

NEWS RELEASE

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Western Australia Iron Ore site tour: Day 1 presentation materials

BHP will be hosting an investor and analyst briefing today to provide an update on our Western Australia Iron Ore business and our outlook for the steel and iron ore markets, including steel decarbonisation and our Scope 3 emission partnerships.

A copy of the presentations is attached.

The presentation slides and script will be available on BHP's website at: https://www.bhp.com/investors/presentations-events/presentations-and-briefings

Further information on BHP can be found at: **bhp.com**

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Western Australia Iron Ore

Brandon Craig Asset President WAIO

Disclaimer

Forward-looking statements

This presentation contains forward-looking statements, including: statements regarding our strategy, our values and how we define success; our expectations of a competitive advantage for our business or certain products; our commitment to generating social value; our commitments under sustainability frameworks, standards and initiatives; our intention to achieve certain sustainability-related targets, goals, milestones and metrics; statements regarding trends in economic outlook; commodity prices and currency exchange rates; demand for commodities; medium-term guidance; production forecasts; operational performance; expectations, plans, strategies and objectives of management; climate scenarios; assumed long-term scenarios; potential global responses to climate change; the potential effect of possible future events on the value of the BHP portfolio; closure or divestment of certain assets, operations or facilities (including associated costs); anticipated production or construction or construction commencement dates; capital expenditure or costs and scheduling; operating costs, including unit cost guidance, and shortages of materials and skilde employees; anticipated productive lives of projects, mines and facilities; provisions and contingent liabilities; and tevelopments.

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We use various Non-IFRS information to reflect our underlying performance. For further information please refer to Non-IFRS financial information set out in section 11 of the Operating and Financial Review in the Appendix 4E for the year ended 30 June 2022.

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BHP and its subsidiaries

In this release, the terms 'BHP', the 'Company, the 'Group', 'BHP Group', 'our business', 'organisation', 'we', 'us', 'our' and ourselves' refer to BHP Group Limited and, except where the context otherwise requires, our subsidiaries. Refer to note 28 'Subsidiaries' of the Financial Statements in the Appendix 4E for a list of our significant subsidiaries. Those terms do not include non-operated assets. This release covers BHP's functions and assets (including those under exploration, projects in development or execution phases, sites and closed operations) that have been wholly owned and/or operated by BHP or that have been owned as a joint venture¹ operated by BHP (referred to in this release as 'operated assets' or 'operations') during the period from 1 July 2021 to 30 June 2022.

BHP also holds interests in assets that are owned as a joint venture¹ but not operated by BHP (referred to in this release as 'non-operated assets'). Notwithstanding that this release may include production, financial and other information from non-operated assets, non-operated assets are not included in the BHP Group and, as a result, statements regarding our operations, assets and values apply only to our operated assets unless stated otherwise.

1. References in this release to a 'joint venture' are used for convenience to collectively describe assets that are not wholly owned by BHP. Such references are not intended to characterise the legal relationship between the owners of the asset.

Acknowledgement of Country

Banjima Country Yandi

Western Australia Iron Ore site tour: 3 days at a glance



Meet the team DAY 1



Brandon Craig Asset President Planning and Technical WAIO

Anna Wiley

Vice President

DAY 2

Huw McKay

and Economics





Rod Dukino Vice President Sales and Marketing Sustainability

DAY 3

Kristy Heal Head of Finance WAIO



Steve Campbell General Manager South Flank

Andrew Buckley General Manager Mining Area C



Cindy Dunham

General Manager

Port



Warren Wellbeloved General Manager Rail



Western Australia Iron Ore snapshot

An interconnected system bringing resources and people together to build a better world

- Workforce of ~8,000 employees 29% female and 11% Indigenous
- Four processing hubs supported by five mines, all located in the Pilbara
 - Processing hubs are Newman, Jimblebar, Yandi and Mining Area C (including South Flank)
 - 220 trucks in operation; >30% autonomous
 - ~1,000 km of rail track
 - 182 locomotives; ~10,500 ore cars
 - Each train has an average length of ~2.8 km
 - Port operations at Nelson Point and Finucane Island include five car dumpers and eight shiploaders
 - Loading ~1,500 ships per year (or one every six hours)



WAIO is a significant contributor to BHP

An example of a large, long-life, low-cost asset

- Value unlocked through embedded growth optionality over the long asset-life and first quartile cost performance
 - Return on Capital Employed (ROCE)
 - FY22: 75%
 - 10 year average: 41%
- Consistent strong performance underpins significant contribution
 - > EBITDA
 - FY22: US\$21.8bn
 - 10 year average: US\$13.0bn
 - EBITDA margin
 - FY22: 71%
 - 10 year average: 64%; consistently >50%
 - Free cash flow
 - FY22: US\$20.4bn
 - 10 year average: US\$10.8bn
- Increased production >50%, and lowered unit costs by ~40% in the past decade

Western Australia Iron Ore site tour 3 October 2022

Asset returns since investment in 1985 (annualised, %)







Consistent delivery of superior returns

Safer, lower cost, more reliable, more productive





Our strategy is underpinned by the way we work

Enabling our people to contribute to their full potential to achieve operational excellence





WAIO values safe operations above all else

Empowering our workforce though culture, systems and controls

Over 11 years fatality free; fatal potential events down 65% since FY18

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Disciplined approach to material risk management (e.g. COVID-19)
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Focus on eliminating sexual harassment, racism and bullying

Technology and automation supporting improved safety performance

Frontline engagement through BOS and field leadership program

Events with fatal potential³ (#, index FY18 = 100)



Automation reducing safety events

(# of reported "SME Collision Incident" events / total movement)



Source: Events Management, Surface Mobile Equipment (SME) interactions actual, hazard and near miss events for CY2020. Newman East has since transitioned to autonomous trucks.



Social value embedded in our approach

Helps enable sustainable operations long term and positions us to access future opportunities



Indigenous partnerships

Building relationships based on trust, respect and mutual benefit

Emphasis on co-creating plans and high-quality relationships							
8 Traditional Owner Groups across our portfolio	Ongoing com consulta heritage and the Cultural Heritage M	Ongoing commitment to consultation on heritage and the development of Cultural Heritage Management Plans					
Creating mutual value and long-term, sustainable change							
More than doubling spend with Indigenous businesses >A\$300m by FY24	Increasing Indigenous employment from ~11% in FY22	Supporting workforce participation and training 25% of entry pathway roles are Indigenous	Support for Western Australia's Aboriginal Cultural Heritage reform				

Western Australia Iron Ore site tour 3 October 2022

BHP

Large resource base in proximity to existing infrastructure

Enables capital efficient volumes over the next few decades

- 30 Bt Mineral Resources⁶
- Currently operate four processing hubs supported by five mines
- ~95% of Mineral Resources⁷ within 50 km of existing processing hubs
 - Estimated average hub life of 40-60 years
- · Includes low-cost development options adjacent to existing hubs
 - Attractive future options in Central Pilbara
- · Characteristics of our deposits support low-cost operations
 - Mining strip ratio expected to remain stable at ~1.3 over the next five years
 - Majority of mining above the water table. Increased below water table mining over the medium term

Mines replacement to achieve 330 Mtpa run rate⁷ (Mtpa, peak capacity)



Competitive advantage

High-grade ore and percentage of lump drives superior price realisation

Index quality ore



- High-quality, low-impurity ore
- South Flank will increase overall portfolio grade to ~62% (from ~61%); some grade variability over the next couple of years during ramp-up⁹
- Studying options to beneficiate Jimblebar product to increase value

Increasing lump proportion

Lump proportion (%, FY22)



- Sector leading lump product mix
- South Flank is expected to increase the portion of lump in the portfolio to 30-33% when fully ramped up⁹
- Lump is highly sought after in a decarbonising steel industry

Premium price realisation

Realised price (\$US/wmt FOB, FY22)



- Strong customer relationships and technical expertise drives strong price realisations
- We have outperformed our competitors in price performance, achieving ~98.5% of the Platts 62% benchmark in FY22¹⁰

Note: Competitors include Rio Tinto, Vale and FMG; bubble size represents production volumes; production volumes, grade and price comparison excludes pellet. BHP average product grade excludes Yandi. Studies are underway on the optimal growth pathway above 300 Mt and the resultant grade and lump contributions.

Western Australia Iron Ore site tour

Unlocking capacity across the value chain

Disciplined investment to shift the bottleneck to the port over the medium term



Delivering productivity at Mines

Productivity mitigating expanding deposits and increased haul cycle times

Greater truck payload increasing production

(t, index FY19 = 100)



Accelerating autonomous truck roll out (Number of autonomous trucks)



Productivity driving improved truck hours

(hours, index FY19 = 100)



Mine life driving higher haul cycle times (min, index FY19 = 100)



Delivering productivity at Rail and Port interface

Debottlenecking Port and Rail increases productivity

Track speed restrictions impact on cycle time

(mins, index FY20 = 100)



Pre-dump cycle time

(hours, index FY19 = 100)



Five car dumper (CD) availability

(%, index FY19 = 100)



Number of days operated in 5CD mode (%, index FY19 = 100)



Sector leading free cash flow performance

Lowest cost iron ore producer, with low sustaining capital intensity

- FY23 unit cost guidance of US\$18-19/t FOB, decreasing to <US\$17/t FOB in the medium term (both @ \$0.72 FX)
 - Supply chain reliability, BOS and Operations Services provide strategic advantage
- Low sustaining capital intensity of ~US\$5/t in the medium term (+/- 50% in any given year)
 - Supported by larger ore bodies connecting to four processing hubs

Among lowest sustaining capital requirements¹¹ (\$US/t)



Lowest cost producer for four consecutive years¹² (\$US/t)



Leading free cash flow performance¹³ (US/t)



Technology is a key enabler

Improving safety, equipment reliability and increasing productivity across the value chain

Autonomous haulage

- Jimblebar and Newman East embedded
- South Flank on track to be completed by end CY23
- Studies underway for Newman West and Mining Area C
- Accelerating autonomous pathway to ~85% in medium term

Rail Technology Project (RTP)

- Replaces end of life rail signalling systems with new technology
- Moving block technology (communications based train control) to reduce train separation
- Enables material risks reduction

Shiploader automation

- Currently testing two shiploaders, with plans to fully automate all eight by the end of 2023
- Artificial Intelligence in surveying ships, with world first, 3D laser scan technology
- Eliminating risks from manual operation and reducing loading time





• Improvements in scheduling and decision support to optimise flow through the supply chain





Growing to >300 Mtpa in the medium term

Focus on debottlenecking the Inflow system (Port and Rail)

- The supply chain is highly interconnected with limited sprint capacity
- Capital intensity of between US\$45 US\$60/t

Port

• Port Debottlenecking Project (PDP1), completion in FY24, includes a yard extension and rate increases on our shiploader routes

Mines

- South Flank ramped up by FY25
- Potential to utilise latent Yandi infrastructure with proximate orebodies and remnant ore
- Continued productivity improvements supported by BOS and MECoE strategies and progressive roll-out of autonomous haulage trucks

Phase 1 – Maximising capacity through port five car dumpers system





Studying options for growth to 330 Mtpa

Shifting the system constraint to design bottleneck at Outflow (shiploaders)

Studies expected to be completed in FY25

Port

• Further debottlenecking the Port, likely through an additional cardumper, routes and yard expansion

Rail

- Further rail optimisation, capitalising on reduced train separation from moving block technology
- · Increased ore carried per train via longer trains

Mine

- Ability to leverage existing infrastructure (e.g. Yandi) and beneficiate will be key considerations, trade-off against new processing hub
- Mine options include Ministers North, Jinidi, Homestead, East Opthalmia and Marillana

Phase 2: Enable a stable future proof supply chain



Homestea

Newman

Jimbleba

Consistent delivery of superior returns

Safer, lower cost, more reliable, more productive





BHR

Decarbonisation: operational emissions

Anna Wiley Vice President Planning and Technical



Decarbonisation: operational emissions

WAIO is on track to deliver our plans to lower operational emissions, with further upside potential as new technologies emerge

WAIO is one of the lowest carbon intensity iron ore producers globally⁴

Renewable PPA to lower electricity greenhouse gas emissions at Port Hedland by 50%¹⁴

Yarnima power station to provide firm power while technology evolves

Large proportion of our Pilbara operations' power generation planned to come from renewables by 2040

Working with OEMs to replace our diesel locomotives and trucks with battery electric technology





WAIO's decarbonisation pathway

Delivering structural abatement of emissions through technological advancement



Our pathway to net-zero is dependent on advancement and feasibility of new technology Studies and pilots are critical near-term actions to evaluate the technology options and assess suitability to our operations, we are acting now to set up for the future Flexibility in the implementation horizon is vital as technologies and renewable markets evolve; this will help to enable the best business decisions to be made in support of long-term emissions reduction



WAIO is one of the lowest carbon intensity producers

WAIO represents around 22% of BHP's overall operational emissions (Scope 1 and Scope 2)

2021 Carbon Intensity – Seaborne Iron Ore¹⁵

(Kilograms CO₂-equivalent per tonne of iron ore (wet))



Source: Skarn Associates, BHP.



New PPA to reduce emissions at Port Hedland

Alinta agreement expected to deliver a 50% reduction in emissions at Port



~75 MW demand (Port) ~150 MW demand (Pilbara)



~610 kt CO₂-e GHG emissions¹⁶ (~25% of WAIO total)

Port

- Integrating a 45 MW solar farm, 35 MW battery energy storage system and low emissions intensity thermal power
- Scheduled to be fully operational in late 2024
- The PPA is expected to deliver cost savings, provide optionality to improve network redundancy and maintain firm power supply as well as providing a 50% reduction in reported emissions from electricity at our Port facilities¹⁴
- BHP and Alinta Energy have also entered into a memorandum of understanding in relation to the development of the Shay Gap Wind Farm. The Shay Gap Wind Farm is currently planned to be 45 MW, with a potential first-generation date of 2027

Pilbara

• Pilbara requires a more complex solution as it is an islanded network

Our renewable transition will be supported by Yarnima

Our highly efficient Open Cycle Gas Power Station will provide firm power in the Pilbara

Gas power generation in WA Emission Intensity¹⁷

(t CO₂-e/MWh)



Power generation mix over time



- Yarnima enables the production of reliable gas power while emitting fewer tonnes CO₂ emissions per MWh produced than our competition
- A further ~900 MW of generation will be required to support growth and the power demands of electrification of trucks and locomotives
- By 2040 we intend to have a large proportion of our electricity generated from renewable sources
- Yarnima's future will be assessed as large-scale carbon neutral firm generation options become commercially available
- Our goal is that 100% of electricity generated will come from net zero greenhouse gas emissions sources by 2050

We are trialling battery electric locomotives

Preparing for the replacement of our diesel powered locomotive fleet







~490 kt of CO₂-e GHG emissions (~20% of WAIO total)

- Partnership agreements signed with Wabtec and Progress Rail in January 2022
- Each OEM will supply two battery electric locomotives for an operational trial in Q3 FY2024
- Trial will test the potential of energy recapture using the unique topography of the rail network
- On completion of a successful trial, battery electric locomotives are expected to be delivered from 2027



Mines will focus on battery electric technology

Collaborating for large-scale haul truck electrification solutions







~1,340 kt CO₂-e GHG emissions (~55% of WAIO total)

- Partnership agreements signed in 2021 with Komatsu and Caterpillar to accelerate development and deployment of Zero Emission Haul Trucks
- Caterpillar battery electric early learner haul truck to be trialled in 2025
- On completion of a successful trial we are aiming for the first battery electric haul trucks to be operational by 2027, with full fleet replaced by mid-2030s
- Where possible current fleet life will be extended to meet the commercialisation of battery electric technology
- Charge-on-Challenge identified need for industry collaboration to standardise charging interfaces for mining equipment





Decarbonisation: operational emissions

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Footnotes

- 1. Slide 6: EBITDA Margin presented on a 'continuing operations' basis.
- 2. Slide 7,22: Based on published unit costs by major iron ore producers, as reported at 30 June 2022.
- 3. Slide 9: Fatal potential events include High Potential Injuries (HPI) and near miss events.
- 4. Slide 10,23,30: 2021 Carbon Intensity for Seaborne Iron Ore is detailed on slide 25.
- 5. Slide 10: Nature positive is defined by the WBCSD / TNFD as "A high-level goal and concept describing a future state of nature (e.g., biodiversity, ecosystem services and natural capital) which is greater than the current state." It includes land and water management practices that halt and reverse nature loss that is, supporting healthy, functioning ecosystems.
- 6. Slide 12: BHP FY2022 Annual Report for resource classification, quality and cut-off grade of the Mineral Resources.
- 7. Slide 12: Based on revised CY2020 life of asset plan, subject to change as growth to 330 Mtpa study progress.
- 8. Slide 12: Sustaining studies in progress: mines expansion primarily through crusher and conveyor infrastructure; wet processing infrastructure likely required at Newman to manage increasing below water table ore.
- 9. Slide 13: The increased lump and grade estimates subsequent to the ramp up of South Flank excludes Yandi, which is expected to provide supply chain flexibility for several years.
- 10. Slide 13: Price performance is based on published average realised pricing, as reported at 30 June 2022.
- 11. Slide 17: Sustaining capital disclosure for BHP represents the 5 year average +/- 50% in any given year. The competitor data represents the sustaining capital disclosure for FY23 for FMG and CY22 Rio Tinto. Not all major competitors disclose sustaining capital requirements.
- 12. Slide 17: Competitors include Vale, Rio Tinto and FMG, measured on an annualised based on published half year unit cost measurements.
- 13. Slide 17: Free Cash Flow (FCF) represents reported EBITDA less capital expenditure as a proxy methodology in the absence of available public data.
- 14. Slide 23, 27, 30: Based on current forecast demand and compared with FY20.
- 15. Slide 25: The iron ore emissions intensity curve is based on CY2021 data estimates from Skarn Associates for seaborne iron ore operations. The emissions intensity basis is kilograms of CO₂-equivalent per tonne of iron ore (wet basis) produced per mine. BHP operations have been aggregated to WAIO level and overlayed with reported BHP data points for CY2021 for: i) iron ore production (wet basis); ii) Scope 1 emissions; and iii) Scope 2 emissions incorporating integrated rail, port and ocean emissions. Non-integrated Port + Rail + Ocean emissions intensity estimates utilise Skarn Associates data across the dataset. In case of WAIO, only the emissions from non-integrated Ocean freight are applicable as Rail & Port emissions are included as part of Scopes 1 and 2 emissions.
- 16. Slide 26: Includes natural gas emissions (electricity is ~10% of WAIO total, natural gas is ~15%).
- 17. Slide 27: Sourced from Clean Energy Regulator, Electricity sector emissions and generation data 2020-21. #1 is Newman Power Station, #2 is Solomon Power Station, #3 is West Angelas Power Station
- 18. Slide 29: Includes all haul trucks of which ~220 are large mining trucks.



Appendix

Summary of mining and processing hubs

Joint venture	Processing hub	Mining hub	Main mineral deposits	
Mount Newman		Noursen	Mount Whaleback, Eastern Ridge, Shovelanna	
Jimblebar	Newman operations	Newman	Western Ridge	
	Jimblebar Jimblebar		South Jimblebar, Wheelarra, Hashimoto	
Yandi	Yandi	Yandi	Yandi (end-of-life ramp down started in July 2021)	
Mount Goldsworthy (POSMAC JV holds a sublease over the Mining Area C mine	Mining Area C	Mining Area C	North Flank, Packsaddle	
		South Flank	South Flank (new mine, first production started in May 2021)	



BHP

Steel and iron ore market outlook

Dr Huw McKay Vice President, Market Analysis and Economics

Dr Rod Dukino Vice President, Sales and Marketing Sustainability

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BHP and its subsidiaries

In this release, the terms 'BHP', the 'Company, the 'Group', 'BHP Group', 'our business', 'organisation', 'we', 'us', 'our' and ourselves' refer to BHP Group Limited and, except where the context otherwise requires, our subsidiaries. Refer to note 28 'Subsidiaries' of the Financial Statements in the Appendix 4E for a list of our significant subsidiaries. Those terms do not include non-operated assets. This release covers BHP's functions and assets (including those under exploration, projects in development or execution phases, sites and closed operations) that have been wholly owned and/or operated by BHP or that have been owned as a joint venture¹ operated by BHP (referred to in this release as 'operated assets' or 'operations') during the period from 1 July 2021 to 30 June 2022.

BHP also holds interests in assets that are owned as a joint venture¹ but not operated by BHP (referred to in this release as 'non-operated assets'). Notwithstanding that this release may include production, financial and other information from non-operated assets, non-operated assets are not included in the BHP Group and, as a result, statements regarding our operations, assets and values apply only to our operated assets unless stated otherwise.

1. References in this release to a 'joint venture' are used for convenience to collectively describe assets that are not wholly owned by BHP. Such references are not intended to characterise the legal relationship between the owners of the asset.

Portfolio positively leveraged to megatrends

Low cost assets and world class resource base across a differentiated set of commodities

BHP Portfolio	Population growth	Urbanisation	Rising living standards	Decarbonising power	Electrifying transport	Geopolitical risk	30/30 year growth BHP 1.5°C scenario
Copper Largest endowment ¹	+	++	+++	+++	+++	~	>2x
Nickel Second largest sulphide resource ²	+	++	+++	+	++++	+	~4x
Steel Lowest cost iron ore ³ Leading met coal supplier	+	+++	++	++	~	~	~2x
Potash Large-scale resource supports up to 100 years of operation ⁴	+++	+	+	~	~	+++	>2x
2050 estimate, change from current	~10 bn total population; + 2¼ bn	~7 bn urban population; + 2¾ bn	~\$400 tn world GDP; 4-fold gain	³ ⁄ ₄ of power capacity wind & solar; 13-fold energy gain ⁵	~2 bn EVs on the road; 100-fold gain	-	

+ Indicators are versus a baseline that does not include the theme being assessed. ~ Signifies trivial direct impact or offsetting forces that are basically in balance.

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Steel is the building block of a better world

Different climate scenarios do not produce highly divergent outcomes



Cumulative steel demand ranges and scenarios (30yr/30yr, %)

250



Source: BHP analysis, Vivid Economics.

Note: Our portfolio is tested across a range of future scenarios, including a scenario where warming is limited to 1.5°C. Scenarios were developed prior to the impacts of the COVID-19 pandemic, and therefore any possible effects of the pandemic were not considered in the modelling.

Essential value chains have differing demand drivers

Each is essential to our way of life and has a distinctive relationship to economic development

Food value chain

- Population growth and dietary change
- Food, feed, fibre, fuel
- Low degree of recycling¹
- Steady increase in intensity through the entire development journey, high income plateau

Steel value chain

- Urbanisation and industrialisation
- Buildings, infrastructure, machinery, other goods
- High degree of recycling
- Swift increase in intensity on the way to middle income, where a distinct peak forms



Energy value chain

- Motorisation, electrification, industrialisation
- Transport, power, heat, chemicals
- Low degree of recycling
- Swift increase in intensity on the way to middle income, flatter beyond, high income plateau



Note: Illustrative only, reflecting stylised empirical path of major societies through time that have reached high income levels. 1. Recycling of nutrients via crop residue or manure occurs, but the food value chain is very inefficient and highly subject to waste.

GDP per head

Traditional growth drivers

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per head

Crop needs

Industry has distinctive composition in each major region

Heterogeneity informs our approach to long run forecasting, with emphasis on a bottom-up methodology



Steel supply by basic process & fleet age



Steel supply by metallic mix



Net exports: direct and indirect, % output



Iron ore: domestic & imported sources



Scrap import dependency



Source: World Steel, United Nation, Global Trade Atlas, BHP analysis. * Capacity weighted estimate of integrated steelmaking facilities, based on a sample, not a Census. Germany is EU and US is North America for this metric. Western Australia Iron Ore site tour

Stock of steel per head plateaus at high income levels

Range of end-states in terms of capital stock depth are relatively narrow, but paths to the end-state are diverse

(tonnes finished steel /capita) 2021 actuals China **Other Asia** India developing -USA 1950-2021 -----Germany 1950-2021 -----Japan 1950-2021 —Korea 1970-2021 **GDP** per capita (PPP)

Source: BHP analysis; Global Insight; United Nation; worldsteel. Asian developing countries include ASEAN and other Asian developing countries.

Accumulated stock of steel in use per capita

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Stock levels ultimately converge, but run rates are diverse

China's post-plateau run-rate trajectory remains uncertain, with diverse examples from economies already at the high income level

Steel production by region per head

(kg)











Source: World Steel, United Nations, BHP analysis.

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China: a young, advanced, coastal fleet

New capacity positioned to service dynamic domestic demand centres and secure competitive access to imported raw materials



ILLUSTRATIVE ONLY

Source: BHP analysis.

Note: Our portfolio is tested across a range of future scenarios, including a scenario where warming is limited to 1.5°C. Scenarios were developed prior to the impacts of the COVID-19 pandemic, and therefore any possible effects of the pandemic were not considered in the modelling.

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India: the major growth vector for global steel

Brownfield optionality puts official targets within reach; integrated steelmaking to gain share at expense of coal-based DRI





BHP

Source: BHP analysis.

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South East Asia: gearing up for domestic demand

Multiple countries within the region are building up capacity at home, seeking to reduce historical import dependency

Cumulative steel demand ranges and scenarios (30yr/30yr, %)

500

Source: BHP analysis.

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Steel a net beneficiary of decarbonisation & climate

Net impact of decarbonising power and physical impacts of climate change is a modest uplift in medium and long term demand

We estimate a modest uplift in our base case for steel demand in both 2030 and 2050 from the net impact of four forces:

- Infrastructure of decarbonisation [more steel]
- Decline of fossil energy demand [less steel]
- Higher capital stock turnover [more steel]
- Slower economic growth due to the physical climate impacts & carbon policies [less steel]

Global finished steel demand in 2030 & 2050 by driver (million tonnes)



Essential for the decarbonisation of power

Steel consumption in power will triple from today with demand from wind and solar 5 times bigger

Renewable energy



2050 steel demand in Power Generation vs 2020 Power Gen% total steel demand 2050

3x

5%

Share in 2020 < 2%

Global steel demand from power generation (Mt finished steel, new capacity + rebuild)



Non-fossil fuel share of steel demand in power gen (%)



Renewable power tends to require more steel compared to fossil fuels (Steel t/MW of capacity)





Capital ages faster under climate extremes

Shorter capital lifetimes and higher capital stock turnover are the intuitive outcomes of a harsher physical climate

Capital ages linearly as temperatures rise ... Capital depreciation rate¹ (%)

... but the relationship is more complex with respect to precipitation



The results we present on capital depreciation are general and abstract in nature, being estimated at the whole of capital stock level, either nationally or regionally, in addition to being based on average climate parameters at the same level of aggregation. Therefore, they are not appropriate for accounting use for specific assets, where local climatic and other idiosyncratic factors will be in play. Underlying data sourced from the Penn World Table, analysis by BHP.

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Mean temperature Hotter

Global scrap ratio to rise steadily towards "50 in 50"

Global ratio will reach and surpass pre-China boom levels, as end-of-life scrap availability in China more than doubles by 2050



Regional scrap to steel ratio



Source: BHP analysis.

1. Scrap consumption is net of estimated consumption in foundry sector and is based on steel production and consumption.

2. Scrap consumption / crude steel production.

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Iron ore range is resilient, but notably lower than steel

Alternative metallics compete with primary ore in coming decades

Cumulative steel and iron ore demand ranges and scenarios (30yr/30yr, %)



The evolution of contestable demand: ~2 degrees (%)



Source: BHP analysis. Contestable demand = Global seaborne + China domestic.

Source: BHP for all scenarios, Vivid Economics for 1.5 degrees.

Note: Our portfolio is tested across a range of future scenarios, including a scenario where warming is limited to 1.5°C. Some scenarios were developed prior to the impacts of the COVID-19 pandemic, and therefore any possible effects of the pandemic were not considered in the modelling. They are presented here "as is".

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Low expectations of the late 2010s were not fulfilled

Consensus views of iron ore industry development pre-Brumadinho were a poor predictor of actual performance



Source: 1) Wood Mackenzie. "Before" was sourced from the CY2018 Q3 long term forecast before the Brumadinho tragedy. "Now" use the version of CY2022 Q2 long term forecast. 2) BHP operational review for the half year ended 31 Dec 2021. 3) IHS GTA.

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Reliability of supply is highly valuable in an uncertain world

Accurate volume guidance, delivery to specifications, competitive price realisation, durably low cost operations and attractive margins

Performance versus guidance mixed across the industry

(%, average variation from initial guidance mid point, FY14-FY21)

2030 – BHP projected to remain the lowest cost major producer (CFR China, 62% Fe Fines equivalent, US\$/dry tonne)



Source: Company reports, SBG Securities, analysis by BHP.

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Source: Wood Mackenzie



BIP

Steel decarbonisation pathways

Dr Rod Dukino Vice President, Sales and Marketing Sustainability

Steel decarbonisation in three stages

Regions will transit through these stages at different rates, based on local conditions faced by steel producers

Optimisation stage Up to 20% CO₂ reduction vs. BAU **Transition stage** 30-60% CO₂ reduction vs. BAU

Green end state >80% CO₂ reduction vs. BAU



Incremental improvements in raw materials and process conditions for the integrated steelmaking route: Modifications to BF-BOF route and increased use of renewable energy sources and install low carbon technologies

Raw Material Quality Energy Optimisation / Efficiency Technology Improvements Low Carbon Fuels Blast Furnace Modifications Carbon Capture Low carbon technologies have matured and cost competitive for development at scale

Modified BF with CCUS Direct Reduction with Green Hydrogen Electric Steelmaking Other New Technologies

Multiple 'near' net zero pathways for steel industry

Pathways for industry to be largely decarbonised through primary steel production from iron ore



3% of current iron ore supply is 'EAF quality' today

This will drive innovation along the value chain as steel decarbonisation scenarios develop

Iron ore supply curve by quality band (2022)



Source: Wood Mackenzie.

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Differentiated regional steel decarbonisation pathways

Key enablers are policy, supply of renewable power and carbon storage capacity, age and scale of blast furnace fleet



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BHP's Climate Transition Action Plan

A framework to discuss our strategy and engagement



https://www.bhp.com/sustainability/climate-change

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Partnerships with customers and other industry leaders

Looking to scale modified Blast Furnace (BF) projects, engaging research and technology providers to de-risk alternate pathways





Footnotes

- 1. Slide 3: Largest copper endowment on a contained metal basis, equity share. Peers include: Anglo American, Antofagasta, Codelco, First Quantum Minerals, Freeport, Glencore, Rio Tinto, Southern Copper and Teck. Source peers: Wood Mackenzie Ltd, Q1 2022. Source BHP data: FY2021 BHP Annual Report.
- 2. Slide 3: Second largest nickel sulphide resource on a contained metal basis, equity share. Source peers: MinEx Consulting Global Ni Database, December 2018. Source BHP data: FY2021 BHP Annual Report.
- 3. Slide 3: Based on published unit costs by major iron ore producers, as reported at 30 June 2022.
- 4. Slide 3: Based on a Reserve life of 94 years as reported in BHP's 17 August 2021 news release, available to view on www.bhp.com, with further optionality from Jansen's 5,230 Mt Measured Resource base.
- 5. Slide 3: Three-quarters refers to the share of power capacity. 13-fold refers to the increase in the volume of primary energy, not the increase in the share.



Appendix

Our decarbonisation targets and goals are clear

To support the net zero transition, we will continue to pursue sustainable provision of our products

Operations (Scopes 1 and 2)

FY2030

Target Reduce operational greenhouse gas (GHG) emissions by at least 30% from FY2020 levels.

2050

Goal Achieve net zero operational GHG emissions.



Value chain (Scope 3)

2030

Goals Steelmaking. Support industry to develop technologies and pathways capable of 30% emissions intensity reduction in integrated steelmaking, with widespread adoption expected post 2030.

> Shipping. Support 40% emissions intensity reduction of BHP-chartered shipping of BHP products.

2050

Pursue the long-term goal of net zero Scope 3 GHG emissions. Achievement is uncertain and we cannot ensure the outcome alone.

Targets Shipping. Net zero GHG emissions from all shipping of BHP products*.

> **Suppliers.** Net zero for the operational GHG emissions of our direct suppliers*.

Important note

Refer to the full description of BHP's climate change targets and goals, including essential definitions, assumptions and caveats, at bhp.com/climate

1 The baseline year(s) of our targets will be adjusted for any material acquisitions and divestments based on emissions at the time of the transaction, and to reflect progressive refinement of emissions reporting methodologies. The targets' boundaries may in some cases differ from required reporting boundaries. The use of carbon offsets will be governed by BHP's approach to carbon offsetting described at bhp.com/climate.

* These targets are referable to a FY2020 baseline year. Our ability to achieve the targets is subject to the widespread availability of carbon neutral solutions to meet our requirements, including low/zero-emissions technologies, fuels, goods and services.

Goal An ambition to seek an outcome for which there is no current pathway(s), but for which efforts will be pursued towards addressing that challenge, subject to certain assumptions or conditions.

Target An intended outcome in relation to which we have identified one or more pathways for delivery of that outcome, subject to certain assumptions or conditions.

Information is valid at July 2022



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