

# Iron Bridge Project Approval



2 April 2019

## US\$2.6 billion Iron Bridge Magnetite Project approved Delivers 22mtpa high grade 67% Fe magnetite concentrate product by mid 2022

Fortescue Metals Group Ltd (Fortescue) subsidiary FMG Magnetite Pty Ltd and joint venture partner Formosa Steel IB Pty Ltd (Formosa) have approved the development of Stage 2 of the Iron Bridge Magnetite Project (the Project).

The Project is located 145km south of Port Hedland and owned through an unincorporated joint venture (UJV) between FMG Iron Bridge Ltd (FMG IB) (69 per cent) and Formosa (31 per cent). FMG Magnetite Pty Ltd is a subsidiary of FMG IB, a Hong Kong registered company owned by Fortescue (88 per cent) and a subsidiary of Baosteel Resources International Company Limited (Baosteel) (12 per cent).

This Stage 2 development follows the US\$0.5 billion investment in the successful Stage 1 construction of large scale pilot and demonstration plants which have validated key equipment and magnetite production processes for the full-scale Stage 2 ore processing facility (OPF).

### INVESTMENT HIGHLIGHTS

Fortescue's Chief Executive Officer, Elizabeth Gaines said, "The Iron Bridge Project holds Australia's largest JORC compliant magnetite resource supporting a long mine life. The successful delivery of the Project by the joint venture partners is underpinned by Fortescue's unparalleled track record and capability in safely developing and operating major iron ore projects in the Pilbara."

"We are confident this project will deliver growth in earnings and cashflow, resulting in enhanced returns to our shareholders and our joint venture partners through all market cycles.

"The Project is well progressed and ready for detailed design and execution with the majority of key approvals already in place. The innovative design, including the use of a dry crushing and grinding circuit, will deliver an industry-leading energy efficient operation with globally competitive capital intensity and operating costs," Ms Gaines said.

"In developing the Iron Bridge Project, Fortescue has demonstrated and refined each step of the ore processing system and conducted full-scale trials. Our focus has been to create the most energy and cost-efficient ore processing facility, tailored to the specific ore we will mine. We are now ready to build this plant and develop this mine, and are confident that our early work will support rapid progress to full production.

“The Iron Bridge Project will deliver a premium product with iron content of 67%, further enhancing the range of products available to our customers through our flexible integrated operations and marketing strategy. When combined with the Eliwana development, it will increase Fortescue’s average product grade and provide the ability to deliver the majority of our products at greater than 60% Fe, consistent with our long term goal.

“We are confident in the long term demand for this premium product, supported by market fundamentals, including global supply conditions, investment in higher efficiency steel-making capacity, as well as the competitive advantage of proximity of the Pilbara to key markets in China and the region.

“We also acknowledge the traditional custodians, the Njamal and Kariyarra peoples, with whom we have built strong working relationships focussed on creating economic opportunity for Aboriginal people.

“The Project will underpin the future significant contribution of magnetite processing to the Australian economy through construction and jobs, together with tax and royalty payments,” Ms Gaines said.

Mr Wilfred Wang, Standing Member of Formosa Plastics Group Executive Management Committee, said, “We believe the premium product from the Iron Bridge Project will be very competitive, particularly as steel mills are now looking to increase productivity. The high quality product will be able to be used for both sintering and pelletising and, for Formosa, will increase the options for raw material supply available to its steel mill in Vietnam.”

## KEY FACTS

- Total Stage 2 capital costs of US\$2.6 billion. The UJV partners are each responsible for their equity share of total capital expenditure for Stage 2. FMG IB’s capital contribution will be US\$2.1 billion inclusive of US\$274 million deferred contributions from Stage 1
- Fortescue will manage and operate the Project with full marketing rights, supporting Fortescue’s strategy of a majority of products greater than 60% iron content. The actual product mix will be based on market conditions to deliver the greatest value to Fortescue and its partners
- Annual production of 22 million wet metric tonnes per annum (wmtpa) once full operational capacity is achieved (equivalent to 20 million dry metric tonnes per annum (dmtpa))
- Production of a 67% iron content, low impurity concentrate suitable for pellet feed or blending with sinter fines, expected to price at a premium relative to the Platts 65 Index. Five binding off-take agreements have been concluded for 5.3 mtpa.

Typical grade	Iron Bridge product (%)	Platts 65 Index (%)
Iron content (Fe)	67.0	65.0
Alumina (Al <sub>2</sub> O <sub>3</sub> )	0.24	1.0
Silica (SiO <sub>2</sub> )	5.6	3.5
Phosphorous (P)	0.01	0.075

- Delivery of first ore expected in the first half of calendar year 2022, with ramp up to full production within 12 months

- All-in sustaining cost of US\$45-55/dmt including C1 cost of production (US\$30-35/dmt inclusive of a fee to access Fortescue's port infrastructure), sustaining capital expenditure (US\$4-6/dmt) as well as royalties, administration costs and sea freight (subject to exchange rate, inflation and other market factors)
- Mineral resource of 5.45 billion tonnes and a mine life greater than 20 years including an ore reserve of 716 million tonnes. Refer to Iron Bridge Magnetite Mineral Reserve and Resource release (2 April 2019)
- All primary approvals and Native Title Agreements are in place
- Approximately 3,000 people employed during construction and 900 full time positions once operations commence

## PROJECT BACKGROUND

Detailed Board oversight and disciplined project assessment has delivered a high level of confidence across metallurgical, mechanical and commercial project value drivers.

The Project has been comprehensively studied since 2010 and has been shaped and de-risked through the successful completion and operation of the large scale pilot and full-scale demonstration plants between 2015 and 2018.

The pilot plant verified the wet magnetite processing flowsheet in close collaboration with key equipment manufacturers. The demonstration plant proved the metallurgical and cost benefits of early waste rejection by using full scale dry processing equipment commonly seen in other industries.

The combined plants processed one million tonnes of magnetite ore over a 12-month period to produce a 67% iron, low impurity concentrate product. Extensive data was collected to support the design of the full-scale 22 wmtpa OPF, ensuring a high level of confidence in the performance of the commercial facility. The expected cost and energy savings are significant in relation to other existing magnetite operations.

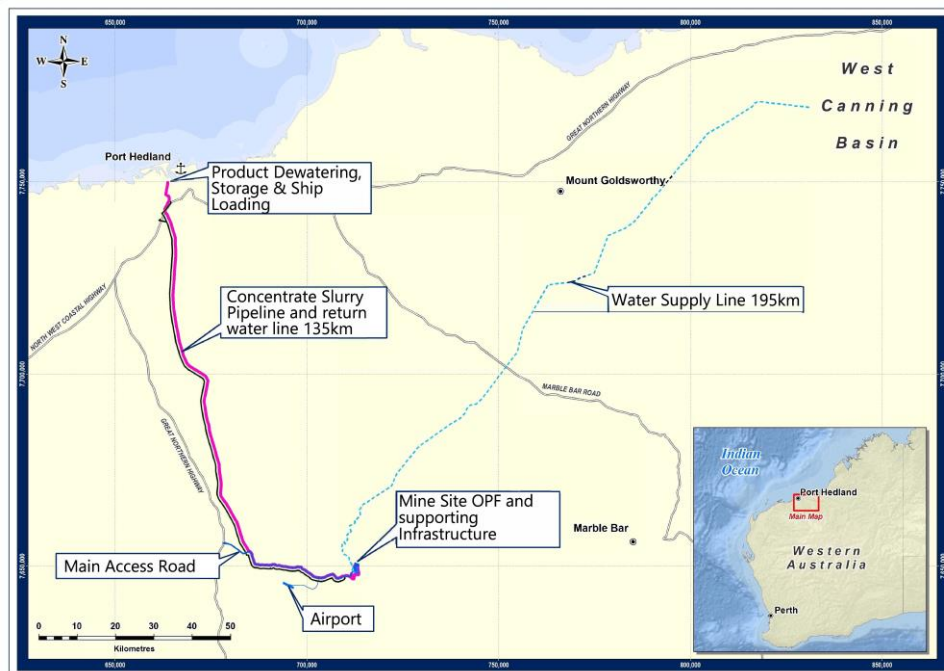
Independent design and construction experts have verified the current process design, and capital and operating cost estimates for the Project. The attached presentation includes a detailed process flowsheet.

Stage 2 development of the Project includes:

- 22 wmtpa OPF
- Airstrip and expanded village
- 195km Canning Basin water pipeline
- 135km concentrate pipeline to Fortescue's Herb Elliot Port facility in Port Hedland and return process water pipeline
- Port handling facilities including concentrate dewatering, covered storage and reclaiming/conveying to existing port outload circuits

The Project requires up to 225 megawatts of power which will be delivered by low cost power transmitted from a mix of existing and new generation sources in the Pilbara. Fortescue is responsible for delivering the power requirements inclusive of latent capacity transmitted from Fortescue's Solomon power station, together with new generation and transmission which may involve third party providers and supply.

Figure 1: Integrated Mine-to-Port Solution



The Project's mining areas and infrastructure have been efficiently designed to reduce earth works and minimise haul distance.

Key features of the location, design and construction of the mine and infrastructure are as follows:

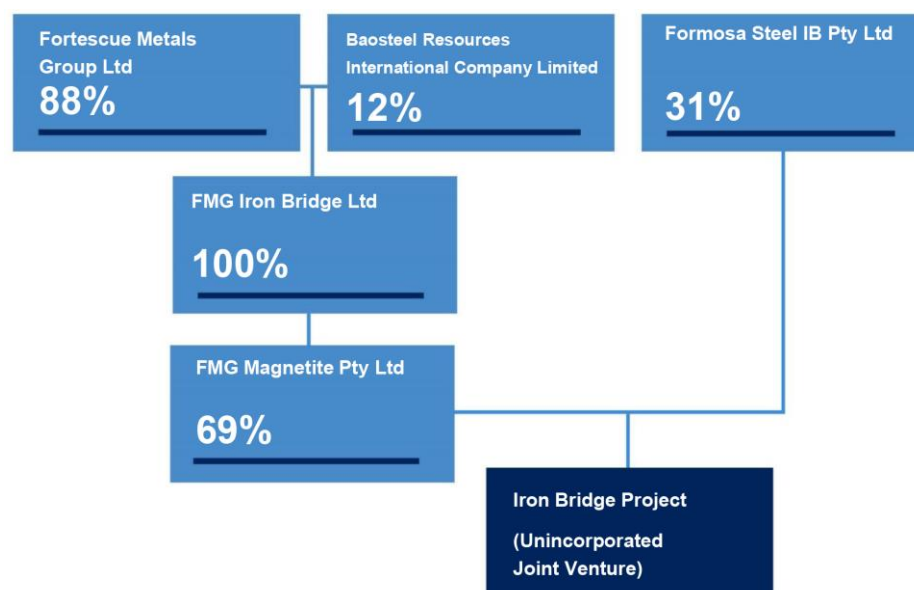
- Ore stockpiles and waste dumps are located to the east and west of the mine and make use of natural valleys to store the life of mine (LOM) volumes.
- The OPF will be located approximately 1.5km southwest of the mine, with efficient positioning of the run of mine (ROM) pad and primary crushing hub.
- Secondary crushing/screening and coarse ore stockpiles are located part way between the ROM pad and OPF to minimise earthworks, conveyor angles and building heights.
- The tailings storage facility (TSF) is located in a natural valley north of the mine, with capacity to store the LOM tailings. This location slopes away from the mine and will be constructed using down-stream methodology.
- Administration, warehousing and light and heavy vehicle workshops are co-located with the OPF to maximise efficiency of operations.
- The concentrate and return water pipeline corridor takes advantage of Fortescue's existing rail corridor for 100km of its 135km length. The 195km water supply pipeline from the Canning Basin borefield follows the most direct route to site.
- The construction and operations villages are located approximately 4km from the mine site.
- The airstrip is located approximately 20km west of the mine site on the most suitable flat land and is close to the mine access road and Great Northern Highway.

## PROJECT OWNERSHIP

The Project is an unincorporated joint venture (UJV) between FMG IB and Formosa.

FMG IB, incorporated in Hong Kong, is jointly owned by Fortescue (88 per cent) and a subsidiary of Baosteel (12 per cent).

The ownership structure is set out in the chart below:



## CAPITAL SPEND PROFILE

Each UJV partner will be responsible for contributing its equity share of the project. FMG IB is required to contribute US\$2.1 billion to the Project, inclusive of US\$274 million deferred contribution from Stage 1. FMG IB's deferred contribution is as a result of Formosa's share of Stage 1 of the Project where Formosa invested US\$438 million and FMG IB invested US\$90 million.

FMG IB's indicative capital expenditure profile is as follows:

- FY19 US\$100 million
- FY20 US\$520 million
- FY21 US\$850 million
- FY22 US\$630 million

## PROJECT FUNDING

FMG IB funding will be provided through a combination of project debt and contributions from respective shareholders. Fortescue will fund its share through a combination of specific project debt facilities, as well as operating cash flow.

Initial market assessment has identified a number of potential non-recourse project financing options which will maintain flexibility and optimise FMG IB's cost of capital for the Project.

Fortescue's investment in the Project will deliver growth in earnings and cashflow, resulting in enhanced returns to shareholders through all market cycles.

Yours sincerely

## MEDIA CONTACT

Michael Vaughan, Fivemark Partners  
E: [mediarelations@fmgl.com.au](mailto:mediarelations@fmgl.com.au)  
M: 0422 602 720

## INVESTOR RELATIONS CONTACT

Stuart Gale  
E: [investorrelations@fmgl.com.au](mailto:investorrelations@fmgl.com.au)

Media and Investor Relations calls will be hosted at 0930 (AWST) and 1130 (AWST) respectively. Dial in details will be sent out directly.



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# Iron Bridge Magnetite Project

2 April 2019

Together we are Fortescue



**Fortescue**  
The New Force in Iron Ore

# Forward looking statements

## Disclaimer

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### Additional Information

This presentation should be read in conjunction with the Annual Report at 30 June 2018 together with any announcements made by Fortescue in accordance with its continuous disclosure obligations arising under the *Corporations Act 2001*.

Any references to reserve and resources estimations should be read in conjunction with Fortescue's Ore Reserves and Mineral Resources statement for its Hematite and Magnetite projects at 30 June 2018 as released to the Australian Securities Exchange on 17 August 2018, together with the Iron Bridge Magnetite Mineral Reserves and Resources Report as released to the Australian Securities Exchange on 2 April 2019. Fortescue confirms in the subsequent public report that it is not aware of any new information or data that materially affects the information included in the relevant market announcement and, in the case of estimates of mineral resources or ore reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

All amounts within this presentation are stated in United States Dollars consistent with the functional currency of Fortescue Metals Group Limited, unless otherwise stated. Tables contained within this presentation may contain immaterial rounding differences.



# Key investment highlights

US\$2.6bn investment in Stage 2 underpinned by Fortescue's track record in development and operations

**22 wmtpa\***  
**67% Fe, low impurity**  
**premium product**  
**First ore 1H CY22**

**Project validated**  
**through Stage 1**  
**pilot and**  
**demonstration plants**

**Globally competitive**  
**low capital intensity**  
**and operating cost**

**Industry-leading**  
**energy efficient**  
**operation**

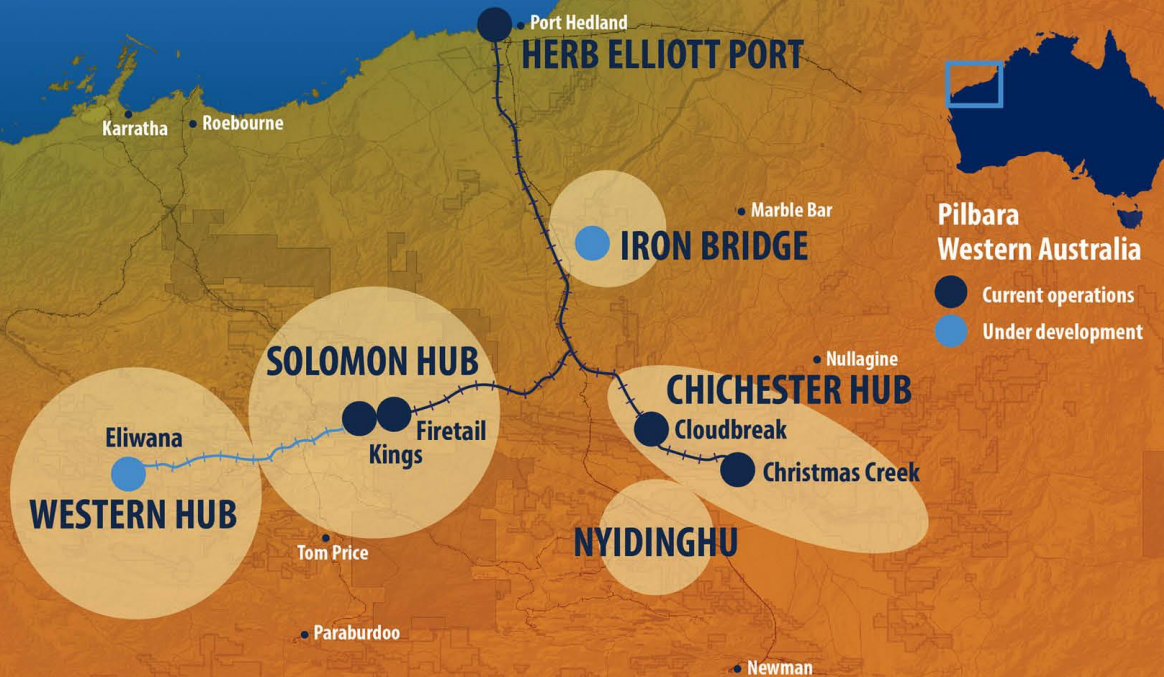
**Growth in earnings**  
**delivers enhanced**  
**returns to**  
**shareholders**

**Innovative design**  
**incorporating a dry**  
**grinding and**  
**crushing circuit**

*\*wet million tonnes per annum*

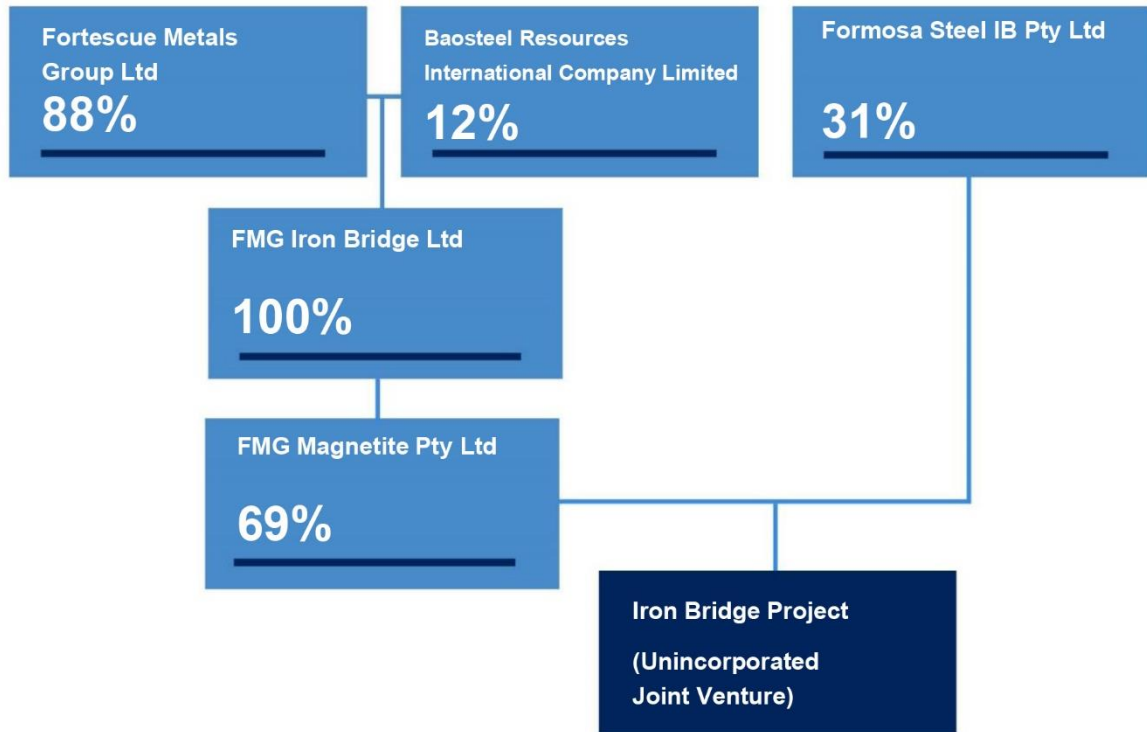
# Project location

Located 145km south of Port Hedland, Iron Bridge incorporates the world class North Star and Glacier Valley magnetite ore bodies



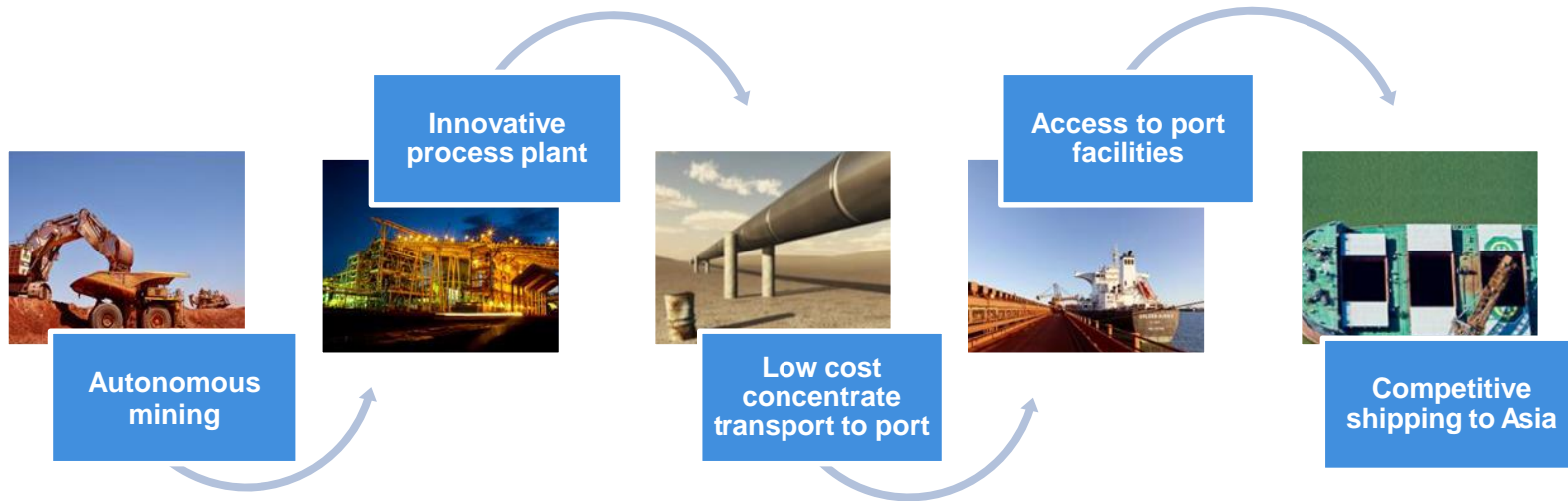
# Project structure

## Unincorporated Joint Venture



# Integrated mine to port solution

~3,000 people employed during construction  
and 900 full time positions once operations commence





# Market opportunity

Confident in the long term demand for this premium product

Supported by global supply and demand fundamentals

Proximity to key markets in China and the region

Global investment in higher efficiency steel-making capacity

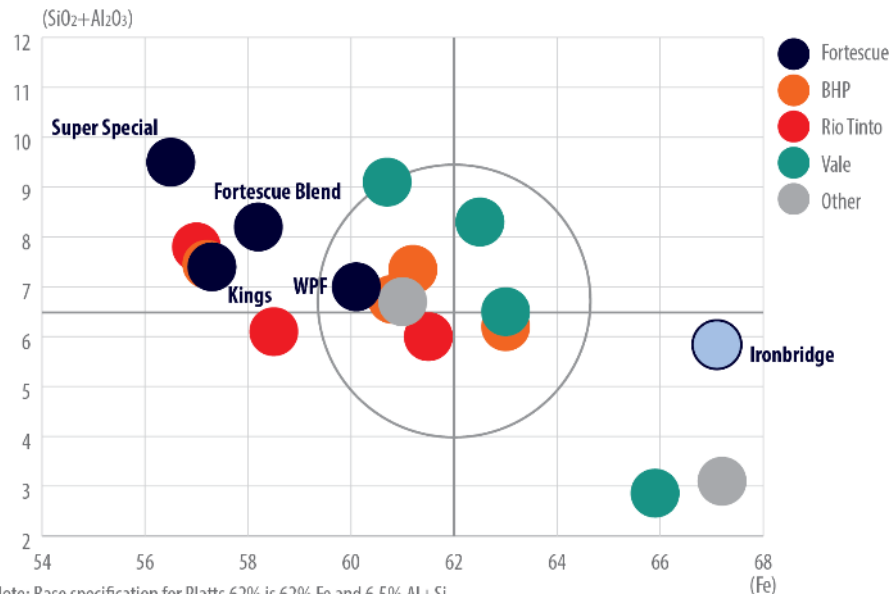
Optionality to respond to market dynamics across product segments

# Ability to deliver majority of product over 60% Fe

## Continues to increase Fortescue's average Fe grade

- **Competitively** positioned across all product segments
- **Flexibility to optimise** margins through iron ore market cycles
- **Highest grade Australian product** with global scale magnetite production

Product positioning: Natural Fe v Gangue ( $\text{SiO}_2 + \text{Al}_2\text{O}_3$ )



Note: Base specification for Platts 62% is 62% Fe and 6.5% Al+Si

Source: Fortescue, company reports

# Integrated Operations and Marketing strategy

- **Full marketing rights** supporting Fortescue's strategy of a majority of product greater than 60% Fe
- Expected to **price at a premium** relative to the Platts 65 Index
- **Low impurity** product suitable for pellet feed or blending with sinter fines
- Binding **offtake agreements** in place with five steel mills for 5.3 mtpa

Typical grade (%)	Iron Bridge product	Platts 65 Index
Iron content (Fe)	67.0	65.0
Alumina (Al <sub>2</sub> O <sub>3</sub> )	0.24	1.0
Silica (SiO <sub>2</sub> )	5.6	3.5
Phosphorous (P)	0.01	0.075



# Globally competitive operating margins

Expected to price at a premium relative to the Platts 65 Index

**All-in sustaining cost of US\$45-55/dmt\* comprising:**

- C1 cost of production US\$30-35/dmt\* inclusive of a fee to access Fortescue's port infrastructure
- Sustaining capital expenditure US\$4-6/dmt\*
- Royalties, administration costs and sea freight

*\*Subject to exchange rate, inflation and other market factors*

*-dry metric tonnes*

Platts 65% Fe Benchmark Index





# Long life resource base

## Updated resource and mine plan

**Australia's largest JORC compliant magnetite resource**

**Mineral resource of ~5.45 billion tonnes\* (JORC 2012 compliant)**

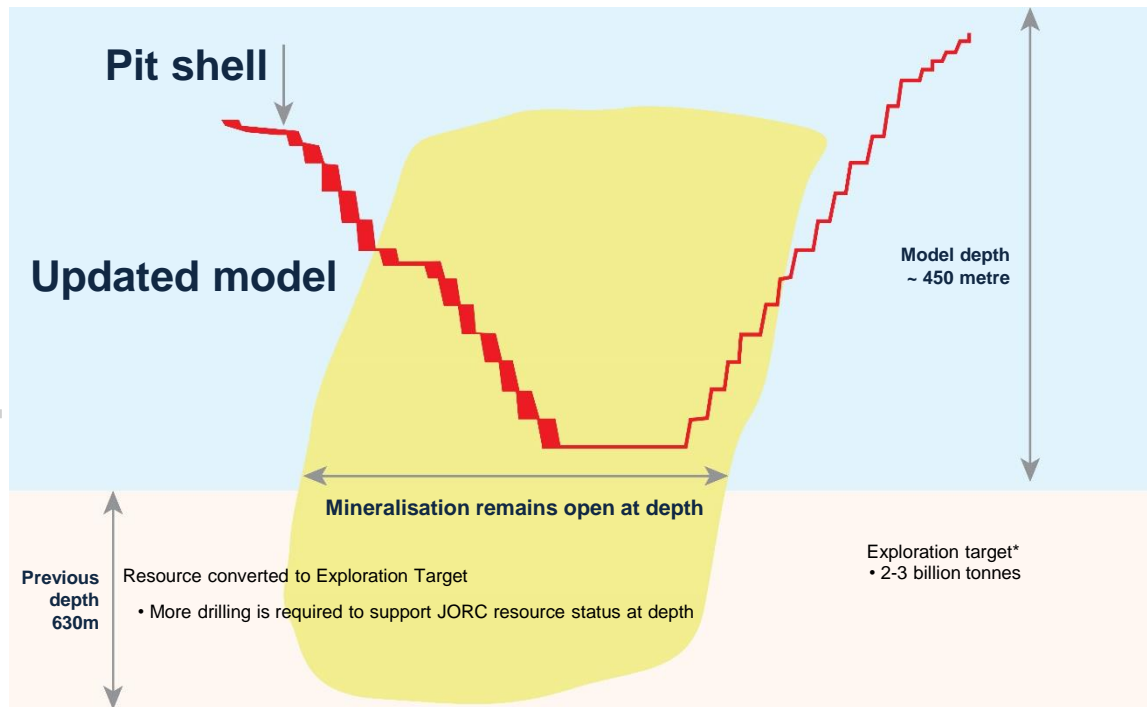
**Ore reserves of 716 million tonnes\* (JORC 2012 compliant)**

**Increase in mass recovery cut-off for reserves (from 9% to 17%)**

\*Refer to Iron Bridge Magnetite Mineral Reserve and Resource release (2 April 2019)

# Updated JORC resource

## Resource tonnes at depth have been reclassified to exploration target



\*At the request of FMG, Snowden has developed an Exploration Target for the Iron Bridge Project, in accordance with Clause 17 of the JORC Code.

Snowden estimates an Exploration Target of between 2 Bt and 3 Bt at 28–32% Fe, 39–43% SiO<sub>2</sub> and 2–3% Al<sub>2</sub>O<sub>3</sub>, with an average mass recovery of 20–24%. The Exploration Target comprises potential mineralisation below the current Mineral Resource within the Western Zone and Eastern Limb Zone of the Pincunah Formation. Snowden notes that the potential quantity and grade is conceptual in nature and there has been insufficient exploration to estimate a Mineral Resource, and that it is uncertain if further exploration will result in the estimation of a Mineral Resource.

The Exploration Target is based on projecting the current resource model approximately 200 m below the base of the Inferred Resource, along the full strike length of the deposit. It is assumed that the grade of the Exploration Target will be similar to that of the Mineral Resource.

Several deeper drillholes (which are included in the defined Mineral Resource) have been drilled in the North Star and Eastern Limb areas which show continuity of the mineralisation at depth, with similar grades reported. It is planned to test the exploration target with RC drilling in the first 10 years of operations.



# Optimised mine plan maximising value

**Low cost open-pit  
truck and shovel  
mining**

**Automated  
haulage and  
drilling systems**

**20+ year mine life  
Strip ratio 0.6  
Mass recovery 30%**

**Short haul  
distances and  
efficient design**

# Rigorous process validation

Collaborating with equipment manufacturers to develop innovative solutions

**US\$0.5 billion invested in Stage 1 to reduce process technical risk**

**1 million tonnes of ore processed through full scale HPGR and air classifier**

**Ore processed through large scale pilot plant, replicating full flowsheet**

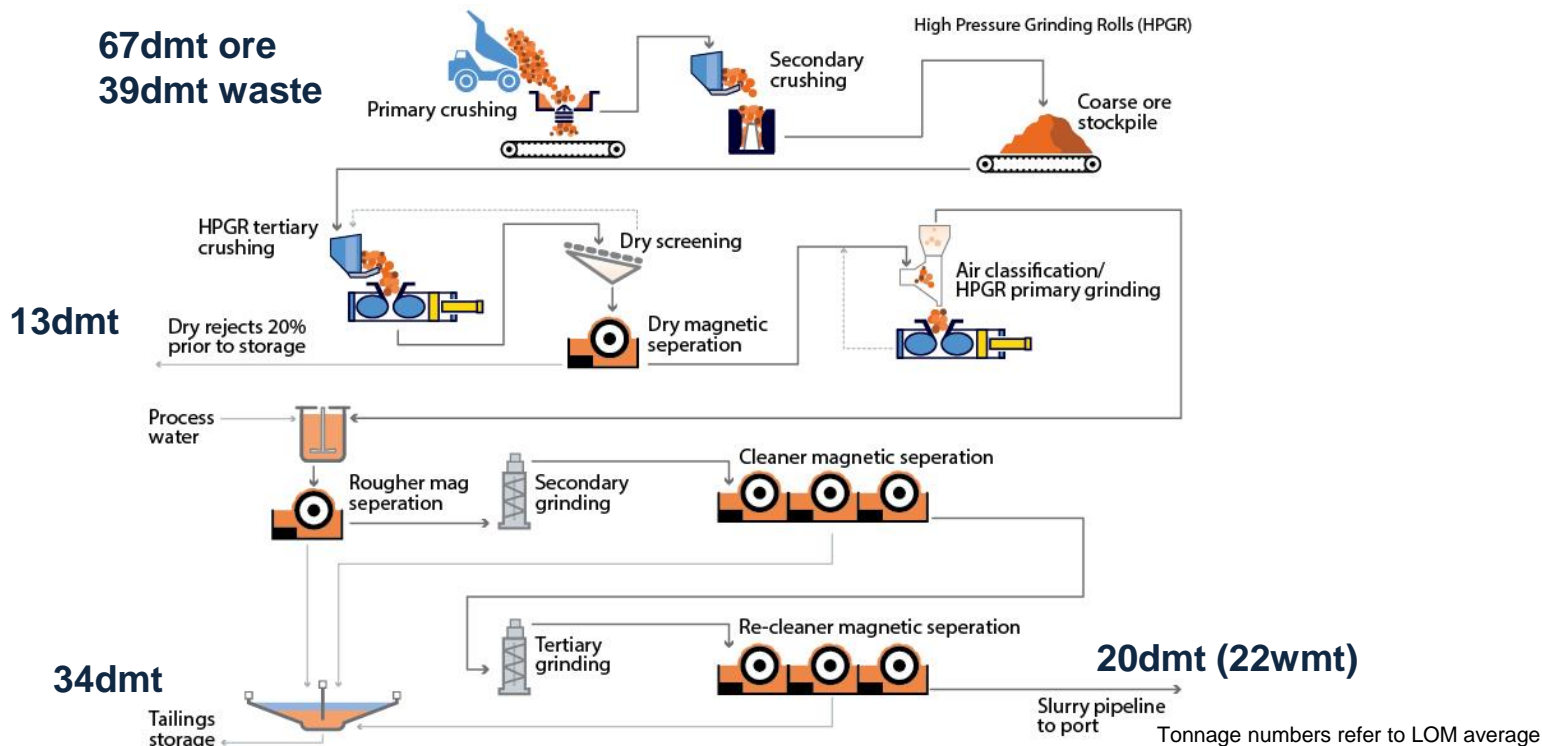
**Equipment performance optimised during large scale pilot plant programme**





# OPF process flow

Innovative design delivers industry-leading energy efficient operation



# Tailings storage facility (TSF)

Located in a natural valley north of the mine, capacity to store LOM tailings

**34mtpa TSF slopes away from mine**

**Constructed using downstream methodology**

**Reviewed by a third party engineering expert**

**Adheres to international TSF design standard**

**No communities or infrastructure in the immediate vicinity**

**Proactive engagement with Department of Mines, Industry Regulation and Safety (DMIRS)**



# Iron Bridge infrastructure

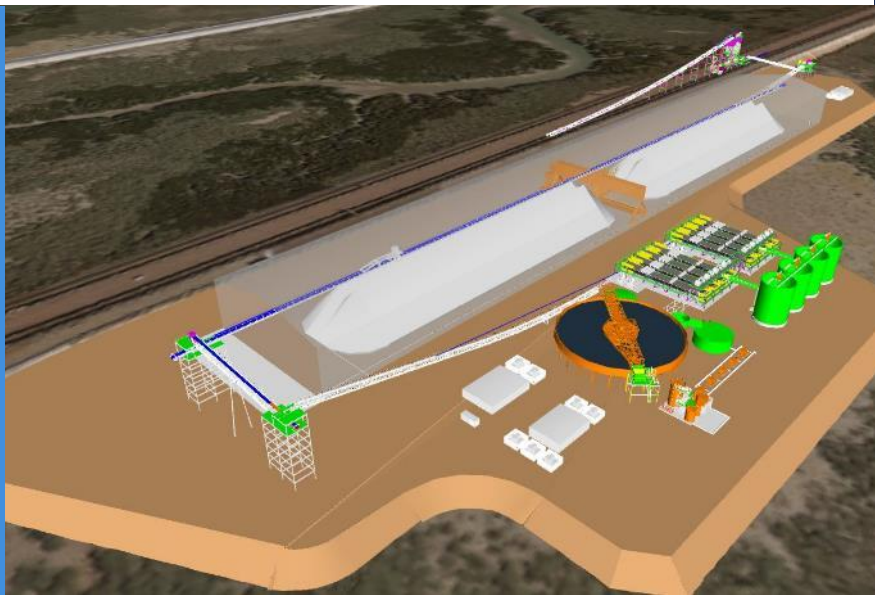
Expanding Fortescue's highly efficient integrated infrastructure



# Port infrastructure

## Leveraging existing port infrastructure including shiploaders

- 135km concentrate pipeline
- Product dewatering facility with return water pipeline to mine
- Enclosed product shed with 10,000 tph bridge reclaimer
- Surge bins, conveyors, transfer chutes



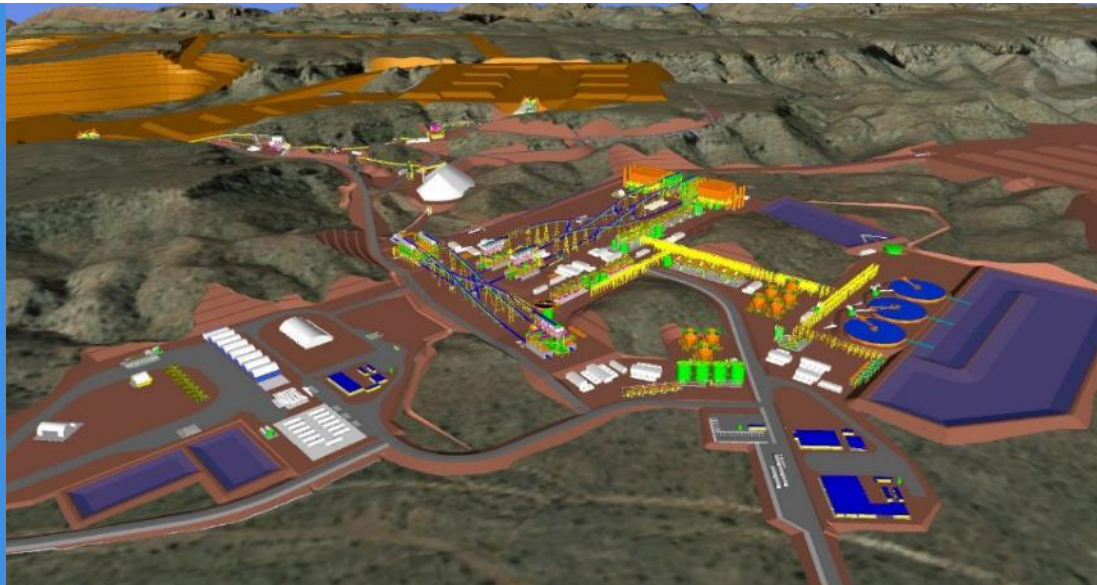


# Construction approach

Efficiently designed to optimise local terrain and reduce earth works

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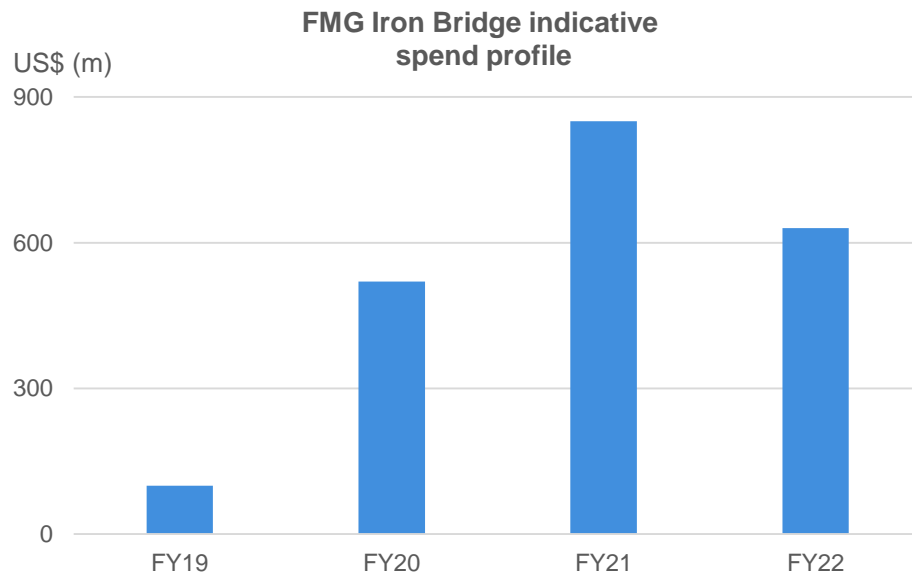
- Fortescue-led integrated management team with proven track record
- Early involvement with key contractors
- Modular construction
- Direct Fortescue procurement



# Capital spend profile

Each UJV partner will be responsible for contributing its equity share of the US\$2.6 billion Stage 2 project

- FMG IB US\$2.1 billion inclusive of US\$274 million deferred contribution from Stage 1
- Fortescue will fund its share through a combination of specific project debt facilities, as well as operating cash flow



# Project summary

## US\$2.6 billion Stage 2 Project delivers enhanced shareholder returns through all market cycles

- Annual production of 22 mtpa
- Full marketing rights support Fortescue's strategy of a majority of products greater than 60% iron content
- 67% Fe low impurity concentrate product, attracting premium price
- Execution risk reduced through Stage 1 pilot and demonstration plants
- Innovative OPF process with low capital and operating costs
- Fortescue's track record in development, construction and operations supports success
- Delivers growth in earnings and cashflow supported by market fundamentals





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The New Force in Iron Ore

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