



# QUELLAVECO

## A WORLD-CLASS COPPER PROJECT

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14 October 2019



**Real Mining. Real People. Real Difference.**

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# A WORLD CLASS COPPER PROJECT...



- 1** One of the largest copper projects globally. A high-quality asset, to benefit all our stakeholders
- 2** Highly experienced management team, supported by Group, with a leading EPCM contractor
- 3** A major contributor to Moquegua and Peru, now and for the future
- 4** Sustainability central to Quellaveco's development
- 5** Favourable geology: high-grade ore in payback period; 30-year reserve life; further endowment potential
- 6** Low-cost position driven by inherent structural advantages
- 7** Execution on-track, benefitting from early works

**...on-track to deliver first production in 2022**

# WHAT IS QUELLAVECO?

Located at ~3,500m above sea level in south of Peru, 34km from the city of Moquegua



Quellaveco – Key facts and figures...		
Overview	<b>Products:</b>	Copper (molybdenum by-product)
	<b>Mine:</b>	Open-pit, 1.3Bt Reserves, 0.57% TCu <sup>1</sup>
	<b>Returns:</b>	>15% IRR, >20% ROCE, 4-yr payback
	<b>Workforce:</b>	~14,000 job created at peak construction (~5,600 from local communities) ~2,500 steady state operations
	<b>Ownership:</b>	Anglo American (60%), Mitsubishi (40%)
Construction	<b>Construction time:</b>	~4 years from August 2018
	<b>Commissioning:</b>	First production 2022 Ramp-up during 2023
	<b>Permitting:</b>	Key construction permits obtained
	<b>Capex:</b>	\$5.0-5.3bn (nominal, 100% basis) \$2.5-2.7bn (nominal, attributable to AA)
Operation	<b>Throughput rate:</b>	127.5ktpd
	<b>Production:</b>	~330ktpa average first five years ~300ktpa average first 10 years
	<b>Reserve Life:</b>	~30 years

Please refer to the AA plc Ore Reserves and Mineral Resources Report 2018 for the tonnes, grades and a breakdown of the classification

# A TIER ONE COPPER ASSET

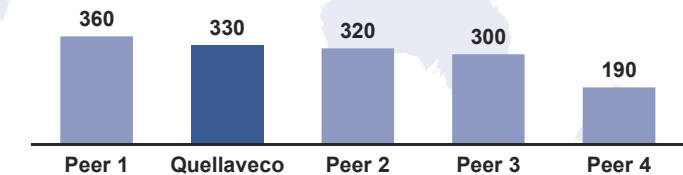
Mining projects face increasing challenges...

Grade decline	Water scarcity	Permitting	Impurities / conc. quality
Political / fiscal risk	Remote locations	Community expectations	Amongst others

There are only a handful of large-scale copper projects being developed in the world today, Quellaveco is one of the most significant



**Quellaveco**  
Start 2022  
Output ~330ktpa



Average first five-year output for approved large-scale (~200+ ktpa) copper projects expected to come on-line in next five years

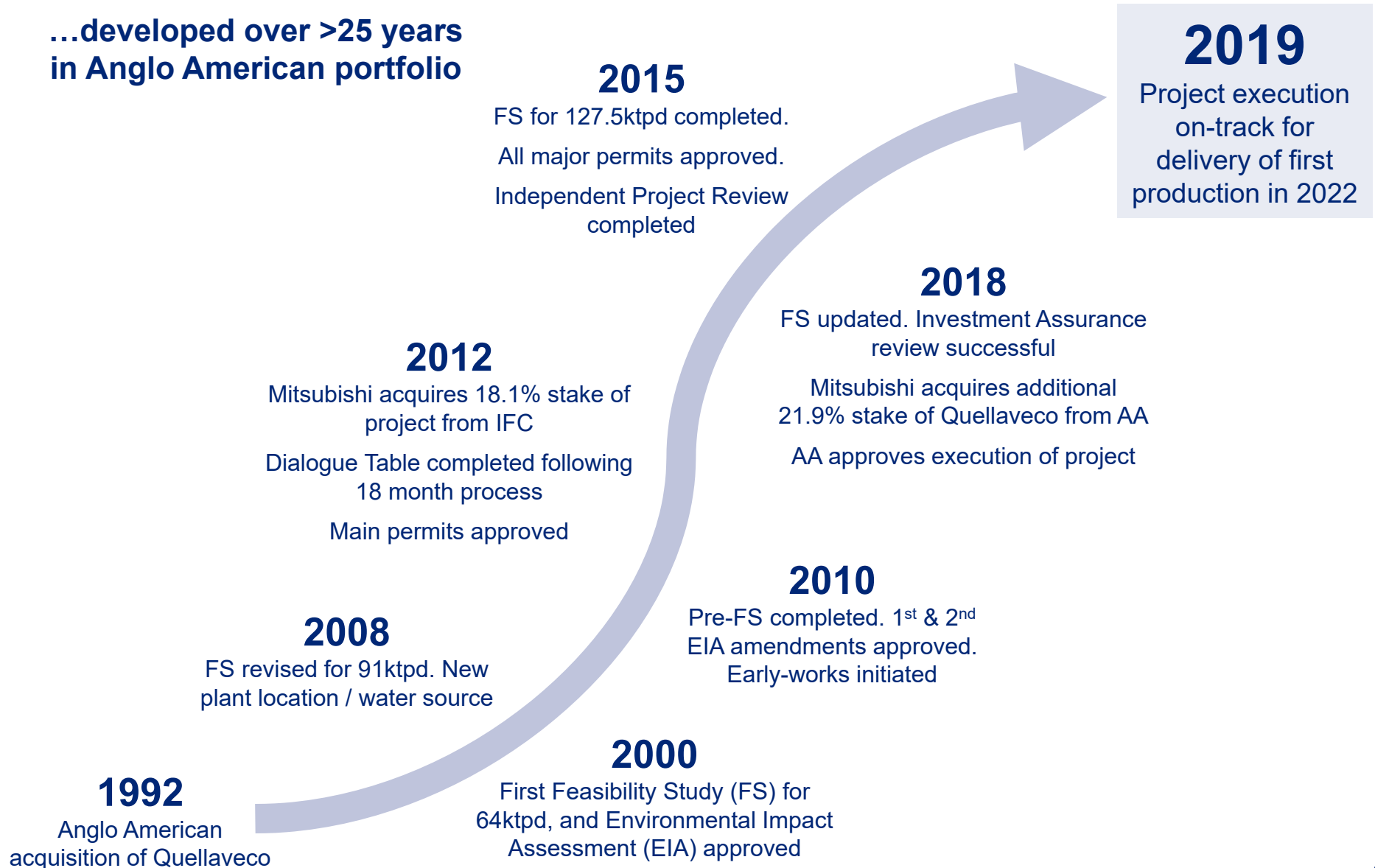
Once operational, Quellaveco will be one of the world's largest copper mines, and a major source of supply for an increasingly industrialised world

Source: Wood Mackenzie – Q3 Copper LTO with the exception of Quellaveco which is Anglo American data. Estimated output represents average for the first five years once operational.

# HISTORY OF THE PROJECT

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...developed over >25 years  
in Anglo American portfolio



# HIGHLY EXPERIENCED LEADERSHIP TEAM



<p><b>Tom McCulley</b> Chief Executive Officer</p>	<p><b>Christoff Kuhn</b> Project Director</p>	<p><b>Peter White</b> Chief Financial Officer</p>	<p><b>Tito Cacho</b> Operations</p>	<p><b>Diego Ortega</b> Corporate Affairs</p>	<p><b>Carlos Dominguez</b> Human Resources</p>	<p><b>Juan García-Montufar</b> Legal</p>
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- Anglo American Group Head of Projects
- Previously VP for Investments and Value Management at Newmont
- Extensive experience delivering large scale greenfield projects
- 5 years with Anglo American

- Management and Engineering Professional with 20+ years of experience
- Owner and EPCM project study and execution experience
- Previously Project Director for De Beers' Venetia Underground Project
- 9 years with Anglo American

- Qualified Chartered Accountant with 20 years of experience
- Previously served as Financial Controller for Anglo American Copper
- 12 years with Anglo American, having started career with PwC

- Qualified Mining Engineer and MBA with 20+ years of multi-commodity experience in the mining industry
- Global exposure including senior roles at Huby Minerals, First Quantum Minerals, Gold Fields and BHP Billiton across three continents

- Qualified Corporate Affairs, Social Performance and Legal Senior Executive with 19+ years of national and international experience in mining sector
- Previously held senior roles in mining law firms and MMG, Gold Fields and Rio Tinto

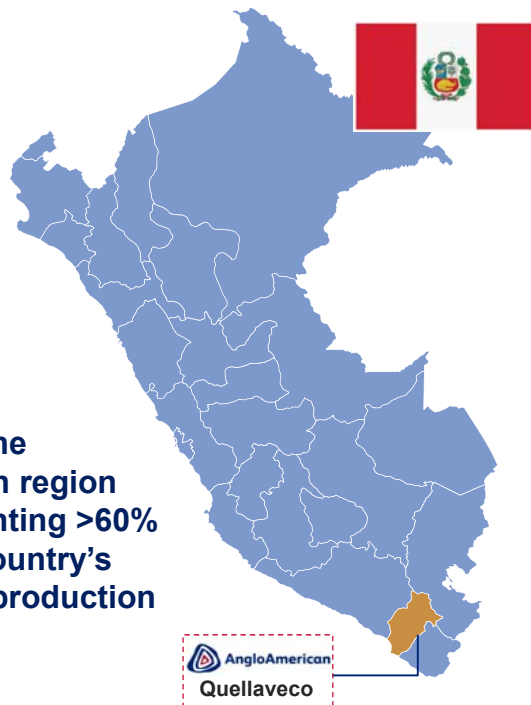
- 35 years of experience in various industries
- 10 years with Anglo American, as Head of HR for Peru
- Previously held senior HR management roles with other Peruvian mining companies including Milpo and Yanacocha

- Lawyer with 28 years of experience in the various fields of corporate and mining law.
- 9 years with Anglo American, as Legal Manager for Peru
- Previously, he worked as a partner at Estudio Rubio Leguía Normand and legal manager of Indecopi.

# MINING IS IMPORTANT TO THE PERUVIAN ECONOMY

The world's second largest producer of copper, with mining accounting for ~10% of GDP

- Small developing economy
- Democratic, centre-right politics with understanding of the importance of mining to the national economy
- 60% of exports come from mining...



- ...with the southern region representing >60% of the country's copper production

Importance of the Project acknowledged by Central, Regional and Local government

Central government	<ul style="list-style-type: none"> <li>• Government supports project execution</li> <li>• Legislation supports mining</li> </ul>
Regional / Local government	<ul style="list-style-type: none"> <li>• Acknowledges importance to regional economy</li> <li>• Expectant and supportive</li> <li>• Continuous engagement</li> </ul>

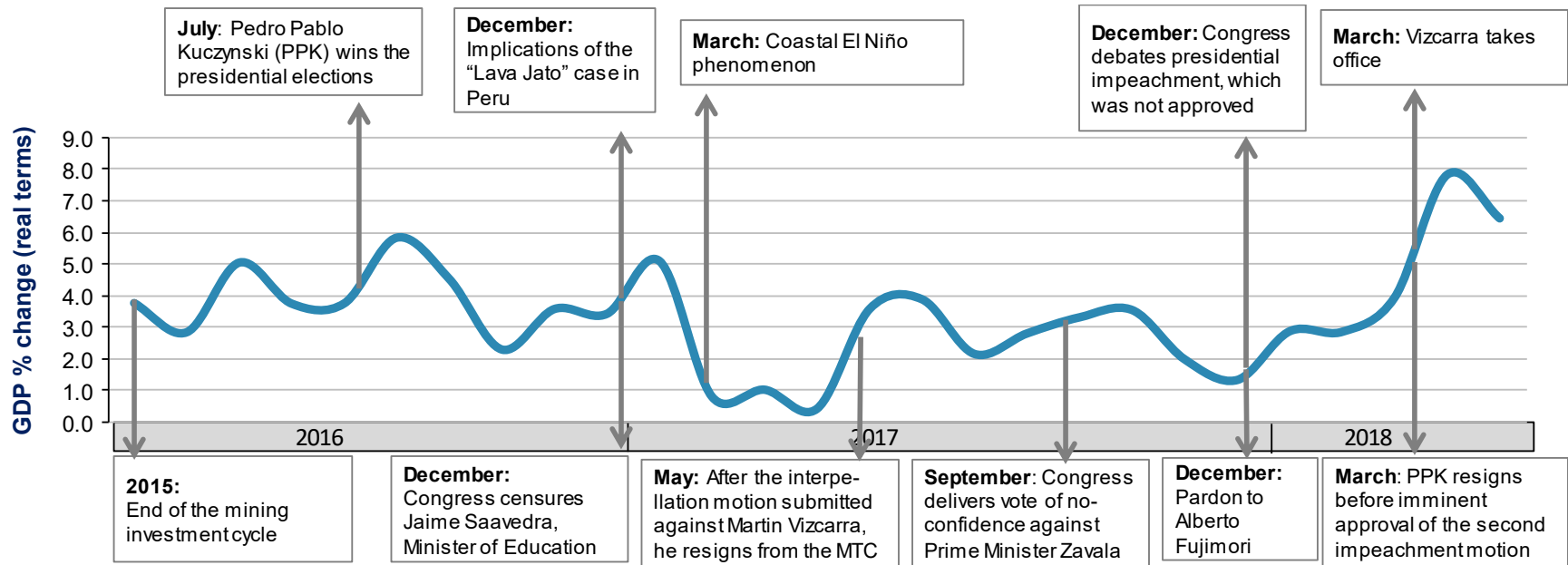
The south of Peru is an established mining location

- Fastest growing copper producing region in Peru
- Hosts many of the world's foremost mining companies
- Established infrastructure and skilled workforce
- Clear policy and regulatory framework
- Expectation management is key



# RESILIENT ECONOMIC GROWTH

Peru has seen positive economic growth in spite of “El Niño”, corruption scandals, and political crises



Source: Central Bank of Peru, Apoyo Consultoria

# QUELLAVECO: A MAJOR CONTRIBUTOR TO PERU

## Employment



- **Largest employer in Moquegua:** ~5,600 local people employed on project, >90% of unskilled workforce
- **Top 10 employer in Peru:** ~14,000 people employed in total
- **Training:** ~1,200 local people on “Developing capabilities for the future” program, developing skills to work across a range of industries

## Procurement



- **~\$50-75 million** purchased from local suppliers
- **Local procurement prioritised**
- Goods and services purchased from **>300 local suppliers**
- **Supplier fairs**, bringing contractors together with local suppliers

## Economy



- Total investment in Quellaveco represents **twice the total GDP** of Moquegua
- Once operational, Quellaveco will represent **~12% of Peruvian copper** production, a **~6% increase...**
- ...and will add **~3% to income from copper exports**
- As well as contributing direct taxes for **regional communities** through canon

## Water infrastructure



- **Community water requests prioritised** in project development plans
- Vizcachas dam to deliver **better quality and consistent quantities** of water to Moquegua and Tambo regions
- Water for mining operations to mainly come from water not fit for human, livestock or agricultural use due to naturally high salt, boron and arsenic
- **~\$400 million** to be invested in water infrastructure during construction phase

## Social investment



- Programs focused on **education, local enterprise, rural development, water** and the **environment**
- Develop Moquegua into **the mining technology hub** in Peru. **~\$10-15 million** to be invested in a Technical Institute to create a centre of excellence
- Training for operating / maintenance of mining and construction equipment for local community
- Internship for local university students (~70% female participation)
- Training courses to improve negotiating, administrative and management skills
- Support for small local farmers
- **~\$300 million** to be invested in social projects over next 30 years, of which **~\$30 million** recently brought forward to construction stage

# COMMITTED TO WORKING WITH LOCAL COMMUNITIES

**Dialogue Table focused on three key areas...**

## **Water**

Supply and optimal use of water resources



## **Environment**

Compliance and monitoring of environmental commitments



## **Local stakeholders**

Sustainable development projects



**...with firm commitments**

# 26

Agreements directly from the Dialogue Table

# 31

Bodies from 3 different municipalities

# ~\$300m

Community investment commitment over next 30 years

# LICENCE TO OPERATE TO UNDERPIN PROJECT SUCCESS

Sustainability at the heart of Anglo American purpose, central to Quellaveco's development

## Safety and Health

### Safety

- Comprehensive health and safety programme based on principles and values of Anglo American and Fluor
- Zero-harm objective

### Health

- Support health and sanitation, and assist communities in obtaining access to required services
- Support reduction of malnutrition, infant mortality, and improvement in living conditions
- Joint effort to fight anaemia



## Environment

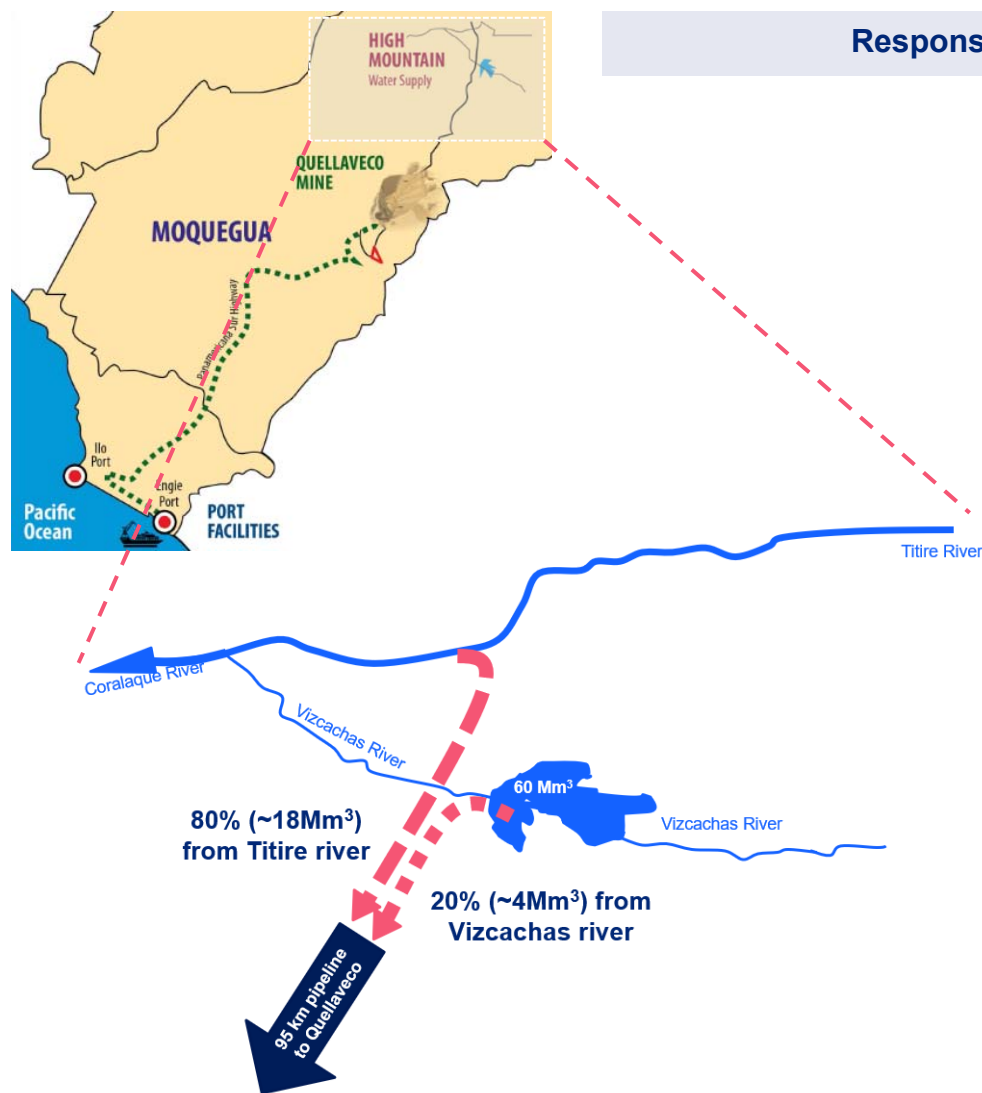
### Policy & Programme

- Robust environmental programme
- Environmental controls and water scheme reviewed and accepted by local communities
- Regular, scheduled monitoring of air, water, noise, flora and fauna in place with local residents' participation
- Segregate waste, establish recycling and manage the proper disposal of waste
- Full compliance with commitments and no major incidents to date



Evaporation balls on water ponds to prevent loss of water

# DELIVERING IMPROVED QUALITY AND VOLUME OF WATER TO LOCAL COMMUNITIES



## Responsibly sourced water for operations

Water for operational phase to come from two sources in High Mountain region:

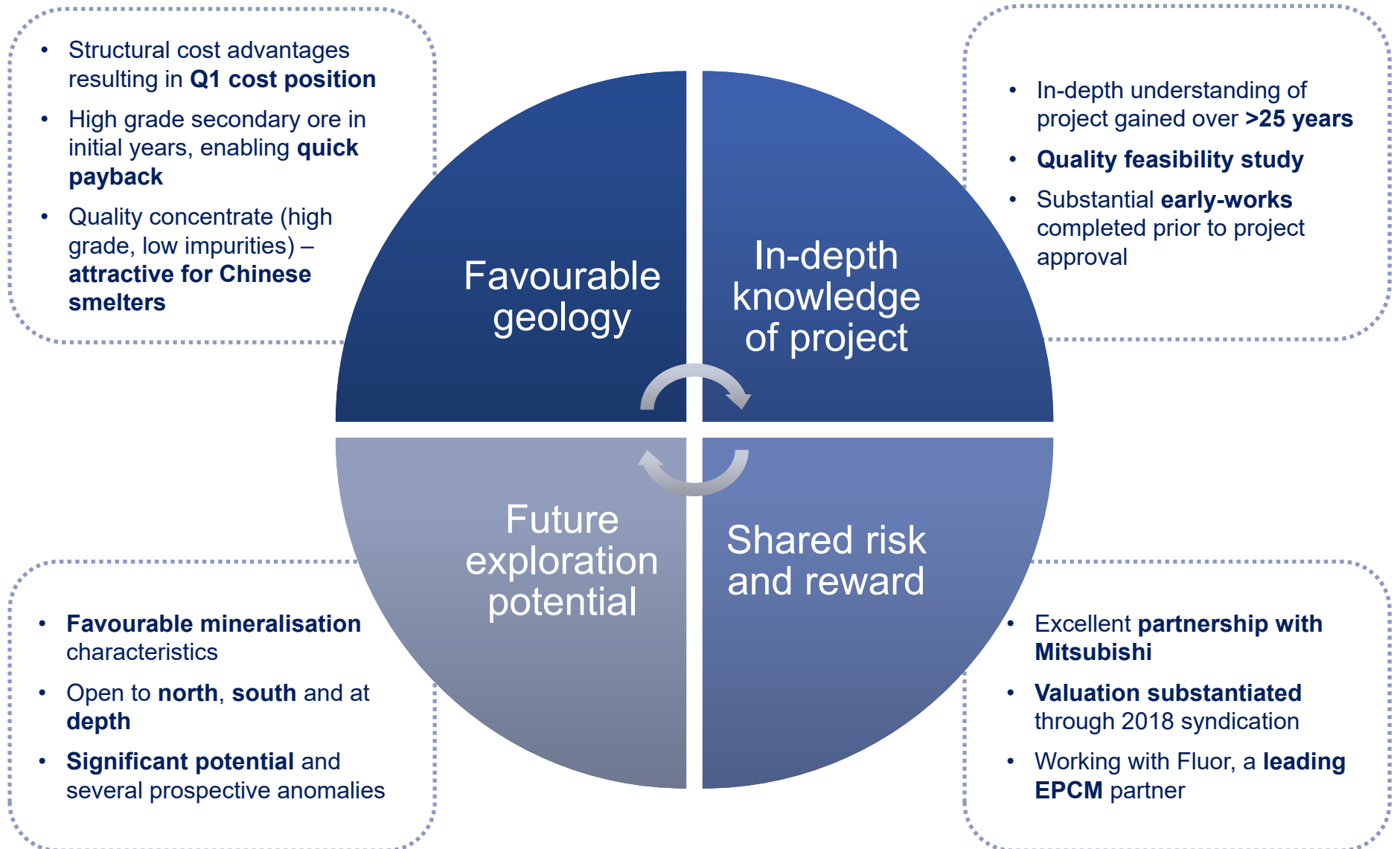
- 80% (18Mm<sup>3</sup>) from **Titire River**: unfit for human, livestock or agricultural use due to naturally high salt, boron and arsenic
- 20% (4Mm<sup>3</sup>) from **Vizcachas reservoir**:
  - 60Mm<sup>3</sup> capacity dam and reservoir under construction
  - Operation will use only 4Mm<sup>3</sup> p.a.
  - Will provide better quality and volume of water to Moquegua and Tambo regions
- Water for the operation to be transported to site via 95km water pipeline. Downstream flow, no pumping required.

### Maximum permissible limit (ppm)

	Titire River	ECA <sup>1</sup>	FAO <sup>2</sup> , WHO <sup>3</sup>
Arsenic	1.2	0.05	0.05
Boron	47.2	0.5 – 6	0.5 – 6

1. Peruvian Environmental Authority; 2. UN Food and Agricultural Organisation; 3. World Health Organisation

# QUELLAVECO: QUALITY AND OPPORTUNITY



# ATTRACTIVE GEOLOGY: HIGH GRADE ORE IN 4 YEAR PAYBACK PERIOD

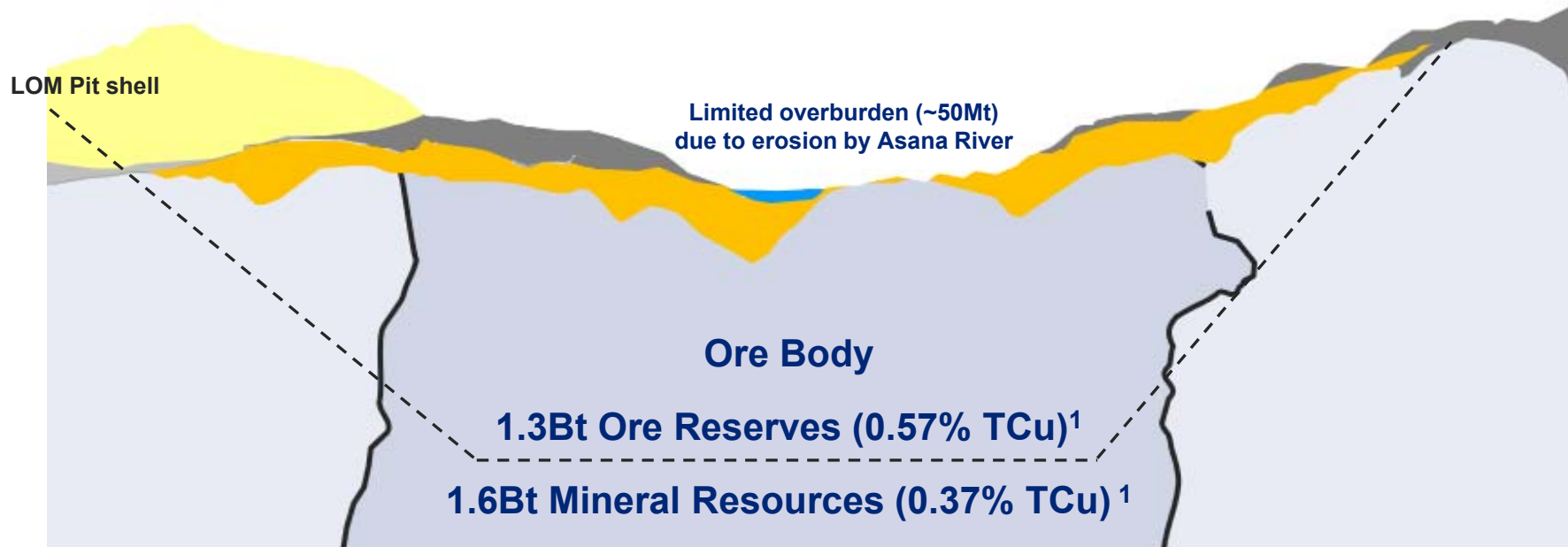
...with high degree of confidence in ore body

First five years:

~330ktpa production

0.84% TCu grade

>90% Proved Reserves



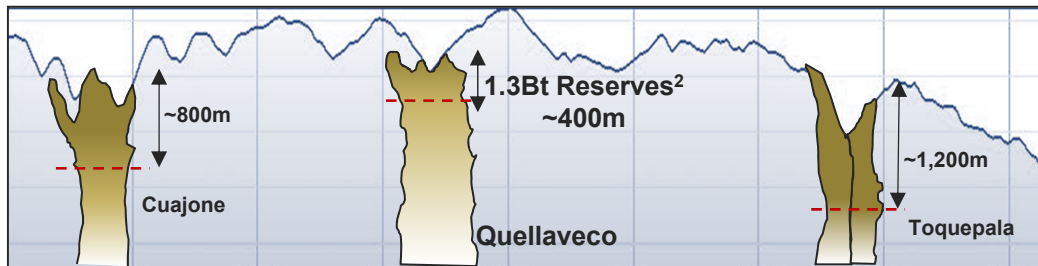
**In payback period: Softer, near-surface, easily accessible high-grade secondary ore**

Please refer to the AA plc Ore Reserves and Mineral Resources Report 2018 for the tonnes, grades and a breakdown of the classification

# 30-YEAR RESERVE LIFE WITH SIGNIFICANT POTENTIAL

## Favourable mineralisation characteristics

4,000m above sea level



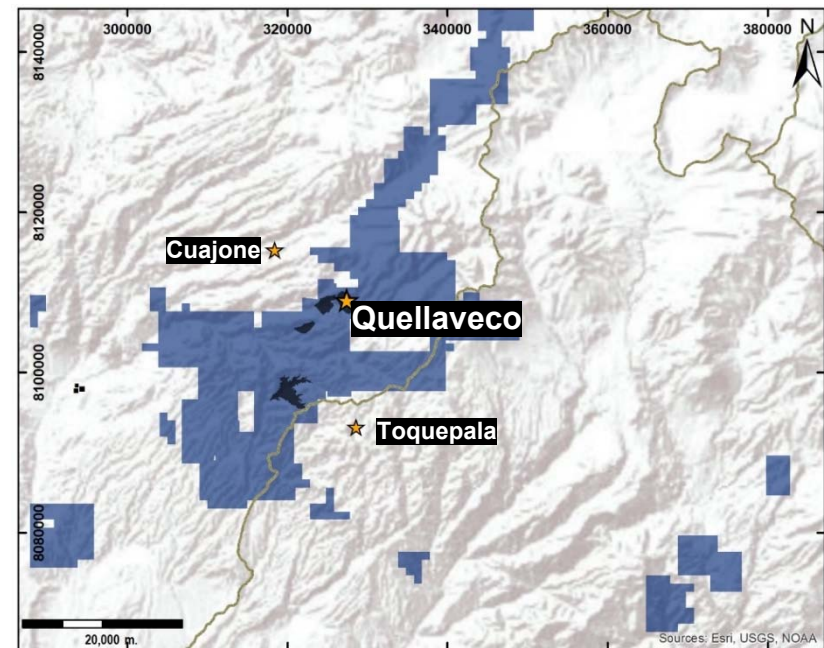
2,000m above sea level

Mineralisation open at depth, to north and to south

Neighbouring mines operating >40 years and 2-3x deeper

## Quellaveco at start of its resource journey

Quellaveco licence area: significant potential and several prospective anomalies



Anglo American Tenements



# STRUCTURAL COST ADVANTAGES

Ore body uncovered through erosion by Asana River, leading to low strip ratio of 0.8x

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# STRUCTURAL COST ADVANTAGES: LOW-COST MINING

Open-pit operation, with optimal design based on latest resource block model

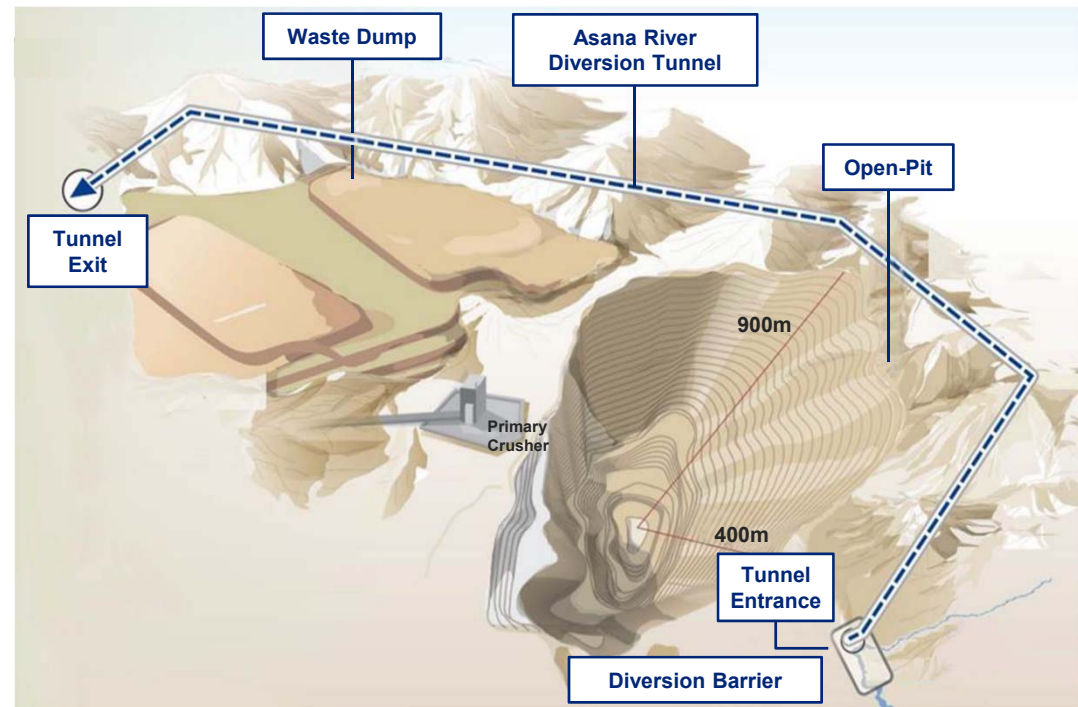
## Low strip-ratio

- Ore body uncovered through erosion by the Asana River...
- ...leading to low strip ratio of 0.8x (LOM)

## Efficient hauling

- Central location of primary crusher...
- ...leading to short haulage distances, with downhill loaded cycle for most of first ten years

## Competitive labour and power costs



# WHAT ARE WE BUILDING...

Construction on-track for first production in 2022

## Tailings Dam

- Downstream method, designed and reviewed by world-leading experts



## Temporary Facilities

- Workers camp
- Concrete batch plants



## Infrastructure

- Port expansion
- Power lines and substation
- Access roads



## High Mountain Water

- Vizcachas River: dam and reservoir
- 95km water pipeline to transport water to plant



## Quellaveco Mine

- Asana River diversion system
- Pre-strip of ~50Mt



## Papujune Plant

- Conventional processing plant
- Two grinding lines: one SAG and one Ball Mill each, with space for third line



# INDUSTRY LEADING DAM SAFETY MANAGEMENT

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## Quellaveco tailings safety management

- **Downstream** method of construction applied; earthfill starter dam, followed by compacted cycloned sands, per our industry-leading standards
- **~1.3 billion tonnes** storage capacity
- **Rigorous independent reviews** by a number of world leading tailings dam construction experts
- **Water to be recovered** and returned to processing plant, with recycling industry target of less than 0.4 m<sup>3</sup> per tonne
- **Latest technology in dam monitoring to be applied**, including satellite radar, drone inspections, in-situ fibre optic instrumentation, and dedicated seismic instrumentation monitoring
- Internal dedicated Quellaveco **governance structure** will be set up for dam monitoring, surveillance, Quality Assurance / Quality Control, and training of site personnel
- **Research program** and collaboration with Canadian instrumentation company and Peruvian University planned to start in 2020
- Toured the three largest dams in the world to **learn operating practises**



# KEY ACHIEVEMENTS TO DATE

## Project execution on-track



- ✓ Engineering well-advanced
- ✓ Contracting and procurement nearing completion
- ✓ Long-term low-cost power supply agreement in place
- ✓ ~14,000 workers employed today, ~5,600 from local community

## All major milestones achieved on time...



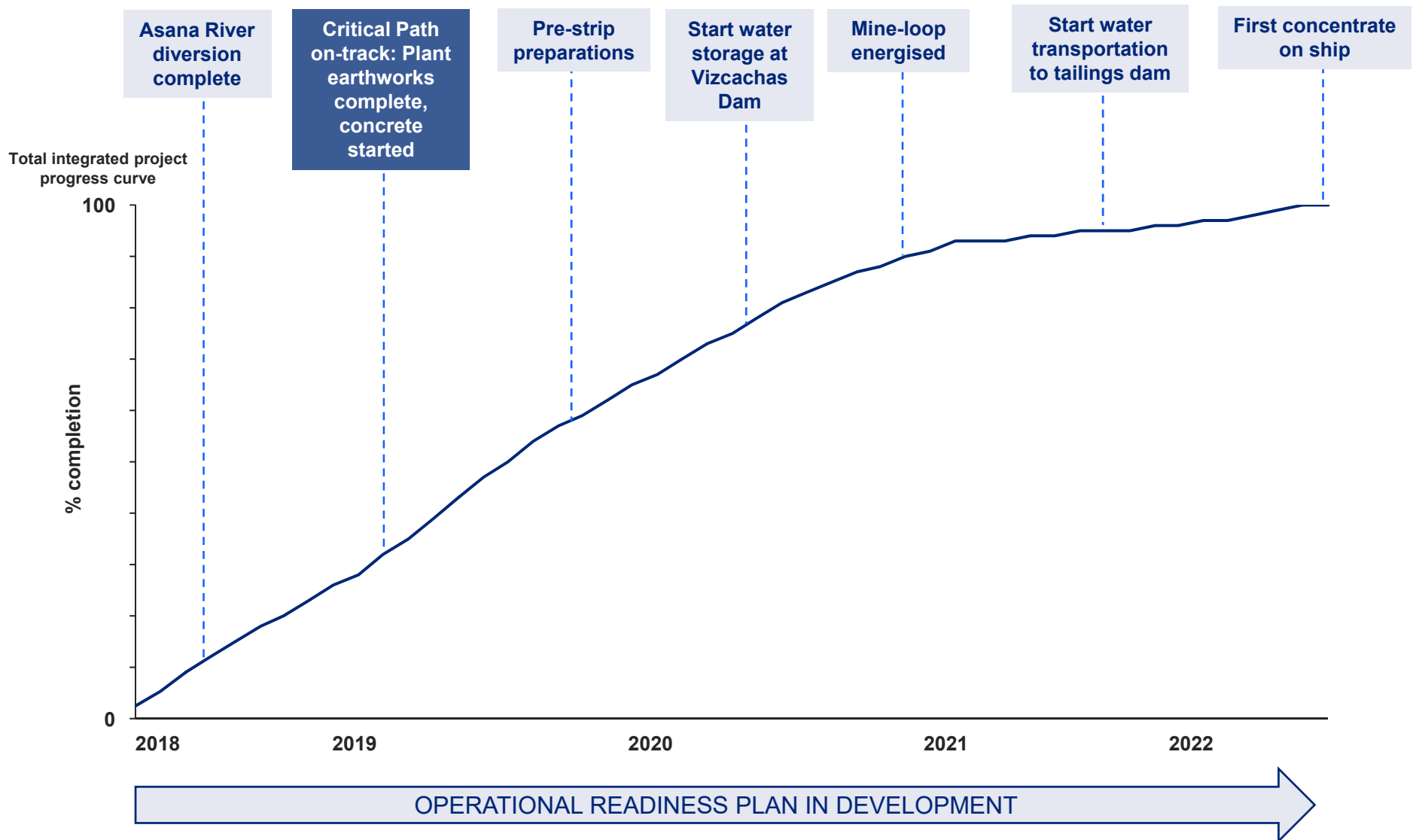
- ✓ All work areas mobilised
- ✓ Asana and Vizcachas River diversions complete
- ✓ Main Access Road
- ✓ Workers camp and multipurpose building complete
- ✓ Plant earthworks complete
- ✓ Mass concrete placement at plant site begun

## ...and on-track for next set of milestones



- Structural steel pre-assembly
- Tailings starter dam
- Tunnel excavations for overland conveyor
- Preparations for pre-stripping on-track
- Vizcachas Dam progressing

# SCHEDULE TO COMPLETION



# QUELLAVECO IN NUMBERS



**>14,000**  
workers employed at  
peak construction



**>300**  
local suppliers



**2.5 million**  
metres of cabling



**+\$300m**  
social investment  
over 30 years

**19,000**  
tonnes of steel



**25,000**  
meals served daily



**50 million tonnes**  
Pre-stripping



**310,000m<sup>3</sup>**  
of concrete



**7.8km**  
river diversion  
system



**8.7 million**  
evaporation balls on ponds  
to prevent water loss



**60 million m<sup>3</sup>**  
water dam being built



**>60,000**  
Individuals from  
protected species  
rescued