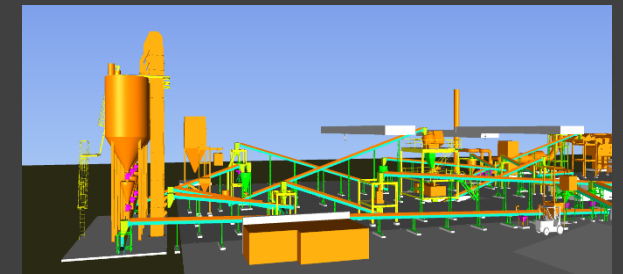
## What is exciting

1. High productivity with world's largest iron ore region, the Pilbara
2. Produces pig iron metal with less than 5% emissions
3. Uses agricultural by-products to produce sustainable biomass
4. Consumes < 1/3rd electricity compared to other green hydrogen technologies
5. Potential to be net negative if combined with carbon capture and storage

## Progress and partners

We have successfully produced iron in the small-scale pilot plant. We are currently designing a continuous pilot plant to commence operations in 2026.

*3D Model of the CPP*



**Our key partners include:**



**Metso**



# Our approach spans 3 time horizons and the full steel value chain

We are working with ~40 partners, across ~50 projects in 10 countries





# Rowena Albones

Chief Financial Officer

Iron Ore

# We have great assets that generate superior returns through the cycle

<b>\$ Billion</b> Except where stated	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>H1 2023</b>
Underlying EBITDA	18.8	27.6	18.6	9.8
EBITDA margin	74%	76%	68%	69%
Capex	2.9	3.9	2.9	1.1
Free cash flow	10.2	15.2	11.0	5.6
ROCE	74%	100%	62%	63%

## Asset quality

Strong resource base

Integrated mining and infrastructure system

Attractive EBITDA and returns

## Local contribution

~\$10 billion spend in Australia<sup>1</sup> in 2022

\$8.8 billion taxes paid<sup>2</sup> in 2022

>50% increase in indigenous procurement in H1 2023

## Disciplined investment

Next phase of mine replacement projects

Rhodes Ridge development

Green steel R&D and low impact mining

<sup>1</sup> Includes operating and capital expenditure in Australia excluding taxes and royalties

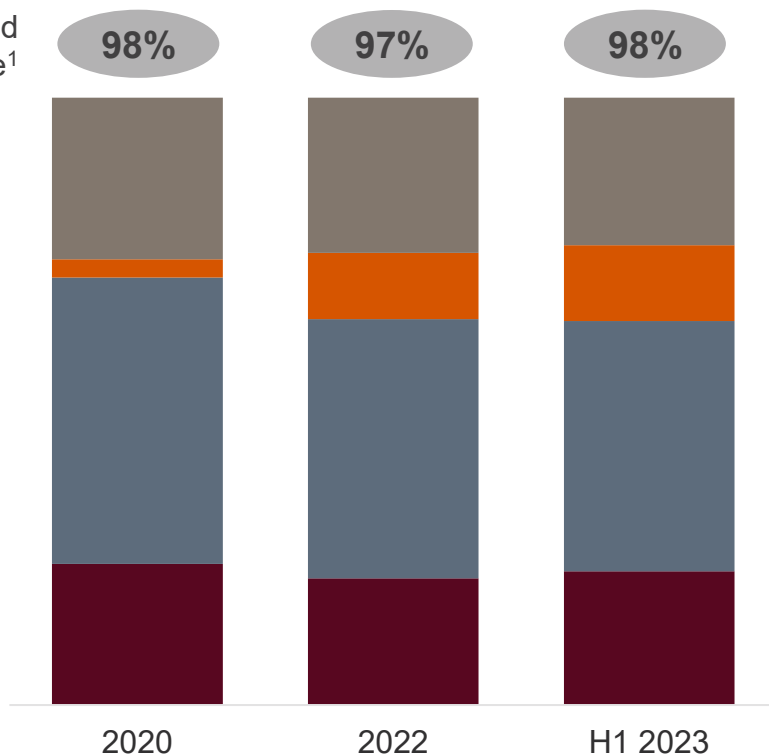
<sup>2</sup> Rio Tinto Taxes Paid Report

# Our strong resource base provides options in the market

## Pilbara sales mix and index price relativity

Average realised price vs 62% Fe<sup>1</sup>

Product mix



- Pilbara Blend lump
- Pilbara Blend fines
- Robe Valley lump & fines, and Yandicoogina fines
- SP10 lump and fines

## Resilient product mix

Pilbara Blend >85% of volume post Rhodes Ridge<sup>2</sup>  
Strong SP10 relativities

## SP10 flex

Competitive cost, provides options  
Alternate customer supply via portside and IOC blend

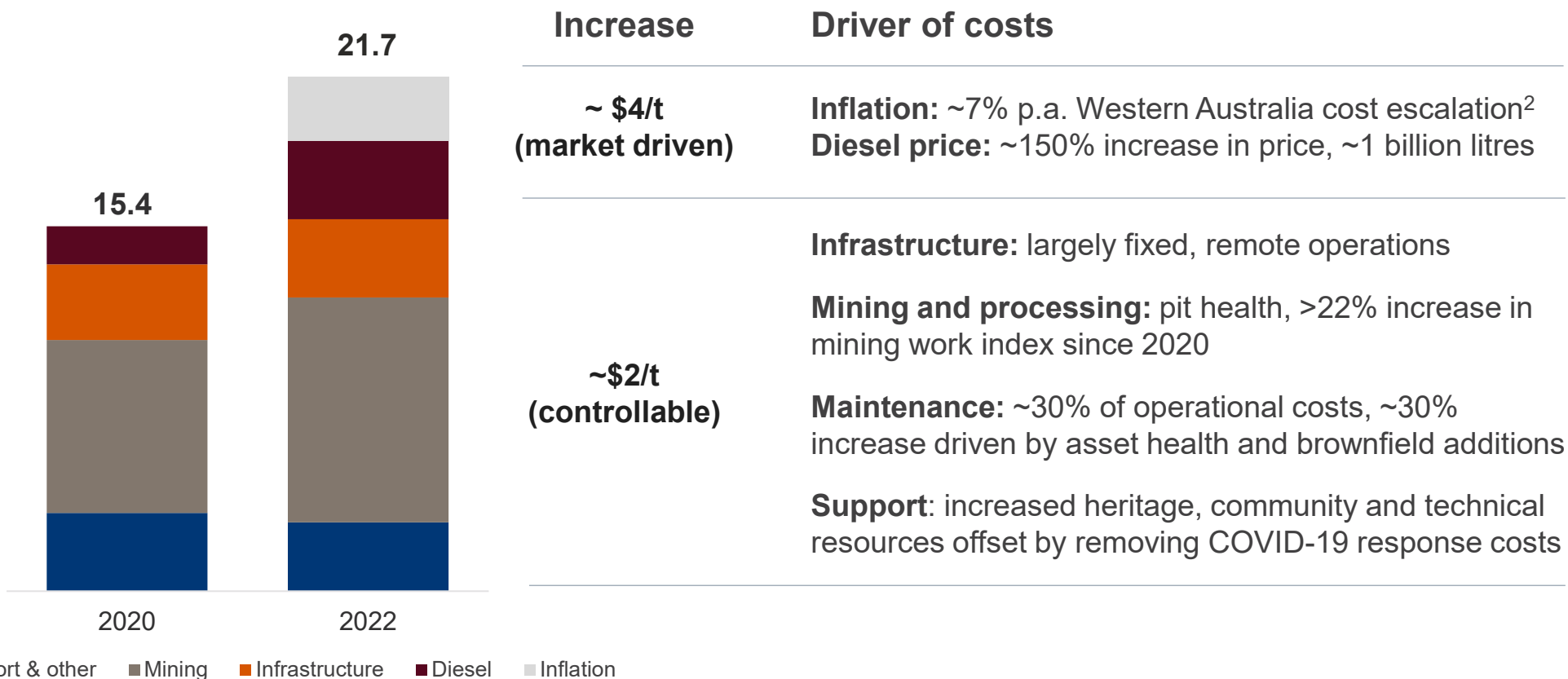
## Preparing for the future

Mid-term mine replenishment  
Rhodes Ridge options

# We have focused on improving mine and asset health

## Pilbara unit costs (2020 v 2022)<sup>1</sup>

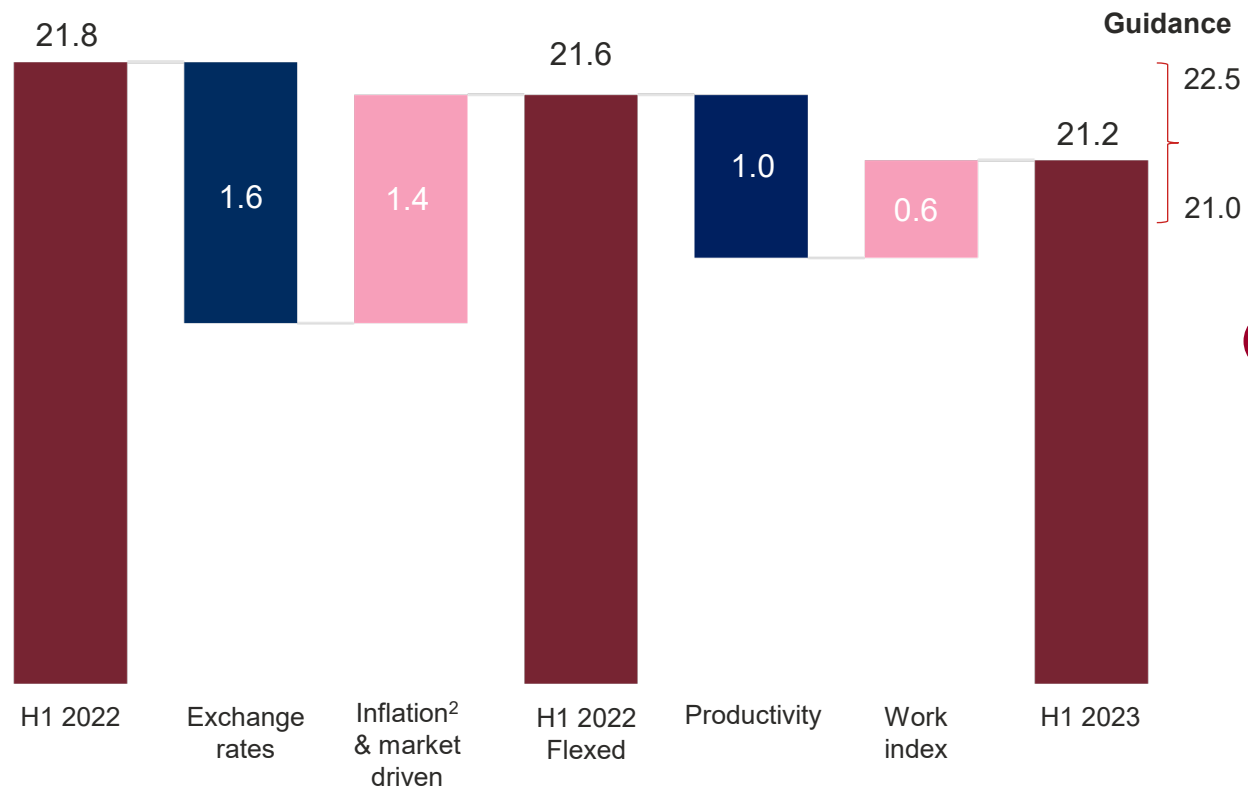
\$/t shipped



# This year, improved productivity is offsetting mining headwinds

## Pilbara unit costs (H1 2022 v H1 2023)

\$/t shipped



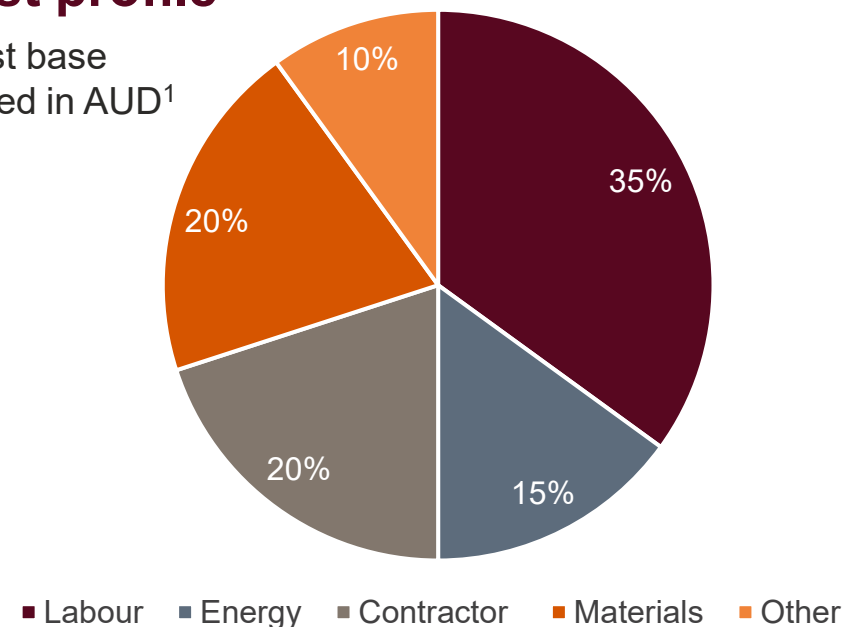
## Productivity and asset health

Improved system productivity and uplift in volume offset  
~6% uplift in mining work index

Retain focus on maintenance

## Our cost profile

85% of cost base  
denominated in AUD<sup>1</sup>



# Volume and productivity to enable cost improvements

## Pilbara unit costs

\$/t shipped



Reduces unit costs from current

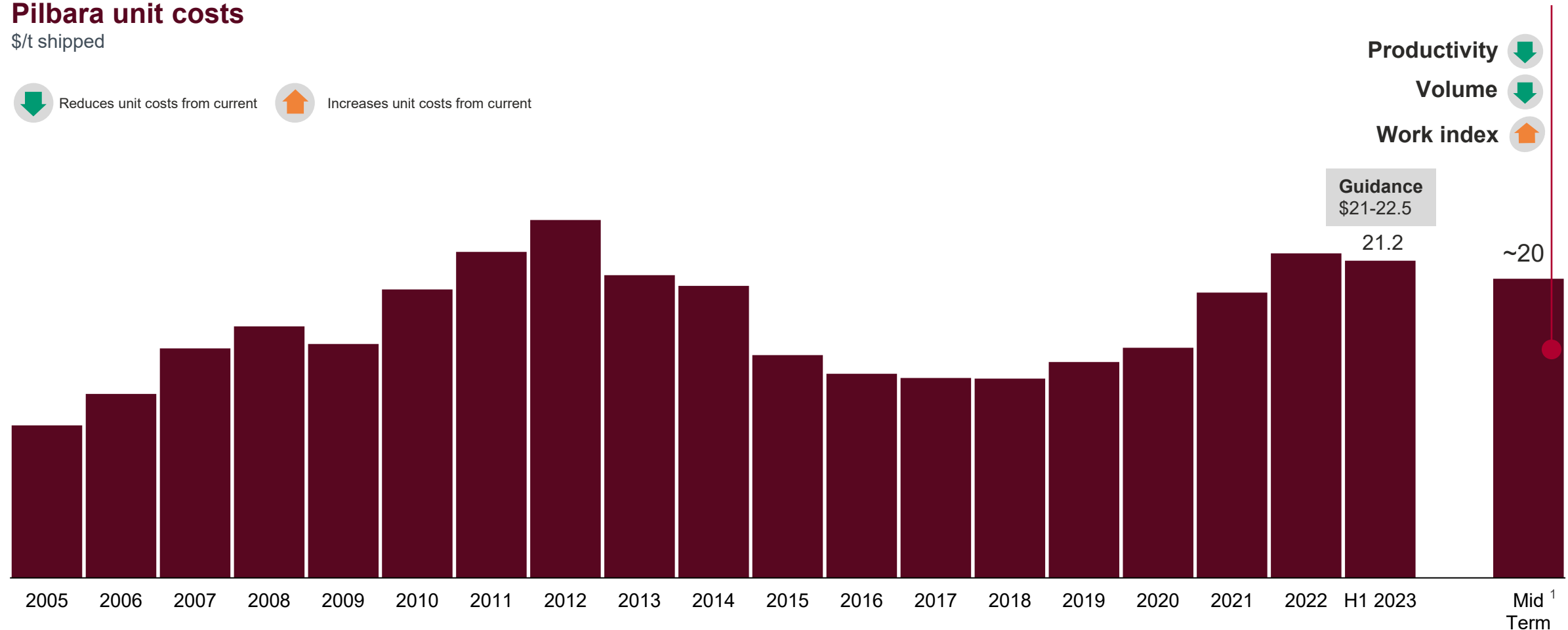


Increases unit costs from current

Productivity 

Volume 

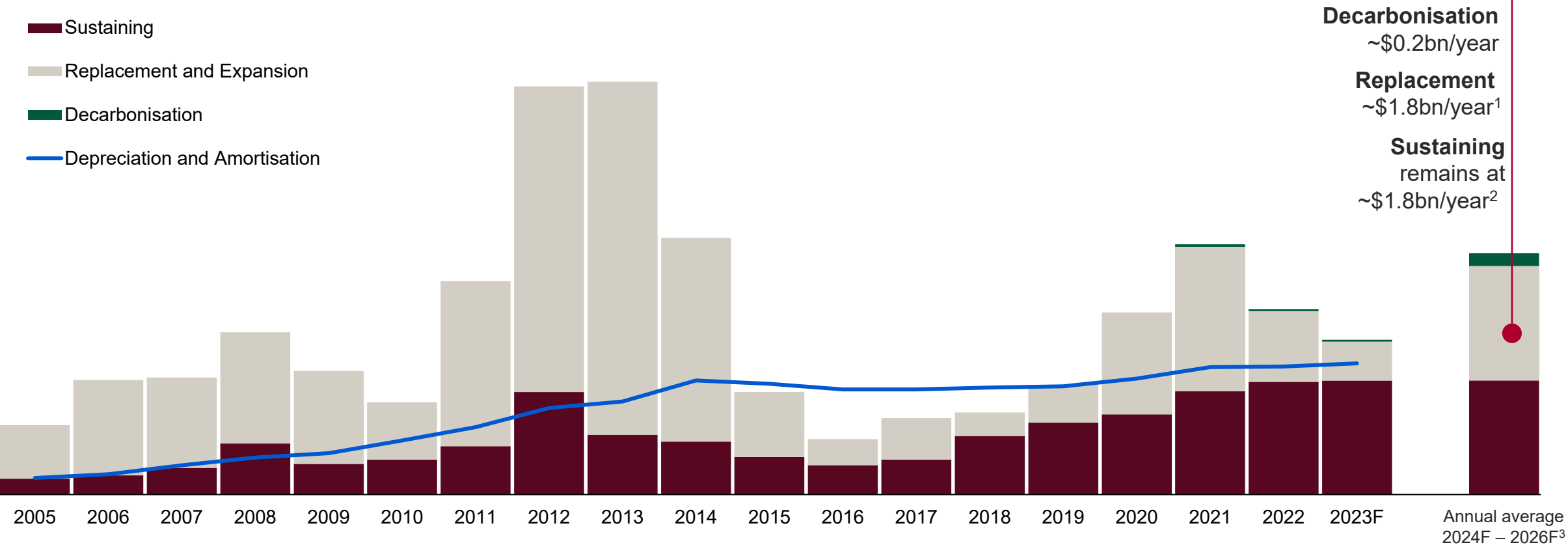
Work index 



# Disciplined capital investment across our Pilbara assets

## Capital expenditure

\$ billion, Rio Tinto share

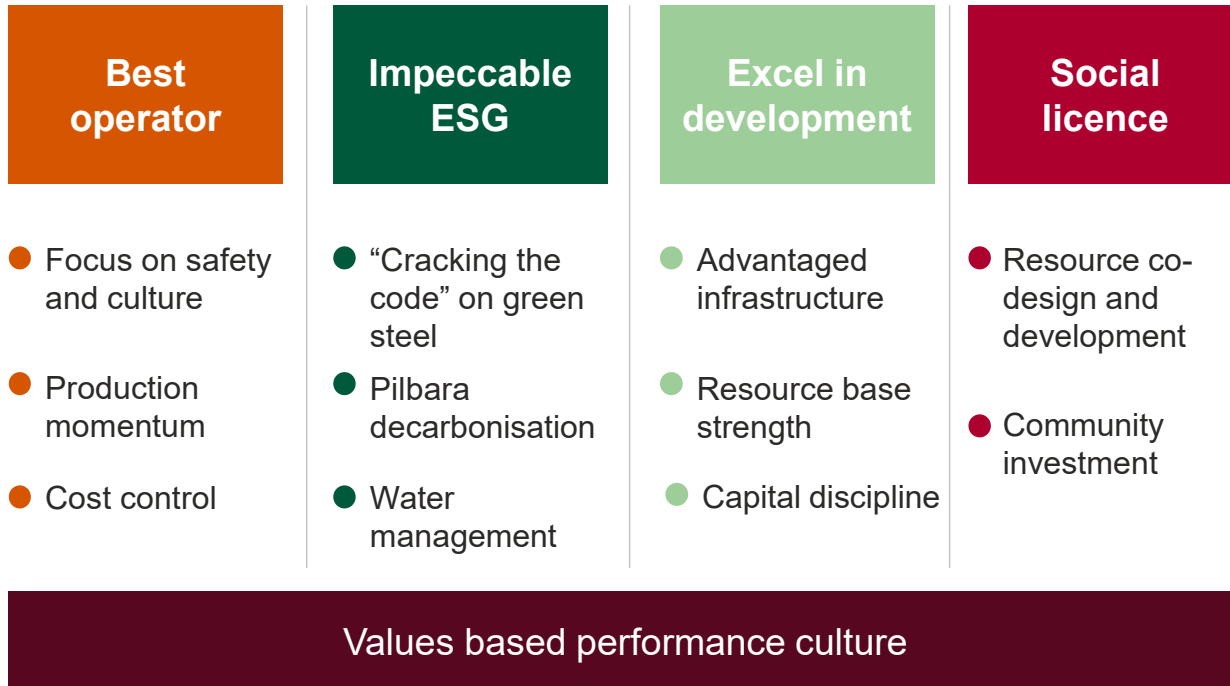


**Decarbonisation**  
~\$0.2bn/year  
**Replacement**  
~\$1.8bn/year<sup>1</sup>  
**Sustaining**  
remains at  
~\$1.8bn/year<sup>2</sup>

<sup>1</sup> This includes mine replacement from the bubble chart on slide 18 as well as existing mine pit development and stock yard equipment replacement;  
<sup>2</sup> ~\$6 per tonne capital intensity; <sup>3</sup> Real basis, subject to inflationary pressures



# We have clear priorities and are positioning for the future



**Volume:** 345 – 360 Mtpa mid-term capacity

---

**Effective equity:** remains >85%<sup>1</sup> post Rhodes Ridge

---

**Pilbara Blend:** >85% of volume post Rhodes Ridge<sup>2</sup>

---

**Unit costs:** ~\$20/t mid-term<sup>3</sup>

---

**Capital expenditure:**

**Sustaining:** ~\$1.8bn<sup>4</sup> per year in 2024-26

**Mine Replacement:** \$20 - 50/t installed capacity<sup>5</sup>

**Growth:** large, grade-advantaged, near infrastructure

# Simon Trott

Chief Executive, Iron Ore



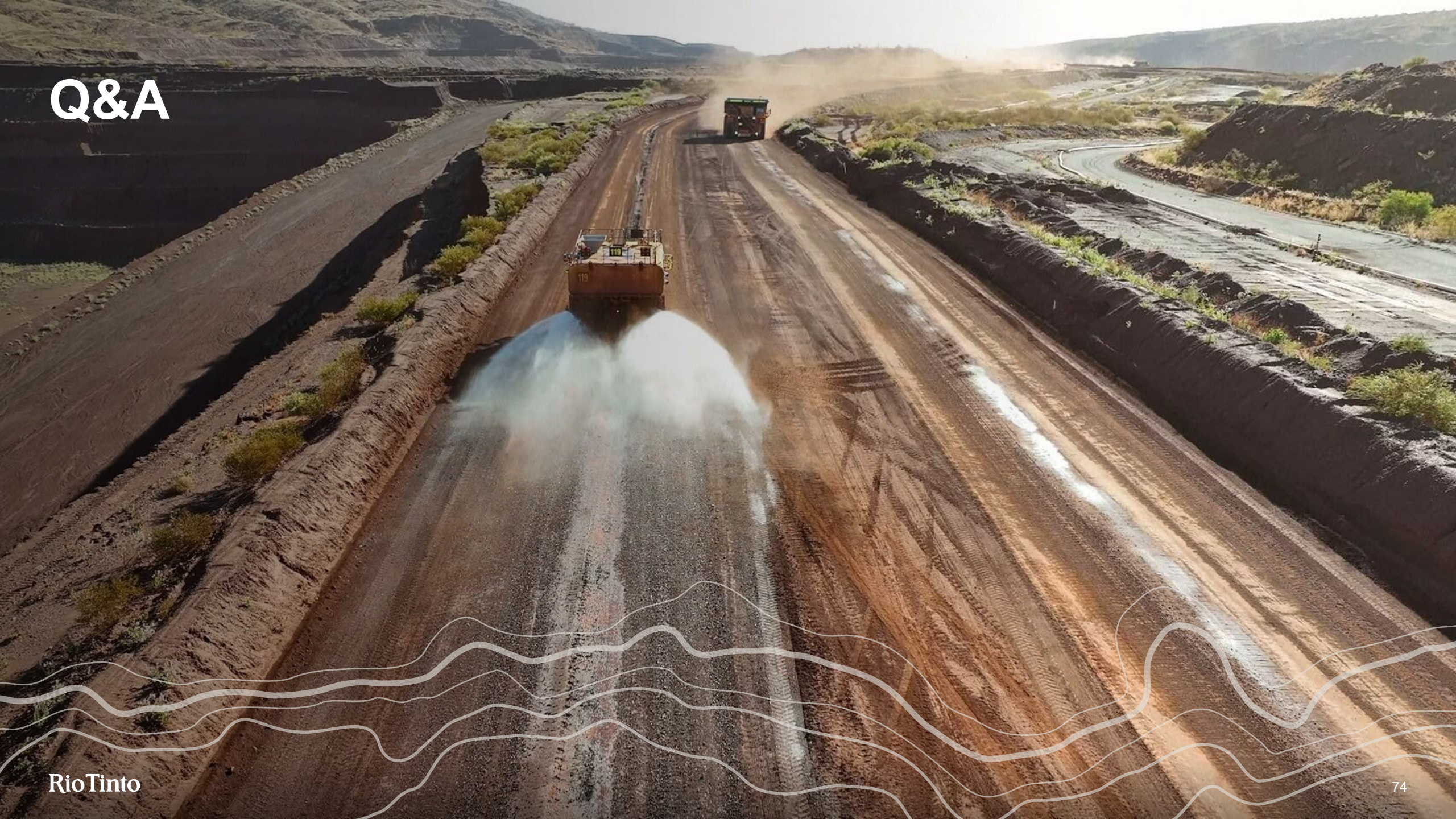
# A proven record, and a strategy for the future

We will be the 'Most Valued' resource business

*Defined by the cash flow we generate and as viewed by our people and external stakeholders*



# Q&A



**Rio Tinto**

# Common acronyms

<b>AHS</b>	Autonomous Haulage System	<b>EAF</b>	Electric Arc Furnace	<b>IRR</b>	Internal rate of return	<b>RT</b>	Rio Tinto
<b>AIFR</b>	All Injury Frequency Rate	<b>EBITDA</b>	Earnings Before Interest, Taxes, Depreciation and Amortisation	<b>JV</b>	Joint Venture	<b>RTE</b>	Round trip efficiency
<b>ASEAN</b>	Association of Southeast Asian Nations	<b>ESG</b>	Environmental, Social and Governance	<b>km</b>	kilometre	<b>RTIO</b>	Rio Tinto Iron Ore
<b>ATAL</b>	Aboriginal Training and Liaison	<b>EU</b>	European Union	<b>M</b>	Millions	<b>RTX</b>	Rio Tinto Exploration
<b>ASX</b>	Australian Securities Exchange	<b>FAI</b>	Fixed asset investment	<b>MENA</b>	Middle East and North Africa	<b>SMM</b>	Safety Maturity Model
<b>AUD</b>	Australian dollar	<b>Fe</b>	Iron	<b>MoU</b>	Memorandum of Understanding	<b>SPS</b>	Safe Production System
<b>Bn</b>	Billion	<b>FIFO</b>	Fly-in fly-out	<b>Mt</b>	Million tonnes	<b>T</b>	Tonne
<b>BF</b>	Blast furnace	<b>FOB</b>	Free On Board	<b>Mtpa</b>	Million tonnes per annum	<b>t/ha</b>	Tonnes per hectare
<b>BMP</b>	Blast management plan	<b>FS</b>	Feasibility Study	<b>MW</b>	Megawatt	<b>tLS</b>	Tonnes of liquid steel
<b>BOF</b>	Blast Oxygen Furnace	<b>FY</b>	Full Year	<b>MWh</b>	Megawatt hour	<b>tCO<sub>2</sub>e</b>	Tonne of carbon dioxide equivalent
<b>Bt</b>	Billion tonnes	<b>GHG</b>	Greenhouse gas	<b>NPV</b>	Net present value	<b>tpa</b>	Tonnes per annum
<b>CAGR</b>	Compound annual growth rate	<b>Gt</b>	Giga tonnes	<b>O&amp;M</b>	Operation & Maintenance	<b>TWh</b>	Terawatt hour
<b>CBAM</b>	Carbon Border Adjustment Mechanism	<b>GW</b>	Gigawatt	<b>OBK</b>	Ore body knowledge	<b>USD</b>	United States dollar
<b>CCUS</b>	Carbon Capture Utilisation and Storage	<b>H<sub>2</sub></b>	Hydrogen	<b>p.a</b>	Per annum	<b>WA</b>	Western Australia
<b>CO<sub>2</sub></b>	Carbon dioxide	<b>HBI</b>	Hot briquetted iron	<b>PFI</b>	Potentially fatal injury	<b>WTS</b>	Western Turner Syncline
<b>CPP</b>	Continuous pilot plant	<b>HME</b>	Heavy Mining Equipment	<b>PP&amp;E</b>	Plant, Property & Equipment	<b>YoY</b>	Year on Year
<b>D&amp;B</b>	Drill & Blast	<b>IEA</b>	International Energy Agency	<b>R&amp;D</b>	Research & Development	<b>YTD</b>	Year to date
<b>DRI</b>	Direct Reduction Iron	<b>IOC</b>	Iron Ore Company of Canada	<b>ROCE</b>	Return on capital employed	<b>\$</b>	United States dollar

# Our ability to flex product mix is an important value lever

## **Pilbara Blend** (since 2007)

### **Our flagship, long-term product strategy**

Reliable | Liquid | Reference product for 62% Fe indices | Baseload in China



## **Yandicoogina Fines** (since 1998)

### **Baseload by large, quality sensitive mills in Japan**

Low in phosphorous & alumina | Premium mid-grade fines product | Calcines to high Fe



## **Robe Valley** (Since 1970s)

### **Niche, very low phosphorous**

Sold principally to Japan, Korea & Taiwan



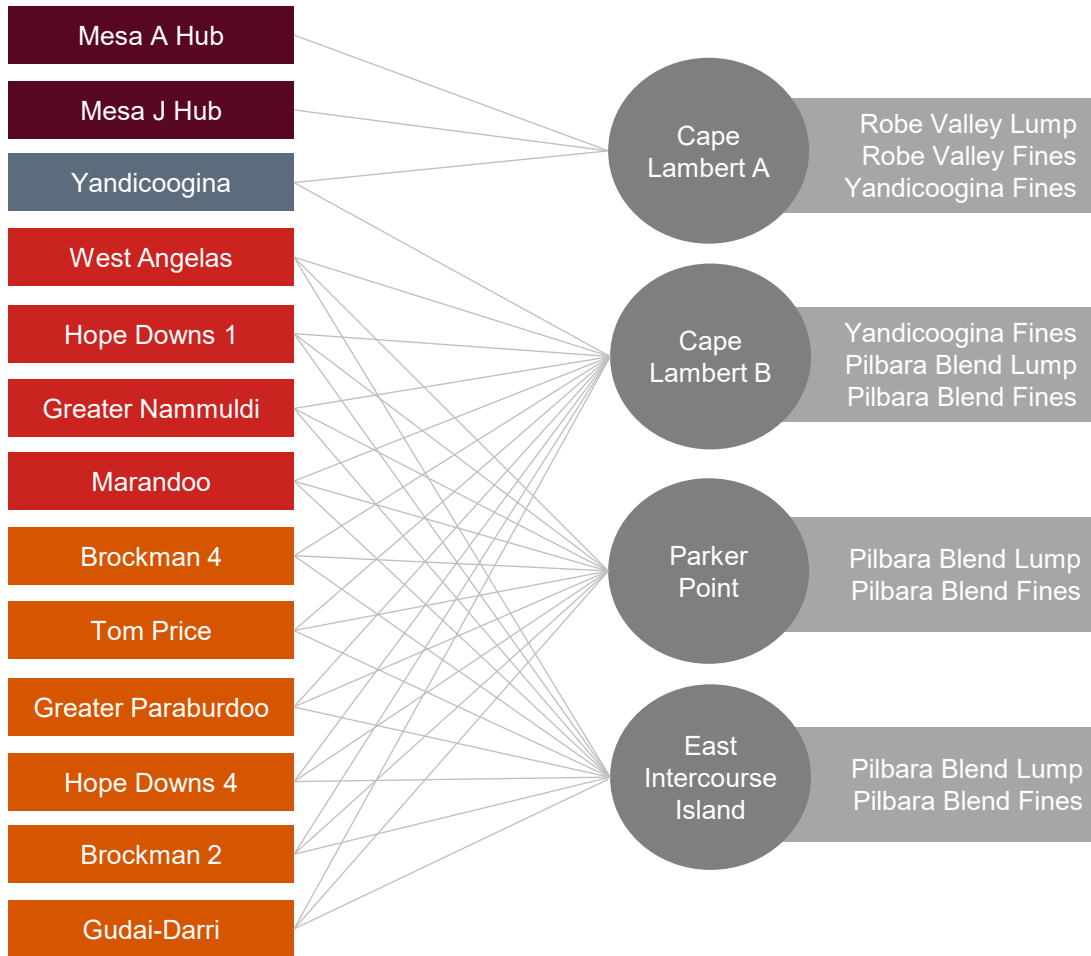
## **SP10** (since 2014)

### **Delivering further operational & product flexibility**

Flexibility to fill capacity | Low cost | Supports Pilbara Blend quality | Extends China customer base



# Our world class Pilbara iron ore blending capability

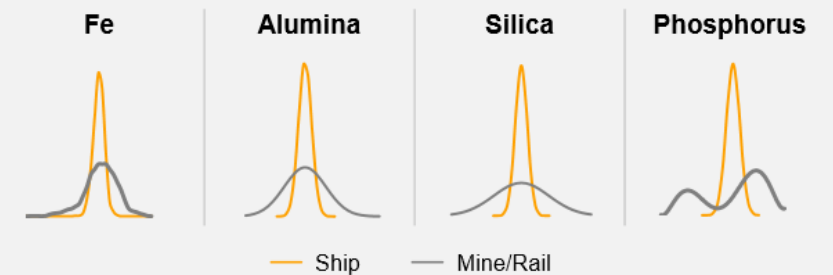


Pisolite Marra Mamba Brockman

## Port blending capability reduces product variability



## Product quality variance from mean





# Accounting treatment for Pilbara mines

Asset	%	Location	Accounting treatment
Brockman (2 and 4)	100.0	Australia	Full consolidation
Eastern Range JV <sup>1</sup>	54.0	Australia	Proportional consol
Hope Downs JV (1 and 4)	50.0	Australia	Proportional consol
Marandoo	100.0	Australia	Full consolidation
Mt Tom Price	100.0	Australia	Full consolidation
Nammuldi	100.0	Australia	Full consolidation
Pannawonica (Mesas J and A)	53.0	Australia	Proportional consolidation <sup>2</sup>
Paraburdoo	100.0	Australia	Full consolidation
West Angelas	53.0	Australia	Proportional consolidation <sup>2</sup>
Western Turner Syncline	100.0	Australia	Full consolidation
Yandicoogina	100.0	Australia	Full consolidation

<sup>1</sup> Under the terms of the Eastern Range Joint Venture Agreement, Hamersley Iron manages the operation and is obliged to purchase all production from the JV;

<sup>2</sup> Rio Tinto recognises 65% of the assets, liabilities, revenues and expenses of Robe River, with a 12% non-controlling interest. The Group therefore has a 53% beneficial interest in the Robe River mines (Mesas J and A and West Angelas).