## **Copper Business Overview**

September 4, 2019 Dale Andres, Senior Vice President, Base Metals Alex Christopher, Senior Vice President Exploration, Projects and Technical Services Michael Schwartz, Director, Market Research Shehzad Bharmal, Vice President North America Operations, Base Metals



## **Caution Regarding Forward-Looking Statements**

Both these slides and the accompanying oral presentations contain certain forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995 and forward-looking information within the meaning of the Securities Act (Ontario) and comparable legislation in other provinces (collectively referred to herein as forward-looking statements). Forward-looking statements can be identified by the use of words such as "plans", "expects" or "does not anticipate", or variation of such words and phrases or state that certain actions, events or results "may", "could", "should", "would", "might" or "will" be taken, occur or be achieved. Forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Teck to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. These forward-looking statements relating to production guidance at our operations; all statements relating to the projected impacts of innovation, technology and analytics at our operations, including any expected timing for key milestones; all statements relating to oncentrate produced, upside potential and expected timing for key milestones; all statements relating to greated Blanca, including statements relating to planned exploration and development activities throughout Teck for 2019 and beyond; statements relating to management's priorities for Highland Valley Copper; all statements relating to HVC 2040, including anticipated timing for completion of the feasibility study and anticipated iming for expectations; expectati

These forward-looking statements involve numerous assumptions, risks and uncertainties and actual results may vary materially. These statements are based on a number of assumptions, including, but not limited to, assumptions regarding general business and economic conditions, the timing of the receipt of further permits and approvals for the QB2 project and the timing and receipt of permits and approvals for the QB2 project and the timing and receipt of permits and approvals for the QB2 project and the timing with respect to size, grade and recoverability) and the geological, operational and price assumptions on which these are based, the supply and demand for and the level and volatility of prices of copper, the implementation and effectiveness of technology, our anticipated costs and timing of development and production, power prices, availability of water and power resources for our CB2 and QB3 projects, market competition, acts of foreign or domestic governments, our production and productivity levels, as well as those of our competitors, the timing of development of our competitors' projects, interest rates, conditions in financial markets, the future financial performance of the company, our ability to attract and retain skilled staff, our ability to procure equipment and supplies, positive results from the studies on our QB3 expansion projects, our ability to attract and retain skilled staff, our ability to procure equipment and supplies. The foregoing list of assumptions is not exhaustive.

Factors that may cause actual results to vary materially include, but are not limited to, changes in market demand for our products, inaccurate geological and metallurgical assumptions (including with respect to the size, grade and recoverability of mineral reserves and resources), unanticipated development or operational difficulties (including cost escalation, unavailability of materials and equipment, government action or delays in the receipt of government approvals, industrial distributances or other job action, adverse weather conditions and unanticipated events related to health, safety and environmental matters), the development and use of new technology, the failure of technology to perform in the manner expected, acts of foreign governments and the outcome of legal proceedings, changes in commodity and power prices, changes in interest and currency exchange rates, union labour disputes, political risk, social unrest, failure of counterparties (including but not limited to rail, port and other logistics providers) to perform their contractual obligations, changes in our credit ratings or the financial market in general, unanticipated increases in costs to construct our development projects, difficulty in obtaining permits or securing transportation for our products, inability to address concerns regarding permits of environmental impact assessments, changes in tax benefits or tax rates, resolution of environmental and other proceedings or disputes, and changes or disputes, and changes or disputes, and changes or tax rates, resolution of environmental and other proceedings or disputes, and changes or tax rates, resolution of environmental and other proceedings or disputes, and changes or disputes or disputes or disputes or disputes and changes or disputes or disp

All QB2 mining and economic projections (QB2 mine life, throughput, timing of first production, amount of production, costs (including C1 and AISC), expected EBITDA from the project) depend on the QB2 project coming into production in accordance with the current budget and project schedule, the projected capital intensity figures are based on the same assumptions.

All economic analysis with respect to the QB2 project is based on a development case which includes inferred resources within the life of mine plan, referred to as the Sanction Case, which is the case on which Teck is basing its development decision for the QB2 project. Inferred resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. Inferred resources are subject to greater uncertainty than measured or indicated resources and it cannot be assumed that they will be successfully upgraded to measured and indicated through further drilling. Nonetheless, based on the nature of the mineralization, Teck has used a mine plan including inferred resources as the development mine plan for the QB2 project. The economic analysis of the Sanction Case, which includes inferred resources, may be compared to economic analysis regarding a hypothetical mine plan which does not include the use of inferred resources as mill feed, referred to as the Reserve Case, and which is set out in our Annual Information Form available under our profile on SEDAR and on EDGAR.

We assume no obligation to update forward-looking statements except as required under securities laws. Further information concerning assumptions, risks and uncertainties associated with these forward-looking statements and our business can be found in our most recent Annual Information Form, as well as our management's discussion and analysis of quarterly results and other subsequent filings, all filed under our profile on SEDAR (www.sedar.com) and on EDGAR (www.sec.gov).

Scientific and technical information regarding our material mining projects in this presentation was approved by Mr. Rodrigo Alves Marinho, P.Geo., an employee of Teck. Mr. Marinho is a qualified person, as defined under National Instrument (NI) 43-101.

## Agenda

## **Copper Business Unit**

QB2 Update

**Copper Market** 

Highland Valley Copper Overview

Q&A

## Continuing the Transformation in Base Metals

MILESTONES ACHIEVED

#### **Delivering Results**

#### 2019 Guidance

- Copper production on track for 290,000 to 310,000 tonnes with strong by-product volumes
- Reduced unit costs for both copper and zinc



#### **Performance Focused**

- Safe production
- Capital spend, with lower 2019 guidance
- Productivity improvement and cost focused
- Strong sustainable foundation

FUTURE VALUE CATALYSTS

 Significant EBITDA improvements expected

#### **Executing on Growth**

- QB2 in construction
- QB3 scoping study nearing completion
- Advancing key life extension projects

**Delivering Results and Building Value** 

## Long Life and Stable Assets in Copper



- H1 copper production of 50,000 tonnes, guidance maintained at 95,000 to 100,000 tonnes in 2019
- Lower zinc in 2019, increasing in 2020
- New 3-year collective agreement



- Higher recoveries driving increased copper production
- Technology focus with autonomous haulage, shovel-based ore sorting, and advanced analytics
- D3 mill project complete in Q2 2019, ahead of schedule and under budget



- June thickener failure impacted Q2 2019 copper production, no impact to annual guidance
- Improved sizer availability and mill throughput in H2 2019
- Copper production on track with leaching operations
- Mine fleet supporting QB2 earthworks
- QB2 operations readiness well advanced

#### **Foundation of Stable Operations**



## **Integrated Zinc Business**



- Strong Q2 2019 production offset difficult Q1 winter weather conditions
- Higher lead guidance, lower unit costs Acid Plant #2 project completed ahead •
- Shipping season progressing well
- VIP2 project advancing to commissioning in 2020 and expected to improve throughput by ~15%
- Zinc production impacted by recent electrical equipment failure in refinery
- Acid Plant #2 project completed ahead of schedule and under budget
- Focus on margin improvement including automation in melting plant
- Improving outlook for TC/RC's and profitability in 2020

- Care and maintenance started in August
- Decision on path forward anticipated end 2019

**Strengthening our Zinc Business** 

## Innovation and Technology Driving increased margins across the portfolio

#### **Innovation-Driven Efficiency Program**

- Transforming the business through technology with RACE21<sup>™</sup>
- Leveraging "Ideas at Work" across all sites
- Driving to top tier labour efficiencies at QB2
  - Autonomous Haulage System (AHS)
  - Remote integrated operations centre in Santiago

#### **Innovation Success Stories:**

- 9-truck pilot of AHS at HVC
- Ore sorting with shovel-mounted sensors to reduce dilution operational at HVC, pilots at Red Dog and CdA
- Sizer used in non-traditional application at CdA to reduce primary crusher discharge size, targeting a 10% improvement in mill throughput

#### Continued focus on cost reduction and productivity

- Robust continuous improvement pipeline across Base Metals
- Asset management and equipment availability improvement



## Major Growth and Life Extension Projects Setting up for long-term success





#### **Quebrada Blanca**

- QB2: 316 kt of CuEq production for first 5 years<sup>1</sup>
  - Doubles copper production with low strip ratio and AISC of US\$1.38/lb copper<sup>2</sup>
- QB3: Scoping Study on expansion potential in progress
  - Mineral resource supports up to 3 times milling rate, with low strip ratio and low anticipated AISC<sup>2</sup>
  - Capitally efficient, leveraging QB2 infrastructure

## NuevaUnión

• Feasibility Study (FS) completion in Q1 2020

## Life Extension Projects

- HVC 2040 FS completion expected H1 2020
  - Targeting ~13 year extension
- Antamina advancing extension and debottlenecking studies
- Red Dog resource definition drilling ongoing on Aktigiruq and Anarraaq deposits

## Continuing the Transformation in Base Metals



**Delivering Results and Building Value** 



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## QB2 Project Update Executing on a world class development asset

#### **Highlights**

Teck

✓ Vast, long life deposit in favourable jurisdiction Significant brownfield development ✓ Will be a top 20 producer ✓ Very low strip ratio ✓ Low all-in sustaining costs (AISC) High grade, clean concentrates Community agreements in place and strong local relationships ✓ Fully sanctioned and construction well underway ✓ Expansion potential (QB3) with potential to be a top 5 producer

#### Location



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## QB2 Project Update – June 30, 2019<sup>1</sup>

Engineering <sup>1</sup>	Costs <sup>1,2,3</sup> US\$330M Expenditures ~60% Total capital committed	
Procurement <sup>1</sup>	Progress <sup>1</sup>	
~88%	<b>14.4%</b> Overall	
Contracting <sup>1</sup>	Workforce <sup>1,4</sup>	
~96%	~3,100	Concentrator - Grinding Area, August 2019
Teck		- /12

## **QB2** Project Execution Snapshot

## Critical path area is progressing on track



## Earthworks activities advancing in all areas



## Commencing piling work at port



Procurement and fabrication well advanced





# Long-term growth potential in QB3

Drilling and study work ongoing to explore options to realize full value of the asset





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## Smelter Production To Remain Constrained



#### Global Concentrate Production<sup>1</sup> (kt)



#### Global Primary Smelter Capacity<sup>1</sup> (kt)

## China Switching to Copper Concentrates

## Net Copper Imports and Percentage of Concentrates<sup>1</sup>

Copper content (kt)



## **Copper Treatment Charges Under Pressure**



#### TC/RCs Spot and BM Falling<sup>1</sup> (US\$/lb)

#### Disruptions Increasing<sup>2</sup>; Smelters to be Impacted (kt)



-1,200

## Copper Supply

## Mine production rising further but increases constrained

#### Sanctioned Projects Since 2017<sup>1</sup> (Copper content, kt)



#### Projects Pipeline Comparison<sup>2,3</sup> (Copper content, kt)



- Remaining probable projects 20% of historic levels
- 40% of sanctioned projects in difficult jurisdictions
- 35% of 2008 probable projects remain unsanctioned
- Execution risk remains on sanctioned underground operations

## **Global Mega Trends Impact Copper**

### **Demographic Changes**

Urbanization

## **Transformational Technology**

- Mobile Internet
- Automation of Knowledge
- Internet of Things (Smart Homes)
- Advanced Robotics
- Autonomous Mobility
- Vehicle Electrification (features)

## Low Carbon Economy

- Alternative Energy
- Electric Vehicles
- Energy Storage

Teck

#### 2023 More EVs Will Be Built Than Standard ICE; 2027 More EVs Will Be Built Than Total ICE<sup>1</sup>



#### Copper Demand in Smart Home Applications To Reach 1.5 Mt<sup>2</sup> (Copper content, kt)



## Refined Copper Balance Moves To Deficit Despite Lower Growth Rates

Teck average global growth rate to 2025 is 1.6%, and 1.3% for China<sup>1</sup> (kt)



Wood MacKenzie is removing all uncommitted projects (mines & smelters) to show the need for copper projects at 1.7% global cathode growth

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## Highly Reliable Asset Set For Production Growth

## **Focused On**

- Improving upon best ever safety performance
- Delivering on production and cost commitments
- Improving cost and production profile through aggressive implementation of new technologies
- HVC 2040





## Innovation and Technology Driving Safety, Production and Cost Improvements

- Aggressive implementation of innovation and technology
  - D3 built and ramping up
  - Autonomous Haulage Systems pilot expansion
  - Expanding implementation of MineSense
  - Integrated Process Management
  - Advanced Analytics



## Agenda - Thursday, September 5, 2019 At Highland Valley Copper

ТІМЕ	ТОРІС	PRESENTER
9:00am-9:15am	Welcome and Introductions; Safety Orientation Administration Building	Geoff Brick, General Manager Highland Valley Copper
9:15am-10:00am	Highland Valley Overview and Site Initiatives Administration Building	Geoff Brick, General Manager Highland Valley Copper
10:00am-11:30am	Dam Overview; Geotechnical Monitoring and Risk Dam Viewpoint	Chris Anderson, Manager Tailings and Water
11:30am-12:30pm	Lunch and Sustainability Overview Trojan Pond	Peter Martell, Superintendent Environment and Community Affairs
12:30pm-2:30pm	Mine Tour	Paul Dixon, Superintendent Mine Operations
2:30pm-2:45pm	Refresh at Administration Building	
2:45pm-3:15pm	Mill Overview Administration Building	Shane Green, Manager Mill Operations
3:15pm-4:00pm	Mill Tour	Shane Green, Manager Mill Operations
4:00pm-4:15pm	<b>Debrief and Wrap Up</b> Administration Building	Geoff Brick, General Manager Highland Valley Copper and HVC team



## **Copper Business Overview**

## Any questions?

## Appendix



## Notes

#### Slide 8: Major Growth and Life Extension Projects

- 1. Copper equivalent production calculated for the first 5 full years of production assuming US\$3.00/lb copper, US\$10.00/lb molybdenum and US\$18.00/oz silver without adjusting for payability.
- 2. All-in sustaining costs (AISC) are net cash unit costs (also known as C1 cash costs) plus sustaining capital expenditures. Net cash unit costs are calculated after cash margins by-product credits assuming US\$10.00/lb molybdenum and US\$18.00/cz silver. Net cash unit costs for QB2 include stripping costs during operations. AISC, Net cash unit cost and cash margins for by-products are non-GAAP financial measures which do not have a standardized meanings prescribed by International Financial Reparable to such measures as reported by other issuers and may not be comparable to such measures as reported by others. These measures are meant to provide further information about our financial expectations to investors. These measures should not be considered in isolation or used in substitute for other measures of performance prepared in accordance with IFRS. For more information on our calculation of non-GAAP financial measures please see our Management's Discussion and Analysis for the year ended December 31, 2018, which can be found under our profile on SEDAR at www.sedar.com.

#### Slide 12: QB2 Project Update - June 30, 2019

- 1. Project progress as at the end of June 2019.
- 2. Expenditures are quoted in millions of U.S. dollars at spot currency exchange rates from January 1, 2019.
- 3. Commitments to total budget based on the project exchange rate of 625 CLP:USD.
- 4. Number of active workers versus employees on payroll.

#### Slide 16: Smelter Production to Remain Constrained

1. Source: Data compiled by Teck based on information from Wood Mackenzie and internal sources.

#### Slide 17: China Switching to Copper Concentrates

1. Source: Data compiled by Teck based on information from the National Bureau of Statistics and Shanghai Metals Market.

#### Slide 18: Copper Treatment Charges Under Pressure

- 1. Source: Data compiled by Teck based on information from Wood Mackenzie, CRU, and Metal Bulletin.
- 2. Source: Data compiled by Teck based on information from Wood Mackenzie and Teck's analysis of publicly available quarterly financial reports and other public disclosures of various entities.

#### Slide 19: Copper Supply

- 1. Source: Data compiled and analyzed by Teck based on information from Wood Mackenzie and Teck's analysis of publicly available quarterly financial reports and other public disclosures of various entities.
- 2. Source: Wood Mackenzie Q2 2008 Quarterly Outlook.
- 3. Source: Wood Mackenzie Q2 2019 Quarterly Outlook (Probable projects not sanctioned).

#### Slide 20: Global Mega Trends Impact Copper

- 1. Source: Martec Group Automotive Wiring Assessment July 2019 for ICA.
- 2. Source: BSRIA (Building Services Research & Information Association) Opportunities for Copper in Smart Homes May 2019 for ICA.

#### Slide 21: Refined Copper Balance Moves To Deficit

1. Source: Data compiled by Teck based on information from Wood Mackenzie and internal sources.

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