

GLENCORE
Resources & Reserves
as at 31 December 2019

Contents

	Page number
About this report	2
Definitions	4
Metals and Minerals:	
Copper	5
Zinc	19
Nickel	37
Ferroalloys	41
Aluminium/Alumina	45
Iron ore	46
Energy Products:	
Coal	50
Oil	69

About this report

We report our resources and reserves in accordance with the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code), the 2016 edition of the South African Code for Reporting of Mineral Resources and Mineral Reserves (SAMREC), the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves (2014 edition) and the Petroleum Resources Management System (PRMS) for reporting oil and natural gas Reserves and Resources.

Overview

The resource and reserve data in the following tables are as at 31 December 2019, unless otherwise noted. For comparison purposes, data for 2018 has been included.

Metric units are used throughout.

All data is presented on a 100% asset basis, with the Glencore attributable percentage shown against each asset, with the exception of Oil assets which are shown on a working interest basis.

All tonnage information has been rounded to reflect the relative uncertainty in the estimates; there may therefore be small differences in the totals.

The Measured and Indicated resources are reported inclusive of those resources modified to produce reserves, unless otherwise noted.

Commodity prices and exchange rates used to establish the economic viability of reserves are based on long-term forecasts applied at the time the reserve was estimated.

Where resources and reserves have not been updated, on the basis that the information has not materially changed since it was reported under JORC 2004, this information has not been updated to comply with the JORC code 2012. Reference is given in the report where this is the case.

Copper

The Copper Mineral Resources and Ore Reserves Statement at 31 December 2019 has been compiled in accordance with the JORC Code.

The Mineral Resources and Ore Reserves statements have been reviewed and the relevant data extracted and compiled by Mark Jamieson, Glencore Copper.

Zinc

The Zinc Mineral Resource and Ore Reserve Statement at 31 December 2019 has been compiled in accordance with the JORC Code.

The term 'Ore Reserves', as defined in Clause 28 of the JORC Code, has the same meaning as 'Mineral Reserves' as defined in the CIM Definition Standards for Mineral Resources and Mineral Reserves.

The Mineral Resource and Ore Reserve statements have been reviewed and the relevant data extracted and compiled by Aline Cote, Glencore Zinc (OGQ).

Nickel

The Canadian and New Caledonian Mineral Resources and Mineral Reserves estimates are prepared in accordance with the CIM Definition Standards on Mineral Resources and Mineral Reserves, adopted by CIM Council on 10 May 2014, and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines, adopted by CIM Council on 23 November 2003, and have been compiled using geo-statistical and/or classical methods, plus economic and mining parameters appropriate to each project.

The Mineral Resource and Ore Reserve estimates at Murrin in Australia have been prepared in accordance with the JORC Code.

The Mineral Resource and Ore Reserve statements have been reviewed and the relevant data extracted and compiled by Steve Kormos, Glencore Nickel.

Ferroalloys

South African chromite, vanadium and PGM's (platinum group metals) Mineral Resources and Ore Reserves in this report were prepared in accordance with the JORC Code.

The Chromite, Vanadium and PGM's Mineral Resource and Ore Reserve Statement at 31 December 2019 is based on the Glencore Ferroalloys "Procedure for the Estimation of Mineral Resources and Ore Reserves". Definitions of all the terms used in this report can be found in the relevant code.

The Mineral Resource and Ore Reserve statements have been reviewed and the relevant data extracted and compiled by Pieter-Jan Gräbe, Glencore Ferroalloys (SACNASP).

Iron Ore

Iron ore Mineral Resources and Ore Reserves have been compiled in accordance with the JORC Code, unless otherwise stated in the notes for a particular Mineral Resource and Ore Reserve.

Iron Ore Mineral Resources and Ore Reserves have not been re-estimated since 2015.

Coal

Australian, Canadian and Colombian Coal Resources and Reserves have been prepared in accordance with the JORC Code.

South African Coal Resources and Reserves have been prepared in accordance with the 2016 edition of the South

About this report

African Code for Reporting of Mineral Resources and Mineral Reserves (SAMREC).

The Coal Resource and Reserve Statements as at 31 December 2019 conform to the requirements of these Codes and are consistent with Glencore Coal's internal Coal Resource and Reserve Estimation and Reporting Standard.

Coal resources have been estimated for all coal seams that have reasonable prospects for eventual economic extraction by open cut or underground mining methods within mining leases or exploration licences. In general, Coal Resources are reported within a geoshell limited by the areal and depth extent of the drill holes; i.e. there is very little inclusion of Coal Resources extrapolated beyond the extent of the geological data.

Coal Resources are excluded from those areas where the seam has been extracted or sterilised by mining.

All tonnage information has been rounded to reflect the relative uncertainty in the estimates; there may therefore be small differences in the totals.

Coal Resource and Reserve totals are rounded to appropriate levels of accuracy in accordance with the Glencore Coal rounding procedures. The following table summarises the data rounding assumptions for the 2019 report.

Classification	Tonnage Range	Rounding
Measured + Indicated Resources / Proved + Probable Reserves	< 10Mt	1 significant figure
	10Mt - 30Mt	2 significant figures
	30Mt - 100Mt	Nearest 5Mt
	> 100Mt	2 significant figures
	>1000Mt	Nearest 50Mt
Inferred	< 100Mt	Nearest 10Mt
	100Mt - 400Mt	Nearest 50Mt
	> 400Mt	Nearest 100Mt

Values expressed in the text have not been rounded and therefore do not correlate directly with the tables.

Coal Reserves are rounded to the same assumptions as Measured and Indicated Coal Resources above.

Individual tonnage assessments are added to show Group or Complex tonnages and geographical accumulations. These are not subjected to further rounding.

The Coal Resource and Reserve Competent Person statements have been reviewed and the relevant data extracted and compiled by Matthew White, Glencore Coal.

Oil

Oil and natural gas Resources and Reserves have been prepared in accordance with the PRMS jointly published by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists and the Society of Petroleum Evaluation Engineers, as amended.

The Oil Reserves statement has been reviewed and the relevant data extracted and compiled by McDaniel & Associates.

The Oil Resources statements for Equatorial Guinea, Chad and Cameroon have been reviewed and the relevant data extracted and compiled by Glencore.

Competent/Qualified Persons

Resource and reserve estimates are based on information compiled by Competent Persons (as defined by the JORC, SAMREC Codes), Qualified Persons (as defined by CIM Definition Standards for Mineral Resources and Mineral Reserves) and Adequately Qualified Persons (as defined by PRMS).

Each of the Competent/Qualified Persons has the appropriate professional membership and the relevant experience in relation to the resources and/or reserves being reported by them to qualify as a Competent or Qualified Person as defined in the relevant code or standard. Each has consented to the inclusion of their resource and reserve estimates in the form and context in which it appears in this report.

Definitions

Throughout this report, the following abbreviations and definitions have been used:

Technical and industry terms:

3PGE	Three Platinum Group Elements (Platinum, Palladium and Rhodium)	NSR	Net Smelter Return
CV	Calorific Value, kilo calories per (kcal/kg) kilogramme	OC	Open cast or Open cut
DTC	Davis Tube Concentrate	OR	Ore Reserves
EL	Exploration Licence	QQ	Quantile quantile plot, a geostatistical method to assess modelled data against actual data
Geoshell	A broad envelope limited by the depth and areal extent of geological data points (primarily drill holes)	ROM	Run of Mine
kt	Thousand tonnes	SX/EW	Solvent extraction and electrowinning
LOM	Life of Mine	UG	Underground
LOX	Limit of Oxidation	UG2	Upper Group No2 Chromitite layer
LOZ	Lower Oxidised Zone	VMS	Volcanogenic Massive Sulphide
Mt	Million tonnes		

Professional bodies and applicable standards:

AIG	Australian Institute of Geoscientists
APEGBC	Association of Professional Engineers and Geoscientists of BC
APEGGA	Association of Professional Engineers Geologists and Geophysicists of Alberta
APEGNB	Association of Professional Engineers and Geoscientists of New Brunswick
APGO	Association of Professional Geoscientists of Ontario
AusIMM	Australasian Institute of Mining and Metallurgy
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
ECSA	Engineering Council of South Africa
GSL	Geological Society of London
ICOG-EurGeol	Ilustre Colegio Oficial de Geólogos – European Geologist
JORC	Joint Ore Reserves Committee
OGQ	Ordre des Géologues du Québec
OIQ	Ordre des Ingénieurs du Québec
PEO	Professional Engineers of Ontario
PLATO	South African Council for Professional and Technical Surveyors
PRMS	Petroleum Resources Management System
QQ	Quantile quantile plot, a geostatistical method to assess modelled data against actual data
SACNASP	The South African Council for Natural Scientific Professions
SAMREC	South African Code for Reporting of Mineral Resources and Mineral Reserves

Marketable Coal Reserves (CIM/JORC) and Saleable Coal Reserves (SAMREC) are the tonnage and coal quality that will be available for sale, either in the raw ROM state at specific moisture content or after beneficiation of the ROM Coal Reserve has produced materials at specified qualities, moisture contents and size ranges.

Definitions of many of the terms used in this report can be found in the relevant codes.

Metals and Minerals

Copper

African Copper Mineral Resources (Katanga, Mutanda, Mopani)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Katanga												
Kamoto	74.6%	UG	Ore (Mt)	12.1	12.1	65.0	65.6	77.0	77.7	48.4	48.4	CS
			Copper (%)	3.90	3.90	3.93	3.92	3.92	3.92	3.83	3.83	
			Cobalt (%)	0.59	0.59	0.46	0.46	0.48	0.48	0.38	0.38	
T17 (OC&UG)	74.6%	UG/OC	Ore (Mt)	4.2	4.2	9.4	9.4	13.6	13.6	5.2	5.2	CS
			Copper (%)	2.66	2.66	4.44	4.44	3.89	3.89	4.21	4.21	
			Cobalt (%)	0.51	0.51	0.65	0.65	0.61	0.61	0.98	0.98	
Mashamba East	74.6%	OC	Ore (Mt)	–	–	52.9	57.8	52.9	57.8	14.6	15.9	CS
			Copper (%)	–	–	1.70	1.72	1.70	1.72	2.74	2.72	
			Cobalt (%)	–	–	0.64	0.63	0.64	0.63	0.52	0.51	
KOV OC, KOV UG, KTE	74.6%	OC	Ore (Mt)	–	–	104.0	106.8	104.0	106.8	77.4	77.6	CS
			Copper (%)	–	–	4.81	4.80	4.81	4.80	4.40	4.40	
			Cobalt (%)	–	–	0.53	0.53	0.53	0.53	0.38	0.38	
Kananga	74.6%	OC	Ore (Mt)	–	–	4.1	4.1	4.1	4.1	4.0	4.0	CS
			Copper (%)	–	–	1.61	1.61	1.61	1.61	2.00	2.00	
			Cobalt (%)	–	–	0.79	0.79	0.79	0.79	0.98	0.98	
Tilwezembe	74.6%	OC	Ore (Mt)	–	–	9.5	9.5	9.5	9.5	13.8	13.8	CS
			Copper (%)	–	–	1.89	1.89	1.89	1.89	1.75	1.75	
			Cobalt (%)	–	–	0.60	0.60	0.60	0.60	0.60	0.60	
KITD	74.6%		Ore (Mt)	–	–	3.8	6.1	3.8	6.1	–	–	CS
			Copper (%)	–	–	1.42	1.44	1.42	1.44	–	–	
			Cobalt (%)	–	–	0.17	0.17	0.17	0.17	–	48.4	
Total Katanga			Ore (Mt)	16	16	249	259	265	276	163	165	
			Copper (%)	3.58	3.58	3.69	3.60	3.68	3.60	3.8	3.78	
			Cobalt (%)	0.57	0.57	0.54	0.54	0.54	0.54	0.45	0.44	
Mutanda												
Mutanda South	100%	OC	Ore (Mt)	330.1	356.0	76.8	234.1	406.9	590.1	16.2	60.2	RH
			Copper (%)	1.36	1.44	0.96	0.83	1.28	1.20	0.68	0.81	
			Cobalt (%)	0.56	0.49	0.42	0.26	0.53	0.40	0.55	0.22	
	100%	UG	Ore (Mt)	28.8	–	9.1	–	37.9	–	–	–	RH
			Copper (%)	1.86	–	1.14	–	1.69	–	–	–	
			Cobalt (%)	0.51	–	0.49	–	0.51	–	–	–	
Mutanda North	100%	OC	Ore Mt	9.0	48.1	9.9	29.1	18.9	77.2	0.4	58.9	RH
			Copper (%)	1.14	0.73	0.88	0.51	1.00	0.65	2.27	0.48	
			Cobalt (%)	0.47	0.34	0.57	0.14	0.52	0.26	0.04	0.08	
Total Mutanda			Ore (Mt)	368	404	96	263	464	667	17	119	
			Copper (%)	1.39	1.36	0.97	0.79	1.31	1.14	0.72	0.65	
			Cobalt (%)	0.55	0.47	0.44	0.25	0.53	0.38	0.53	0.15	

Metals and Minerals Copper

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Mopani												
Nkana	73.1%	UG	Ore (Mt)	155.9	157.2	49.0	49.0	204.8	206.2	48.8	48.8	CS
Sulphides			Copper (%)	2.06	2.06	2.00	2.00	2.05	2.05	1.97	1.97	
			Cobalt (%)	0.10	0.10	0.11	0.11	0.10	0.10	0.12	0.12	
Nkana	73.1%	UG/OC	Ore (Mt)	7.2	7.2	1.8	1.9	9.0	9.2	1.5	1.5	CS
Oxides			Copper (%)	2.27	2.25	1.95	1.92	2.20	2.18	1.89	1.89	
			Cobalt (%)	0.03	0.03	0.06	0.06	0.04	0.04	0.04	0.04	
Nkana	73.1%		Ore (Mt)	–	–	5.7	5.7	5.7	5.7	0.8	0.8	CS
Tailings			Copper (%)	–	–	0.71	0.71	0.71	0.71	0.94	0.94	
Dump			Cobalt (%)	–	–	0.07	0.07	0.07	0.07	0.07	0.07	
Mufulira	73.1%	UG	Ore (Mt)	31.8	32.1	15.9	15.9	47.7	48.0	21.9	21.9	CS
Sulphides			Copper (%)	2.43	2.44	2.57	2.57	2.48	2.48	2.42	2.42	
Mufulira	73.1%	UG	Ore (Mt)	8.8	8.8	2.0	2.0	10.7	10.7	1.3	1.3	CS
Oxides			Copper (%)	1.19	1.19	0.9	0.9	1.14	1.14	0.81	0.81	
Mufulira	73.1%		Ore (Mt)	3.0	3.0	1.8	1.8	4.9	4.9	1.3	1.3	CS
Surface			Copper (%)	1.81	1.81	1.8	1.8	1.81	1.81	1.76	1.76	
Total Mopani			Ore (Mt)	207	208	76	76	283	285	76	76	
			Copper (%)	2.08	2.08	1.99	1.99	2.06	2.06	2.06	2.06	
			Cobalt (%)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	

Metals and Minerals Copper

African Copper Ore Reserves (Katanga, Mutanda, Mopani)

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Katanga										
Kamoto	74.6%	UG	Ore (Mt)	6.4	6.5	19.5	20.1	25.8	26.6	JL
			Copper (%)	3.61	3.60	3.32	3.34	3.39	3.40	
			Cobalt (%)	0.56	0.56	0.54	0.53	0.54	0.54	
T17 (OC & UG)	74.6%	UG/OC	Ore (Mt)	2.2	2.2	9.1	9.1	11.3	11.3	JL
			Copper (%)	3.42	3.42	3.71	3.71	3.65	3.65	
			Cobalt (%)	0.54	0.54	0.64	0.64	0.62	0.62	
Mashamba East	74.6%	OC	Ore (Mt)	–	–	28.4	31.6	28.4	31.6	JL
			Copper (%)	–	–	2.06	2.15	2.06	2.15	
			Cobalt (%)	–	–	0.62	0.60	0.62	0.60	
KOV OC, KOV UG, KTE	74.6%	OC	Ore (Mt)	–	–	54.4	57.5	54.4	57.5	JL
			Copper (%)	–	–	3.74	3.72	3.74	3.72	
			Cobalt (%)	–	–	0.48	0.48	0.48	0.48	
KITD	74.6%		Ore (Mt)	–	–	3.6	5.7	3.6	5.7	JL
			Copper (%)	–	–	1.41	1.44	1.41	1.44	
			Cobalt (%)	–	–	0.17	0.17	0.17	0.17	
Total Katanga			Ore (Mt)	9	9	115	124	124	133	
			Copper (%)	3.56	3.56	3.18	3.15	3.20	3.18	
			Cobalt (%)	0.56	0.55	0.53	0.51	0.53	0.52	
Mutanda										
Mutanda South Oxide Ore	100%	OC	Ore (Mt)	20.6	29.6	0.8	2.2	21.3	31.8	JP
			Copper (%)	1.71	1.87	0.80	1.03	1.68	1.81	
			Cobalt (%)	0.91	0.85	0.72	0.68	0.90	0.84	
Transitional Ore	100%	OC	Ore (Mt)	–	17.5	18.7	1.1	18.7	18.6	JP
			Copper (%)	–	2.19	2.01	1.49	2.01	2.15	
			Cobalt (%)	–	0.79	0.80	0.80	0.80	0.79	
Sulphide Ore	100%	OC	Ore (Mt)	–	–	59.6	48.7	59.6	48.7	JP
			Copper (%)	–	–	1.46	1.83	1.46	1.83	
			Cobalt (%)	–	–	0.74	0.58	0.74	0.58	
Stockpiles	100%		Ore (Mt)	27.8	32.8	2.6	–	30.4	32.8	JP
			Copper (%)	1.09	1.26	1.84	–	1.16	1.26	
			Cobalt (%)	0.41	0.52	0.63	–	0.43	0.52	
Total Mutanda			Ore (Mt)	48	80	82	52	130	132	
			Copper (%)	1.36	1.69	1.59	1.79	1.51	1.73	
			Cobalt (%)	0.62	0.70	0.75	0.59	0.70	0.66	
Mopani										
Nkana Sulphides	73.1%	UG	Ore (Mt)	93.5	94.5	23.6	25.4	117.1	119.9	JL
			Copper (%)	1.85	1.84	1.72	1.79	1.82	1.83	
Mufulira Sulphides	73.1%	UG	Ore (Mt)	16.5	16.7	7.3	7.3	23.8	24.0	JL
			Copper (%)	2.21	2.21	2.30	2.30	2.24	2.24	
Total Mopani			Ore (Mt)	110	111	31	33	141	144	
			Copper (%)	1.90	1.90	1.85	1.90	1.89	1.90	

Metals and Minerals Copper

Notes

Katanga: Remaining life of mine: expected to be in excess of 20 years. Expiry date of relevant permits: 7 May 2022 for the Kananga Extension and 3 April 2024 for all remaining permits (Kamoto and Mashamba East Open Pit, T-17 Open Pit, KOV Open Pit, Tilwezembe Open Pit, Kananga Mine), renewable in accordance with the DRC mining code for a period of 15 years.

Glencore is the majority shareholder in Katanga Mining Limited ("KML"), which owns 75% of Kamoto Copper Company SA ("KCC"). Following a rights issue at KML level in December 2019, Glencore's ownership interest in KML increased from 86.3% to 99.5%. KCC owns the material assets, including the mining and exploration rights related to the mining assets. La Generale des Carrieres et des Mines ("GCM") and La Société Immobilière du Congo, which are state-owned mining companies in the DRC, own the other 25% of KCC.

With the exception of Tilwezembe, the primary sulphide mineralisation within the Lower Roan, Orebody Inferior, is associated with Stratified Dolomite and Silicified Rock. The primary sulphides in the Orebody Superior is associated with the Basal Schists and Upper Dolomitic Shales and is thought to be sys-sedimentary in origin. Typical primary copper sulphide minerals are bornite, chalcocite, chalcocite and occasional native copper while cobalt is in the form of carrollite. The mineralisation occurs as disseminations or in association with hydrothermal carbonate alteration and silicification.

The mineralisation at Tilwezembe Mine is atypical being hosted by the Mwashya or R4 Formation. The mineralisation generally occurs as infilling of fissures and open fractures associated with the brecciation. The typical copper minerals are mainly chalcocite, malachite and pseudomalachite while cobalt is in the form of heterogenite, carrollite and sphaerocobaltite. Manganese minerals are psilomelane and manganite.

Mineral Resources and Ore Reserves decreased from 2018 to 2019 due to mining depletion.

Mutanda

Overall Mineral Resources decreased by 306Mt from 2018 to 2019, reflecting a revised cut-off grade methodology and physical constraints applied in the light of potential economic extraction. A pit optimisation shell was applied to the open pit mineral resource, and an economic zone of potential mining was applied to the underground resource. As a result:

- Mutanda North Mineral Resources decreased by 116Mt
- Mutanda South Mineral Resources decreased by 189Mt

The Ore Reserve estimate for Mutanda decreased by 2Mt from 2018 to 2019 mainly as a result of mining depletion. Some mining depletion was offset by changes to the sulphide Ore Reserves as a result of economic evaluation completed in 2019.

A feasibility study of processing sulphide ore from concentrates to cathode on site using a new sulphides concentrator and Albion Process leach plant with the existing SXEW infrastructure yielded positive results, which have been used to update the sulphide Ore Reserves.

The Mutanda sulphide Ore Reserves are categorized as probable due to uncertainty around certain modifying factors, chiefly the processing plant recovery of partially-oxidised

sulphides, which requires more test work to understand and could potentially require modifications to the concentrator design. Further integrated studies on mining and processing of sulphide ore will be undertaken in 2020.

An investment decision on sulphide ore mining and processing will be considered upon completion of the updated integrated study.

Remaining mine life: estimated at approximately 20 years (assuming approval and investment in sulphide ore processing, described below). Expiry date of relevant mining permits: 26 May 2022 for Mutanda South and 5 May 2022 for Mutanda North. Both mining permits are renewable in accordance with the DRC mining code for periods of 15 years.

The Mutanda oxides operation was placed on care and maintenance in November 2019 in response to various factors which have resulted in the operations ceasing to be economically viable in current market conditions, including the significant decrease in the cobalt price, combined with inflation in key input costs. The additional taxes imposed by the new Mining Code have also exacerbated the financial position of the operation.

Mopani: Remaining life of mine: 26 years for Nkana and 16 years for Mufulira. Expiry date of relevant mining/ concession licences: 31 March 2025 for both of these mines. Licences are renewable in accordance with the provisions of the relevant laws of Zambia.

Within the Nkana mining area there are four underground mines and a series of open pits. All the open pits are exhausted except "Area Nose" and area J, both of which were placed on care and maintenance in 2019.

All the mines are situated on the north-eastern limb of the Nkana Syncline area. The orebodies are stratiform and are mainly confined to a recognisable ore formation, which occurs near the base of the Katangan sequence within the Lower Roan Group of the Mine Series. In the underground workings, the principal copper ore minerals are chalcocite and bornite with subordinate chalcocite. There is a zoning in the geographical distribution of these minerals. Cobalt occurs as carrollite and cobaltiferous pyrite. In the open pits, malachite and chrysocolla are the principal ore minerals in the oxidation closer to the surface. In some places however, vermiculite, malachite pseudomalachite and accessory wad are present. At deeper levels chalcocite, bornite and chalcocite are predominantly present.

In the Mufulira mining area, the Basement Complex topography appears to have exerted a significant structural control during deformation. The distribution of ore minerals in all three orebodies is stratigraphically controlled, occurring dominantly as disseminations, blebs and irregular masses. The principal copper minerals are chalcocite, bornite, and minor/trace chalcocite. Oxide minerals are confined to near surface occurrences, and supergene enrichment zones. Generally the deposit is structurally simple being characterised by three main folds that are in part overturned with a plunge and dip approximately 10° to the northeast. The basin is open and untested at depth.

The change in the Mineral Resources at both Mufulira and Nkana from 2018 to 2019 is mostly due to mining depletion.

Changes in Ore Reserves from 2018 to 2019 at Mufulira relate only to mining depletion, whilst changes at Nkana are due to mining depletion and placing of North Shaft and area Nose under care and maintenance.

Metals and Minerals Copper

Competent Persons

CS = Christiano Santos Goncalves of Golder Associates Africa (Pty) Ltd, (MAusIMM CP (Geo)).

JL = Jacobus Lotharingen of Ukwazi Mining Solutions (Pty) Ltd, for Golder Associates Africa (Pty) Ltd, (SAIMM, PrEng.).

JP = Julian Poniewierski of Glencore, (AusIMM).

RH = Riann Herman, independent consultant (SACNSP).

Metals and Minerals Copper

Collahuasi Mineral Resources

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Collahuasi	44%	OC	Sulphide (Mt)	820	834	4,501	4,427	5,321	5,261	4,755	5,007	YT
			Copper (%)	0.81	0.85	0.81	0.81	0.81	0.82	0.73	0.74	
			Molybdenum (%)	0.018	0.019	0.025	0.025	0.024	0.024	0.017	0.015	
			Oxide & Mixed (Mt)	37	37	33	31	70	67	51	45	YT
			Copper (%)	0.67	0.67	0.73	0.73	0.70	0.70	0.57	0.56	
			(Mt)	857	870	4,534	4,458	5,391	5,328	4,806	5,052	
			Copper (%)	0.80	0.84	0.81	0.81	0.81	0.82	0.73	0.74	
			Molybdenum (%)	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	

Collahuasi Ore Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Collahuasi	44%	OC	Sulphide (Mt)	486	448	2,569	2,683	3,055	3,131	RZ
			Copper (%)	1.03	1.10	0.90	0.90	0.92	0.93	
			Molybdenum (%)	0.021	0.023	0.026	0.026	0.025	0.026	

Notes

Collahuasi: The Collahuasi district is located in Northern Chile, Tarapacá Region, and host large Copper-Molybdenum porphyry-type deposits: Rosario, Ujina and peripheral vein deposits such as Rosario Oeste and Rosario Sur. Sulphides as chalcopirite, bornite, enargite and less chalcocite are the main copper minerals at Ujina and Rosario. At Rosario Oeste, supergene chalcocite and enargite are the main copper mineral. Rosario Sur is a small oxide-bearing deposit, mainly chrysocolla. Collahuasi is mined by open cut methods. The Rosario orebody is the main source of mineral for current Collahuasi operation. Mineral Resources for Rosario, Ujina, Rosario Oeste and Rosario Sur have been classified into Measured, Indicated and Inferred categories based on minimum search radius constraints and drill hole spacing.

Mineral Resources are reported within the constraints of optimized pit shells. Mineral Resources and Ore Reserves have been updated based on new drilling information, re-logging of historical drill holes, updated geological-geostatistical models, mining parameters and adjustments to metal prices forecast.

The 53.3 Mt ore production for 2019 is already depleted from the reported Ore Reserves (actual production to September and estimate for October/December). Ore Reserves estimates are based only on Measured and Indicated

Mineral Resources, and include all Proved and Probable Reserves above the mill (operational) cut-off grade. The process of generating the resource model and optimized pit shells incorporated diluting materials as such no additional dilution factors were required in converting Mineral Resources to Ore Reserves.

Both Mineral Resources and Ore Reserves include estimates of stockpile material at time of reporting. Stockpile material from Rosario and Ujina pits are classified according to the level of perceived uncertainty. These materials have been downgraded to Probable Ore Reserves. All sulphide stockpile are considered Indicated Mineral Resources and are classified as Probable Ore Reserves.

Collahuasi has a life of mine of 51 years from 2020 to 2070, according to the most recent Life of Mine plan that supports the present reserves report, including a 210ktpd plant capacity.

Competent Persons

YT = Yuan Tay, Employee of Compañía Minera Doña Inés de Collahuasi (APEGBC).

RZ = Rodrigo Zúñiga, Employee of Compañía Minera Doña Inés de Collahuasi (AusIMM).

Metals and Minerals Copper

Antamina Mineral Resources

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Antamina	33.75%	OC/UG	Sulphide Cu (Mt)	239	242	419	441	658	683	889	824	LC
			Copper (%)	0.84	0.86	0.83	0.84	0.83	0.85	0.98	0.95	
			Zinc (%)	0.11	0.14	0.13	0.14	0.12	0.14	0.16	0.17	
			Silver (g/t)	6	7	8	9	8	8	9	10	
			Molybdenum (%)	0.029	0.031	0.026	0.026	0.027	0.028	0.026	0.025	
			Sulphide Cu-Zn (Mt)	105	105	231	266	336	371	406	412	LC
			Copper (%)	0.86	0.88	0.92	0.91	0.90	0.90	1.12	1.09	
			Zinc (%)	1.94	1.83	1.88	1.80	1.90	1.81	1.54	1.48	
			Silver (g/t)	16	17	16	16	16	16	16	16	
			Molybdenum (%)	0.007	0.009	0.009	0.008	0.008	0.008	0.008	0.008	
Total Antamina			(Mt)	344	347	650	707	994	1,054	1,295	1,236	
			Copper (%)	0.84	0.87	0.86	0.86	0.86	0.87	1.02	0.99	
			Zinc (%)	0.67	0.65	0.75	0.77	0.72	0.73	0.60	0.60	
			Silver (g/t)	9	10	11	11	10	11	11	12	
			Molybdenum (%)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	

Antamina Ore Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Antamina	33.75%	OC	Sulphide Cu (Mt)	148	154	107	126	255	279	FA
			Copper (%)	0.94	1.01	0.99	0.96	0.96	0.98	
			Zinc (%)	0.12	0.15	0.15	0.18	0.13	0.17	
			Silver (g/t)	6	7	8	8	7	8	
			Molybdenum (%)	0.037	0.038	0.033	0.034	0.035	0.036	
			Sulphide Cu-Zn (Mt)	76	81	98	129	174	210	FA
			Copper (%)	0.88	0.87	0.82	0.79	0.85	0.82	
			Zinc (%)	2.14	1.97	2.18	1.98	2.16	1.98	
			Silver (g/t)	14	17	13	13	14	14	
			Molybdenum (%)	0.007	0.008	0.007	0.008	0.007	0.008	
Total Antamina			(Mt)	224	235	205	254	430	489	
			Copper (%)	0.92	0.96	0.91	0.87	0.91	0.91	
			Zinc (%)	0.80	0.78	1.12	1.09	0.95	0.94	
			Silver (g/t)	9	10	11	11	10	11	
			Molybdenum (%)	0.027	0.027	0.021	0.021	0.024	0.024	

Notes

Antamina: Antamina is a polymetallic (mainly copper, zinc and molybdenum) skarn deposit resulting from multiple complex intrusive events. Copper mineralization occurs mainly as chalcopyrite, except for some areas of bornite, representing approximately 5% of the deposit. Zinc mineralization generally occurs as sphalerite. Other significant sulphide minerals include molybdenite and pyrite, while trace amounts of numerous silver and bismuth bearing minerals and local areas of galena are also found within the deposit.

The Mineral Resource classification is based on geologic risk factors (proportion-of-breccia indicator), geologic continuity (intrusive, endoskarn and exoskarn-waste) and drill-hole spacing. The Antamina deposit is sufficiently well drilled to support the classification criteria. The Mineral Resources include the material reported as Ore Reserves. An underground extraction derived for the conceptual underground mine are also included in the Mineral Resource inventory.

Year over year Mineral Resources are similar after depletion (2,289 Mt versus 2,290 Mt), due to additional drilling information included in the mineral resource estimation.

Ore Reserve results were developed during the 2019 planning process based on the end-of-year 2019 topography obtained from the forecast Q4-2019 mine plan. The Ore Reserves consider only Measured and Indicated Mineral Resources; all Inferred Mineral Resources contained within the Ore Reserve pit have been treated as waste. The cut-off grade for the Ore Reserves mine plan varies by year in an effort to maximize the net present value; nonetheless the minimum cut-off grade is 6,000 \$/h. The Ore Reserve mine plan goes until year 2028 and is primarily limited to the operation tailings dam capacity.

In comparison with the previous year, total Ore Reserves (Cu Ore and Cu-Zn Ore) decreased by 59Mt, or 543kt of Contained Cu, mainly due to ore depletion during 2019.

Competent Persons

LC = Lucio Canchis, Employee of C.M. Antamina (AusIMM);

FA = Fernando Angeles, Employee of C.M. Antamina. (EGBC)

Metals and Minerals Copper

Other South America Mineral Resources (Alumbrera, Lomas Bayas, Antapaccay)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Alumbrera	50%											
Bajo de la Alumbrera		UG	Ore (Mt)	117	117	6	6	123	123	1	1	FM
			Copper (%)	0.38	0.38	0.35	0.35	0.37	0.37	0.29	0.29	
			Gold (g/t)	0.35	0.35	0.32	0.32	0.35	0.35	0.28	0.28	
			Molybdenum (%)	0.014	0.014	0.013	0.013	0.014	0.014	0.014	0.014	
Bajo El Durazno		OC	Ore (Mt)	5	5	12	12	16	16	6	6	FM
			Copper (%)	0.22	0.22	0.20	0.20	0.20	0.20	0.2	0.20	
			Gold (g/t)	0.77	0.77	0.61	0.61	0.66	0.66	0.48	0.48	
Lomas Bayas	100%											
Lomas Bayas I		OC	Oxide & Mixed (Mt)	97	149	375	579	472	728	28	71	EC
			Copper (%)	0.30	0.33	0.22	0.23	0.24	0.25	0.18	0.20	
			Soluble Copper (%)	0.17	0.16	0.12	0.11	0.13	0.12	0.09	0.10	
Lomas Bayas II		OC	Oxide & Mixed (Mt)	116	138	292	351	408	489	40	69	EC
			Copper (%)	0.32	0.32	0.24	0.23	0.27	0.25	0.14	0.10	
			Soluble Copper (%)	0.22	0.22	0.15	0.14	0.17	0.16	0.08	0.10	
Lomas Bayas III		OC	Sulphide&Mixed (Mt)	58	18	523	425	580	443	459	449	EC
			Copper (%)	0.49	0.55	0.36	0.36	0.37	0.37	0.32	0.30	
			Oxide & Mixed (Mt)	3	1	81	52	85	53	36	32	
			Copper (%)	0.28	0.26	0.23	0.24	0.23	0.24	0.22	0.20	
Antapaccay	100%	OC	Ore (Mt)	218	203	432	389	650	592	119	157	HB
			Copper (%)	0.49	0.52	0.39	0.42	0.42	0.45	0.30	0.4	
			Gold (g/t)	0.10	0.11	0.08	0.08	0.09	0.09	0.05	0.1	
			Silver (g/t)	1.30	1.42	1.10	1.16	1.17	1.24	0.67	0.8	
Tintaya expansion	100%	OC	Ore (Mt)	3	4	2	2	5	6	1	–	HB
			Copper (%)	0.89	0.88	0.86	0.85	0.88	0.87	0.20	–	
			Gold (g/t)	0.03	0.02	0.02	0.02	0.03	0.02	0.001	–	
			Silver (g/t)	5.23	3.71	3.88	3.42	4.80	3.61	0.02	–	
Coroccohuayco	100%	UG/OC	Ore (Mt)	42	42	248	247	290	290	12	12	HB
			Copper (%)	0.97	0.97	1.25	1.25	1.21	1.21	1.13	1.13	
			Gold (g/t)	0.11	0.11	0.14	0.14	0.14	0.14	0.19	0.19	
			Silver (g/t)	3.83	3.83	4.56	4.56	4.45	4.44	2.99	2.99	
Total Other South America			Ore (Mt)	659	677	1,971	2,063	2,629	2,741	703	797	
			Copper (%)	0.44	0.44	0.43	0.42	0.43	0.42	0.31	0.30	
			Gold (g/t)	0.11	0.11	0.04	0.04	0.06	0.05	0.02	0.03	
			Silver (g/t)	0.7	0.7	0.8	0.8	0.8	0.7	0.2	0.2	

Metals and Minerals Copper

Other South America Ore Reserves (Alumbrera, Lomas Bayas, Antapaccay)

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Alumbrera	50%									
Bajo de la Alumbrera		UG	Ore (Mt)	67	67	2	2	70	70	FM
			Copper (%)	0.40	0.40	0.38	0.38	0.40	0.40	
			Gold (g/t)	0.39	0.39	0.38	0.38	0.39	0.39	
			Molybdenum (%)	0.013	0.013	0.014	0.014	0.013	0.013	
Lomas Bayas	100%									
Lomas Bayas I		OC	Oxide & Mixed (Mt)	74	81	115	123	189	204	EC
			Copper (%)	0.29	0.29	0.23	0.22	0.25	0.25	
			Soluble Copper (%)	0.17	0.17	0.13	0.13	0.14	0.15	
Lomas Bayas II		OC	Oxide & Mixed (Mt)	99	120	169	202	267	322	EC
			Copper (%)	0.33	0.32	0.25	0.23	0.28	0.27	
			Soluble Copper (%)	0.22	0.22	0.16	0.15	0.18	0.18	
Antapaccay	100%	OC	Ore (Mt)	210	201	267	257	477	458	HB
			Copper (%)	0.49	0.52	0.41	0.42	0.45	0.46	
			Gold (g/t)	0.09	0.10	0.08	0.08	0.08	0.09	
			Silver (g/t)	1.29	1.34	1.14	1.16	1.21	1.24	
Tintaya	100%	OC	Ore (Mt)	3	4	2	1	5	5	HB
Expansion			Copper (%)	0.89	0.85	0.86	0.86	0.88	0.85	
			Gold (g/t)	0.03	0.02	0.02	0.02	0.03	0.02	
			Silver (g/t)	5.22	3.54	3.84	3.62	4.78	3.56	
Coroccohuayco	100%									
		OC	Ore (Mt)	22	22	41	41	63	63	HB
			Copper (%)	0.75	0.75	0.56	0.56	0.63	0.63	
			Gold (g/t)	0.08	0.08	0.06	0.06	0.07	0.07	
			Silver (g/t)	2.75	2.75	1.57	1.57	1.98	1.98	
		UG	Ore (Mt)	9	9	112	112	121	121	JA
			Copper (%)	0.82	0.82	1.25	1.25	1.22	1.22	
			Gold (g/t)	0.09	0.09	0.12	0.12	0.12	0.12	
			Silver (g/t)	3.02	3.02	3.93	3.93	3.86	3.86	
Total Other South America			Ore (Mt)	484	504	707	739	1,192	1,243	
			Copper (%)	0.44	0.45	0.49	0.47	0.46	0.46	
			Gold (g/t)	0.10	0.10	0.05	0.05	0.07	0.07	
			Silver (g/t)	0.8	0.8	1.2	1.3	1.0	1.1	

Notes

Bajo de La Alumbrera and Bajo El Durazno

The Bajo de la Alumbrera copper-gold porphyry deposit is located in the Hualfin district, Belen department of the Catamarca province, in the northwest region of Argentina. The orebody consists of primary sulphide mineralised ore which comprises disseminated, vein and fracture controlled chalcopryite in altered dacite and andesite host rocks, with minor chalcocite and covellite in the enriched zone that surrounds the major faults.

The variables (copper, gold, and molybdenum) of the resources model were estimated using Ordinary Kriging interpolation within geological constraints from an assay database comprising some 116,000m of diamond drilling and 15,000m of reverse circulation drilling. Mineral Resources with reasonable prospects to be economically mined were assessed at long term metal prices and updated operating costs using a cut-off grade of 0.43% of equivalent copper.

Ore Reserves are based on an economic and operative solid generated for an underground mining process (sub-level caving) with a cut-off grade of 0.5% of equivalent copper. The economic cut-off is based on economic parameters and metallurgical recoveries.

The Bajo de la Alumbrera Mineral Resource and Ore Reserve estimate are unchanged from 2018 to 2019.

The Bajo el Durazno deposit belongs to the mining district of Agua de Dionisio and is located 5km northeast of the Bajo de la Alumbrera deposit and 2km from Minera Alumbrera's concentrator plant. The deposit is located within the Farallón Negro volcanic complex, which is eroded, deformed by faults and mineralized, resulting in a "depressed geomorphological" with hydrothermal alteration known as "Bajo".

39,444m of diamond drilling was completed between 2009 and 2015. Mineral Resources are estimated using Ordinary Kriging interpolation for copper and gold. The size of the block in the geological model (10x10x15) was based on geological criteria stemming from the geological interpretation and the proposed drilling grid.

The Mineral Resources were estimated using a cut-off 0.75 g/t for gold-equivalents within an economic shell. The Bajo el Durazno Mineral Resource estimate is unchanged from 2018 to 2019.

Both projects Alumbrera and Durazno are currently on care and maintenance.

Lomas Bayas (I) – Lomas Bayas (III): Lomas Bayas is a low grade copper-molybdenum deposit resulting from the intrusion of several porphyry and breccia systems that were later exposed to leaching and subsequent supergene

Metals and Minerals Copper

enrichment and in situ oxidation. Green copper oxides, copper sulphates in various forms and less partially mixed ores are the main source of ore for the existing SX/EW operation. The copper oxides-sulphate mineralisation is the basis of the Lomas Bayas Ore Reserves (Lomas Bayas I).

Mineral Resources are estimated using Ordinary Kriging on a block model that includes historic drill holes totalling 318,788m and sampled at 2m intervals. Ore Reserves are as of 31 December 2019 using projected topography to that date (taking into account the forecast Q4 mine plan); operational pit life-of-mine developed in 2019; cut-off grade 0.1% CuT. Lomas Bayas (I) Ore Reserves have been depleted to account for ongoing extraction. The Lomas Bayas (III) Mineral Resources estimates sulphides in a pit shell calculated using Measured, Indicated and Inferred Mineral Resources; Oxides-Mixed ore within this pit are also considered Mineral Resources that will eventually feed the current SX/EW operation.

Lomas Bayas (II): This low grade copper deposit is located 2km south of Lomas I pit, in the same district and geological environment as Lomas Bayas deposit. The main difference is a larger presence of water soluble copper oxides and lower geotechnical rock quality. The Lomas II block model includes historic drill holes totalling 127,717 m and sampled at 2m intervals. Mineral Resources are estimated using Ordinary Kriging on a block model. Ore Reserves are as of 31 December 2019 using projected topography to that date (taking into account the forecast Q4 mine plan) and consider the operational life-of-mine and cut-off grades (0.08% CuT). Lomas Bayas (II) Ore Reserves have been depleted to account for ongoing extraction.

The Lomas Bayas SX/EW plant is fed by both Lomas Bayas (I) and Lomas Bayas (II) and has a current life of mine plan that extends to 2029; permits for the operation are valid to the end of the life of the mine.

Antapaccay: The Antapaccay orebody is located 10km southwest of Tintaya, and together with Coroccohuayco is part of the Tintaya mineralised district. It is a sulphide mineralised system comprising disseminated, vein and fracture controlled chalcopryrite and bornite in altered quartz-monzonite and diorite in a limestone host rock, with some mineralised exoskarn areas and minor copper oxides and copper carbonates in the upper part of the deposit.

Antapaccay Ore Reserves and Mineral Resources as at 31 December 2019: Mineral Resource categorisation is based on assessment of orebody and grade continuity, structural complexity, data quality, adequacy of data coverage, and reasonable prospects of economical extraction. The Mineral Resources estimation is based on a block model with grade interpolation by using Ordinary Kriging. Mineral Resources

and Reserves were estimated using the economic best destination concept and consider 0.10% Cu as minimum recoverable head grade to plant which considers the valuation of Cu, Au and Ag. Ore Reserves are then derived from Measured and Indicated Mineral Resources after applying economical and technical modifying factors.

The orebody model and Mineral Resources estimate has been updated in 2019 using a drill hole database that now includes over 329,494.45 m and 982 drill holes of total drilling data. The last drilling of geological infill was carried 2019 of 40,254.25 m. and 115 drill holes.

This drilling programme mainly focused on increasing the density of drilling in the existing defined area, in order to improve understanding of the orebody. This resulted in an increase mainly in Indicated Resources, and confirmed the continuity of the orebody at depth.

The Ore Reserves are for 11 years ending in 2030, with ore processed through the Tintaya and Antapaccay plants. Operation permits are valid until the end of the life of mine.

Coroccohuayco: The Coroccohuayco copper-gold skarn deposit is located 9km southeast of Tintaya. Together with Tintaya and Antapaccay this orebody is part of the Tintaya mineralised district. The main copper bearing minerals are bornite, chalcopryrite and chalcocite. The Coroccohuayco orebody is defined as a copper skarn deposit, which consists of Cretaceous sedimentary rocks of the Ferrobamba and Mara formation, intruded by monzonitic plutons of the Eocene-Oligocene Andahuaylas-Yauri batholiths. The orebody model and Mineral Resources estimated was updated in 2018 using a drill hole database that now includes over 245,849.7 m of total drilling data. The last drilling of geological infill was carried out between 2017 and 2018 of 5,287 m., and 20,547.30 respectively.

Mineral Resources and Ore Reserves are based on a pit and Underground optimization and are reported on an economic, cut-off grade 0.40 % Cu for Underground Resources and cut-off grade 0.49 % Cu for Underground Reserves. Cut-off grade 0.20 %Cu for Resources and Reserves (Open Pit).

Competent Persons

EC = Edwin Cortes, Employee of Glencore (AusIMM).

FM = Flavio Montini, Employee of Glencore (AusIMM).

HB = Heller Bernabé, Employee of Glencore (AusIMM).

JA = Javier Aymachoque, Independent Senior Consulting (AusIMM).

Metals and Minerals Copper

Australia Mineral Resources (Ernest Henry, Mount Isa, Cobar)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Ernest Henry												
Underground	70% ¹	UG	Ore (Mt)	8.1	14.2	57.7	58.6	65.8	72.8	15.5	15.6	CS
			Copper (%)	1.18	1.32	1.17	1.17	1.17	1.20	1.17	1.17	
			Gold (g/t)	0.65	0.71	0.62	0.62	0.62	0.64	0.62	0.62	
E1	100%	OC	Ore (Mt)	4.6	4.6	5.5	5.5	10.1	10.1	0.4	0.4	CS
			Copper (%)	0.70	0.70	0.75	0.75	0.73	0.73	0.90	0.9	
			Gold (g/t)	0.20	0.20	0.23	0.23	0.22	0.22	0.30	0.3	
Monakoff	100%	OC	Ore (Mt)	–	–	2.4	2.4	2.4	2.4	0.1	0.1	CS
			Copper (%)	–	–	0.95	0.95	0.95	0.95	0.80	0.8	
			Gold (g/t)	–	–	0.30	0.30	0.30	0.30	0.20	0.2	
Mount Isa		100%										
X41 Mine 500, 650, 1100 & 1900 Orebodies		UG	Ore (Mt)	25.1	26.1	11.6	11.8	36.7	37.9	3.0	3.0	HB
			Copper (%)	1.84	1.84	1.68	1.68	1.79	1.79	1.65	1.6	
Enterprise Mine 3000 & 3500 Orebodies		UG	Ore (Mt)	19.1	20.5	5.7	6.2	24.8	26.7	0.9	0.9	HB
			Copper ()	2.44	2.43	2.26	2.25	2.40	2.39	2.26	2.3	
Black Rock Cave		UG	Ore (Mt)	–	–	2.5	1.4	2.5	1.4	0.1	0.6	HB
			Copper ()	–	–	5.49	5.88	5.49	5.88	4.44	4.8	
Open Pit		OC	Ore (Mt)	47.5	47.5	79.0	79.0	126.6	126.6	135	135	HB
			Copper ()	1.41	1.41	1.24	1.24	1.30	1.30	0.9	0.9	
Cobar	100%	UG	Ore (Mt)	3.6	3.2	2.8	2.8	6.4	6.0	5.1	5.4	EA
			Copper ()	5.69	5.72	5.18	5.31	5.46	5.53	5.29	5.37	
			Silver (g/t)	22	23	23	23	22.1	23.0	20	20	
Total Australia			Ore (Mt)	108	116	167	168	275	284	160	161	
			Copper (%)	1.79	1.77	1.39	1.37	1.5	1.53	1.09	1.1	
			Gold (g/t)	0.06	0.09	0.23	0.23	0.16	0.17	0.06	0.06	
			Silver (g/t)	0.7	0.6	0.4	0.4	0.5	0.5	0.6	0.7	

1 Glencore's effective interest in Ernest Henry underground varies between certain defined areas. The net effect of such is described in the notes.

Australia Ore Reserves (Ernest Henry, Mount Isa, Cobar)

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Ernest Henry	70%									
Underground		UG	Ore (Mt)	6.1	10.5	38.2	32.5	44.2	43.1	MC
			Copper (%)	1.50	1.49	0.92	0.91	1.00	1.05	
			Gold (g/t)	0.80	0.79	0.47	0.46	0.52	0.54	
Mount Isa	100%									
X41 Mine 500, 650,		UG	Ore (Mt)	3.8	5.1	10.9	13.2	14.7	18.3	SJ
1100 & 1900 Orebodies			Copper (%)	1.76	1.79	1.67	1.71	1.70	1.73	
Enterprise Mine 3000		UG	Ore (Mt)	8.3	12.4	4.9	3.6	13.2	16.0	SJ
& 3500 Orebodies			Copper (%)	2.37	2.17	1.95	2.44	2.21	2.23	
Black Rock Cave		UG	Ore (Mt)	–	–	1.7	1.4	1.7	1.4	SJ
			Copper (%)	–	–	4.34	4.51	4.34	4.51	
Cobar	100%	UG	Ore (Mt)	4.1	3.9	2.6	2.5	6.7	6.4	AS
			Copper (%)	4.04	4.01	3.41	3.5	3.79	3.81	
			Silver (g/t)	15.0	16.3	14.0	14.7	15.0	15.7	
Total Australia			Ore (Mt)	22	32	58	53	81	85	
			Copper (%)	2.34	2.11	1.36	1.43	1.63	1.68	
			Gold (g/t)	0.22	0.26	0.31	0.28	0.29	0.27	
			Silver (g/t)	2.8	2.0	0.6	0.7	1.2	1.2	

Metals and Minerals Copper

Notes

Ernest Henry Underground: The current expected mine life is six years (completion in 2026) with the Mining Lease tenements currently due to expire November 2025.

Copper and gold mineralisation occurs in a breccia comprised of strongly altered and replaced intermediate volcanic fragments in a matrix assemblage of predominantly magnetite, chalcopryite and carbonate. Copper occurs as chalcopryite and gold is strongly associated with chalcopryite.

In October 2016 Evolution Mining purchased an economic interest in the copper and gold production from EHM. Glencore retains a 70 % interest in the copper revenue from a defined life of mine area, and 51 % interest in copper, gold and silver revenue outside the defined LOM area.

Glencore's net interest is 62.6 % of the total copper resource and 20.5% of the total gold resource. Of the stated Ore Reserve Glencore's ownership is 66 % for copper and 11 % for gold.

Changes to the Mineral Resource are primarily due to depletion through mining. Changes to the Ore Reserve are primarily due to mining depletion and the addition of three production levels

E1: Economic mineralisation at E1 occurs as breccia-hosted mineralisation within the footwall volcanics at E1 North, and as strata-bound, replacement style mineralisation within the mineralised sedimentary units at E1 North, Central, South and East. Mine lease tenements expire in December 2032.

Mount Isa X41 and Enterprise Copper Mine: Mineralisation occurs generally as breccia hosted massive to disseminated chalcopryite in "silica dolomite" altered pyritic dolomitic siltstone.

The Mineral Resource estimates for X41 and Enterprise were updated and depleted. The Resource model update for X41 increased the tonnage by 0.8Mt. Enterprise tonnage decreased by 0.1Mt. The Mineral Resources were depleted by 3.7Mt and 2.9Mt respectively, including both mining and sterilisation.

Mining depletion, sterilisation and changes to mine design amounted to a net 0.4Mt increase in the X41 and 2.4Mt decrease in the Enterprise Ore Reserves.

Mount Isa Open pit: Copper mineralisation occurs generally as breccia hosted massive to disseminated copper minerals in "silica dolomite" altered pyritic dolomitic siltstone. The copper mineralisation consists primarily of chalcopryite, the remainder being oxidised or partially oxidised, with a minor

amount of supergene chalcocite mineralisation. The 2019 Mineral Resource is reported inside an optimised pit shell using a cut-off grade of 0.5% Cu.

Black Rock Cave: Copper mineralisation occurs generally within a Chalcocite Zone that lies above the Leached Primary material. The zone is interpreted to lie outside of the Silica-Dolomite alteration. Reinterpretation and estimation of the Black Rock Cave Resource during 2019 resulted in a 0.6Mt increase in the Resource. This Resource is reported using a cut-off grade of 2.0% Cu.

The Black Rock Cave reserves increased by 0.3Mt as a result of changes to mine designs and optimisation of production plans.

The underground life of mine estimate for the X41, Enterprise, and the Black Rock Cave is 4 years (2023) with the tenements due to expire in 17 years (2035).

Cobar: The expected remaining life of mine is approximately 5 years based on Ore Reserves and approximately 10 years based on Mineral Resources, although Cobar has previously been able to extend its expected life of mine through exploratory drilling over the past 50 years. The expiry date of relevant mining/concession licences is 24 June 2028.

Economic mineralisation at Cobar occurs mostly as narrow lenses with short strike lengths that are depth extensive. Lenses consist of vein or semi massive to massive chalcopryite hosted by sub-vertical quartz-chlorite shear zones within a siltstone unit. The Cobar Mineral Resources and Ore Reserves are reported within five 'systems': Western, Eastern, QTS North, QTS South and QTS Central.

A 0.9kt increase in the total Mineral Resource is the result of resource growth, as defined by drilling and reinterpretation, exceeding mine depletion.

Resource upgrade in both QTS North and QTS Central, along with relevant updated designs, resulted in a 0.3Mt increase in Ore Reserves.

Competent Persons

CS = Colin Stelzer, Glencore Copper (AusIMM).

HB = Helen Barnes, Glencore Copper (AusIMM).

MC = Mike Corbett, Glencore Copper (AusIMM).

EA = Eliseo Apaza, Glencore Copper (AusIMM).

AS = Adriaan S. Engelbrecht, Glencore Copper (AusIMM).

SJ = Simon Jackson, Glencore Copper (AusIMM).

Metals and Minerals Copper

Other projects Mineral Resources

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Mineral Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Polymet	72%	OC	Ore (Mt)	319	—	403	—	722	—	415	—	ZB
			Copper (%)	0.24	—	0.23	—	0.23	—	0.24	—	
			Nickel (%)	0.07	—	0.07	—	0.07	—	0.07	—	
			Palladium (g/t)	0.22	—	0.21	—	0.21	—	0.23	—	
			Platinum (g/t)	0.06	—	0.06	—	0.06	—	0.06	—	
			Gold (g/t)	0.03	—	0.03	—	0.03	—	0.03	—	
			Silver (g/t)	0.88	—	0.87	—	0.87	—	0.87	—	
			Cobalt (ppm)	71	—	68	—	39	—	56	—	
El Pachón	100%	OC	Ore (Mt)	534	534	1,055	1,054	1,588	1,588	1,536	1,524	FM
			Copper (%)	0.67	0.67	0.49	0.49	0.55	0.55	0.41	0.41	
			Silver (g/t)	2.4	2.4	2.0	2.0	2.2	2.2	1.8	1.8	
			Molybdenum (%)	0.013	0.013	0.011	0.011	0.012	0.012	0.009	0.009	
West Wall	50%		Ore (Mt)	—	—	861	861	861	861	1,072	1,072	MMV
Copper Project			Copper (%)	—	—	0.51	0.51	0.51	0.51	0.42	0.42	
			Gold (g/t)	—	—	0.05	0.05	0.05	0.05	0.05	0.05	
			Molybdenum (%)	—	—	0.008	0.008	0.008	0.008	0.006	0.006	
Total Other projects			Ore (Mt)	853	534	2,318	1,915	3,171	2,449	3,023	2,596	
			Copper (%)	0.50	0.67	0.45	0.50	0.47	0.54	0.39	0.41	
			Gold (g/t)	—	—	0.02	0.02	0.01	0.02	0.02	0.02	
			Silver (g/t)	1.8	2.4	1.1	1.1	1.2	1.4	1.0	1.1	
			Molybdenum (%)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	

Other projects Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Polymet	72%	OC	Ore (Mt)	157	—	106	—	264	—	HW
			Copper (%)	0.29%	—	0.29%	—	0.29%	—	
			Nickel (%)	0.08%	—	0.08%	—	0.08%	—	
			Palladium (g/t)	0.27	—	0.26	—	0.26	—	
			Platinum (g/t)	0.08	—	0.08	—	0.08	—	
			Gold (g/t)	0.04	—	0.04	—	0.04	—	
			Silver (g/t)	1.05	—	1.08	—	1.06	—	
			Cobalt (ppm)	74.21	—	73.56	—	73.95	—	

Notes

PolyMet: The NorthMet Deposit is one of twelve known copper-nickel-platinum group metal deposits along the northern margin of the Duluth Complex. The Duluth Complex is a large, composite, layered, mafic intrusion that was emplaced into comagmatic flood basalts along a portion of the Mesoproterozoic Midcontinent Rift System. The NorthMet deposit is hosted by the Partridge River Intrusion (PRI), which consists of troctolitic, anorthositic and minor gabbroic rock types that have been subdivided into seven igneous stratigraphic units. The ore-bearing units are primarily found in the basal unit of the Duluth Complex, which contains disseminated sulfides and minor massive sulfides hosted in troctolitic rocks. The Duluth Complex dips shallowly to the southeast in the western end of the deposit but steepens moving to the east.

The metals of interest at NorthMet are copper, nickel, cobalt, platinum, palladium, silver and gold. The majority of the metals are concentrated in, or associated with, four sulfide minerals: chalcopyrite, cubanite, pentlandite, and pyrrhotite. Platinum, palladium and gold are found in bismuthides, tellurides, and alloys. In general, the metals have strong positive correlations with copper sulphide mineralization. At the NorthMet Deposit, Duluth Complex rocks are overlain by up to 50 feet of overburden with an average of 13 ft.

Hard Rock Consulting updated the Mineral Resource model in 2019 to include infill and metallurgical drilling completed in 2018 and 2019. HRC re-estimated the Mineral Resource for the NorthMet Project from drill-hole data constrained by geologic boundaries using an Ordinary Kriging algorithm. The NorthMet Deposit was divided into eight units for geological modelling: the Biwabik Iron Formation including banded iron formation, meta-sedimentary rocks of the Virginia Formation that overlie the Biwabik Formation, five distinct units within the Duluth Complex and overburden. The Magenta Zone, a smaller mineralized zone that cuts through Units 3 through 7 but resides primarily within Units 5 and 6, was modelled from select grade intercepts provided by PolyMet.

The Mineral Reserve was updated in 2019 by IMC based on the 2019 Mineral Resource model. The cut-off grade for the Ore Reserves estimate is based on a \$7.98/t Net Smelter Return (NSR), covering the process plus G&A costs. The Mineral Reserve tonnage is contained within the open pit limited by the EIS permit boundary.

Both the mineral resource and mineral reserve estimates take into consideration metallurgical recoveries, concentrate grades, transportation costs, smelter treatment charges and royalties in determining NSR values. Ore Reserves exceed

Metals and Minerals Copper

the currently approved EIS LOM ore milled limit of 204 million tonnes over a mine life of 20 years.

El Pachón: Located in the southwest of San Juan Province of Argentina, the El Pachón orebody is a porphyry copper-molybdenum deposit in which two major stages of sulphide mineralisation contributed to the formation of the orebody. The bulk of the ore takes the form of disseminated Chalcopyrite-Molibdenite primary sulphides on top which an immature, relatively small copper enrichment blanket has been developed. In this upper part of the deposit Chalcocite and minor Covellite are partially replacing the primary Chalcopyrite ore.

Mineral Resources stated herein are based on assay and geology information from 135,000m of mainly diamond drill holes. Mineral Resources have been classified using a combination of criteria including geological continuity and Kriging parameters. Mineral Resources are constrained by the use of an economic pit shell determined using Measured, Indicated and Inferred Mineral Resources and current assumption for the economic and technical modifying factors conditioning the resource pit.

The increase in total Mineral Resources compared to the 2018 report is mainly in the inferred category and affected by changes in long-term prices, mining and selling costs.

West Wall: The West Wall Copper Project is located in the central Chilean Andes, approximately 100km NNE of Santiago. Glencore and Anglo American each have a 50% interest in the mining company West Wall SCM which holds the project. West Wall is a copper-molybdenum porphyry, with two distinct mineralized zones; Lagunillas to the south of the prospect, and West Wall Norte (WWN) 2km to the north of Lagunillas. The mineralization zones are part of an extensive NNE striking hydrothermal alteration zone of approximately 9km by 4km.

The Mineral Resource is reported within an economic pit shell at a cut-off of 0.2% Cu for 2019. There were no changes to the Mineral Resource during 2019.

Competent Persons

FM = Flavio Montini, Employee of Glencore (AusIMM).

HW = Herbert Welhener, Independent Mining Consultants Inc. (IMC), (SME Registered Member);

MMV = Manuel Machuca Valderrama, Employee of Anglo American for the West Wall Project (AusIMM).

ZB = Zachary Black, Hard Rock Consulting LLC. (HRC), (SME Registered Member).

Metals and Minerals

Zinc

Kazzinc Mineral Resources

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Maleevsky	69.7%	UG	Ore (Mt)	3.2	4.3	3.8	4.1	7.0	8.4	2.2	2.3	AC
			Zinc (%)	6.2	7.3	6.4	6.7	6.3	7.0	6	6	
			Lead (%)	1.1	1.1	1.2	1.2	1.1	1.2	1	1	
			Copper (%)	2.2	2.4	2.0	2.1	2.1	2.3	2	2	
			Silver (g/t)	75	82	73	75	74	79	59	66	
			Gold (g/t)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Ridder-Sokolny	69.7%	UG	Ore (Mt)	59.6	16.2	14.3	12.8	73.9	29.0	0.3	6.1	AC
			Zinc (%)	0.6	1.5	0.7	1.4	0.6	1.5	0.2	1	
			Lead (%)	0.3	0.7	0.3	0.6	0.3	0.6	0.3	1	
			Copper (%)	0.6	0.7	0.6	0.6	0.6	0.7	0.3	1.2	
			Silver (g/t)	10	25	14	30	11	27	22	23	
			Gold (g/t)	2.0	1.8	1.9	1.4	2.0	1.6	2.4	1.5	
Tishinsky	69.7%	UG	Ore (Mt)	7.4	9.7	1.2	0.4	8.6	10.1	0.8	2.4	AC
			Zinc (%)	5.3	5.5	4.7	5.8	5.2	5.5	4	4	
			Lead (%)	0.9	1.0	0.7	1.8	0.9	1.0	1	1	
			Copper (%)	0.6	0.6	0.4	0.4	0.6	0.6	0.4	0.4	
			Silver (g/t)	10	10	6	10	9	10	6	6	
			Gold (g/t)	0.7	0.8	0.4	0.3	0.7	0.7	0.3	0.5	
Shubinsky	69.7%	UG	Ore (Mt)	–	0.2	–	0.2	–	0.4	–	0.1	AC
			Zinc (%)	–	2.6	–	2.5	–	2.5	–	2	
			Lead (%)	–	0.4	–	0.6	–	0.5	–	1	
			Copper (%)	–	1.2	–	0.6	–	1.8	–	0.4	
			Silver (g/t)	–	18	–	16	–	23	–	15	
			Gold (g/t)	–	0.3	–	0.3	–	0.6	–	0.2	
Staroye Tailings Dam	69.7%		Ore (Mt)	–	–	2.4	2.4	2.4	2.4	1.4	1.4	AC
			Silver (g/t)	–	–	11	11	11	11	10	10	
			Gold (g/t)	–	–	1.0	1.0	1.0	1.0	0.8	1.0	
Chashinskoye Tailings Dam	69.7%	OC	Ore (Mt)	–	–	58	58	58	58	30	30	AC
			Silver (g/t)	–	–	5	5	5	5	5	5	
			Gold (g/t)	–	–	0.7	0.7	0.7	0.7	0.5	0.5	
Shaimerden Stockpiles	69.7%	OC	Ore (Mt)	–	–	1.2	1.4	1.2	1.4	–	–	AC
			Zinc (%)	–	–	22	22	22	22	–	–	
Dolinnoe	69.7%	UG	Ore (Mt)	5.6	2.5	1.4	2.4	7.0	4.8	7.3	8.0	AC
			Zinc (%)	1.2	1.4	1.0	1.2	1.2	1.3	0.7	1	
			Lead (%)	0.6	0.8	0.5	0.6	0.6	0.7	0.4	0.4	
			Copper (%)	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	
			Silver (g/t)	47	69	47	38	47	54	12	16	
			Gold (g/t)	3.2	3.7	2.1	3.0	3.0	3.4	1.8	2.0	
Obruchevskoe	69.7%	UG	Ore (Mt)	–	–	5.4	5.4	5.4	5.4	4.0	4.0	AC
			Zinc (%)	–	–	7.3	7.3	7.3	7.3	4	4	
			Lead (%)	–	–	3.2	3.2	3.2	3.2	2	2	
			Copper (%)	–	–	0.9	0.9	0.9	0.9	1	1	
			Silver (g/t)	–	–	37	37	37	37	33	33	
			Gold (g/t)	–	–	1.1	1.1	1.1	1.1	0.7	0.7	
Zhairem Zapadny	69.7%	OC	Ore (Mt)	17.3	22.1	0.2	0.6	17.5	22.7	0.02	1.0	AC
			Zinc (%)	4.5	4.1	4.3	4.6	4.5	4.1	2	4	
			Lead (%)	1.5	2.4	2.0	0.9	1.5	2.4	0.5	3	
			Silver (g/t)	26	25	36	27	26	25	16	30	
Zhairem Dalnezapadny	69.7%	OC	Ore (Mt)	36.5	36.5	3.5	3.5	40.0	40.0	–	–	AC
			Zinc (%)	4.4	4.4	3.9	3.9	4.3	4.3	–	–	
			Lead (%)	1.2	1.2	0.9	0.9	1.2	1.2	–	–	
			Silver (g/t)	6	6	3	3	6	6	–	–	

Metals and Minerals Zinc

Kazzinc Mineral Resources (continued)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Zhairemsky	69.7%	OC	Ore (Mt)	0.6	0.6	1.3	1.3	1.9	1.9	0.1	0.1	AC
Ushkatyn			Zinc (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
			Lead (%)	5.3	5.3	3.7	3.7	4.2	4.2	3	3	
			Silver (g/t)	35	35	27	27	30	30	18	18	
Uzhynzhal	100%	OC	Ore (Mt)	–	–	–	–	–	–	17.9	17.1	AC
			Zinc (%)	–	–	–	–	–	–	1	1	
			Lead (%)	–	–	–	–	–	–	3	3	
			Silver (g/t)	–	–	–	–	–	–	51	47	
Novo-Leninogorskoye	69.7%	UG	Ore (Mt)	–	–	–	–	–	–	30.0	30.0	AC
			Zinc (%)	–	–	–	–	–	–	5	5	
			Lead (%)	–	–	–	–	–	–	2	2	
			Copper (%)	–	–	–	–	–	–	0.2	0.2	
			Silver (g/t)	–	–	–	–	–	–	40	40	
			Gold (g/t)	–	–	–	–	–	–	2	2	
Chekmar	69.7%	OC	Ore (Mt)	–	–	–	–	–	–	55	55	AC
			Zinc (%)	–	–	–	–	–	–	3	3	
			Silver (g/t)	–	–	–	–	–	–	13	13	
			Gold (g/t)	–	–	–	–	–	–	0.3	0.5	
Total Polymetallic Kazzinc			Ore (Mt)	130	92	93	92	223	185	149	157	
			Zinc (%)	2.6	4.0	1.3	1.5	2.1	2.7	2	2	
			Lead (%)	0.8	1.4	0.4	0.4	0.6	0.9	1	1	
			Copper (%)	0.4	0.3	0.2	0.2	0.3	0.3	0.1	0.1	
			Silver (g/t)	14	20	12	15	13	17	23	22	
			Gold (g/t)	1.1	0.5	0.9	0.8	1.0	0.7	1	1	
Vasilkovsky	69.7%	OC	Ore (Mt)	70	78	44	46	113	124	0.1	–	AC
(Gold)			Gold (g/t)	2.1	2.1	1.7	1.7	1.9	1.9	1.0	–	

Metals and Minerals Zinc

Kazzinc Ore Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Maleevsky	69.7%	UG	Ore (Mt)	2.6	3.3	3.5	4.2	6.1	7.5	AC
			Zinc (%)	5.1	7.0	3.9	4.2	4.4	5.4	
			Lead (%)	0.8	1.0	0.7	0.8	0.8	0.9	
			Copper (%)	1.8	1.4	1.2	1.4	1.5	1.4	
			Silver (g/t)	60	73	46	51	52	61	
			Gold (g/t)	0.4	0.4	0.3	0.3	0.3	0.4	
Ridder-Sokolny	69.7%	UG	Ore (Mt)	16.3	7.5	4.1	5.2	20.4	12.7	AC
			Zinc (%)	0.4	1.4	0.4	1.3	0.4	1.3	
			Lead (%)	0.2	0.6	0.3	0.5	0.2	0.6	
			Copper (%)	0.5	0.5	0.5	0.6	0.5	0.5	
			Silver (g/t)	7	23	10	27	8	25	
			Gold (g/t)	2.2	1.4	2.2	0.9	2.2	1.2	
Tishinsky	69.7%	UG	Ore (Mt)	2.1	4.4	0.9	0.9	3.0	5.3	AC
			Zinc (%)	6.5	5.0	4.7	4.7	5.8	4.9	
			Lead (%)	1.2	0.9	0.7	1.1	1.1	1.0	
			Copper (%)	0.6	0.6	0.6	0.4	0.6	0.5	
			Silver (g/t)	12	9	8	8	11	9	
			Gold (g/t)	0.9	0.7	0.7	0.4	0.8	0.6	
Shubinsky	69.7%	UG	Ore (Mt)	–	0.1	–	0.1	–	0.1	AC
			Zinc (%)	–	2.5	–	2.5	–	2.5	
			Lead (%)	–	0.4	–	0.6	–	0.5	
			Copper (%)	–	1.5	–	0.8	–	1.1	
			Silver (g/t)	–	21	–	20	–	20	
			Gold (g/t)	–	0.3	–	0.4	–	0.3	
Shaimerden	69.7%	OC	Ore (Mt)	–	–	1.3	1.4	1.3	1.4	AC
Stockpiles			–	–	22.7	22.0	22.7	22.0		
Dolinnoe	69.7%	UG	Ore (Mt)	3.7	1.8	0.7	1.5	4.4	3.3	AC
			Zinc (%)	1.1	1.4	1.1	1.2	1.1	1.3	
			Lead (%)	0.6	0.8	0.6	0.6	0.6	0.7	
			Copper (%)	0.2	0.2	0.2	0.2	0.2	0.2	
			Silver (g/t)	51	74	52	41	51	59	
			Gold (g/t)	3.2	3.8	2.3	3.0	3.1	3.4	
Zhairem	69.7%	OC	Ore (Mt)	16.2	21.7	0.1	0.6	16.4	22.3	AC
Zapadny			Zinc (%)	4.5	4.0	3.2	4.4	4.5	4.0	
Lead (%)			1.4	2.3	1.5	0.9	1.4	2.3		
Silver (g/t)			26	25	37	26	26	25		
Zhairem	69.7%	OC	Ore (Mt)	37.0	37.1	2.8	2.8	39.7	39.9	AC
Dalnezapadny			Zinc (%)	4.2	4.2	3.8	3.8	4.1	4.1	
Lead (%)			1.2	1.2	0.9	0.9	1.2	1.2		
Silver (g/t)			6	6	2	2	5	5		
Zhairem	69.7%	OC	Ore (Mt)	–	0.08	–	0.2	–	0.3	AC
Ushkatyn			Zinc (%)	–	0.1	–	0.1	–	0.1	
Lead (%)			–	4.4	–	4.1	–	4.2		
Silver (g/t)			–	46	–	29	–	34		
Total Polymetallic Kazzinc			Ore (Mt)	78	76	13.4	16.8	91	93	
			Zinc (%)	3.4	3.9	4.5	4.4	3.6	4.0	
			Lead (%)	1.0	1.4	0.5	0.7	0.9	1.3	
			Copper (%)	0.2	0.1	0.5	0.6	0.2	0.2	
			Silver (g/t)	14	18	19	27	15	19	
			Gold (g/t)	0.6	0.3	0.9	0.7	0.7	0.4	
Vasilkovsky	69.7%	OC	Ore (Mt)	42	51	44	47	86	98	AC
(Gold)			Gold (g/t)	2.2	2.1	1.8	1.8	2.0	1.8	

Metals and Minerals Zinc

Notes

Maleevsky: Maleevsky is a typical syngenetic VMS deposit hosting ores of sulphide-polymetallic formation with associated gold and silver.

Infill drilling in various parts of the deposit enabled conversion of Inferred resources to Indicated, particularly near the active mining fronts.

The mined material from Maleevsky during 2019 was 2.1Mt at 6.3% Zn, 0.9% Pb, 1.9% Cu, 55g/t Ag and 0.5g/t Au.

The expected mine life for Maleevsky is 3-4 years based on Ore Reserves and 6 years based on Mineral Resources.

Ridder-Sokolny: The giant Ridder-Sokolny deposit is a unique deposit that has features of many deposit styles. The total footprint of the mineralisation exceeds 20km² and is structurally controlled by a north-west trending normal horst and graben fault system, superimposed by a kilometer-wide north-east to south-west deformation zone. The upper ore zone of the deposit consists of a cluster of sub-horizontal VMS-style lens-shaped bodies associated with a carbonaceous unit adjacent to a vertical fault structure. The lenticular VMS-style mineralisation is underlain by a steeply dipping to sub-vertical polymetallic Cu-rich stringer-stockwork ore zone. Structurally controlled gold-bearing quartz veins overprint the entire system. Individual or small cluster of veins with high gold grades have been selectively mined. Gold-bearing quartz veins are typically 0.2-0.8m thick, with down-dip dimensions up to 40m, and 30-50m strike lengths. Production in 2019 was 1.8 Mt, grading 0.4% Zn, 0.2% Pb, 0.4% Cu, 7 g/t Ag, and 2.5 g/t Au.

The Ridder-Sokolny mine was remodelled in 2019 as the final step in an exhaustive data compilation that began in 2015. This newly digitized data allowed for a complete revision of the 3D interpretation. The new modelling approach honours metal zonation and distribution according to the geological controls, and was validated by past production. The holistic model provides the first opportunity to evaluate the sizeable mineral resource which previously did not honour 3D spatial continuity. A major focus in 2019 was developing a methodology to model the ore deposit for Ridder Sokolny mine. Reflective of the deposit size, the mine were split in a grid of 500x500 meters. A total of 32 tiles were created.

Ore Reserves are reported against the new Ridder-Sokolny mine resource model, with the removal of historical mining volumes and sterilization. The Ore Reserves presented use current mining methods and existing infrastructures. These will undergo optimization studies in 2020.

The expected mine life of Ridder-Sokolny is 11 years based on Ore Reserves and potentially up to 20 years based on Mineral Resources.

Tishinsky: Tishinsky is a syngenetic VMS deposit of Au- and Ag-bearing sulfide polymetallic ores. Tishinsky Mineral Resources have slightly increased, due to several factors, including reinterpretation of geological wireframes and ongoing exploration. Changes to the Indicated zinc grade are due to the sterilisation of very high grade pillars. The mined material from Tishinsky during 2019 was 573 Kt at 4.3% Zn, 0.9% Pb, 0.4% Cu, 8 g/t Ag and 0.5 g/t Au.

The expected mine life for Tishinsky is 4-5 years based on Ore Reserves and 6 years based on Mineral Resources.

Shubinsky: The Shubinsky Mine was closed in 2019 as all Ore Reserves were depleted and the remaining mineralized material does not have reasonable prospects for eventual economic extraction. Closure activities are underway.

Shaimerden: The Shaimerden stockpile is composed of high-grade, crushed zinc oxide ore which is not amenable to the concentration process; it is directly sent to the Ridder Zinc refinery. Total material processed during 2019 was 202Kt at 21% Zn.

Dolinnoe: The Dolinnoe deposit is situated in the south-eastern portion of the Ridder mining district in the Rudnyi Altay geotectonic block. Gold is the main mineral of economic interest and structural interpretation, modelling and classification of the mineral resource was completed on the basis of an underground infill drilling campaign. Changes to the Mineral Resources (and Ore Reserves) are due to continuous drilling of the deposit. The mined material from Dolinnoe during 2019 was 0.458 Kt, 1.7% Zn, 0.9% Pb, 0.3% Cu, 95 g/t Ag and 4.9 g/t Au.

The expected mine life for Dolinnoe is 7 years based on Ore Reserves and 14 years based on Mineral Resources.

Obruchevskoe: The Obruchevsky deposit is situated in the deepest south-eastern portion of the Ridder mining district in the Rudnyi Altai geotectonic block. Veinlet disseminated polymetallic mineralization predominates at Obruchevsky. A feasibility study and confirmation drilling of the deposit are underway.

Chekmar: The Chekmar deposit comprises two main polymetallic mineralized zones: Chekmar and Gusliakov, which are separated by a distance of roughly 1.5 km. The deposits are typical syngenetic VMS deposits, with distinct metal zonation and near-surface weathering profiles. The deposits were initially explored in the 1970s. Studies are underway to confirm the mineral resource and to perform metallurgical testing of the mineralization. Due to the historical nature of the previous drilling, all Mineral Resources are currently classified as Inferred.

Zhairem: The various iron, manganese, barite and polymetallic deposits of the Zhairem area, central Kazakhstan were discovered by geological and geophysical prospecting between the 1930s and 1960s. Between 1978 and 1995, some 22 million tonnes of low-grade zinc-lead ore including barite-dominated mineralisation were mined. As of 1996, focus was set on manganese and iron ore production. The Zhairem deposits were acquired by Kazzinc on the basis of their polymetallic value.

Since purchase, the three deposits (namely Zapadny, Dalnezapadny and Ushkatyn) have been remodelled using implicit modelling techniques for the Mineral Resources, followed by optimisation of the pit shell and associated design.

In 2019, the Ushkatyn reserves were exhausted and the pit stopped operations.

The mined material from the Zapadny pit in 2019 was 0.87Mt at 5.6% Zn, 1.9% Pb and 35g/t Ag.

The mined material from the Ushkatyn pit in 2019 was 0.28Mt at 4.7% Pb and 34g/t Ag. Thereafter, the Ushkatyn reserves were exhausted and the pit stopped operations.

The expected mine life for Zhairem is 12 years based on Ore Reserves. The expected mine life based on Mineral Resources is also 12 years.

Uzynzhal: The Uzynzhal deposit is located in central Kazakhstan, in the same belt as the Zharemsky deposits. It has been identified as a Sedex. Pb-Zn ores shows close spatial correlations with barite and manganese ores. The deposit is made up of an oxide cap, containing mainly Pb-oxide ores, while the sulfide portion of the deposit contains both Zn and Pb sulfides.

Novo-Leninogorskoye: The Novo-Leninogorsky deposit is part of the Ridder-Sokolny group of polymetallic VMS deposits in

Metals and Minerals Zinc

the Altai region of Eastern Kazakhstan. Novo-Leninogorsky was discovered in 1981 and was explored between 1981 and 1985. Two styles of mineralization can be found at Novo-Leninogorsky: barite-polymetallic and polymetallic, with the mineralization hosted by siltstones and quartzites.

Vasilkovsky: Vasilkovsky is a gold deposit of epigenetic stockwork-type and beresite subtype of deposits hosting ores of goldquartz formation. Ore Reserves were estimated based upon an updated mineral resource interpretation and interpolation parameters; the ore reserve was constrained by a new pit design, which is fully encompassed in the Resource pit shell. The mined material from Vasilkovsky during 2019 was 10.4 Mt at 2.2 g/t Au.

The expected mine life for Vasilkovsky is 9 years based on Ore Reserves and 15 years based on Mineral Resources.

Expiry date of relevant mining/concession licences: different for each mine, ranging from February 2021 to March 2041. There is a routine licence extension procedure in Kazakhstan which Kazzinc undertakes as required.

Competent person

AC = Aline Côté, Head of Mining Technical Services, Glencore Zinc, (OGQ).

Metals and Minerals Zinc

Australia Mineral Resources (Mount Isa, McArthur River)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Mount Isa	100%											
Black Star		OC	Ore (Mt)	4.8	4.8	3.1	3.1	7.9	7.9	7.3	7.3	AC
Open Cut			Zinc (%)	5.4	5.4	3.7	3.7	4.7	4.7	2	2	
			Lead (%)	5.2	5.2	3.2	3.2	4.4	4.4	1	1	
			Silver (g/t)	89	89	53	53	74	74	19	19	
Black Star underground		UG	Ore (Mt)	13.6	13.6	52	52	66	66	92	92	AC
			Zinc (%)	5.7	5.7	5.6	5.6	5.6	5.6	5	5	
			Lead (%)	3.2	3.2	2.6	2.6	2.7	2.7	3	3	
			Silver (g/t)	62	62	46	46	49	49	62	62	
Mount Isa Open Pit		OC	Ore (Mt)	27.5	27.5	80	80	107	107	40.3	40.3	AC
			Zinc (%)	4.0	4.0	4.1	4.1	3.8	3.8	4	4	
			Lead (%)	4.7	4.7	3.5	3.5	3.8	3.8	3	3	
			Silver (g/t)	97	97	73	73	79	79	62	62	
George Fisher	100%											
South (P49) Orebodies		UG	Ore (Mt)	29.8	24.3	25.2	31.4	55	56	23	27	AC
			Zinc (%)	8.3	8.3	8.1	8.3	8.2	8.3	8	8	
			Lead (%)	5.3	5.2	4.7	4.8	5.0	5.0	4	4	
			Silver (g/t)	114	113	96	101	106	106	82	87	
North (L72) Orebodies		UG	Ore (Mt)	49.3	32.8	116	135	165	168	58	53	AC
			Zinc (%)	9.4	9.3	8.9	8.8	9.1	8.9	9	9	
			Lead (%)	3.5	3.7	3.4	3.4	3.4	3.5	4	4	
			Silver (g/t)	59	63	53	53	55	55	55	57	
Handlebar Hill		OC	Ore (Mt)	1.6	1.6	3.6	3.6	5.2	5.2	0.8	0.8	AC
Open Cut (primary)			Zinc (%)	7.8	7.8	6.1	6.1	6.6	6.6	5	5	
			Lead (%)	2.6	2.6	2.0	2.0	2.2	2.2	2	2	
			Silver (g/t)	41	41	35	35	37	37	30	30	
Handlebar Hill		OC	Ore (Mt)	0.5	0.5	0.1	0.1	0.6	0.6	–	–	AC
Open Cut (oxide)			Zinc (%)	0.4	0.4	0.4	0.4	0.4	0.4	–	–	
			Lead (%)	8.5	8.5	4.1	4.1	7.8	7.8	–	–	
			Silver (g/t)	89	89	65	65	85	85	–	–	
Lady Loretta	100%	UG	Ore (Mt)	4.1	4.6	3.7	3.7	7.7	8.3	5	–	AC
			Zinc (%)	15.4	16.3	15.3	15.1	15.3	15.7	11	–	
			Lead (%)	6.4	6.3	4.1	5.0	5.3	5.7	3	–	
			Silver (g/t)	106	96	70	87	89	92	79	–	
Total Mount Isa			Ore (Mt)	131	110	284	308	414	419	226	220	
			Zinc (%)	7.6	7.4	6.9	7.0	7.1	7.0	6	6	
			Lead (%)	4.3	4.4	3.4	3.4	3.6	3.7	3	3	
			Silver (g/t)	82	85	61	62	68	67	61	65	
McArthur River	100%											
Open Cut		OC	Ore (Mt)	107	108	48	56	155	164	–	–	KM
			Zinc (%)	9.6	9.7	9.6	9.5	9.6	9.6	–	–	
			Lead (%)	4.1	4.2	4.8	5.0	4.3	4.5	–	–	
			Silver (g/t)	41	42	51	54	44	46	–	–	
Woyzbun South Zone		UG	Ore (Mt)	–	–	8.3	8.3	8.3	8.3	–	–	KM
			Zinc (%)	–	–	14	14	14	14	–	–	
			Lead (%)	–	–	5.6	5.6	5.6	5.6	–	–	
			Silver (g/t)	–	–	58	58	58	58	–	–	
Total McArthur River			Ore (Mt)	107	108	56	64	163	172	–	–	
			Zinc (%)	9.6	9.7	10.3	10.1	9.8	9.8	–	–	
			Lead (%)	4.1	4.2	4.9	5.1	4.4	4.6	–	–	
			Silver (g/t)	41	42	52	55	45	47	–	–	
Total Australia			Ore (Mt)	238	217	340	373	578	591	226	202	
			Zinc (%)	8.5	8.5	7.4	7.5	7.9	7.8	6	6	
			Lead (%)	4.2	4.3	3.6	3.7	3.9	3.9	3	3	
			Silver (g/t)	64	65	60	61	61	62	61	65	

Metals and Minerals Zinc

Australia Ore Reserves (Mount Isa, McArthur River)

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
George Fisher	100%									
South (P49) Orebodies		UG	Ore (Mt)	8.7	5.3	8.8	11.4	17.5	16.7	AC, JT
			Zinc (%)	6.2	6.5	6.2	6.1	6.2	6.2	
			Lead (%)	4.4	4.6	4.3	4.3	4.3	4.4	
			Silver (g/t)	101	103	96	97	98	99	
North (L72) Orebodies		UG	Ore (Mt)	17.2	11.2	39	61	56	72	AC, JT
			Zinc (%)	7.4	7.2	7.2	6.9	7.2	7.0	
			Lead (%)	3.2	3.3	3.1	3.1	3.2	3.1	
			Silver (g/t)	56	60	54	51	55	52	
Handlebar Hill Open Cut (oxide)		OC	Ore (Mt)	0.5	0.5	–	–	0.5	0.5	AC
			Zinc (%)	0.4	0.4	–	–	0.4	0.4	
			Lead (%)	8.5	8.5	–	–	8.5	8.5	
			Silver (g/t)	89	89	–	–	89	89	
Lady Loretta	100%	UG	Ore (Mt)	2.9	4.7	2.6	2.7	5.5	7.4	AC, JT
			Zinc (%)	13.4	12.6	13.3	12.1	13.4	12.5	
			Lead (%)	6.1	5.2	3.7	3.8	4.9	4.7	
			Silver (g/t)	102	79	64	71	83	76	
Total Mount Isa			Ore (Mt)	29	22	50	75	79	97	
			Zinc (%)	7.5	8.1	7.3	7.0	7.4	7.2	
			Lead (%)	3.9	4.1	3.4	3.3	3.6	3.5	
			Silver (g/t)	74	75	62	60	66	62	
McArthur River	100%	OC	Ore (Mt)	71	73	27	35	98	108	DH
			Zinc (%)	9.5	9.4	8.0	8.1	9.1	9.0	
			Lead (%)	4.3	4.3	4.0	4.3	4.2	4.3	
			Silver (g/t)	42	43	42	46	42	44	
Total Australia			Ore (Mt)	100	95	77	110	177	205	
			Zinc (%)	8.9	9.1	7.6	7.3	8.3	8.2	
			Lead (%)	4.2	4.3	3.6	3.6	3.9	3.9	
			Silver (g/t)	51	50	55	55	53	53	

Notes

Mount Isa

Black Star Open Cut (“BSOC”): Lead-zinc-silver mineralisation occurs in galena and sphalerite-rich bedding parallel horizons in dolomitic and variably carbonaceous pyritic shales and siltstones.

The open cut was moved to a care and maintenance phase during the last quarter of 2016 after mining out the existing Ore Reserves.

The resource mineralisation occurs inside a designed Stage. Stage 7 pit is based on a pit optimisation utilising Measured and Indicated Resources, all of which have been re-evaluated using updated metallurgical information.

Black Star Underground (“BSUG”): BSUG is the continuation of the same lead-zinc-silver mineralisation in BSOC, which occurs in galena and sphalerite-rich bedding parallel horizons in dolomitic and variably carbonaceous pyritic shales and siltstones. This resource was previously included in the Mount Isa Open Pit disclosures, was separated as a new section from 2018.

Mount Isa Open Pit (“MIOP”): Lead-zinc-silver mineralisation occurs in galena and sphalerite-rich bedding parallel horizons in dolomitic and variably carbonaceous pyritic shales and siltstones.

Approximately 85% of the lead-zinc-silver resource is primary sulphide; the remainder being considered as transitional mineralisation (mixed sulphide and secondary oxide/carbonate).

The copper resource in MIOP has not been included here; it is reported separately in the Copper section of this report.

BSOC, BSUG and the Isa Open Pit are all located on Mining Lease ML8058 which expires on 30 November 2036.

George Fisher Mine

North (L72) & South (P49) Orebodies: Lead-zinc-silver mineralisation occurs in galena and sphalerite-rich bedding parallel horizons in dolomitic and variably carbonaceous pyritic shales and siltstones. Orebody and structural interpretation, modelling and classification of the mineral resource was completed on the basis of additional geological information and improved systems.

Changes to the Mineral Resources are due to geological modelling and the addition of new drilling information.

Changes to the Ore Reserves are related to higher cut-off grade and changes to the macroeconomic assumptions applied.

Mine production for 2019 totalled 2.9 Mt at 6.8% Zn, 4.1% Pb and 72 g/t Ag. The mine is located on Mining Lease ML8058 and the lease expires on 30 November 2036.

Reserves were prepared by JT and reviewed and audited by AC.

Handlebar Hill Open Cut: Lead-zinc-silver mineralisation occurs in galena and sphalerite-rich bedding parallel horizons in dolomitic and variably carbonaceous pyritic shales and siltstones.

Metals and Minerals Zinc

The Handlebar Hill Open Cut resource is up dip of and additional to the George Fisher South resource. Material from the oxidised portion of the mineralisation has been reported as a mineral resource.

No depletion has occurred through mining during 2019.

The Handlebar Hill Open Cut is located on Mining Lease ML8058 which expires on 30 November 2036. The mine was placed in care and maintenance in July 2014.

Lady Loretta

Lead-zinc-silver mineralisation occurs in a galena and sphalerite rich massive sulphide lens located in carbonaceous pyritic shales and siltstones.

The deposit consists of a tight syncline dislocated by a number of major faults. The deeper and high grade portion of the deposit reaches 500m below the surface.

Mine production at Lady Loretta in 2019 totalled 1.5 Mt at grades of 13.7% Zn, 6.4% Pb and 102 g/t Ag. The Mining Lease, ML5568, is current until January 31st, 2026

Reserves were prepared by JT and reviewed and audited by AC.

McArthur River Mine

Zinc-lead-silver mineralisation occurs predominantly as ultra-fine bedded parallel sphalerite and galena rich bands hosted by dolomitic and carbonaceous pyritic siltstones, graded beds and chaotic debris flow breccias.

All relevant modifying factors for the conversion of mineral resources to ore reserves have been considered, with confidence levels in these factors reflected in the classification categories.

The open pit optimisation was updated with long-term inputs. The break-even pit shell for Mineral Resources reporting and the designed final pit for Ore Reserves reporting remain unchanged.

The Mineral Resources were depleted by 4.3Mt during 2019, and decreased by 4.0Mt due to changes in the resource model and economic assumptions. The Ore Reserves have been depleted during 2019 by a total of 4.3Mt at 7.4% Zn and 3.5% Pb, and reduced by 5.8Mt due to the resource model changes.

Mining activities have ramped back up through 2019 toward nameplate capacities, with mining planned to be completed in 2039. Mineral Resources and Ore Reserves are located within leases that are valid to 2043.

Competent persons

AC = Aline Côté, Head of Mining Technical Services, Glencore Zinc, (OGQ).

JT = Jody Todd, Manager – Technical Services, Zinc Mining Queensland, (AusIMM).

KM = Kristian Masterman, Mining Technical Services Superintendent, Glencore Zinc, (AusIMM).

DH = Drew Herbert, Mining Consultant, The Minserve Group Pty Ltd, (AusIMM).

Metals and Minerals Zinc

North America Mineral Resources (Zinc projects: Kidd Creek, Matagami, PD1, Errington, Vermilion, Hackett River, Bell, Granisle)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Kidd Creek	100%	UG	Ore (Mt)	7.8	9.5	0.8	0.9	8.6	10	3.5	3.5	BD
			Zinc (%)	4.0	4.1	4.8	5.0	4.0	4.2	7	7	
			Copper (%)	1.9	1.9	1.7	1.6	1.8	1.9	2	2	
			Silver (g/t)	48.0	48.0	47.0	44.0	48	48	62	60	
Matagami 100%												
Bracemac-McLeod		UG	Ore (Mt)	3.1	1.5	—	2.2	3.1	3.7	—	—	JD
			Zinc (%)	6.3	5.5	—	7.3	6.3	6.6	—	—	
			Copper (%)	1.0	0.9	—	1.0	1.0	1.0	—	—	
			Silver (g/t)	29	24	—	31	29	28	—	—	
			Gold (g/t)	0.7	0.5	—	0.6	0.7	0.6	—	—	
Caber	100%	UG	Ore (Mt)	0.8	0.8	0.7	0.7	1.5	1.5	0.02	0.02	AC
			Zinc (%)	6.1	6.1	5.4	5.4	5.2	5.2	8	8	
			Copper (%)	1.1	1.1	1.1	1.1	1.1	1.1	1	1	
			Silver (g/t)	10	10	9	9	10	10	6	6	
			Gold (g/t)	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.1	
Caber Nord	100%	UG	Ore (Mt)	—	—	—	—	—	—	6	6	AC
			Zinc (%)	—	—	—	—	—	—	3	3	
			Copper (%)	—	—	—	—	—	—	1	1	
			Silver (g/t)	—	—	—	—	—	—	11	11	
			Gold (g/t)	—	—	—	—	—	—	0.1	0.1	
PD-1	100%	OC/UG	Ore (Mt)	0.6	0.6	1.0	1.0	1.6	1.6	—	—	GR
			Zinc (%)	4.2	4.2	5.0	5.0	4.7	4.7	—	—	
			Copper (%)	0.8	0.8	1.3	1.3	1.1	1.1	—	—	
			Silver (g/t)	20	20	20	20	20	20	—	—	
Errington	100%	UG	Ore (Mt)	6.7	6.7	2.3	2.3	9.0	9.0	—	—	AC
			Zinc (%)	3.9	3.9	4.3	4.3	4	4	—	—	
			Lead (%)	1.1	1.1	1.3	1.3	1.2	1.2	—	—	
			Copper (%)	1.2	1.2	1.1	1.1	1.1	1.1	—	—	
			Silver (g/t)	52	52	55	55	53	53	—	—	
			Gold (g/t)	0.8	0.8	0.8	0.8	0.8	0.8	—	—	
Vermilion	100%	UG	Ore (Mt)	2.8	2.8	0.4	0.4	3.2	3.2	—	—	AC
			Zinc (%)	4.2	4.2	5.3	5.3	4.4	4.4	—	—	
			Lead (%)	1.2	1.2	1.3	1.3	1.2	1.2	—	—	
			Copper (%)	1.3	1.3	1.1	1.1	1.3	1.3	—	—	
			Silver (g/t)	53	53	56	56	53	53	—	—	
			Gold (g/t)	0.9	0.9	1.1	1.1	0.9	0.9	—	—	
Hackett River	100%	OC/UG	Ore (Mt)	—	—	27.1	27.1	27.1	27.1	60	60	AC
			Zinc (%)	—	—	4.5	4.5	4.5	4.5	4	4	
			Lead (%)	—	—	0.6	0.6	0.6	0.6	1	1	
			Copper (%)	—	—	0.5	0.5	0.5	0.5	0.4	0.4	
			Silver (g/t)	—	—	130	130	130	130	150	150	
			Gold (g/t)	—	—	0.3	0.3	0.3	0.3	0.2	0.2	
Total Zinc North America			(Mt)	21.8	21.7	32	34	54	55	70	70	
			Zinc (%)	4.4	4.2	4.5	4.8	4.5	4.5	4	4	
			Lead (%)	0.5	0.5	0.6	0.5	0.6	0.7	1	1	
			Copper (%)	1.4	1.5	0.6	0.7	0.9	1.0	1	1	
			Silver (g/t)	45	46	116	112	87	87	134	133	
			Gold (g/t)	0.5	0.4	0.3	0.4	0.4	0.4	0.2	0.2	

Metals and Minerals Zinc

North America Mineral Resources (Copper projects: Bell, Granisle)

North America Mineral Resources (Copper projects: Bell, Granisle)												
Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Bell	100%	OC	Ore (Mt)	57	57	200	200	257	257	100	100	BD
			Copper (%)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
			Gold (g/t)	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
Granisle	100%	OC	Ore (Mt)	18	18	55	55	73	73	20	20	BD
			Copper (%)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
			Gold (g/t)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Total Copper North America				75	75	255	255	330	330	120	120	
Copper (%)				0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Gold (g/t)				0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	

North America Ore Reserves (Kidd Creek, Matagami)

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Kidd Creek	100%	UG	Ore (Mt)	3.6	4.8	1.0	1.2	4.6	6.0	AM
			Zinc (%)	3.5	3.6	5.1	5.5	3.8	4.0	
			Copper (%)	2.0	2.0	1.9	1.8	1.9	2.0	
			Silver (g/t)	52	46	43	40	50	45	
Matagami	100%									
Bracemac-McLeod		UG	Ore (Mt)	2.1	0.9	–	1.8	2.1	2.8	AC
			Zinc (%)	6.0	5.5	–	6.5	6.0	6.1	
			Copper (%)	0.9	0.8	–	0.9	0.9	0.9	
			Silver (g/t)	27	25	–	27	27	26	
			Gold (g/t)	0.6	0.5	–	0.6	0.6	0.6	
Total North America			Ore (Mt)	5.7	5.8	1.0	3.0	7	9	
			Zinc (%)	4.42	3.93	5.1	6.1	4.5	4.7	
			Copper (%)	1.59	1.79	1.9	1.3	1.6	1.6	
			Silver (g/t)	43	42	43	32	43	39	
			Gold (g/t)	0.22	0.09	–	0.4	0.2	0.2	

Notes

Kidd Creek: Kidd Creek is a VMS Cu-Zn-Ag deposit. Mineralisation occurs within a rhyolitic volcanic/volcaniclastic sequence as massive sulphide lenses of dominantly pyrite-pyrrhotite-sphalerite-galena-rich ores that are underlain by copper in chalcopyrite stringer zones.

Ore Reserves are based on the approved mining plan to 2,900m (9,600ft) depth. Mineral Resources are reported to 3,100m (10,200ft) depth. There is an ongoing exploration program that has identified mineralization continuity to 3,600m (11,700ft) depth, but there is insufficient data at this time to calculate an inferred resource. Updated reporting is anticipated in 2020.

Mineral Resources and Ore Reserves changes are the result of mining drawdown, with some adjustments due to updated mine design, cost reductions, and commodity pricing changes.

2019 production totalled 2.0 Mt at 3.9% Zn, 1.8% Cu and 36 g/t Ag. The majority of ore reserve in the Probable category reflects geotechnical and economic uncertainty during the latter years of the mine plan, rather than geological uncertainty.

Mine life is anticipated to be 3 years, end-2022. All land tenures covering the existing Mineral Resources and Ore Reserves are patented and never expire.

Bracemac-McLeod: The Bracemac-McLeod deposits comprise a cluster of polymetallic VMS lenses, which are generally thinner and of a more complex morphology than the historic

deposits in the Matagami mining camp. All shallower deposits are now mined-out and only the McLeod Deep lens remains, which lies between depths of 980m and 1,440m. The underground diamond drilling campaign was completed in July 2019 and since September 2019 the geological model for this deposit has only been updated based on underground geological mapping. The Deep lens is now classified as a Measured Resource.

Mine production for the year 2019 was 0.8Mt grading 5.7% Zn, 0.7% Cu, 26g/t Ag and 0.6g/ Au. Mine life is anticipated to be 2.5 years, mid-2022. There are no known land tenure issues that could affect the production plan.

PD-1: The PD1 deposit is a polymetallic VMS of the same age and derived from the same ore-forming hydrothermal system as the rest of the Matagami camp deposits. It is located 40km west of Glencore's Matagami concentrator and offices.

The PD1 deposit was discovered in 1974. A total of 50 historical drill holes were drilled between 1974 and 1984. In 2010, 25 additional holes were drilled in the upper portion of the deposit above 100m vertical depth, including 3 duplicate holes to validate the historical data. The deposit is located on a mining claim owned by Glencore.

Caber and Caber Nord: The Caber deposits are polymetallic VMS's of the same age and derived from the same ore-forming hydrothermal system as the rest of the Matagami camp deposits.

The deposit is located on a mining claim owned by Glencore. Drilling conducted in 2017-18 grew historical resources and

Metals and Minerals Zinc

increased confidence in the grade and tonnage of the mineralization outlined.

Errington: The Errington deposit is a polymetallic massive sulphide located in the Sudbury Basin, Ontario. The 5 lenses that make up this deposit are hosted by sedimentary rocks of the Vermilion Formation at the contact of the Onaping and Onwatin formations. The deposits formed by replacement of carbonate mounds and carbonaceous tuffs fuelled by heat from the Sudbury Igneous Complex. Additional enrichment and concentration of metals was provided by deformation from the South Range shear zone.

Discovered in the 1920's, the Errington underground development began in 1924 and ended in 1928. A total of 129,713t of ore were produced from Errington.

The historical resource was confirmed in 2013 with a 50,000m drill programme and has been reported in compliance with the JORC Code 2012.

Vermilion: The Vermilion deposit is a polymetallic massive sulphide body located in the Sudbury Basin, Ontario. The 17 lenses that make up the deposit are hosted by sedimentary rocks of the Vermilion Formation at the contact of the Onaping and Onwatin Formations. The deposits formed by replacement of carbonate mounds and carbonaceous tuffs fuelled by heat from the Sudbury Igneous Complex. Additional enrichment and concentration of metals was provided by deformation from the South Range shear zone.

Although discovered in the 1920s, the Vermilion underground development only started between 1952 and 1957. A total of 22,172t of ore were hoisted at Vermilion and stockpiled since circa 1958. The stockpile was shipped to Kidd Mine for processing in 1992.

The historical mineral resource was confirmed in 2013 with a 10,000m drill program. Mineral Resources were interpolated by ID2.

Hackett River Project: The Hackett River project is located in Nunavut, Canada, approximately 480km northeast of Yellowknife and 105km south-southwest of the community of Bathurst Inlet, which is located on the Arctic Ocean.

The Hackett River deposits are situated within the Slave Structural Province, a predominantly Archaean granite-greenstone-sedimentary terrane that lies between Great Slave Lake and Coronation Gulf. The deposits are typically VMS deposits. Sulphide mineralization occurs as tabular semi-massive to massive lenses. Stringer sulphide minerals are developed beneath the lower massive lenses in

stratiform to pipe-like configurations. Stratiform disseminated sulphides envelop the massive sulphide and stringer zones.

The four principle sulphide occurrences from west to east are the East Cleaver, Boot Lake, Main Zone and Jo Zone deposits. These deposits were defined as economically viable Mineral Resources, following boundaries of open cut vs underground mining, through a Preliminary Economic Assessment prior to Glencore's acquisition in 2010. A Pre-Feasibility study was carried out in 2013 to evaluate possible mining methods and boundaries between open cut and underground; for these reasons the Mineral Resources and only distinguished through their categories instead of possible exploitation method.

Following the exploration drilling campaign of 2013, which added 114 drillholes totalling 39,000m, reinterpretation was carried out outlining an *in situ* resource using Zn equivalent grades. The resource grades are interpolated using ID2 estimation.

Bell/Granisle: Bell and Granisle are porphyry copper-gold deposits located at Babine Lake. The Babine deposits are associated with calc-alkaline magmatic rocks. They were formed in the roots of Eocene volcanoes built upon continental crust. Erosion has removed most of the poorly consolidated volcanic piles, exposing the mineral deposits.

Recorded past production from the Bell mine from 1972 to 1992 totalled 77.2Mt averaging 0.47% Cu with an average waste to ore ratio of 0.95:1.

Past production for Granisle from 1966 to 1982 totalled 52.7Mt averaging 0.47% Cu with an average waste to ore ratio of 1.37.

There are no known land tenure issues and the mining leases are renewed yearly. For the Bell Mine the mining leases expire on July 31, 2020, and for the Granisle Mine the mining leases expire on February 7, 2020.

Competent persons

AC = Aline Côté, Head of Mining Technical Services, Glencore Zinc, (OGQ).

AM = Adrianus Moerman, Principal Mine Engineer, Glencore Zinc, (PEO).

BD = Benoit Drolet, Senior Resource Geologist, Glencore Zinc (APGO).

GR = Gilles Roy, Senior Resource Geologist, Glencore Zinc, (OGQ).

JD = Julie Drapeau, Chief Mine Geologist, Glencore Zinc (OGQ).

Metals and Minerals Zinc

Volcan Mineral Resources (Yauli, Chungar, Alpamarca, Palma, Puagjanca, Andrea, La Tapada, Cerro de Pasco, Santa Barbara and Rondoni)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Yauli	23.3%		Ore (Mt)	3.2	4.6	4.4	4.7	7.6	9.3	4.7	4.7	AC
Andaychagua		UG	Zinc (%)	4.7	4.2	6.1	4.0	5.5	4.1	6	4	
			Lead (%)	1.0	1.0	1.2	0.9	1.1	0.9	1	1	
			Silver (g/t)	113	117	122	121	119	119	119	132	
Zoraida			Ore (Mt)	–	–	3.0	–	3.0	–	1.0	–	AC
			Zinc (%)	–	–	4.8	–	4.8	–	5	–	
			Lead (%)	–	–	3.3	–	3.3	–	4	–	
			Silver (g/t)	–	–	143	–	143	–	149	–	
Carahuacra		UG	Ore (Mt)	4.8	3.0	3.7	3.6	8.5	6.6	4.1	3.4	AC
			Zinc (%)	6.6	7.5	6.6	6.4	6.6	6.9	6	7	
			Lead (%)	0.8	0.6	1.4	0.8	1.1	0.7	1	1	
			Silver (g/t)	77	88	140	81	105	84	135	115	
San Cristobal		UG	Ore (Mt)	11.1	17.5	12.5	15.7	23.5	33.2	16.2	13.1	AC
			Zinc (%)	7.3	7.0	6.2	5.9	6.7	6.5	6	5	
			Lead (%)	1.2	1.1	1.1	0.9	1.2	1.0	1	1	
			Silver (g/t)	156	127	140	123	148	125	109	92	
Ticlio		UG	Ore (Mt)	2.6	3.9	3.2	4.0	5.8	7.9	4.0	4.8	AC
			Zinc (%)	4.7	4.6	4.2	2.9	4.4	3.7	4	2	
			Lead (%)	1.2	1.0	1.0	0.6	1.1	0.8	1	1	
			Silver (g/t)	49	37	63	31	57	34	71	30	
Chungar	23.3%		Ore (Mt)	1.3	1.2	3.1	1.6	4.4	2.7	3.9	2.9	AC
Islay		UG	Zinc (%)	1.7	1.8	1.8	1.3	1.8	1.5	2	1	
			Lead (%)	0.8	0.9	0.8	0.6	0.6	0.7	1	1	
			Silver (g/t)	247	290	153	153	153	218	144	109	
Animon		UG	Ore (Mt)	4.5	4.0	12.2	7.9	16.7	11.9	15	13	AC
			Zinc (%)	9.7	8.8	6.7	7.0	7.5	7.6	5	5	
			Lead (%)	2.6	2.6	2.0	2.2	2.1	2.3	2	2	
			Silver (g/t)	100	111	81	78	86	89	77	64	
Alpamarca	23.3%	OC	Ore (Mt)	0.1	1.0	2.8	2.4	2.8	3.4	0.08	0.6	AC
			Zinc (%)	0.9	1.0	1.0	1.1	1.0	1.1	1	1	
			Lead (%)	0.7	0.7	0.7	0.9	0.7	0.8	0.5	1	
			Silver (g/t)	47	51	50	53	50	52	51	76	
Palma	23.3%	UG	Ore (Mt)	–	–	12.5	9.6	12.5	9.6	10.2	4.9	AC
			Zinc (%)	–	–	4.5	5.0	4.5	5.0	4	6	
			Lead (%)	–	–	0.9	0.7	0.9	0.7	1	1	
			Silver (g/t)	–	–	27	22	27	22	17	21	
Puagjanca	23.3%	UG/OC	Ore (Mt)	5.8	–	4.7	5.5	10.5	5.5	3.9	2.8	AC
			Zinc (%)	4.3	–	5.3	6.1	4.7	6.1	4	4	
			Lead (%)	2.4	–	3.0	2.9	2.6	2.9	3	2	
			Silver (g/t)	35	–	43	46	39	46	35	25	
Andrea	23.3%	UG	Ore (Mt)	–	–	–	–	–	–	5.4	–	AC
			Zinc (%)	–	–	–	–	–	–	4	–	
La Tapada	23.3%	UG	Ore (Mt)	–	–	3.6	–	3.6	–	6.5	7.7	AC
			Zinc (%)	–	–	3.6	–	3.6	–	3.4	3	
			Lead (%)	–	–	1.5	–	1.5	–	1.3	1	
			Silver (g/t)	–	–	46	–	46	–	40	38	
Cero de Pasco	23.3%		Ore (Mt)	–	2.1	–	–	–	2.1	154	154	AC
			Zinc (%)	–	1.2	–	–	–	1.2	2.1	2.1	
			Lead (%)	–	0.6	–	–	–	0.6	1	1	
			Silver (g/t)	–	15	–	–	–	15	78	78	
Total Pb-Zn-Ag			Ore (Mt)	33	37	66	55	99	92	228	212	
			Zinc (%)	6.3	6.3	5.2	5.2	5.6	5.6	2.9	2.7	
			Lead (%)	1.5	1.2	1.5	1.2	1.5	1.2	1.1	0.9	
			Silver (g/t)	107	109	87	79	93	93	78	76	

Metals and Minerals Zinc

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Santa Barbara	23.3%	OC	Ore (Mt)	—	—	—	—	—	—	140	140	AC
			Cu (%)	—	—	—	—	—	—	0.4	0.4	
			Gold (g/t)	—	—	—	—	—	—	0.2	0.2	
Rondoni	23.3%	OC	Ore (Mt)	18.4	18.4	34.3	34.3	53	53	7.8	7.8	AC
			Cu (%)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Total Cu			Ore (Mt)	18.4	18.4	34.3	34.3	53	53	148	148	
			Gold (g/t)	—	—	—	—	—	—	0.2	0.2	
			Cu (%)	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	

Volcan Ore Reserves (Yauli, Chungar, Alpamarca, Cerro de Pasco)

	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
Name of operation				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Yauli	23.3%	UG	Ore (Mt)	1.6	2.7	3.0	3.1	4.6	5.8	AC
Andaychagua			Zinc (%)	4.8	3.5	5.5	3.2	5.3	3.3	
			Lead (%)	0.9	0.9	1.1	0.7	1.0	0.8	
			Silver (g/t)	84	82	104	88	97	86	
Carahuacra		UG	Ore (Mt)	0.8	1.3	1.6	1.4	2.4	2.7	AC
			Zinc (%)	6.6	4.3	4.9	4.1	5.4	4.2	
			Lead (%)	1.4	0.4	1.3	0.5	1.3	0.4	
			Silver (g/t)	114	51	122	54	119	55	
San Cristobal		UG	Ore (Mt)	4.4	5.5	7.8	6.2	12.2	11.6	AC
			Zinc (%)	5.5	5.8	5.1	4.7	5.3	5.2	
			Lead (%)	1.0	0.7	1.0	0.9	1.0	0.8	
			Silver (g/t)	126	94	120	104	123	99	
Ticlio		UG	Ore (Mt)	0.6	0.9	1.2	0.5	1.8	1.5	AC
			Zinc (%)	4.3	4.3	4.3	4.2	4.3	4.3	
			Lead (%)	1.1	0.9	0.8	0.7	0.9	0.9	
			Silver (g/t)	53	28	66	24	62	27	
Chungar	23.3%	UG	Ore (Mt)	0.1	0.3	0.9	0.5	1.0	0.9	AC
Islay			Zinc (%)	1.4	0.9	2.4	1.5	2.3	1.3	
			Lead (%)	0.7	0.5	1.0	0.8	1.0	0.6	
			Silver (g/t)	209	177	125	175	137	176	
Animon		UG	Ore (Mt)	2.5	2.2	6.5	5.2	9.0	7.4	AC
			Zinc (%)	5.6	5.1	4.6	4.8	4.9	4.9	
			Lead (%)	1.6	1.5	1.5	1.6	1.5	1.4	
			Silver (g/t)	61	63	58	51	59	54	
Alpamarca		OC	Ore (Mt)	0.1	0.9	1.7	1.6	1.8	2.5	AC
			Zinc (%)	0.9	0.9	0.9	0.8	0.9	0.9	
			Lead (%)	0.8	0.7	0.7	0.6	0.7	0.7	
			Silver (g/t)	42	48	47	37	47	41	
Cerro de Pasco			Ore (Mt)	–	2.1	–	–	–	2.1	AC
Sulphide stockpile			Zinc (%)	–	1.2	–	–	–	1.2	
			Lead (%)	–	0.6	–	–	–	0.6	
			Silver (g/t)	–	15	–	–	–	15	
Total Volcan			Ore (Mt)	10.1	15.8	22.6	18.5	32.7	34.3	
			Zinc (%)	5.3	4.1	4.5	4.0	4.8	4.0	
			Lead (%)	0.9	0.8	1.1	1.0	1.1	0.9	
			Silver (g/t)	99	74	92	76	94	73	

Glencore holds 55.0% of the total class A common shares (63.0% of the class A common shares excluding treasury shares) and has an economic interest in Volcan of 23.3% (including the class B common shares and excluding treasury shares)

Metals and Minerals Zinc

Notes

Yauli: The Yauli “dome” is located 100km east of Lima, Peru.

The southern portion of the dome is where Andaychagua, Carahuacra, San Cristobal and Ticlio are located, and is made up of mantos and vein-type deposits. The mantos type are hosted by the Pucara limestone, while the veins are steeply dipping and cross-cut rocks of the Mitu and Excelsior groups, as well as the Chumpe and San Cristoval intrusions. The main mining methods used are an equal mix of sub-level stoping and cut-and-fill.

In 2019, Yauli complex production was split between the four operations:

- Andaychagua production was 962 Kt grading 4.5% Zn, 1.0% Pb, and 87 g/t Ag.
- Carahuacra production was 764 Kt grading 4.4% Zn, 0.5% Pb and 56 g/t Ag.
- Ticlio production was 248 Kt grading 4.3% Zn, 0.9% Pb and 59 g/t Ag.
- San Cristobal production was 1,191 Kt grading 5.5% Zn, 0.6% Pb and 91 g/t Ag.

The expected mine lives of the Yauli complex operations are:

- Andaychagua: 5-6 years based on Ore Reserves and 10 years based on Mineral Resources
- Carahuacra: 3-4 years based on Ore Reserves and 9-10 years based on Mineral Resources
- Ticlio: 9 years based on Ore Reserves and 12 years based on Mineral Resources
- San Cristobal: 10 years based on Ore Reserves and 14-15 years based on Mineral Resources

The Zoraida deposit is located in the Yauli district, 15km from the Andaychagua concentrator. The deposit is comprised of three stratiform manto bodies, and smaller volumes of vein and replacement bodies. Drilling in 2019 focused on confirming a new geological interpretation and preparing a mineral resource estimate in accordance with the 2012 JORC Code reporting guidelines.

Chungar: Located in the Huaron mining district, Chungar encompasses the Islay and Animon mines. The mineralization in Islay comprises a breccia-type fissure fill, mainly with silver mineralization, with subordinated lead and zinc. Animon is a hydrothermal polymetallic deposit consisting of mineralized structures probably related to Miocene aged monzonite dykes principally within, but not confined to the Huaron anticline. Various software was used for mineral resource modelling and interpolation: Leapfrog, Leapfrog Edge, GEMS and Datamine. Animon is exploited using a combination of sub-level stoping and cut-and-fill, while Islay focuses mainly on cut-and-fill.

In 2019, Chungar production was split between the two operations:

- Animon production was 1.5 Mt at 5.3% Zn, 1.2% Pb and 58 g/t Ag;
- Islay production was 253 Kt at 1.7% Zn, 0.9% Pb and 158 g/t Ag.

The expected mine lives of the Chungar complex operations are:

- Animon: 6 years based on Ore Reserves and 12 years based on Mineral Resources

- Islay: 3-4 years based on Ore Reserves and 4-5 years based on Mineral Resources

Alpamarca: The Alpamarca deposit is a structurally controlled vein-type deposit located in the Pacaros district of the province of Huarai. Mineral Resources are reported on the basis of a sub-blocked model honoring the narrow vein geometry, whereas Ore Reserves are reported using diluted block grades representative of the mining selectivity. In 2019, Alpamarca produced 950kt at 0.7% Zn, 0.5% Pb and 44 g/t Ag.

The expected mine life of Alpamarca is 2 years based on Ore Reserves.

Palma: Palma is a sub-seafloor replacement VMS deposit in the Casma greenstone belt of coastal Peru, which also hosts the Perubar, Cerro Lindo and Colquisiri deposits. Zinc, lead and silver mineralization at Palma is found in a series of semi-conformable lenses crosscut by a system of North-South trending dykes. The project is located in the Huarochiri province of Lima.

Puagjanca and Andrea: Puagjanca is an advanced exploration project which hosts polymetallic mineralization that includes zinc, lead, and silver. The deposit outcrops in the form of replacement bodies and sills rich in lead and zinc. It is located 15 km west of the Alpamarca mine in the Pacaros district of the province of Huarai in the region of Lima. Drilling in 2019 was successful in outlining additional resources in a new lens named Andrea and in assessing the mineralogy of the mineralization.

La Tapada: The La Tapada project is in the early exploration stage. It is close to Volcan's Yauli operating unit within the geological formation known as the Yauli Dome. The hosting formation consists of folded structures that are aligned over an intrusive stock, enriched in zinc, lead and silver.

Cerro de Pasco: In 2019, a comprehensive review of all historical data from Cerro de Pasco was performed and a new geological interpretation of the deposit was initiated. Production in 2019 consisted of 2.1 Mt of stockpile material, grading 1.9% Zn, 0.6% Pb and 44 g/t Ag from Cerro de Pasco San Expedito, and 0.9 Mt grading 272 g/t Ag and 21 g/t Au from the Cerro de Pasco Oxides.

The sale of Cerro de Pasco has been agreed subject to customary closing conditions, and is expected to complete in H1 2020.

Santa Bárbara and Rondoni: The geological setting of the Santa Barbara and Rondoni projects are characteristic of Andean Cu-porphyry deposits, with mineralization dominantly occurring in chalcopyrite-bearing veinlets with intermediate argillic and potassic alteration. The upper portion of the deposit exhibits a lithocap of intense advanced argillic alteration typically to Cu-porphyries. The mineralization occurs as disseminations in the matrix and in systems of veinlets, in lesser quantities.

All Volcan's mining concessions are held in perpetuity, subject only to continued annual payment of “rights of validity” taxes. Exploration licences are also held in perpetuity, subject to provision every five years of a report on activities undertaken.

Competent Person

AC = Aline Côté, Head of Mining Technical Services, Glencore Zinc, (OGQ).

Metals and Minerals Zinc

Other Zinc Mineral Resources (Los Quenuales, Illapa, Sinchi Wayra, Aguilar, Pallas Green)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Los Quenuales	97.6%											
Iscaycruz pit		OC	Ore (Mt)	0.5	0.7	1.3	1.7	1.8	2.4	0.7	1.8	AC
			Zinc (%)	6.5	5.0	6.4	5.4	6.4	5.3	7	6	
			Lead (%)	0.7	0.7	0.8	0.8	0.8	0.8	1	1	
			Copper (%)	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	
			Silver (g/t)	55	37	47	44	49	42	47	41	
Iscaycruz		UG	Ore (Mt)	0.7	0.7	1.1	1.1	1.8	1.8	2.0	2.0	AC
			Zinc (%)	7.0	7.0	5.7	5.7	6.2	6.2	3	3	
			Copper (%)	0.8	0.8	1.0	1.0	1.0	1.0	2	2	
			Silver (g/t)	19	19	16	16	17	17	19	19	
Yauliyacu		UG	Ore (Mt)	6.5	7.3	13.3	12.0	19.8	19.4	13.8	11.9	AC
			Zinc (%)	3.1	3.2	3.1	3.3	3.1	3.2	3	4	
			Lead (%)	1.1	1.1	1.3	1.3	1.3	1.2	2	2	
			Copper (%)	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4	
			Silver (g/t)	122	118	158	163	147	146	251	299	
Contonga		UG	Ore (Mt)	2.5	2.0	5.0	3.3	7.5	5.3	4.4	4.6	AC
			Zinc (%)	3.3	3.6	2.9	3.0	3.0	3.3	2	3	
			Lead (%)	0.5	0.9	0.8	0.7	0.7	0.7	1	1	
			Copper (%)	0.8	0.7	0.5	0.8	0.8	0.8	1	1	
			Silver (g/t)	50	55	52	55	55	55	49	55	
Illapa	45%											
Bolivar		UG	Ore (Mt)	1.6	1.5	1.1	1.3	2.6	2.8	5.5	6.0	AC
			Zinc (%)	13.2	14.0	13.0	13.7	13.1	13.9	9	9	
			Lead (%)	1.4	1.6	1.3	1.3	1.4	1.5	1	1	
			Silver (g/t)	326	343	293	336	313	340	344	338	
Porco		UG	Ore (Mt)	0.8	1.2	0.3	0.7	1.2	1.9	1.8	2.2	AC
			Zinc (%)	10.7	11.3	9.7	10.4	10.4	10.8	10	11	
			Lead (%)	0.6	0.7	0.6	0.7	0.6	0.9	1	1	
			Silver (g/t)	76	106	87	104	79	104	87	102	
Sinchi Wayra	100%											
Caballo Blanco		UG	Ore (Mt)	0.9	0.9	0.6	0.7	1.5	1.6	2.2	2.0	AC
			Zinc (%)	13.7	13.2	13.0	13.0	13.4	13.1	12	12	
			Lead (%)	3.8	3.2	3.2	2.6	3.6	2.9	2	2	
			Silver (g/t)	382w	301	320	252	357	279	229	219	
Aguilar	100%											
Aguilar Pit		OC	Ore (Mt)	0.5	0.5	0.4	0.4	0.8	0.8	0.03	0.03	AC
			Zinc (%)	2.8	2.8	2.3	2.3	2.6	2.6	2	2	
			Lead (%)	2.3	2.3	2.4	2.4	2.3	2.3	3	3	
			Silver (g/t)	59	59	65	65	62	62	65	65	
Aguilar		UG	Ore (Mt)	0.6	1.0	0.5	0.7	1.1	1.7	0.4	0.3	AC
			Zinc (%)	8.0	8.5	8.0	8.6	8.0	8.6	8	8	
			Lead (%)	8.9	9.5	7.8	7.3	8.4	8.6	6	6	
			Silver (g/t)	163	184	140	142	153	167	96	99	
Pallas Green	100%		Ore (Mt)	–	–	–	–	–	–	45.4	45.1	AH
Tobermalug Zone			Zinc (%)	–	–	–	–	–	–	7	7	
			Lead (%)	–	–	–	–	–	–	1	1	
Total Other Zinc			(Mt)	14.6	15.9	24	22	38	38	76	76	
			Zinc (%)	5.8	6.0	4.2	4.8	4.8	5.3	6	7	
			Lead (%)	1.5	1.7	1.3	1.4	1.4	1.5	1	1	
			Copper (%)	0.4	0.3	0.3	0.4	0.3	0.4	0.2	0.1	
			Silver (g/t)	138	134	130	138	133	137	83	89	

Metals and Minerals Zinc

Other Zinc Ore Reserves (Los Quenuales, Illapa, Sinchi Wayra, Aguilar)

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person	
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18		
Los Quenuales	97.6%										
Iscaycruz pit		OC	Ore (Mt)	0.6	0.7	1.2	1.7	1.8	2.4	AC	
			Zinc (%)	5.7	4.9	5.8	5.1	5.8	5.1		
			Lead (%)	0.6	0.6	0.7	0.7	0.7	0.7		
			Copper (%)	0.2	0.3	0.2	0.2	0.2	0.2		
			Silver (g/t)	48	38	43	45	45	43		
Iscaycruz		UG	Ore (Mt)	0.1	–	0.2	0.5	0.4	0.5	AC	
			Zinc (%)	9.3	–	7.1	6.0	7.9	6.0		
			Copper (%)	0.7	–	0.8	0.9	0.7	0.9		
			Silver (g/t)	20	–	15	20	17	20		
Yauliyacu		UG	Ore (Mt)	1.7	2.5	7.4	6.1	9.0	8.6	AC	
			Zinc (%)	2.4	2.5	2.0	1.9	2.1	2.4		
			Lead (%)	0.8	0.7	0.9	0.8	0.9	0.8		
			Copper (%)	0.3	0.3	0.2	0.3	0.2	0.3		
			Silver (g/t)	109	87	120	109	118	103		
			Ore (Mt)	0.3	0.2	0.8	0.8	1.2	1.0		AC
			Zinc (%)	3.3	2.7	3.4	2.8	3.4	2.8		
			Lead (%)	0.8	0.7	1.2	0.4	1.1	0.5		
Contonga		UG	Copper (%)	0.8	0.7	0.5	1.2	0.6	1.1		
			Silver (g/t)	55	44	63	41	61	42		
Illapa	45%										
Bolivar		UG	Ore (Mt)	1.0	0.7	0.7	0.8	1.7	1.4	AC	
			Zinc (%)	10.0	10.6	9.9	10.9	10	10.7		
			Lead (%)	1.0	1.2	0.9	1.0	1.0	1.1		
			Silver (g/t)	263	259	234	261	251	260		
Porco		UG	Ore (Mt)	0.2	0.4	0.1	0.2	0.4	0.6	AC	
			Zinc (%)	11.1	9.5	9.6	9.7	11	9.5		
			Lead (%)	0.5	0.5	0.7	0.5	1	0.5		
			Silver (g/t)	80	90	121	102	94	94		
Sinchi Wayra	100%										
Caballo Blanco		UG	Ore (Mt)	0.9	0.8	0.6	0.7	1.5	1.4	AC	
			Zinc (%)	6.8	6.8	7.0	8.0	6.9	7.3		
			Lead (%)	2.1	2.2	2.1	1.4	2.1	1.8		
			Silver (g/t)	214	208	206	133	211	172		
Aguilar	100%	UG	Ore (Mt)	0.3	0.5	0.3	0.4	0.6	0.9	AC	
			Zinc (%)	7.5	6.9	6.3	7.0	6.9	6.9		
			Lead (%)	8.2	8.5	7.8	7.5	8.0	8.1		
			Silver (g/t)	153	163	134	127	144	148		
Total Other Zinc			Ore (Mt)	5.2	5.6	11.3	11.2	16.6	16.8		
			Zinc (%)	6.0	5.2	3.5	3.9	4.3	4.4		
			Lead (%)	1.4	1.7	1.1	1.0	1.2	1.2		
			Copper (%)	0.2	0.2	0.2	0.3	0.2	0.2		
			Silver (g/t)	145	124	118	103	126	110		

Metals and Minerals Zinc

Notes

Iscaycruz: Zinc, lead and copper mineralization are exposed as subvertical massive sulphide orebodies which are described as skarn, breccias and carbonate replacement type along a 12 km corridor hosted in clay-rich limestone and dolomite rocks. Hydrothermal mineralization assemblages are mainly composed of sphalerite, galena, pyrite and chalcopyrite distributed in five production zones named Limpe Centro, Chupa, Tinyag II, Tinyag I and Santa Este, from north to south.

Changes to the Santa Este Mineral Resources and Ore Reserves are due to geological modelling and the addition of new drilling information, as well as mining depletion.

Open pit production from Santa Este in 2019 was 400kt grading 5.3% Zn, 0.7% Pb, 0.4% Cu and 43 g/t Ag. Underground production for 2019 was 10kt grading 10.6% Zn, 0.1% Pb, 0.1% Cu and 14 g/t Ag.

The expected life of Iscaycruz Mine is 2 to 3 years based on Ore Reserves and 3 to 5 years based on Mineral Resources. Relevant mining/concession licenses are permanent.

Yauliyacu: Main mineralisation occurs as sphalerite, galena, tetrahedrite and chalcopyrite in 60-80 degrees northwest dipping narrow veins, stockwork and minor replacement massive orebodies exposed in about 5km length extension and +2km depth extension. This hydrothermal mineralisation is strongly structurally controlled and hosted in folded rock units as calcareous sandstones, conglomerates, volcanic tuffs, andesites and limestones.

Changes to the mineral resource are due to refinement of the model with additional zones of vein and disseminated mineralisation; changes to silver grades are mainly driven by the refinement factors used in the treatment of historical data.

Production for 2019 was 1.3Mt grading 2.0% Zn, 0.7% Pb and 72 g/t Ag.

The expected life of Yauliyacu is 6 years based on Ore Reserves and 10 years based on Mineral Resources. Expiry date of relevant mining/concession licences: permanent.

Contonga: Contonga is a polymetallic deposit of Zinc, and Lead-Silver, and lesser Copper, skarns. The mine is located 425km northeast of Lima in the Ancash region, and is adjacent to the Antamina mine. The area is extremely rugged mountains, the property situated between 4,000-5,000m in elevation.

2019 production was 156kt grading 2.3% Zn, 0.4% Pb, 0.8% Cu and 42 g/t Ag. Contonga was placed on care and maintenance in H1 2019 while restructuring the operation. Its expected life mine is 3-4 years based on Ore Reserves and 5-6 years based on Mineral Resources.

Illapa and Sinchi Wayra: The majority of the deposits within the Illapa and Sinchi Wayra portfolio are epigenetic-hydrothermal base metal type vein and fault-filled mineralization hosted within a variety of lithologies from volcanic tuffs to sedimentary packages. The main mineral assemblages are composed of sphalerite, marmatite, galena, silver-rich galena and silver sulfosalts. The resources are based on multiple structures, Porco containing over 100 different veins, not all of which are comprised in the mineral resource. The typical dimensions of these structures is over 500m in length and over 450m in depth profile with mineralization open at depth. Average vein widths are between 0.2 and 4.0m.

The Caballo Blanco operational unit consists of three mines: Colquechaquita, Reserva and Tres Amigos, which supply the central plant, Don Diego, situated close to Potosi.

At Porco, additional mineralization has been captured in the 3D model and geostatistical parameters are refined based on those changes.

Production for 2019 for each operation was:

- Bolivar: 219kt grading 7.2% Zn, 0.6% Pb and 172 g/t Ag;
- Porco: 217kt grading 7.1% Zn, 0.6% Pb and 65 g/t Ag;
- Caballo Blanco: 251kt grading 6.8% Zn, 1.9% Pb and 214 g/t Ag.

The expected life of the mines as a group, considering current production capacities, is an average of 5 years based on Ore Reserves and 7 to 10 years based on Mineral Resources.

According to the new Bolivian Constitution enacted in 2009, natural resources belong to the Bolivian people. The Bolivian state can enter into mining contracts with private investors to operate them. As with all private investors, Illapa and Sinchi Wayra do not hold property rights over mining resources in the country, but rather hold the right to exploit them pursuant to Bolivian legislation.

Expiry date of the relevant mining concessions / authorizations or contracts is different for each mine. Porco and Bolivar - July 2028 (joint venture agreement entered into in 2013) and permanent in respect of Caballo Blanco.

Aguilar: Mineralisation is classified as sedex type with sulphide layers in between siliciclastic and shale rocks with a postsecondary metasomatic over print between two intrusive stocks. Galena-rich, sphalerite, marmatite pyrite orebodies as lenses shape, locally brittle-style hydrothermal breccias, minor veinlets-stockworks and dissemination defines the economic portion of mineral inventories. Strike length extension of mineral geometries is variable and reaches up to 300m on north-south extension, about 55m in width and reaches up to 160m in depth.

The decrease in the underground Mineral Resources is the result of a sterilization campaign on portions of Piqué Inferior and Capa A Contacto that are impossible to access. There has been no effect on the Ore Reserves as these zones were not previously considered part of the ore reserve. Under the current economic assumptions, remaining Mineral Resources in the Aguilar open pit have not been modified to Ore Reserves.

Production for 2019 was 0.21Mt grading 6.3% Zn, 10.5% Pb and 192g/t Ag.

The remaining mine life is approximately 2-3 years based on Ore Reserves and 3-4 years based on Mineral Resources.

Expiry date of relevant mining/concession licences: permanent.

Pallas Green: The Pallas Green project is situated near Limerick in Southwestern Ireland. The Tobermalug zone consists of multiple, subhorizontal, stratiform lenses of Irish-type, breccia-hosted, sphalerite-galena-pyrite within a Carboniferous limestone. The lenses occur over an area 4,000m by 4,000m, and from 300m to 1,300m below surface.

The Inferred Mineral Resource is based on 413,600m of diamond drilling in 806 drill holes completed between 2002 and the end of 2018. Drill spacing is nominally 100m, but 178

Metals and Minerals Zinc

infill drill holes at 50m spacing have been completed. Mineralisation wireframes were built, taking into account a cut-off of 4% Zn+Pb and a minimum 3.0m true thickness, and constrain interpolation by Inverse Distance Weighting in a block model.

Competent Person

AC = Aline Côté, Head of Mining Technical Services, Glencore Zinc, (OGQ).

AH = Allan Huard, Senior Geologist, Glencore Zinc, (APGO).

Metals and Minerals

Nickel

Integrated Nickel Operations (INO) Mineral Resources (Raglan, Sudbury)

Name of operation	Attributable Interest	Mining Method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Raglan	100%	UG	Ore (Mt)	5.89	6.50	14.93	14.20	20.8	20.7	15	14	DP
			Nickel (%)	3.66	3.75	3.11	3.15	3.26	3.34	3.2	3.0	
			Copper (%)	0.90	0.92	0.94	0.96	0.93	0.95	0.9	0.9	
			Cobalt (%)	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	
			Platinum (g/t)	0.95	1.00	0.92	0.94	0.93	0.96	0.9	0.9	
			Palladium (g/t)	2.32	2.41	2.29	2.35	2.30	2.37	2.3	2.2	
Sudbury	100%	UG	Ore (Mt)	4.94	5.68	22.66	23.25	27.6	28.9	27	25	SEK
			Nickel (%)	1.70	1.59	2.07	2.10	2.00	2.00	0.9	0.9	
			Copper (%)	1.26	1.49	2.54	2.50	2.31	2.30	2.5	2.6	
			Cobalt (%)	0.04	0.04	0.05	0.05	0.05	0.05	0.02	0.03	
			Platinum (g/t)	0.60	0.87	0.98	0.91	0.91	0.90	1.0	1.0	
			Palladium (g/t)	0.58	0.83	1.13	1.07	1.03	1.02	1.2	1.2	
Total INO			Ore (Mt)	10.8	12.2	37.6	37.5	48.4	49.6	42	39	
			Nickel (%)	2.77	2.74	2.48	2.50	2.54	2.56	1.7	1.7	
			Copper (%)	1.06	1.19	1.90	1.92	1.72	1.74	1.9	2.0	
			Cobalt (%)	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.04	
			Platinum (g/t)	0.79	0.94	0.96	0.92	0.92	0.93	1.0	1.0	
			Palladium (g/t)	1.53	1.67	1.59	1.56	1.58	1.58	1.6	1.6	

Integrated Nickel Operations Ore Reserves (Raglan, Sudbury)

Name of operation	Attributable Interest	Mining Method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Raglan	100%	UG	Ore (Mt)	3.38	4.57	7.01	6.70	10.39	11.28	RC
			Nickel (%)	2.89	2.83	2.77	2.76	2.81	2.79	
			Copper (%)	0.70	0.70	0.80	0.80	0.77	0.76	
			Cobalt (%)	0.06	0.06	0.06	0.06	0.06	0.06	
			Platinum (g/t)	0.76	0.75	0.86	0.87	0.83	0.82	
			Palladium (g/t)	1.84	1.83	2.12	2.14	2.03	2.01	
Sudbury	100%	UG	Ore (Mt)	4.98	5.74	14.55	15.03	19.53	20.77	SEK
			Nickel (%)	1.27	1.26	2.08	2.06	1.88	1.84	
			Copper (%)	0.88	1.17	0.98	0.98	0.96	1.03	
			Cobalt (%)	0.03	0.03	0.05	0.05	0.04	0.04	
			Platinum (g/t)	0.49	0.66	0.36	0.37	0.40	0.45	
			Palladium (g/t)	0.45	0.62	0.41	0.42	0.42	0.47	
Total INO			Ore (Mt)	8.4	10.3	21.6	21.7	29.9	32.0	
			Nickel (%)	1.92	1.96	2.30	2.28	2.20	2.17	
			Copper (%)	0.81	0.96	0.92	0.92	0.89	0.94	
			Cobalt (%)	0.04	0.04	0.05	0.05	0.05	0.05	
			Platinum (g/t)	0.60	0.70	0.52	0.52	0.55	0.58	
			Palladium (g/t)	1.01	1.16	0.97	0.95	0.98	1.02	

Metals and Minerals Nickel

Notes

For the purposes of this statement, the term 'Ore Reserves' as defined by the JORC Code 2012 has the same meaning as 'Mineral Reserves' as defined in the CIM Standards 2014. The resource totals have been restated in compliance with the JORC Code.

There are no known environmental, permitting, legal, taxation, political or other relevant issues that would materially affect the estimates of the Mineral Reserves.

Depending on when production is scheduled, Mineral Reserves and Resources are calculated using a blend of short, medium, or long term metal price assumptions and exchange rates.

Raglan: Ni-Cu-Co-PGE mineralisation is located at or near the base of subvolcanic mafic-ultramafic intrusive complexes referred to as the "Raglan Formation". Resources are generally determined at a 1.5% Ni cut-off and are composed of disseminated, net-textured, and massive pyrrhotite-pentlandite-chalcopryite rich sulphides contained within 134 individual sulphide lenses, extending from surface to more than 900m vertical depth. The size of these high-grade sulphide lenses varies significantly from 0.01Mt to 6.1Mt, averaging 0.2Mt. Mineral Reserves are sufficient to support a 7 year mine life. Significant undeveloped Mineral Resources provide an opportunity to extend mine life by more than 10 years.

Expiry date of relevant mining leases and exploration licenses: depending on the mine/project, range from 9 October 2020 to 25 June 2038.

Sudbury: Sulphide deposits sit on broadly defined trends of mineralisation along basal brecciated rocks of the Sudbury Igneous Complex as pentlandite-pyrrhotite-chalcopryite rich concentrations as well as within the underlying footwall in fractured pathways as chalcopryite dominated polymetallic (Cu, Ni, Au, Ag, Pt, Pd) vein-style sulphides. The total Ore Reserve tonnage decreased from 2018 due to mining depletion. Cut-off grades are calculated for each individual mine site or resource based on a metal equivalent or net smelter return value taking into account all recoverable metals. The expected reserve-based mine life is 15 years.

All Land holdings in Sudbury covering existing Ore Reserves are patented and 100% owned by Glencore, with the exception of one site where a portion of reserves are covered by two licences of occupation which are held in perpetuity. Mineral Resources are also patented with the exception of areas covered by several mining leases which expire in 2033 and 2036.

Competent Persons

DP = Daniel Patry, Glencore Nickel, P.Geo (OGQ).

RC = Richard Caumartin, Glencore Nickel, P.Eng. (OIQ).

SEK = Steve Kormos, Glencore Nickel, P. Geo. (APGO).

Metals and Minerals Nickel

Murrin Murrin Mineral Resources

Name of operation	Attributable Interest	Mining Method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Murrin Murrin	100%	OC	Ore (Mt)	144.5	138.4	75.5	75.5	220.0	214.0	17	17	SK
			Nickel (%)	1.01	1.01	0.99	0.99	1.00	1.01	0.9	0.9	
			Cobalt (%)	0.073	0.075	0.084	0.084	0.077	0.078	0.07	0.07	

Murrin Murrin Ore Reserves

Name of operation	Attributable Interest	Mining Method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Murrin Murrin	100%	OC	Ore (Mt)	103.6	83.1	37.8	18.5	141.4	101.7	MR/PW
			Nickel (%)	1.03	1.05	1.04	1.05	1.03	1.05	
			Cobalt (%)	0.080	0.082	0.103	0.078	0.086	0.081	

Koniambo Mineral Resources

Name of operation	Attributable Interest	Mining Method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Koniambo	49%	OC	Ore (Mt)	11.7	12.8	41.7	43.6	53.5	56.4	82	83	RM
			Nickel (%)	2.48	2.48	2.41	2.40	2.42	2.42	2.5	2.5	

Koniambo Ore Reserves

Name of operation	Attributable Interest	Mining Method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Koniambo	49%	OC	Ore (Mt)	11.5	11.7	30.3	30.1	41.8	41.8	KC
			Nickel (%)	2.24	2.27	2.18	2.20	2.19	2.22	

Other Nickel Mineral Resources

Name of operation	Attributable Interest	Mining Method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Kabanga	50%	UG	Ore (Mt)	13.8	13.8	23.4	23.4	37.2	37.2	21	21	SEK
			Nickel (%)	2.49	2.49	2.72	2.72	2.63	2.63	2.6	2.6	
			Copper (%)	0.34	0.34	0.36	0.36	0.35	0.35	0.3	0.3	
			Cobalt (%)	0.21	0.21	0.19	0.19	0.20	0.20	0.2	0.2	
			Platinum (g/t)	0.16	0.16	0.42	0.42	0.32	0.32	0.3	0.3	
			Palladium (g/t)	0.19	0.19	0.28	0.28	0.25	0.25	0.3	0.3	

Metals and Minerals Nickel

Notes

For the purposes of this statement, the term 'Ore Reserves' as defined by the JORC Code 2012 has the same meaning as 'Mineral Reserves' as defined in the CIM Standards 2014. The Mineral Resource totals have been restated in compliance with the JORC Code.

There are no known environmental, permitting, legal, taxation, political or other relevant issues that would materially affect the estimates of the Mineral Reserves.

Depending on when production is scheduled, Mineral Reserves and Resources are calculated using a blend of short, medium, or long term metal price assumptions and exchange rates.

Murrin Murrin: Nickel and cobalt mineralisation at Murrin is hosted within a laterite formed from the weathering of ultramafic rocks. The resources are hosted in multiple deposits over three main project areas (North, South and East). Mineral Resource and Ore Reserve figures as at 31 December 2019 are generated by depletion of the resource models by using end-of-period surface surveys as at 30 September 2019, with adjustments applied for October to December forecast production. Resources are determined at a 0.8% Ni cut-off.

The Murrin 2019 Ore Reserve estimate is based on the optimised Base Case pit shells for Measured and Indicated Mineral Resources, and includes scats and stockpiles. Updates to process modelling, 4-yearly shutdown costs and operating costs have been included. The Ore Reserve tonnage has increased in 2019, mostly attributable to the re-optimisation of LOM pit shells in addition to the inclusion of a maiden ore reserve declaration for the Irwin Hills orebody.

Ore Reserve grades have been subject to the application of grade modifying factors. These have been derived from analysis of the latest applicable two years mine-to-mill grade performance and result in grade modifying factors of 97.9% and 92% for nickel and cobalt respectively.

Remaining mine life: the most recent Life of Mine schedule indicates the remaining mine life is 17 years. Expiry dates for relevant tenements differ for each tenement and range from 2020 to 2039.

Koniambo: Nickel rich laterite deposits are developed on variably serpentinized ultramafic rocks. Mineral Resources and Ore Reserves include inventories as of 31 October 2019 with adjustments applied for November to December forecast production. In converting Mineral Resources to Ore Reserves, a mining recovery of 90% and a mining dilution of 15% (0.5% Ni) were assumed. The mining dilution factors are based on historical data, production reconciliation and equipment selectivity.

Mineral Resources are calculated through Conditional Simulations within the LOM and Trazy area. In areas outside the LOM footprint, Mineral Resources were estimated by the plan polygonal method. The reserve cut-off grade used is 2.0% Ni.

Designed yearly production rate is 2.5Mtpa and expected mine life is 17 years. The expiry date of relevant mining property licences is 31 December 2048. Ore Reserves stated include a stockpile estimated at 208kt at 2.23% Ni between the mine and process plant.

Kabanga: The Mineral Resource comprises massive sulphide and ultramafic-hosted disseminated to semi-massive sulphide mineralisation.

There have been no changes to the previously disclosed Mineral Resource estimate. The last drilling campaign was performed in 2009 and the latest Mineral Resource estimate dates from June 2010.

An application for a new Prospecting Licence has been submitted and is currently awaiting approval.

Competent Persons

KC = Kenny Cheong, Koniambo Nickel SAS, (P. Eng (OIQ)).

MR = Mitch Rohr, Minara Resources Pty Ltd., (mining and metallurgical costs, reserve optimisation), (AusIMM).

PW = Paul Wiltshire, Minara Resources Pty Ltd., (process plant modelling assumptions), (AusIMM).

RM = Robert Menin, Koniambo Nickel SAS, (AusIMM).

SK = Stephen King, Minara Resources Pty Ltd., (geostatistical analysis, modelling/estimation and resource classification), (AusIMM).

SEK = Steve Kormos, Glencore Nickel, P. Geo (PGO).

Metals and Minerals Ferroalloys

Chrome Mineral Resources

Bushveld Complex – Western Limb

				Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
Name of operation	Attributable interest	Mining method	Commodity	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Western Chrome Mines – LG6 Chromitite Package and MG1 Chromitite Layer												
Waterval Mine	79.5%	UG	Ore (Mt)	16.231	16.231	1.02	1.02	17.26	17.26	0.7	0.7	MM/DR
			Cr ₂ O ₃ (%)	41.31	41.31	42.6	42.6	41.4	41.4	43	43	
Marikana West	79.5%	UG	Ore (Mt)	2.991	2.947	1.69	1.69	4.69	4.64	–	–	MM/DR
			Cr ₂ O ₃ (%)	42.43	42.44	42.6	42.6	42.5	42.5	–	–	
Kroondal Mine	79.5%	UG/OC	Ore (Mt)	9.399	8.590	0.66	1.57	10.16	10.16	–	–	MM/DR
			Cr ₂ O ₃ (%)	42.76	42.84	41.5	41.6	42.7	42.6	–	–	
Kroondal	79.5%	UG/OC	Ore (Mt)	10.369	10.037	4.22	4.96	14.59	15.00	–	–	MM/DR
Gemini			Cr2O3 (%)	42.54	42.56	41.4	41.4	42.2	42.2	–	–	
Marikana East	79.5%	UG	Ore (Mt)	4.279	4.193	0.53	0.79	4.81	4.98	–	–	MM/DR
			Cr ₂ O ₃ (%)	42.23	42.25	42.0	41.8	42.2	42.2	–	–	
Klipfontein/ Waterval	79.5%	UG	Ore (Mt)	11.852	9.952	22.94	16.92	34.79	26.87	101.1	106.9	MM/DR
			Cr ₂ O ₃ (%)	42.08	42.10	42.0	42.0	42.0	42.0	42	42	
Boshhoek	79.5%	UG/OC	Ore (Mt)	–	–	17.09	17.09	17.09	17.09	–	–	MM/DR
			Cr ₂ O ₃ (%)	–	–	40.5	40.5	40.5	40.5	–	–	
Townlands	79.5%	UG	Ore (Mt)	–	–	12.94	12.94	12.94	12.94	–	–	MM/DR
Extension 9			Cr ₂ O ₃ (%)	–	–	41.4	41.4	41.4	41.4	–	–	
Total LG6 and MG1			Ore (Mt)	55.121	51.951	61.11	57.00	116.23	108.95	101.8	107.6	
			Cr ₂ O ₃ (%)	42.09	42.10	41.5	41.4	41.8	41.7	42	42	

Western Chrome Mines – Tailings

Tailings	79.5%		Ore (Mt)	–	–	–	–	–	–	2.8	2.6	MM/DR
			Cr ₂ O ₃ (%)	–	–	–	–	–	–	17	17	

Bushveld Complex – Eastern Limb

				Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
Name of operation	Attributable interest	Mining method	Commodity	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Eastern Chrome Mines –MG1 Chromitite Layer												
Thornccliffe	79.5%	UG/OC	Ore (Mt)	39.814	36.445	10.16	14.40	49.98	50.85	–	0.2	SV/DR
			Cr ₂ O ₃ (%)	40.16	40.44	41.2	41.2	40.4	40.6	–	42	
Helena	79.5%	UG/OC	Ore (Mt)	23.763	23.667	12.77	13.58	36.54	37.25	10.2	9.1	SV/DR
			Cr ₂ O ₃ (%)	39.81	39.75	38.5	38.4	39.3	39.3	38	38	
De Grooteboom	79.5%	UG/OC	Ore (Mt)	1.037	1.038	0.50	0.50	1.54	1.54	–	–	SV/DR
			Cr ₂ O ₃ (%)	40.22	40.23	40.3	40.3	40.2	40.3	–	–	
Richmond	79.5%	UG	Ore (Mt)	0.578	0.595	21.83	12.26	22.41	12.86	29.2	13.9	SV/DR
			Cr ₂ O ₃ (%)	40.95	41.32	41.2	41.1	41.2	41.1	41	41	
St George	79.5%	UG	Ore (Mt)	0.981	–	3.95	4.92	4.94	4.92	19.9	6.1	SV/DR
			Cr ₂ O ₃ (%)	40.21	–	39.5	39.6	39.6	39.6	40	40	
Total MG1			(Mt)	66.172	61.743	49.23	45.67	115.40	107.41	59.2	29.3	
			Cr ₂ O ₃ (%)	40.04	40.18	40.4	40.2	40.2	40.2	40	40	

Eastern Chrome Mines – MG2 Chromitite Layer

Thornccliffe Mine	79.5%	UG/OC	Ore (Mt)	—	—	—	—	—	—	41.8	41.8	SV/DR
			Cr ₂ O ₃ (%)	—	—	—	—	—	—	38	38	
Helena Mine	79.5%	UG/OC	Ore (Mt)	—	—	—	—	—	—	85.4	85.4	SV/DR
			Cr ₂ O ₃ (%)	—	—	—	—	—	—	38	38	
Total MG2			Ore (Mt)	—	—	—	—	—	—	127.2	127.2	
			Cr ₂ O ₃ (%)	—	—	—	—	—	—	38	38	
Total MG1 and MG2			Ore (Mt)	66.172	61.743	49.23	45.67	115.40	107.41	186.4	156.5	
			Cr ₂ O ₃ (%)	40.04	40.18	40.4	40.2	40.2	40.2	39	38	

Eastern Chrome Mines – Tailings

Tailings	79.5%		Ore (Mt)	–	–	–	–	–	–	4.6	4.2	SV/DR
			Cr ₂ O ₃ (%)	–	–	–	–	–	–	20	19	

Metals and Minerals

Ferroalloys

Chrome Ore Reserves

Bushveld Complex – Western Limb

Western Chrome Mines – Western End				Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
Name of operation	Attributable interest	Mining method	Commodity	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Western Chrome Mines – LG6 Chromitite Package and MG1 Chromitite Layer										
Waterval	79.5%	UG	Ore (Mt)	8.692	8.802	0.93	0.95	9.63	9.75	MM/DR
			Cr ₂ O ₃ (%)	31.38	31.12	26.5	26.2	30.9	30.6	
Marikana West	79.5%	UG	Ore (Mt)	0.131	0.146	–	–	0.13	0.015	MM/DR
			Cr ₂ O ₃ (%)	29.66	29.49	–	–	29.7	29.5	
Kroondal	79.5%	UG/OC	Ore (Mt)	2.523	1.901	0.56	1.38	3.09	3.28	MM/DR
			Cr ₂ O ₃ (%)	29.05	29.59	28.1	28.6	28.9	29.2	
Kroondal Gemini	79.5%	UG/OC	Ore (Mt)	5.764	5.625	4.11	4.73	9.87	10.35	MM/DR
			Cr ₂ O ₃ (%)	30.96	31.23	28.6	28.8	30.0	30.1	
Marikana East	79.5%	UG	Ore (Mt)	0.031	0.423	–	–	0.03	0.42	MM/DR
			Cr ₂ O ₃ (%)	28.28	28.63	–	–	28.3	28.6	
Klipfontein/	79.5%	UG	Ore (Mt)	0.650	0.521	0.46	0.30	1.11	0.82	MM/DR
Waterval			Cr ₂ O ₃ (%)	28.43	28.70	28.3	28.5	28.4	28.6	
Boshhoek	79.5%	UG/OC	Ore (Mt)	–	–	0.58	0.58	0.58	0.58	MM/DR
			Cr ₂ O ₃ (%)	–	–	26.1	26.1	26.1	26.1	
Total LG6 and MG1			Ore (Mt)	17.791	17.418	6.65	7.94	24.44	25.36	
			Cr ₂ O ₃ (%)	30.79	30.84	28.0	28.2	30.0	30.0	

Bushveld Complex – Eastern Limb

Eastern Chrome Mines – MG1 Chromitite Layer				Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
Name of operation	Attributable interest	Mining method	Commodity	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Eastern Chrome Mines – MG1 Chromitite Layer										
Thornccliffe	79.5%	UG/OC	Ore (Mt)	20.406	19.719	6.64	10.03	27.05	29.74	SV/DR
			Cr ₂ O ₃ (%)	33.54	33.31	34.1	34.2	33.7	33.6	
Helena	79.5%	UG/OC	Ore (Mt)	4.148	3.241	–	–	4.15	3.24	SV/DR
			Cr ₂ O ₃ (%)	31.71	32.55	–	–	31.7	32.6	
Richmond	79.5%	UG	Ore (Mt)	–	–	2.04	–	2.04	–	SV/DR
			Cr ₂ O ₃ (%)	–	–	31.9	–	31.9	–	
Total MG1			Ore (Mt)	24.554	22.961	8.68	10.03	33.23	32.99	
			Cr ₂ O ₃ (%)	33.23	33.20	33.6	34.2	33.3	33.5	

Notes

Tonnages are quoted as million metric tonnes.

Grades are quoted as %Cr₂O₃.

The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce Ore Reserves.

The chromitite assets include those owned by Glencore and Merafe in different ownership percentages, the attributable interest in such assets remain as reflected.

All Glencore Ferroalloys' chrome operations mine the chromitite deposits developed within the world renowned Bushveld Complex of South Africa. The 2060 Ma year-old Bushveld Complex is the largest known deposit of chrome, vanadium and platinum group elements (PGEs) in the world. The Bushveld Complex stretches 350km east-west and 450km north-south. The chrome ore is mined from shallow dipping (10° – 14°) tabular orebodies. Although there are numerous chromitite layers developed in the Bushveld Complex, the chromitite layers targeted for economic exploitation are the LG6/LG6A Chromitite Layer package and the MG1 Chromitite Layer.

No cut-off grades are applied to the chromitite layers being mined. The chromitite layers are mined from contact to contact and no selective mining cuts are applied. The chromitite layer

grades show exceptional regional grade consistency and continuity.

The chromitite layers are mostly mined underground using trackless mechanised mining methods on a board and pillar mine layout design.

The Mineral Resources are estimated as chromitite tonnages and grades to reflect the grades of the various individual chromitite layers and have been presented by separate layers for clarity in this report. To this end the Mineral Resources for the Eastern Limb properties have been split between the MG1 and MG2 Chromitite Layers. Both the LG6 and MG1 Chromitite Layers which Glencore currently mine are discrete solid chromitite layers with sharp contacts.

Changes in the year on year Mineral Resource tonnage and grade estimates are mainly due to mining depletion and changes due to additional geological information gained through exploration. These changes reflect in the tonnage and grade reports from the grade block models.

The tonnage and grades for all the tailings facilities that can be economically processed have been estimated and declared in this report. For a number of the tailings facilities this will be the initial declaration as reflected in the accompanying tables.

Metals and Minerals Ferroalloys

Eastern Chrome Mines: The mining complex consist of the Thorncliffe, Helena, and Magareng Mines. The eastern mines complex had a net increase in Mineral Resources of 42.646Mt after mining depletion. The Ore Reserves of the Eastern Mines had a net increase of 3.952Mt after mining depletion. The increase, for both the resources and the reserves, are mainly due to the generation of resources and reserves on the farms of Richmond and St George. The application lodged to incorporate the St George and Richmond Prospecting Right areas into the existing Eastern Chrome Mines Mining Right area has been granted and executed.

Western Chrome Mines: The chrome mining complex consist of the operating mines of Kroondal and Waterval as well as the resource areas of Klipfontein/Waterval and Boshhoek. The Mineral Resources had a net increase of 2.845Mt after mining depletion. The increase is mainly due to the addition of a resource block resulting from the exchange agreement with a neighbouring mine. The Ore Reserves had a minor increase of 0.272Mt after mining depletion.

The tonnage and grade estimations for the chromitite layers are initiated by the geostatistical analysis of the exploration drill hole data. The outcomes of this analysis are used in the construction of block models for each and every mine and project area. The geostatistical analysis of the chromitite data indicates a high degree of continuity both in grade and thickness of the chromitite layers. The block model estimates are verified using geostatistical parameters such as Kriging Efficiency to test the stability of the variograms used and the suitability of the selected cell sizes and Kriging parameters. Post-estimate validations are done using swath plots and quantile-quantile plots. Tonnages and grades are reported from these block models for each mine and project. There is a high degree of confidence in the tonnage and grade estimations derived from the block models. This is confirmed by the monthly and yearly reconciliation between the block model estimates, the monthly survey measurements and the actual mine production for each operating mine. The tailings facility estimates are based on daily production sampling and dam volume surveying by a certified surveyor. The Eastern Chrome Mines Tailings Facilities have been added to this report. For the Western Chrome Mines two additional tailings facilities have been added to the Kroondal Tailings Facility.

The LOM for the operating chrome mines vary between 1 year and 5 years based on the declared Ore Reserves. The LOM periods for the various operating mines, based on all the Mineral Resources converted to Ore Reserves vary between 5 years and 38 years. The Mining Right expiry dates vary from 2022 to 2039 for the operating chrome mines. All the chrome mining rights were granted for an initial period of 30 years. The production rates for the various chrome mines vary from 30kt ROM per month to 112kt ROM per month.

MM = Mogomotsi Maputle, Glencore Ferroalloys, (SACNASP),
Responsible for Mineral Resources and Ore Reserves.

Competent Persons

PJG = Pieter-Jan Gräbe, Glencore Ferroalloys, (SACNASP);
overall responsibility for Mineral Resources and Ore Reserves.

SV = Solly Vaid, Glencore Ferroalloys, (PLATO); responsibility
for Mineral Resources and Ore Reserves.

DR = Dean Richards, Obsidian Consulting Services (SACNASP);
responsible for geostatistical analysis of data, Mineral Resource classification and construction of tonnage and grade block models and reporting of tonnage and grades from block models.

Metals and Minerals Ferroalloys

Vanadium Mineral Resources

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Rhovani	74.0%	OC	Ore (Mt)	51.16	48.36	34.90	37.67	86.06	86.04	91	93	DR/SM
			V ₂ O ₅ (%)	0.48	0.48	0.5	0.5	0.5	0.5	0.5	0.5	

Vanadium Ore Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Rhovani	74.0%	OC	Ore (Mt)	23.10	23.94	9.5	11.5	32.6	35.4	DR/SM
			V ₂ O ₅ (%)	0.47	0.47	0.4	0.5	0.5	0.5	

Notes

Tonnages are quoted as million metric tonnes.

Grades are quoted as %V₂O₅.

The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce Ore Reserves.

Glencore Ferroalloys' vanadium mining operations mine the vanadiferous magnetite deposits developed within the Bushveld Complex, South Africa. The 2060 Ma year-old Bushveld Complex is the largest known deposit of chrome, vanadium and platinum group elements (PGE's) in the world.

The magnetite ore is mined from shallow dipping (6o – 25o) stratified magnetite orebodies developed in the Upper Zone of the Bushveld Complex. Various ore zones with varying grades can be identified in the orebody. The ore zones are defined based on their magnetite and vanadium content.

The magnetite ore is mined using open cast mining methods.

No material changes were recorded compared with the 2018 resource and reserve estimation.

Rhovani: There was a net increase of 0.612Mt in the Mineral Resource estimate after mining depletions have been discounted.

The Ore Reserves had a net increase of 0.640Mt after mining depletions have been discounted.

Obsidian Consulting Services has estimated the Mineral Resources for Pit 1 and Pit 6. An updated grade block model with new data was constructed during September 2019, following the addition of blast hole data for the 2018-2019 reporting period.

The tonnage and grade estimations were done using geo-statistical analysis of the exploration drill hole and blast hole data. From this analysis, the most appropriate parameters for the construction of block models for the various pits were

derived. The block model estimates are verified using geostatistical parameters such as Kriging Efficiency and Slope of Regression to test the stability of the variograms used and the suitability of the selected cell sizes. A final geospatial validation is done by means of swath and QQ plots. Other validations included a comparison of distributions of the source data versus estimated results. Tonnages and grades are reported from the block models for each pit. For the estimation, cut-off grades of 15 for %magnetite and 1.8 and 1.85 %V₂O₅ are used for Pit 1 and Pit 6 respectively. The degree of confidence in the tonnage and grade estimations derived from the block models is reflected in the classified Mineral Resource classes.

The Rhovan LOM based on the declared Ore Reserves is 11.6 years. The LOM based on all the Mineral Resources converted to Ore Reserves is over 30 years. Rhovan is mining from various open cast pits at an actual mining rate averaging 163.694kt of ROM per month (2019). The stripping ratio averaged 1.66 (t:t) for the same period.

The Mining Right expires in 2027.

Competent Persons

PJG = Pieter-Jan Gräbe, Glencore Ferroalloys, (SACNASP); overall responsibility for Mineral Resources and Ore Reserves.

DR = Dean Richards, Obsidian Consulting Services, (SACNASP); responsible for data validation, geo-statistical analysis of data, construction of tonnage and grade block models and reporting of tonnage and grades from block models for Mineral Resource and Ore Reserve estimates.

SM = Sydney Maseti, Glencore Ferroalloys, (SACNASP); Responsible for Mineral Resources and Ore Reserves..

Metals and Minerals

Aluminium/Alumina

Aurukun Mineral Resources

Name of operation	Attributable Interest	Mining Method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Aurukun	100%	OC	Ore (Mt)	95	94	334	322	429	416	3	3	JB
			Al ₂ O ₃ (%)	53.4	53.4	49.9	50.0	50.6	50.7	49.3	49.5	

Notes

The Aurukun Bauxite deposits are located on the western side of the Cape York Peninsula in far north Queensland, Australia. Glencore currently holds tenure to the deposits via a mineral development licence or "MDL" granted in late 2017, which allows feasibility studies to be performed. Currently there is no production from the MDL.

In 2004 and 2005, the Queensland State government funded the Aurukun Geoscientific Investigation Programme. The programme involved drilling approximately 8,500 drill holes and produced approximately 200,000 samples at 0.25m intervals. Most samples were assayed. All samples sent to the lab were beneficiated at 1.2 mm screen size and the +1.2 mm fraction analysed.

The samples from the 2004/05 programme were used to produce the November 2018 bauxite resource model. The tonnes and grade estimates for this 2019 Mineral Resource statement are based on the November 2018 resource model.

Measured and indicated Mineral Resources increased by 13 million tonnes (3%) from 2018 to 2019 due to changes in the economic assumptions.

Competent Persons

JB = John Bower, Principal Consultant, OBK Consulting Pty Ltd

Metals and Minerals

Iron Ore

Iron Ore Mineral Resources

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
El Aouj Mining Company S.A.												
Guelb el Aouj East	50%	OC	Ore (Mt)	400	400	1,170	1,170	1,570	1,570	300	300	AM/SvdM
			Iron (%)	36	36	36	36	36	36	36	36	
			DTC wt (%)	45	45	45	45	45	45	45	45	
			DTC Iron (%)	69.8	69.8	69.2	69.2	69.3	69.3	69.5	69.5	
			Oxidised (Mt)	70	70	80	80	150	150	30	30	AM/SvdM
			Iron (%)	34	34	35	35	35	35	35	35	
Guelb el Aouj Centre	50%		Ore (Mt)	–	–	185	185	185	185	615	615	AM/SvdM
			Iron (%)	–	–	34	34	34	34	35	35	
			DTC wt (%)	–	–	43	43	43	43	44	44	
			DTC Iron (%)	–	–	69.6	69.6	69.6	69.6	69.8	69.8	
			Oxidised (Mt)	–	–	–	–	–	–	45	45	AM/SvdM
			Iron (%)	–	–	–	–	–	–	33	33	
Bou Derga	50%		Ore (Mt)	–	–	–	–	–	–	510	510	AM/SvdM
			Iron (%)	–	–	–	–	–	–	36	36	
			DTC wt (%)	–	–	–	–	–	–	43	43	
			DTC Iron (%)	–	–	–	–	–	–	69.7	69.7	
			Oxidised (Mt)	–	–	–	–	–	–	130	130	AM/SvdM
			Iron (%)	–	–	–	–	–	–	35	35	
Tintekrate	50%		Ore (Mt)	–	–	–	–	–	–	710	710	AM/SvdM
			Iron (%)	–	–	–	–	–	–	36	36	
			DTC wt (%)	–	–	–	–	–	–	44	44	
			DTC Iron (%)	–	–	–	–	–	–	69.4	69.4	
			Oxidised (Mt)	–	–	–	–	–	–	180	180	AM/SvdM
			Iron (%)	–	–	–	–	–	–	34	34	
Total El Aouj Mining Company S.A.			Ore (Mt)	470	470	1,435	1,435	1,905	1,905	2,520	2,520	
			Iron (%)	36	36	36	36	36	36	35	35	
Sphere Mauritania S.A.												
Askaf North	90%	OC	Ore (Mt)	200	200	160	160	360	360	45	45	AM/SvdM
			Iron (%)	36	36	35	35	36	36	36	36	
			DTC wt (%)	47	47	45	45	46	46	45	45	
			DTC Iron (%)	69.8	69.8	69.4	69.4	69.6	69.6	69.2	69.2	
			Oxidised (Mt)	15	15	30	30	45	45	15	15	AM/SvdM
			Iron (%)	35	35	35	35	35	35	35	35	
Askaf Centre	90%	OC	Ore (Mt)	–	–	–	–	–	–	95	95	AM/SvdM
			Iron (%)	–	–	–	–	–	–	36	36	
			DTC wt (%)	–	–	–	–	–	–	42	42	
			DTC Iron (%)	–	–	–	–	–	–	69.9	69.9	
			Oxidised (Mt)	–	–	–	–	–	–	13	13	AM/SvdM
			Iron (%)	–	–	–	–	–	–	37	37	
Askaf East	90%	OC	Ore (Mt)	–	–	–	–	–	–	70	70	AM/SvdM
			Iron (%)	–	–	–	–	–	–	35	35	
			DTC wt (%)	–	–	–	–	–	–	42	42	
			DTC Iron (%)	–	–	–	–	–	–	70.3	70.3	
			Oxidised (Mt)	–	–	–	–	–	–	13	13	AM/SvdM
			Iron (%)	–	–	–	–	–	–	31	31	
Total Sphere Mauritania S.A.			Ore (Mt)	215	215	190	190	405	405	251	251	
			Iron (%)	36	36	35	35	36	36	35	35	
Sphere Lebtheinia S.A.												
Lebtheinia Centre	100%		Ore(Mt)	–	–	2,180	2,180	2,180	2,180	350	350	AM/SvdM
			Iron (%)	–	–	32	32	32	32	32	32	
			DTC wt (%)	–	–	27	27	27	27	27	27	
			DTC Iron (%)	–	–	68.6	68.6	69.6	69.6	68.1	68.1	
			LOZ (Mt)	–	–	–	–	–	–	210	210	AM/SvdM
			Iron (%)	–	–	–	–	–	–	31	31	
Total Sphere Lebtheinia S.A.			Ore (Mt)	–	–	2,180	2,180	2,180	2,180	560	560	
			Iron (%)	–	–	32	32	32	32	32	32	

Metals and Minerals Iron Ore

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Jumelles Limited												
Zanaga	50%	OC	Ore (Mt)	2,300	2,300	2,500	2,500	4,800	4,800	2,100	2,100	MT
			Iron (%)	34	34	30	30	32	32	31	31	

Iron Ore Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
El Aouj Mining Company S.A.										
Guelb el Aouj East	50%	OC	Ore (Mt)	380	380	551	551	931	931	NS
			Iron (%)	35	35	35	35	35	35	
			DTC wt (%)	44	44	43	43	44	44	
			DTC Iron (%)	69.6	69.6	69.0	69.0	69.2	69.2	
Jumelles Limited										
Zanaga	50%	OC	Ore (Mt)	770	770	1,290	1,290	2,070	2,070	GB
			Iron (%)	37	37	32	32	34	34	

Notes

All Mineral Resources are considered suitable for open cut extraction.

DTC wt (%) – Davis Tube Concentrate mass recovery.

DTC Iron (%) – Davis Tube Concentrate assay %Fe.

Davis Tube test work has been conducted at a grind size of 95% passing 80 micron.

The rounding used for the values in this report reflects the confidence in the different levels of Mineral Resource and Ore Reserve classifications.

No exploration activities were carried out in the reporting period.

El Aouj Mining Company: Glencore holds a 50% interest in the El Aouj Mining Company through a Joint Venture arrangement with SNIM.

Guelb el Aouj East: The “Guelb” deposits are hosted in Banded Iron Formations (BIF) within the Dorsale Reguibat, an uplifted part of the Archaean West African Craton, which dominates the northern third of Mauritania’s surface geology. Recrystallisation and aggregation of the magnetite grains in BIF has resulted in the partial to total destruction of the original banded (bedding) texture to produce the Guelb el Aouj magnetite-quartzite deposits. The geological sequence is overprinted by a reasonably uniform, approximately 80m thick weathered zone in which much of the magnetite has oxidised to hematite.

In 2018, the FEED phase of the development programme was completed. The project is based on the production of 11.3Mtpa of sinter feed product derived from fresh magnetite ore, beneficiated to product 66.5% iron content concentrate. The FEED phase has provided a firm and costed project implementation plan, and options to further enhance the project’s viability.

Mineral Resources and Ore Reserves are unchanged compared to previous reporting periods. The long term IODEX65 pricing for Ore Reserves modelling is \$90/dmt CFR North China.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Guelb el Aouj Centre: The El Aouj Centre magnetite-quartzite (MQ) deposit is a highly metamorphosed banded iron formation (meta-BIF) unit that ranges in true thickness from 50m to over 200m. The geometry of the deposit is defined by a tight synformal structure with a sub-vertical axial plane. The synform outcrops over a strike length of about 2.4km. The thickest accumulation of magnetite-quartzite is found along the western limb of the synform, pinching out towards the east. A series of stacked recumbent isoclinal folds probably controlled the overall geometry of the deposit. The original bedding has been partially to completely obliterated by recrystallisation, resulting in a coarse-grained texture with aggregated magnetite grains. The weathered zone, though variable, has an average vertical thickness of approximately 40m. In this zone partial to complete oxidation of magnetite to hematite has occurred.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Bou Derga: The Bou Derga deposit forms part of a larger scale synformal structure defined by an Archaean magnetite-quartzite (MQ) unit that ranges in true thickness from approximately 20m to 200m. The thicker parts of the deposit are considered to be a result of isoclinal folding. Drilling was restricted to the western fold closure. The deposit dips towards the northeast at about 60°. The deposit contains a number of internal waste bands (typically 5m to 50m thick) which have been modelled separately and excluded from the Mineral Resource estimation. A northwest-southeast trending fault displaces the mineralisation in the south-eastern part of the deposit.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

The Bou Derga Mineral Resource Statement has been prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2004 Edition).

Tintekrate: The Tintekrate deposit is hosted within the Dorsale Reguibat, an uplifted part of the Archaean West African Craton, which dominates the northern third of Mauritania’s surface geology. Recrystallisation and aggregation of the magnetite grains in the meta-banded iron formation (BIF)

Metals and Minerals Iron Ore

units has resulted in partial to total destruction of the original banded (bedding) texture to produce the Tintekrate and other similar magnetite-quartzite deposits. The Tintekrate deposit is a circular structure defined by a steep dipping MQ unit with dips of 50° to 80° (locally overturned) with true mineralised thicknesses of 100m to 150m on the western side of the structure to 50m to 100m on the eastern side. The weathered zone averages 70m to 75m vertical depth below natural surface and its base tends to mirror the natural surface profile. In this zone, magnetite has been partially to completely oxidised to hematite.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Askaf North: Askaf North Deposit is an east-west striking synformal structure defined by a magnetite-quartzite (MQ) unit that ranges in true thickness from approximately 140m in the western hinge zone to approximately 30m along the eastern part of the southern limb. The synformal axis plunges at between 20° to 30° towards the east in the western part of the synform, and at about 35° to 45° towards the west at the eastern fold closure, producing a double plunging synform. A dolerite dyke has been emplaced along an east-west fault zone that displaces the northern part of the deposit in a dextral shear sense. The disruption and emplacement of the dolerite along the northern limb of the synform has not affected the quality of the mineralisation. The MQ unit represents a metamorphosed banded iron-formation (BIF). The precursor BIF was subjected to high-grade metamorphic conditions during the Archaean, which resulted in complete recrystallisation of the original fine-grained BIF. In most cases the primary textures have been destroyed by the recrystallisation. Coarse-grained (>1mm) MQ is produced as a result, with good Davis Tube liberation characteristics and concentrate grades at a liberation grind size of 95% passing 80 micron.

The Askaf North Mineral Resource Statement uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Askaf Centre: The Askaf Centre deposit comprises a northern body that is exposed over a strike length of 3.5km and a southern body that is exposed over a strike length of 1.7km. Both bodies form part of a regional scale antiformal structure and each body is also duplicated within itself by outcrop-scale tight isoclinal folding. The northern and southern bodies are separated and displaced in a dextral shear sense by a regional scale fault/fracture system. The northern body is generally sub-vertical striking roughly northwest-southeast. The magnetite-quartzite unit ranges in thickness from approximately 50m in the west to approximately 70m in the east, with the magnetite-quartzite mineralisation being thinnest in the steep dipping middle portion (± 10 m). The multiple layers reported is the result of tight isoclinal folding. The southern body comprises an open synformal structure with an undulating sub-horizontal fold axis that plunges at approximately 25° towards the southwest at the southern part of the deposit. At this locality the mineralisation is still open-ended at depth. The two limbs of the synform are exposed over a strike length of approximately 1km. The northern part of the synform is tighter than is the case in the south, with the eastern limb almost being overturned in some places. Magnetite-quartzite ranges in thickness from approximately 30m to 35m in the limbs to approximately 45m

to 55m in the synformal keel as a result of structural thickening with thicknesses of up to 90m reported. The magnetite-quartzite unit is embedded within an Archaean granitic/gneiss sequence. The weathered zone which, though variable, has an average vertical thickness of approximately 40m and in this zone partial to complete oxidation of magnetite to hematite has occurred. Oxidation significantly reduces the Davis Tube mass recovery (wt%) in mineralised drill samples.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Askaf East: The Askaf East deposit occupies the southern limb of an apparent east-west striking synformal structure defined by an Archaean magnetite-quartzite unit that ranges in true thickness from approximately 20m at the western end of the limb to approximately 140m in the central part of the limb. The hinge zone is at the eastern end of the deposit. The synformal axis plunges about 40° towards the west in the eastern part of the synform. The thickening of the sequence in the eastern part of the deposit is probably as a result of isoclinal folding within the sequence. The MQ unit is embedded within an Archaean granitic/gneiss sequence. The weathered zone, though variable, has an average vertical thickness of approximately 40m. Partial to complete oxidation of magnetite to hematite has occurred in this zone and this significantly reduces the Davis Tube mass recovery (wt%) in mineralised drill samples.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Lebtheinia: The magnetite-rich Banded Iron Formations (BIF) at Lebtheinia form part of the Archaean Lebzena Group. The BIF units in EL264 are exposed over a total strike length of approximately 24km, of which Lebtheinia Centre has a strike length of 11.5km. Parts of the main BIF units at Lebtheinia Centre deposit are covered by laterite and colluvium consisting of BIF fragments.

The magnetite-BIF at Lebtheinia Centre averages about 240m thick. The BIF is characterised by a well-defined banding pattern, with individual bands ("mesobands") averaging 5-10mm thick. Drilling shows that mineralisation extends to at least 400m vertically below natural surface and is open at depth. The deposit is intruded by a series of sub-vertical dolerite dykes, striking NE-SW to NNE-SSW. Lebtheinia Centre has a hanging wall of (variously) quartzite, amphibolite, rhyolite, clay/saprolite (altered amphibolite) and a footwall of quartzite or amphibolite.

The depth of weathering (oxidation) of the BIF averages around 50m. In the lower two thirds of the oxidised zone (the Lower Oxidised Zone, "LOZ") the degree of oxidation is less than in the more oxidised upper third.

The Lebtheinia Centre Mineral Resource Statement for fresh mineralisation uses 20% DTC wt% cut-off. For the LOZ unit the cut-off is 14 SI x 10⁻³ units of magnetic susceptibility.

The Lebtheinia Mineral Resource Statement has been prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2004 Edition).

Zanaga Project: The Zanaga ELs are located within a north-south oriented greenstone belt which extends for over 47km in length, and vary between 0.5km and 3km in width. The

Metals and Minerals Iron Ore

mineralisation is hosted by metamorphosed volcano-sedimentary itabirites, and is interbedded with amphibolites and mafic schists. The contact with the crystalline basement is typically faulted and sheared. The principal ore lithologies consist of itabirites, interbedded with basic lavas, which are later altered to amphibolites. Typically, the itabirites consist of layers of iron-rich and quartz rich meta-sediments, on a millimetre to centimetre scale. The orebody lithologies are crosscut by late intrusions and dolerite dykes, oriented northeast-southwest. The deposit comprises a sequence of weathering domains, which overlay an un-weathered protore comprising itabirite. The weathered sequence observed at Zanaga is typical of iron ore deposits, where the surficial material demonstrates enrichment in iron above the protore due to a mass reduction and associated leaching of the silicate layers.

The Mineral Resource is reported at a 0% Fe cut-off.

The Zanaga Mineral Resource Statement has been prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2012 Edition).

The Zanaga Project Ore Reserve Statement was prepared by SRK Consulting (UK) Limited as part of a Feasibility Study.

The full release of this Mineral Resource and Ore Reserve update is available on the Zanaga Iron website (www.zanagairon.com).

Competent Persons

AM = Alan Miller, Independent Consultant (MAusIMM (CP)), responsible for the construction of the geological block model, the grade interpolation and the Mineral Resource estimation (tonnage and grade) and classification.

GB = Gabor Bacsfalusi, SRK Consulting (UK) Limited (MAusIMM (CP)).

MT = Malcolm Titley, CSA Global (UK) Ltd (MAusIMM (CP)).

NS = Nicolas Szwedzka, BBA Inc. (OIQ).

SvdM = Schalk van der Merwe, Independent Consultant (SACNSP), responsible for the geological interpretation for the Mineral Resource estimation (wireframe model), and the drill hole data set used in these resource estimation.

Energy Products

Coal

Australia Coal Resources – New South Wales

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Oakbridge Group			Thermal Coal (Mt)	1,009	1,034	620	633	1,450	1,530	
Bulga Complex	68.3%	OC/UG	Thermal Coal (Mt)	990	1,000	560	560	1,300	1,300	JET
			CV (kcal/kg)	5,900	5,900	5,600	5,600	5,700	5,700	
Baal Bone	74.1%	OC/UG	Thermal Coal (Mt)	–	15	–	13	–	80	MJL
			CV (kcal/kg)	–	5,800	–	6,350	–	5,000	
Running Stream	78%	OC/UG	Thermal Coal (Mt)	19	19	60	60	150	150	MJL
			CV (kcal/kg)	5,050	5,050	5,050	5,050	5,150	5,150	
Macquarie Coal JV	80%		Thermal Coal (Mt)	–	42	–	107	–	30	
West Wallsend		UG	Thermal Coal (Mt)	–	40	–	12	–	–	MAS
			CV (kcal/kg)	–	5,350	–	5,450	–	–	
Cardiff Borehole		UG	Thermal Coal (Mt)	–	–	–	15	–	30	MAS
			CV (kcal/kg)	–	–	–	5,800	–	5,500	
Teralba		UG	Thermal Coal (Mt)	–	2	–	80	–	–	MAS
			CV (kcal/kg)	–	6,000	–	6,100	–	–	
Mitchells Flat	100%	OC/UG	Thermal Coal (Mt)	–	–	–	120	–	350	MJL
			CV (kcal/kg)	–	–	–	5,750	–	5,900	
Liddell	67.5%	OC/UG	Thermal Coal (Mt)	210	160	230	200	400	400	JET/
			CV (kcal/kg)	6,250	6,150	6,200	6,100	6,150	6,200	LRG
Mount Owen Complex	100%		Thermal Coal (Mt)	310	305	266	296	441	441	
Mount Owen		OC	Thermal Coal (Mt)	190	180	190	220	350	350	LRG
			CV (kcal/kg)	6,050	6,000	6,100	6,100	6,050	6,050	
Ravensworth East		OC	Thermal Coal (Mt)	60	65	26	26	1	1	LRG
			CV (kcal/kg)	5,750	5,750	5,700	5,700	5,750	5,750	
Glendell		OC	Thermal Coal (Mt)	60	60	50	50	90	90	LRG
			CV (kcal/kg)	5,900	5,900	5,900	5,900	5,850	5,850	
Integra	100%	UG	Thermal/Coking Coal (Mt)	17	14	60	55	30	40	MAS
			CV (kcal/kg)	5,900	5,800	5,950	5,900	5,800	5,950	
United - Wambo	47.5%	OC/UG	Thermal Coal (Mt)	300	240	340	250	500	600	IAE
			CV (kcal/kg)	5,950	6,000	5,700	6,000	5,600	5,550	
Ulan Complex	100%		Thermal Coal (Mt)	245	245	293	323	520	720	
Ulan UG		UG	Thermal Coal (Mt)	200	200	280	310	500	700	MJL
			CV (kcal/kg)	6,400	6,500	4,750	4,800	5,000	5,000	
Ulan OC		OC	Thermal Coal (Mt)	45	45	13	13	20	20	MJL
			CV (kcal/kg)	4,950	4,950	5,200	5,200	4,900	4,900	
Ravensworth Group			Thermal Coal (Mt)	404	414	240	240	100	100	
Narama	100%	OC	Thermal Coal (Mt)	24	24	–	–	–	–	MAS
			CV (kcal/kg)	5,600	5,600	–	–	–	–	
Ravensworth North	90%	OC	Thermal Coal (Mt)	380	390	240	240	100	100	MAS
			CV (kcal/kg)	6,050	6,050	6,050	6,050	5,650	5,650	
Mangoola	100%	OC/UG	Thermal Coal (Mt)	110	130	100	100	1,500	1,500	MAS
			CV (kcal/kg)	5,250	5,200	4,750	4,750	4,250	4,250	
Ravensworth UG	70%	UG	Thermal Coal (Mt)	320	320	220	220	250	250	MJL
			CV (kcal/kg)	5,800	5,800	5,400	5,400	5,350	5,350	
Hunter Valley Operations	49%	OC	Thermal Coal (Mt)	820	704	1,300	1,430	2,400	1,654	LMP
			CV (kcal/kg)	6,500	–	6,450	–	6,200	–	
Coal Resources New South Wales			Coking/Thermal Coal (Mt)	3,745	3,608	3,669	3,974	7,591	7,615	

Energy Products Coal

Australia Coal Reserves – New South Wales

Name of operation	Attributable interest	Mining method	Coal type	Coal Reserves		Marketable Coal Reserves		Total Marketable Coal Reserves		Competent Person
				Proved 31.12.19	Probable 31.12.19	Proved 31.12.19	Probable 31.12.19	31.12.19	31.12.18	
Oakbridge Group	68.3%		Thermal Coal (Mt)	130	89	85	57	150	175	
Bulga OC		OC	Thermal Coal (Mt)	60	65	35	40	80	90	JWG
			CV (kcal/kg)			6,350	6,300	6,300	6,300	
Bulga UG		UG	Thermal Coal (Mt)	70	24	50	17	70	85	POG
			CV (kcal/kg)			6,150	6,200	6,150	6,400	
Liddell	67.5%	OC	Thermal Coal (Mt)	16	1	10	1	11	15	AMG
			CV (kcal/kg)			6,750	6,700	6,750	6,750	
Mount Owen Complex	100%		Thermal Coal (Mt)	97	9	55	5	60	66	
Mount Owen		OC	Thermal Coal (Mt)	80	9	45	5	50	51	STH
			CV (kcal/kg)			6,250	6,400	6,250	6,350	
Ravensworth East		OC	Thermal Coal (Mt)	7	–	4	–	4	5	BOB
			CV (kcal/kg)			5,800		5,800	6,100	
Glendell		OC	Thermal Coal (Mt)	10	–	6	–	6	10	BOB
			CV (kcal/kg)			6,550		6,550	6,500	
Integra	100%	UG	Coking Coal (Mt)	2	8	2	6	7	8	AWF
			Ash (%)			9	8	8	9	
United Wambo	47.5%	OC	Thermal Coal (Mt)	18	75	13	50	65	50	PTP
			CV (kcal/kg)			6,800	6,500	6,550	6,500	
Ulan Complex	100%		Thermal Coal (Mt)	146	5	134	5	139	140	
Ulan #3 UG		UG	Thermal Coal (Mt)	60	–	55	–	55	50	EAM
			CV (kcal/kg)			6,150	–	6,150	6,350	
Ulan West UG		UG	Thermal Coal (Mt)	80	5	75	5	80	86	HAE
			CV (kcal/kg)			6,150	6,150	6,150	6,250	
Ulan Waratah OC		OC	Thermal Coal (Mt)	6	0.4	4	0.2	4	4	VCE
			CV (kcal/kg)			5,000	5,000	5,000	5,000	
Ravensworth North	90%	OC	Thermal Coal (Mt)	190	12	130	8	140	148	DJC
			CV (kcal/kg)			6,250	6,350	6,250	6,250	
Mangoola	100%	OC	Thermal Coal (Mt)	65	30	55	25	75	84	MRW
			CV (kcal/kg)			5,350	5,350	5,350	5,400	
Ravensworth UG	70%	UG	Thermal Coal (Mt)	40	–	28	–	28	28	KJB
			CV (kcal/kg)			6,950	–	6,950	6,950	
Hunter Valley Operations	49%	OC	Thermal Coal (Mt)	440	460	320	330	650	554	PJO
			CV (kcal/kg)			6,350	6,350	6,350	n/a	
Coal Reserves New South Wales			Thermal Coal (Mt)	1,142	681	830	481	1,318	1,260	
			Coking Coal (Mt)	2	8	2	5	7	8	

Note: Hunter Valley Semisoft coking coal is included in Thermal Coal (Mt)

Energy Products Coal

Notes

The New South Wales Coal Resources and Reserves are contained within the Sydney Basin.

Changes and issues material to the estimation of Coal Resources and Reserves are noted below for specific projects. Reference to production changes between 31 December 2018 and 31 December 2019 are detailed for each producing mine site.

Unless otherwise stated, tenement expiries will be eligible for a standard renewal as per the relevant Government policy.

Tonnages are quoted as million metric tonnes. Values expressed in the text have not been rounded and therefore do not correlate directly with the tables.

Oakbridge Group

Bulga open cut: Coal Resource and Reserve depletion due to mining (-12.3Mt).

Coal Reserves for Bulga Open Cut operations are sufficient to support a mine life of approximately 16 years.

Bulga underground: No material change in Coal Resource estimations since 31 December 2018 and there is currently no active UG mining on site.

Coal Reserves sterilised due to open cut mining removing access to drift (-25.1Mt).

Tenements for the Bulga Complex expire between April 2021 and September 2036. Some tenements are undergoing a routine renewal process with the NSW Government.

Baal Bone: Coal Resources were written down to zero.

Underground mine portals are in the process of being sealed and site rehabilitation in progress. Therefore the resources are assessed as not having reasonable prospects for mining (Clause 20, JORC2012).

Running Stream Running Stream is an undeveloped thermal coal project. Coal Resources were not re-estimated in 2019.

Potential mining methods are open cut for the shallow Coal Resources (less than 60m depth of cover) and underground mining for Coal Resources in excess of 60m depth of cover.

Assessment Lease expires in May 2020.

Macquarie JV

Tenements for West Wallsend, Cardiff Borehole and Teralba expire between January 2020 and January 2030. Glencore has commenced the process to relinquish these tenements. As a result it has been assessed that these tenements do not have a "reasonable prospect of eventual economic extraction" (Clause 20 JORC 2012), and hence Glencore will no longer be reporting resources for these tenements.

Mitchells Flat

Glencore has commenced the process to relinquish the Mitchells Flat tenement. As a result it has been assessed that Glencore does not have a "reasonable prospect of eventual economic extraction" (Clause 20 JORC 2012) at Mitchells Flat, and hence Glencore will no longer be reporting resources for this tenement.

Liddell Open Cut

Coal Resources include both the current Liddell Open Cut Operations and a project area known as Glendell North. Each area has been assessed by a different Competent Person; Liddell Open Cut by John Terrill and Glendell North by Leigh Gibson.

Coal Resource and Reserve depletion due to mining at Liddell Open Cut (-5.8Mt).

Tenements for Liddell expire between October 2023 and November 2028. Coal Reserves for Liddell operations are sufficient to support the planned mine life of 4 years.

Overall Resource increases and category upgrades have occurred at Liddell following drilling and re-assessment of new data associated with the Glendell North project. The main components are;

- Additional resource; Measured and Indicated +15Mt,
- Reinterpretation (thickness and aggregation criteria); Measured and Indicated +32.6Mt, Inferred +50Mt, and
- Upgrade from Inferred to Measured and Indicated (+43.2Mt)

Tenements for Glendell North Project expire between July 2020 and December 2023.

Mt Owen Complex

Mount Owen: Coal Resource and Reserve depletion due to mining (-7.2Mt).

Net decrease in Measured and Indicated Resources of ~20Mt primarily from depletion by mining and removal of resources previously included on unallocated, stratified tenure (-15.8Mt). Tenements for Mt Owen expire between July 2020 and July 2036. Some tenements are undergoing a routine renewal process with the NSW Government.

Coal Reserves for Mt Owen Operations are sufficient to support the planned mine life of 16 years.

Ravensworth East: Coal Resource and Reserve depletion due to mining (-1.4Mt).

Tenements for Ravensworth East expire between July 2020 and October 2034.

Coal Reserves for Ravensworth East operations are sufficient to support the planned mine life of 3 years.

Glendell: Coal Resource and Reserve depletion due to mining (-4.1Mt).

Tenements for Glendell expire between July 2020 and November 2033. Coal Reserves for Glendell operations are sufficient to support the planned mine life of 3 years.

Integra

Coal Resource and Reserve depletion due to mining (-2.4Mt).

The inclusion of new drilling data has resulted in a reclassification of resources from Inferred to Measured and Indicated (+9.3Mt)

Tenements for the area expire between July 2020 and November 2033. Coal Reserves for Integra operations are sufficient to support the planned mine life of 4 years.

Hunter Valley Operations

Note – changes are for the period 30 June 2018 to 31 December 2019.)

Increase in Measured tonnes owing to use of points of observation at tenements in adjacent mines managed by Glencore. Increase in inferred tonnes owing to additional points of observation, application of larger polygons (greater radii) and inclusion of resources in exploration licence EL8821.

Marketable reserves have increased following mining studies revising pit shell designs (net +ve 85Mt) and loss/dilution assumptions (+13Mt) along with improved coal recovery based on applying flotation (+22Mt). Reserves have been depleted by actual and forecast mining volumes (-21Mt).

Energy Products Coal

Tenements for Hunter Valley Operations expire between April 2020 and December 2035. Some tenements are undergoing a routine renewal process with the NSW Government. Coal Reserves at Hunter Valley Operation are sufficient to support the planned mine life of approximately 30 years.

United - Wambo

The inclusion of new drilling data has resulted in:

- a reclassification of resources from Inferred to Measured and Indicated (94.4Mt)
- a decrease in Measured and Indicated CV; and,
- an increase in Measured and Indicated Raw Ash.

Planning consent for the United-Wambo project was granted by the NSW state government in August 2019. The grant of federal environmental approval by the Commonwealth Government in December 2019 satisfied the final condition precedent, and the joint venture formally commenced on 18 December 2019. This combines Peabody's existing open cut operations at Wambo Coal with the new United opencut pit. Glencore will manage the combined opencut mining operations utilising certain existing infrastructure at the Wambo mine such as the CHPP, rail loading facilities and water infrastructure. United (which is 95% owned by Glencore) and Wambo each have a 50% interest in the joint venture. Mining activities are expected to commence in H2 2020.

The addition of Wambo has resulted in an increase in resources of 67Mt of Measured and Indicated Resources. These additional resources have a depth limit of 200m. The corresponding increase in coal reserves from the Wambo mining area is 19Mt (ROM).

An additional increase in Reserves (3.3Mt) has also occurred following a revision of the United open cut mine plan. Tenements for the JV area expire between March 2021 and March 2033. Some tenements are undergoing a routine renewal process with the NSW government. Coal reserves of the United-Wambo JV are sufficient to support a planned mine life of 13 years.

Ulan Complex

Coal Resource decrease due to sterilisation (-23.4Mt) of the upper part of the mining section as mining occurs in the lower part. The mining section was depleted (-13Mt) as a direct result of mining. Reduction of Inferred resources (173.6Mt) owing to sterilisation of upper seams (above mined out longwall workings) based on "no reasonable prospect of mining" (Clause 20, JORC2012).

Tenements for Ulan expire between May 2020 and June 2038. Some tenements are undergoing a routine renewal process with the NSW Government.

Ulan Open Cut: No mining during reporting period therefore no material change to Coal Reserves estimations since 31 December 2018.

Ulan West Underground: Coal Reserve depletion due to mining (-6.1Mt).

Coal Reserves for Ulan West underground operations are sufficient to support the planned mine life of 12 years.

Ulan #3 Underground: Coal Reserve depletion due to mining (-6.1Mt).

Coal Reserve increase due to mine plan variation resulting in an extension of Longwall blocks (+11.6Mt).

Coal Reserves for Ulan #3 underground operations are sufficient to support the planned mine life of 10 years.

Ravensworth Group

Narama: No material change to Coal Resources since 31 December 2018. Mining Operations in Narama ceased at the end of 2014 upon completion of the Narama mine plan.

Tenements for Narama expire between December 2023 and August 2036.

Ravensworth North: Coal Resource and Reserve depletion due to mining (-14.1Mt).

Tenements for Ravensworth North expire between June 2022 and September 2035. Some tenements are undergoing a routine renewal process with the NSW Government. Coal Reserves for Ravensworth North operations are sufficient to support the planned mine life of 15 years.

Mangoola: Coal Resource and Reserve depletion due to mining (-12.8Mt).

Tenements for Mangoola expire in November 2029. Some tenements are undergoing a routine renewal process with the NSW Government. Coal Reserves for Mangoola operations are sufficient to support the planned mine life of 10 years.

Ravensworth Underground: No material change in Coal Resource or Reserve estimations since 31 December 2018.

Production was suspended in September 2014 with the mine currently on care and maintenance.

Tenements for Ravensworth Underground expire between November 2021 and November 2029. Some tenements are undergoing a routine renewal process with the NSW Government.

Competent Persons

AMG = Andrew Green, Senior Mining Engineer, Bulga Open Cut (AusIMM);

AWF = Alison Freeman, Senior Mining Engineer, Glencore Coal Assets Australia (AusIMM);

BOB = Brendan O'Brien, Technical Services Manager, Glendell Open Cut (AusIMM);

DJC = David Cahill, Senior Mining Engineer, Ravensworth Open Cut (AusIMM);

EAM = Ed McGonigle, Senior Mining Engineer, Ulan Underground (AusIMM);

HAE = Heath Evans, Technical Services Manager, Ulan West Underground (AusIMM);

IAE = Isaac Eadndel, Geologist, United Colliery (AusIMM);

JWG = Joel Grant, Senior Mining Engineer, Glencore Coal Assets Australia (AusIMM);

JET = John Terrill, Principal Resource Geologist, Glencore Coal Assets Australia (AIG);

KJB = Konrad Bawelkiewicz, Mining Engineer, Glencore Coal Assets Australia (AusIMM);

LMP = Lyndon Pass, Director/Principle Geologist, Encompass Mining (AusIMM);

LRG = Leigh Gibson, Senior Resource Geologist, Mt. Owen Complex (AusIMM);

MJL = Mark Laycock, Manager Geology, Glencore Coal Assets Australia (AusIMM);

Energy Products Coal

MAS = Michael Stadler, Senior Geologist, Glencore Coal Assets Australia (AusIMM);

MRW = Mark Williams, Technical Services Manager, Mangoola Open Cut (AusIMM);

PJO = Paul Jones, Principle Engineer, Glencore Coal Assets Australia (AusIMM);

POG = Paul O'Grady, Group Manager, Technical Services, Glencore Coal Assets Australia (AusIMM);

PTP = Phuc Pham, Mining Engineer, United Colliery (AusIMM);

STH = Shane Holmes, Technical Services Manager, Glencore Coal Assets Australia (AusIMM);

VCE = Vrotnesky Cediel, Technical Services Superintendent, Ulan Surface Operations (AusIMM).

Energy Products Coal

Australia Coal Resources – Queensland

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Oaky Creek	55%	OC/UG	Coking/Thermal Coal (Mt)	240	250	355	340	80	80	RJH
Oaky North		UG	Coking Coal (Mt)	240	250	310	340	60	80	RJH
Fairhill Oaky Creek		OC	Thermal Coal (Mt)	–	–	45	–	20	–	RJH
			CV (kcal/kg)			4,150	–	4,150	–	
Red Rock	75%	OC/UG	Coking/Thermal Coal (Mt)	1	1	300	250	200	200	RJH
			CV (kcal/kg)	6,950	6,950	5,100	5,300	5,450	5,150	
NCA	100%		Coking/Thermal Coal (Mt)	463	466	567	563	1,030	1,030	
Newlands, Suttor		OC/UG	Thermal Coal (Mt)	310	310	140	150	400	400	JET
Eastern (RCM)			CV (kcal/kg)	5,750	5,750	5,200	5,200	5,050	5,050	
Wollombi (MCM)		OC/UG	Coking Coal (Mt)	17	10	80	55	100	90	JET
			Thermal Coal (Mt)	6	16	29	60	80	90	
			CV (kcal/kg)	5,550	5,300	5,250	5,250	5,150	5,150	
Sarum		OC/UG	Coking Coal (Mt)	30	30	8	8	60	60	JET
			Thermal Coal (Mt)	–	–	70	65	250	250	
			CV (kcal/kg)	–	–	5,450	5,450	4,650	4,650	
Collinsville		OC/UG	Coking Coal (Mt)	35	35	80	75	40	40	RJH
			Thermal Coal (Mt)	65	65	160	150	100	100	
			CV (kcal/kg)	5,300	5,300	6,000	6,000	5,500	5,500	
Cook	95%	OC/UG	Coking/Thermal Coal (Mt)	–	–	180	210	700	800	JET
			CV (kcal/kg)	–	–	6,650	6,650	6,500	6,500	
Rolleston	75%		Thermal Coal (Mt)	220	230	190	200	380	370	
Rolleston ML		OC	Thermal Coal (Mt)	220	230	190	200	350	350	JLB
			CV (kcal/kg)	5,750	5,750	5,550	5,550	5,550	5,550	
Rolleston MDL & EPCs		OC	Thermal Coal (Mt)	–	–	–	–	30	20	JLB
			CV (kcal/kg)	–	–	–	–	5,650	5,700	
Togara North	70%	OC/UG	Thermal Coal (Mt)	370	370	250	250	700	700	MAS
			CV (kcal/kg)	6,350	6,350	6,000	6,000	6,000	6,000	
Wandoan	75%		Thermal Coal (Mt)	1,650	1,500	2,200	1,950	4,600	4,600	MPL
			CV (kcal/kg)	5,300	5,200	5,400	5,100	5,400	5,050	
Milray	75%	OC/UG	Thermal Coal (Mt)	–	–	170	170	600	600	RJH
			CV (kcal/kg)	–	–	6,050	6,050	4,950	4,950	
Pentland	75%	OC/UG	Thermal Coal (Mt)	100	100	40	40	10	10	RJH
			CV (kcal/kg)	4,400	4,400	4,050	4,050	4,100	4,100	
Clermont	37.1%	OC	Thermal Coal (Mt)	75	90	17	18	5	5	JET
			CV (kcal/kg)	6,200	6,200	6,000	6,050	5,650	5,600	
Hail Creek	84.67%		Coking/Thermal Coal (Mt)	730	150	480	710	420	90	
Hail Creek Operations		OC/UG	Coking/Thermal Coal (Mt)	730	150	360	590	350	20	RJH
			CV (kcal/kg)	–	–	–	–	–	–	
Lake Elphinstone		OC/UG	Coking/Thermal Coal (Mt)	–	–	120	120	40	40	JET
			CV (kcal/kg)	–	–	–	–	–	–	
Mount Robert		OC/UG	Coking/Thermal Coal (Mt)	–	–	–	–	30	30	LMP
			CV (kcal/kg)	–	–	–	–	–	–	
Valeria	71%	OC	Thermal Coal (Mt)	–	–	530	700	200	60	JET
			CV (kcal/kg)	–	–	–	–	–	–	
Coal Resources Queensland				3,849	3,157	5,279	5,401	8,925	8,545	

Energy Products Coal

Australia Coal Reserves – Queensland

Name of operation	Attributable interest	Mining method	Coal type	Coal Reserves		Marketable Coal Reserves		Total Marketable Coal Reserves		Competent Person
				Proved 31.12.19	Probable 31.12.19	Proved 31.12.19	Probable 31.12.19	31.12.19	31.12.18	
Oaky Creek	55%		Coking Coal (Mt)	45	9	29	6	35	45	
Oaky North		UG	Coking Coal (Mt)	45	9	29	6	35	45	SNW
			Ash (%)			9	9	9	9.4	
NCA	100%		Coking/Thermal Coal (Mt)	50	85	42	71	113	116	
Newlands OC		OC	Coking Coal (Mt)	3	3	1	2	3	5	WTE
			Ash (%)			9	9	9	9	
		OC	Thermal Coal (Mt)	17	27	13	21	35	35	WTE
			CV (kcal/kg)			6,400	6,450	6,450	6,400	
Collinsville OC		OC	Coking Coal (Mt)	–	–	–	–	–	16	LEN
			Ash (%)			–	–	–	10	
		OC	Thermal Coal (Mt)	30	55	28	45	75	60	LEN
			CV (kcal/kg)			5,850	5,950	5,900	5,950	
Rolleston	75%	OC	Thermal Coal (Mt)	130	70	130	70	200	220	RJM
			CV (kcal/kg)			5,700	5,450	5,600	5,600	
Togara North	70%	OC	Thermal Coal (Mt)	–	28	–	28	28	28	PJO
			CV (kcal/kg)			–	6,300	6,300	6,300	
Wandoan	75%	OC	Thermal Coal (Mt)	570	200	490	160	650	650	PJO
			CV (kcal/kg)			5,600	5,600	5,600	5,600	
Clermont	37.1%	OC	Thermal Coal (Mt)	75	14	75	14	85	100	HRB
			CV (kcal/kg)			5,950	5,800	5,900	5,900	
Hail Creek	84.67%	OC	Coking/Thermal Coal (Mt)	130	80	95	40	130	140	APC
			CV (kcal/kg)							
Coal Reserves Queensland										
			Thermal Coal (Mt)	822	394	736	348	1,073	1,149	
			Coking Coal (Mt)	178	92	125	48	168	150	

Note: Hail Creek tonnages rolled up into Coking Coal Coal Reserves Queensland line, reflecting predominantly hard coking reserves

Notes

The Queensland Coal Resources and Reserves are contained within the Bowen Basin, the Surat Basin and the Galilee Basin.

Changes and issues material to the estimation of Coal Resources and Reserves are noted below for specific projects. Reference to production changes between 31 December 2018 and 31 December 2019 are detailed for each producing mine site.

Tonnages are quoted as million metric tonnes (Mt). Values expressed in the text have not been rounded and therefore do not correlate directly with the tables.

Oaky Creek

Coal Resource depletion due to mining (-6.8Mt).

Measured and Indicated Resource increase (10.5Mt) due to the re-interpretation of the Pleiades Seam Group structure and quality parameters.

Coal Reserve decrease due to mine design changes (-11.4Mt).

Coal Reserves are sufficient to support the planned mine life for 11 years. Tenements for the Oaky Creek Complex expire between June 2020 and August 2035.

Red Rock: Coal Resources include both the current Red Rock area and a new project called South Oak Park. .

South Oak Park Coal Resources estimated for the extraction of thermal and coking coal via open cut methods. Drilling at South Oak park has resulted in the reclassification of Inferred resources, to Measured and Indicated (47.2Mt).

This reclassified resource has relatively lower CV and has hence resulted in a decrease in CV of the Indicated category and an increased CV of the Inferred category. Application of

rounding convention has resulted in an unchanged quantity of Inferred resources.

Tenements for Red Rock expire between September 2020 and September 2021. Some tenements are undergoing a routine renewal process with the QLD Government.

NCA

Newlands Open Cut: Coal Reserve depletion due to mining (-5.8Mt).

Coal Reserves for Newlands Open Cut operations are sufficient to support the planned mine life of approximately 8 years.

Newlands, Suttor, Eastern (RCM – Rangel Coal Measure): Newlands Coal Resource depletion due to mining (-1Mt).

Eastern Creek Coal Resource depletion due to mining (-1.6Mt).

Suttor Creek Coal Resource no material change since 31 December 2018.

Tenements for Newlands Complex expire between April 2021 and August 2037. Some tenements are undergoing a routine renewal process with the QLD Government.

Wollombi (MCM – Moranbah Coal Measures Coal Resource depletion due to mining (-2Mt).

A reassessment of the P1 and P5-7 plies across the entire resource has resulted in a reclassification from Thermal to Coking Coal. The net impact of these changes has been to reclassify approximately 50Mt of Thermal coal to become approximately 40Mt of metallurgical coal. Depth of the reclassified coal has been limited to 200m.

Energy Products Coal

Sarum: No change in the Coal Resource estimation since 31 December 2012.

The Sarum Project is inclusive of the Sarum and Gattovale deposits. Tenements at the Project expire between April 2021 and May 2023. An application for the grant of a new Mineral Development Licence that covers the entire project area has been lodged.

Collinsville: Coal Resource and Reserve depletion due to mining (-4.1Mt).

Overall coal resource increase due to drilling (+9.7Mt). Drilling programme also allowed an increase to Measured and Indicated categories (+21.7Mt). Application of rounding convention has resulted in an unchanged quantity of Inferred resources.

Coking coal reserves written down to zero as Glencore does not currently consider that there is a reasonable prospect of mining these resources (Clause 20, JORC2012).

Coal Reserves for Collinsville are sufficient to support the planned mine life for 20 years.

Tenements for Collinsville expire between January 2021 and September 2035. Some tenements are undergoing a routine renewal process with the Queensland Government.

Cook (Blackrock)

Reduction in resources of 115Mt (Indicated = 35Mt, Inferred = 79Mt) with realignment to the boundary of ML1799.

Tenements for Cook expire between April 2021 and September 2028.

Rolleston

Coal Resource and Reserve depletion due to mining (-15.1Mt).

New drilling in Rolleston South, Rolleston East and Spring Creek North has resulted in an:

- upgrade of Inferred Coal Resource to Measured and Indicated (+6.8Mt).
- increase in Inferred resources (8.6Mt)

Tenements for Rolleston expire between April 2020 and May 2043. Some tenements are undergoing a routine renewal process with the QLD Government. Coal Reserves for Rolleston are sufficient to support the planned mine life of 21 years.

Togara North

No change in the Coal Resource or Reserve estimation since 31 December 2018.

Tenements for Togara North expire between February 2020 and December 2046.

Wandoan

Increase in Resources due to inclusion of EPC 838 and 787 (Measured and Indicated 244.6Mt, and Inferred 163.3Mt)

The inclusion of additional coal quality data has resulted in an increase in CV and a decrease in Raw Ash.

Tenements for Wandoan expire between August 2020 and December 2043. Some tenements are undergoing a routine renewal process with the QLD Government. Coal Reserves for Wandoan are sufficient to support a planned mine life greater than 30 years.

Milray

No change in the Coal Resource estimation since 31 December 2018.

Tenement for Milray expires in January 2021.

Pentland

No change in the Coal Resource estimation since 31 December 2018.

Tenements for Pentland expire on September 2021.

Clermont: Clermont Coal Resources estimated for the extraction of thermal coal via open cut methods.

Coal Resource and Reserve depletion due to mining (-12Mt) and sterilisation (-1.2Mt).

Tenements for Clermont expire between April 2020 and July 2031. Coal Reserves at Clermont are sufficient to support the planned mine life for 8 years. Some tenements are currently in progress through the normal state government renewal process.

Hail Creek:

Hail Creek Operations: Hail Creek Coal Resources estimated for the extraction of thermal and coking coal via open cut methods

Coal Resource and Reserve depletion due to mining (-9.9Mt).

2019 has been the first full year of ownership by Glencore. The 2019 estimate by Glencore has applied conventional criteria to existing data. The principal changes are:

- Assessment of 350Mt of previously unclassified resource as being at Measured status
- An upgrade of 230Mt of Indicated resource to Measured status; and
- Assessment of 330Mt of previously unclassified resource to Inferred status.

Tenements for Hail Creek are currently undergoing a routine renewal process with the Queensland government. Coal Reserves at Hail Creek are sufficient to support the planned mine life for 20 years.

Lake Elphinstone: Resources estimated for the extraction of thermal coal via open cut methods. No exploration or analysis work completed since acquisition so previous resource model re-applied for 2019 reporting period. The previous estimate did not include a quality estimation.

Tenements for Lake Elphinstone are currently undergoing a routine renewal process with the Queensland government.

Mt Robert: Mt Robert Coal Resources estimated for the extraction of thermal coal via open cut methods.

No exploration or analysis work completed since acquisition so previous resource model re-applied for 2019 reporting period. The previous estimate did not include a quality estimation.

Tenements for Mt Robert expire in August 2020. Some tenements are undergoing a routine renewal process with the Queensland government. Project planning has not yet commenced at Mt Robert.

Valeria: Valeria Coal Resources estimated for the extraction of thermal and semi soft coking coal via open cut methods.

Resource domains have been reclassified to better align with Glencore normal practice resulting in a decrease in Measured and Indicated Resources (-172.4Mt), and an increase in Inferred Resources (138.6Mt).

Tenements for Valeria expire in September 2021.

Energy Products Coal

Competent Persons

APC = Andrew Connell, Principal Mining Engineer, Glencore Coal Assets Australia (AusIMM);

HRB = Hans Binnekamp, Senior Mine Planner, Clermont Open Cut (AusIMM);

JLB = Jarrod Bennedick, Senior Geologist, Rolleston Coal (AusIMM);

JET = John Terrill, Principal Resource Geologist, Glencore Coal Assets Australia (AIG);

LEN = Larry Nielsen, Principal Mining Engineer, Glencore Coal Assets Australia (AusIMM);

LMP = Lyndon Pass, Director/Principal Resource Geologist, Encompass Mining (AusIMM);

MAS = Michael Stadler, Senior Geologist, Glencore Coal Assets Australia (AusIMM);

MPL = Murray Little, Senior Geologist, Glencore Coal Assets Australia (AusIMM);

PJO = Paul Jones, Principal Engineer, Glencore Coal Assets Australia (AusIMM);

RJH = Richard Hingst, Resource Geologist, Oaky Creek Coal (AusIMM);

RJM = Rob Molan, Senior Planning Engineer, Rolleston Coal (AusIMM);

SWI = Steve Winter, Technical Services Manager, Oaky Creek Surface Operations (AusIMM);

WTE= Whiteboy Tembo, Technical Services Manager, Glencore Coal Assets Australia (AusIMM).

Energy Products Coal

South Africa Coal Resources

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Tweefontein	79.8%		Thermal Coal (Mt)	860	870	60	60	38	38	
Tweefontein North		OC/UG	Thermal Coal (Mt)	660	670	–	–	8	8	MS
			CV (kcal/kg)	5,250	5,250	–	–	5,500	5,500	
Tweefontein South		OC/UG	Thermal Coal (Mt)	200	200	60	60	30	30	MS
			CV (kcal/kg)	5,350	5,350	4,350	4,350	4,600	4,600	
Goedgevonden Complex	73.99%	OC/UG	Thermal Coal (Mt)	490	510	7	7	1	1	MS
			CV (kcal/kg)	4,800	4,800	5,000	5,000	3,540	3,540	
iMpunzi	79.8%		Thermal Coal (Mt)	360	370	13	13	2	2	
iMpunzi North		OC	Thermal Coal (Mt)	230	240	4	4	2	2	MS
			CV (kcal/kg)	5,250	5,250	5,500	5,500	5,600	5,600	
iMpunzi East		OC	Thermal Coal (Mt)	130	130	9	9	–	–	MS
			CV (kcal/kg)	5,400	5,400	5,250	5,250	–	–	
Zonnebloem	100%	OC	Thermal Coal (Mt)	190	190	35	35	–	–	MS
			CV (kcal/kg)	5,150	5,150	4,850	4,850	–	–	
Oogiesfontein	100%	UG	Thermal Coal (Mt)	44	44	18	18	–	–	MS
			CV (kcal/kg)	4,950	4,950	4,950	4,950	–	–	
Paardekop	100%	UG	Thermal Coal (Mt)	120	120	575	575	80	80	MS
			CV (kcal/kg)	5,350	5,350	5,400	5,400	5,350	5,350	
Nooitgedacht	100%	UG	Thermal Coal (Mt)	21	21	40	40	5	5	MS
			CV (kcal/kg)	4,850	4,850	4,850	4,850	4,850	4,850	
Undeveloped Resources	100%	OC/UG	Thermal Coal (Mt)	–	–	12	12	100	100	MS
			CV (kcal/kg)	–	–	4,750	4,750	5,400	5,400	
Izimbiwa	48.73%		Thermal Coal (Mt)	108	126	35	40	32	38	
MBO		OC	Thermal coal (Mt)	28	30	–	–	2	2	MS
			CV (kcal/kg)	5,600	5,600	–	–	5,600	5,600	
Springlake		UG/OC	Thermal coal (Mt)	–	16	–	5	–	6	MS
			CV (kcal/kg)	–	5,800	–	5,750	–	5,700	
Argent		OC	Thermal coal (Mt)	28	28	–	–	–	–	MS
			CV (kcal/kg)	5,100	5,100	–	–	–	–	
Springboklaagte*		UG/OC	Thermal coal (Mt)	52	52	35	35	30	30	MS
			CV (kcal/kg)	5,100	5,100	5,050	5,050	4,950	4,950	

* Springboklaagte is held as a Joint Venture between Izimbiwa and Umcebo, 100% of the Springboklaagte resources are included in the table above under Izimbiwa and excluded from Umcebo.

Energy Products Coal

South Africa Coal Resources (continued)

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Umcebo	48.67%		Thermal Coal (Mt)	153	158	44	44	86	86	
Klippan		OC	Thermal Coal (Mt)	3	3	1	1	–	–	KvD
			CV (kcal/kg)	5,800	5,800	5,800	5,800	–	–	
Wonderfontein	24.34%	OC/UG	Thermal Coal (Mt)	65	70	5	5	1	1	MS
			CV (kcal/kg)	5,350	5,350	5,200	5,200	4,900	4,900	
Norwesco		OC	Thermal Coal (Mt)	1	1	–	–	–	–	GC
			CV (kcal/kg)	5,000	5,000	–	–	–	–	
Hendrina		UG	Thermal Coal (Mt)	24	24	20	20	80	80	MS
			CV (kcal/kg)	4,400	4,400	4,400	4,400	4,700	4,700	
Belfast	24.34%	UG	Thermal Coal (Mt)	60	60	18	18	5	5	MS
			CV (kcal/kg)	5,200	5,200	5,050	5,050	5,150	5,150	
Coal Resources South Africa			Thermal Coal (Mt)	2,346	2,409	839	844	344	350	

Energy Products Coal

South Africa Coal Reserves

Name of operation	Attributable interest	Mining method	Coal type	Extractable Coal Reserves		Saleable Coal Reserves		Total Saleable Coal Reserves		Competent Person
				Proved	Probable	Proved	Probable	31.12.19	31.12.18	
Twefontein	79.8%		Thermal Coal (Mt)	179	12	112	9	121	135	
Twefontein		UG/OC	Thermal Coal (Mt)	170	12	105	9	114	128	TH
North			Export (Mt)			70	5	75	85	
			CV (kcal/kg)			5,900	5,900	5,900	5,900	
			Domestic (Mt)			35	4	39	43	
			CV (kcal/kg)			5,100	5,100	5,100	5,100	
Twefontein		UG/OC	Thermal Coal (Mt)	9	–	7	–	7	7	TH
South			Export (Mt)			7	–	7	7	
			CV (kcal/kg)			5,900	–	5,900	5,900	
Goedgevonden	73.99%	OC	Thermal Coal (Mt)	280	–	172	–	172	178	CT
			Export (Mt)			73	–	73	79	
			CV (kcal/kg)			6,000	–	6,000	6,000	
			Export (Mt)			75	–	75	76	
			CV (kcal/kg)			5,100	–	5,100	5,100	
			Domestic (Mt)			24	–	24	23	
			CV (kcal/kg)			5,100	–	5,100	5,100	
iMpunzi	79.8%		Thermal Coal (Mt)	128	6	74	2	76	81	
iMpunzi North		OC	Thermal Coal (Mt)	28	3	16	1	17	20	TH
			Export (Mt)			13	1	14	18	
			CV (kcal/kg)			5,700	5,700	5,700	5,700	
			Domestic (Mt)			3	0	3	2	
			CV (kcal/kg)			5,100	5,100	5,100	5,100	
iMpunzi East		OC	Thermal Coal (Mt)	100	3	58	1	59	61	TH
			Export (Mt)			46	1	47	52	
			CV (kcal/kg)			5,700	5,700	5,700	5,700	
			Domestic (Mt)			12	0	12	9	
			CV (kcal/kg)			5,100	5,100	5,100	5,100	
Zonnebloem	100%	OC	Thermal Coal (Mt)	–	156	–	76	76	78	TH
			Export (Mt)			–	38	38	39	
			CV (kcal/kg)			–	6,000	6,000	6,000	
			Domestic (Mt)			–	38	38	39	
			CV (kcal/kg)			–	5,100	5,100	5,100	
Nooitgedacht	100%	UG	Thermal Coal (Mt)	–	33	–	22	22	22	TH
			Export (Mt)			–	11	11	11	
			CV (kcal/kg)			–	5,900	5,900	5,900	
			Domestic (Mt)			–	11	11	11	
			CV (kcal/kg)			–	5,100	5,100	5,100	
Oogiesfontein	100%	OC	Thermal Coal (Mt)	–	7	–	4	4	4	TH
			Export (Mt)			–	3	3	3	
			CV (kcal/kg)			–	5,900	5,900	5,900	
			Domestic (Mt)			–	1	1	1	
			CV (kcal/kg)			–	5,100	5,100	5,100	

Energy Products Coal

South Africa Coal Reserves (continued)

Name of operation	Attributable interest	Mining method	Coal type	Extractable Coal Reserves		Saleable Coal Reserves		Total Saleable Coal Reserves		Competent Person
				Proved 31.12.19	Probable 31.12.19	Proved 31.12.19	Probable 31.12.19	31.12.19	31.12.18	
Izimbiwa	48.73%		Thermal Coal (Mt)	20	26	16	24	40	44	
MBO		OC	Thermal Coal (Mt)	20	-	16	-	16	20	HG
			<i>Export (Mt)</i>			2	-	2	7	
			<i>CV (kcal/kg)</i>			5,700	-	5,700	5,900	
			<i>Domestic (Mt)</i>			3	-	3	3	
			<i>CV (kcal/kg)</i>			5,700	-	5,700	4,800	
			<i>Domestic (Mt)</i>			11	-	11	10	
			<i>CV (kcal/kg)</i>			4,200	-	4,200	4,200	
Argent		OC	Thermal Coal (Mt)	-	26	-	24	24	24	HG
			<i>Export (Mt)</i>			-	19	19	19	
			<i>CV (kcal/kg)</i>			-	4,500	4,500	4,500	
			<i>Domestic (Mt)</i>			-	5	5	5	
			<i>CV (kcal/kg)</i>			-	4,500	4,500	4,500	
Umcebo	48.67%		Thermal Coal (Mt)	45	-	32	-	32	35	
Wonderfontein	24.34%	OC/UG	Thermal Coal (Mt)	45	-	32	-	32	35	HG
			<i>Export (Mt)</i>			6	-	6	-	
			<i>CV (kcal/kg)</i>			5,900	-	5,900	-	
			<i>Domestic (Mt)</i>			26	-	26	35	
			<i>CV (kcal/kg)</i>			4,500	-	4,500	4,500	
Norwesco		OC	Thermal Coal (Mt)	0.30	-	0.25	-	0.25	0.2	HG
			<i>Export (Mt)</i>			0.20	-	0.20	0.2	
			<i>CV (kcal/kg)</i>			5,600	-	5,600	5,600	
			<i>Domestic (Mt)</i>			0.05	-	0.05	0.05	
			<i>CV (kcal/kg)</i>			4,500	-	4,500	4,500	
Coal Reserves South Africa	Thermal Coal (Mt)			652	240	406	137	543	577	

Energy Products Coal

Notes

The South African Coal Resources and Coal Reserve estimates have been prepared in accordance with the 2016 edition of the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the SAMREC Code) and the South African Guide to the Systematic Evaluation of Coal Resources and Coal Reserves (SANS 10320:2004).

The SAMREC Code and SANS 10320:2004 require that Coal Resources be reported on a Mineable Tonnes In Situ (MTIS) basis. The reported MTIS Coal Resource estimates take into account theoretically mineable seam thicknesses, coal quality cut-off parameters, geological loss factors, depth and/or strip ratio cut-offs and, where applicable, are discounted by coal tonnages which have previously been extracted. Coal Resources are reported inclusive of Coal Reserves.

Coal Resources have been re-estimated in 2019 for inclusion in this summary table except where otherwise stated. Revision of the totals includes changes to classifications of Coal Resource status due to exploration, geological reinterpretation and remodelling, and changes to lease holdings.

The reported Run-of-Mine (ROM) Coal Reserve estimates take into account planned practical mining thicknesses, mine layout losses, mining extraction factors, mining recovery efficiency factors, dilution, and contamination.

Saleable Coal Reserves are derived from the ROM Coal Reserves that are discounted by applying practical product yield factors which, where applicable, reflect historical processing plant efficiencies.

Changes and notes relevant to the estimation of Coal Resources and Coal Reserves are listed below for specific projects. Unless otherwise specified, changes reported are exclusive of production from 31 December 2018 to 31 December 2019. Depletion due to mining is based on the actual depletion from January to September, and a forecast for October to December. This forecast is reconciled each year to the actual production and an adjustment is made accordingly.

Coal Resource and Coal Reserve totals are rounded to appropriate levels of accuracy in accordance with the 2016 SAMREC Code and Glencore's standard procedures. In summary, Measured and Indicated Coal Resources are rounded to one significant figure if less than 10Mt and two significant figures if greater than 10Mt; calorific values are rounded to the nearest 50kcal/kg.

Values expressed in the text have not been rounded and therefore do not correlate directly with the tables.

Tweefontein Complex

Tweefontein North Coal Resource depletion due to mining (-13.4Mt). 7.2Mt increase in Coal Resources as a result of drilling an additional 30 boreholes in the northern extent of the Makoupan area, which has resulted in an increase in the interpreted thickness of the 2 Seam and the 4 Seam.

The Tweefontein North development includes all five seams present in the Vryheid Formation, however, only the No.1, No. 2, No. 4 and No. 5 seams form part of the mineable and economic Coal Resources. The Coal Resources have the potential to be extracted via both opencast truck and shovel or dragline, and underground bord and pillar mining methods.

Coal Reserve depletion due to mining (-12.4Mt). The Tweefontein North Underground Operation had a slight increase in the Coal Reserve footprint of the BM Central No. 2 Seam area (1.2Mt ROM and 0.8Mt Saleable). In the

Makoupan and Klipplaat Opencast pits, burning of coal associated with pillar mining on the No.4 and No. 2 seams, has caused a loss of yield (1.5Mt Saleable). Saleable Coal Reserves have also been reduced by sterilising opencast coal with a CV < 4050kcal/kg (0.9Mt). An updated Opencast Coal Reserve model accounting for 4 seam pillar losses excludes 0.4Mt ROM and 3.8Mt Saleable.

Mining rights for Tweefontein North expire on 27 March 2020, and an application for a renewal will be lodged in March 2020. Coal Reserves for Tweefontein North are sufficient to support a mine life of 14 years.

Tweefontein South: Tweefontein South Complex is contained in the iMpunzi new order mining right and in the Klippoortjie old order mining authorisation. A section 102 consent was obtained to incorporate the Klippoortjie MR into iMpunzi. Execution of the deed of amendment to give effect to the consent is pending. The mining area development includes all five seams, however only the No.1, No. 2, No. 4 and No. 5 seams form part of the Coal Resources.

No mining was conducted in 2019 and the No. 5 Seam Addcar Coal Reserves remain available for future extraction.

Mining rights for Tweefontein South expire on 28 March 2029. Coal Reserves for Tweefontein South are sufficient to support a mine life of 10 years.

Goedgevonden: Coal Resource depletion due to mining (-12.1Mt). Reduction in No. 2 seam Coal Resources due to a re-interpretation of the No. 2 seam sub-outcrop (-2.0Mt).

Opencast dragline mining operations in the area are extracting the No. 2, No. 4 and No. 5 seams. The No. 3 seam is too thin for practical extraction and the No.1 seam is not considered economic.

Coal Reserve depletion due to mining (-11.1Mt). There was a change in the mine plan resulting in an increase of 1.6Mt ROM. The previously mined No. 2 and No. 5 Seam underground pillar Coal Reserves (9.6Mt ROM) were elevated from Probable to Proved category

Goedgevonden comprises three mining rights; Goedgevonden, Zaaiwater West and Oogiesfontein. The Goedgevonden mining right will expire on 21 January 2037, Zaaiwater West will expire on 16 October 2037 while Oogiesfontein expired on 19 April 2018. Consent was obtained before expiry of the Oogiesfontein mining right to consolidate the three rights under the Goedgevonden 169 mining right. The deed of amendment to give effect to the consent was executed on 6 September 2018. Coal Reserves for Goedgevonden are sufficient to support a mine life of 24 years.

iMpunzi

The iMpunzi mining right incorporates the iMpunzi East area, consisting of the East pit, and the iMpunzi North area, comprising the North, Phoenix and Office pits. The mining right for iMpunzi expires on 28 March 2040. Coal Reserves for iMpunzi North and East are sufficient to support a mine life of 13 years.

iMpunzi North: Coal Resource depletion due to mining (-8.0Mt). Coal Resources reduction as a result of mining through the No. 2 seam pillar areas (-0.1Mt).

iMpunzi North consists of the iMpunzi North Opencast (opencast dragline and truck and shovel operations in North and South pit) and iMpunzi Mini-pits (truck and shovel operations in the Phoenix, and Office pits). The Opencast

Energy Products Coal

Coal Resources include the No.1, No. 2 and No. 4 seams, whilst the Mini-pit involves only the No. 4 seam.

Coal Reserve depletion due to mining (-8.3Mt). Revised North and East pit layouts account for an additional 0.4Mt of Coal Reserves.

iMpunzi East: Coal Resource depletion due to mining (-3.0Mt).

iMpunzi East consists of the iMpunzi East Opencast (opencast dragline and truck and shovel operations in the East pit). A large proportion of No. 2 seam and a small area of No. 4 seam have been previously mined by underground bord and pillar methods. The full seam is extracted through opencast mining methods – the lower zone of each seam was previously partially extracted by underground mining and the upper zone remains intact.

Coal Reserve depletion due to mining (-3.0Mt).

Zonnebloem

Coal Resource depletion due to mining (-1.2Mt).

The No. 1 and No. 2 seams are developed and are amenable to extraction by opencast truck and shovel operations.

Phase 1 of Zonnebloem is continuing using truck and shovel mining.

Coal Reserve depletion due to mining (-1.1Mt).

The Zonnebloem mining right expires on 28 March 2039. Coal Reserves are sufficient to support a mine life of 23 years.

Oogiesfontein

The Oogiesfontein mining right expired on 19 April 2018. Consent was obtained before expiry to consolidate the right under the Goedgevonden 169 mining right which expires on 21 January 2037. The deed of amendment to give effect to the consent was executed on 6 September 2018. The Environmental Management Programme and Water Use Licence have been approved.

There are no changes in Coal Resources or Coal Reserves for the current reporting period.

Paardekop

A new order mining right was granted in 2017 for 30 years and will expire on 19 August 2047. This right has not been executed due to an on-going dispute with Department of Mineral Resources and Energy. Approval of environmental licensing and permitting is awaited.

The Paardekop project area contains the Main seam which represents nearly 95% of the extractable coal. The seam has a mean thickness of 2.5m and is amenable to underground mining. The upper zone of the seam exhibits a relatively low CV whilst the lower zone has an average raw CV >5,300kcal/kg.

There are no changes in Coal Resources or Coal Reserves for the current reporting period.

Nooitgedacht:

The No. 2 Seam and No. 4 Seam reserves represent a potential future underground extension to Tweefontein South.

There are no changes in Coal Resources or Coal Reserves for the current reporting period.

Undeveloped Coal Resources

Applications for mining rights have been submitted for all the undeveloped Coal Resources. The mining right for

Amersfoort was granted and will expire on 30 May 2037, while the Boschmanspoort mining right is still pending.

The Amersfoort project is located in the southern sector of the Ermelo Coalfield in Mpumalanga province, southwest of Breyten. The Coal Resource estimate is based on the C seam which averages 2.5m in thickness and occurs at a depth of approximately 200m. The coal quality of the Amersfoort resource was re-evaluated and adjusted accordingly.

The Boschmanspoort project is located in the Witbank Coalfield in Mpumalanga province, southeast of Middelburg.

The Coal Resource estimate is based on the No. 2 seam which dips towards the east, therefore allowing some potential for opencast resources in the west.

Izimbiwa Coal

Izimbiwa Coal consists of a number of mines with a life of 5 years that have been grouped into the Middelburg Complex, and two greenfield projects, namely Argent and Springboklaagte, that will extend the life by approximately 20 to 25 years.

The expiry date of the relevant mining rights are as follows: Graspan - renewed and valid until 16 May 2029; Townlands valid until 22 July 2020 and Steelcoal valid until 3 July 2020. The mining rights for Argent and Springboklaagte were granted in May 2016 for 15 years (expiring on 30 May 2031), and 20 years (expiring on 30 May 2036) respectively.

Springboklaagte is held as a Joint Venture between Izimbiwa Coal and Umcebo. 100% of the Springboklaagte Coal Reserves and Coal Resources are included in the table above.

Middelburg Complex (MBO): Graspan, Townlands, Steelcoal and Corobrik, have been grouped into Middelburg Complex (MBO).

Coal Resource depletion due to mining (-3.4Mt) and Coal Resource losses due to 1 and 2 Seam being sterilised in the Corobrik area (-0.2Mt).

Coal Reserve depletion due to mining (-3.4Mt). Coal Reserves reduced in the Graspan Extension area due to a geological feature sterilising 1 seam (-0.1Mt). Updated Business Plan assumptions have resulted in the exclusion of coal in the Plant Reserve and Block B (-1.4Mt). The application of a revised maximum 40% raw ash cut-off for the 1 seam in the Steelcoal block accounts for -0.4Mt of coal excluded from Coal Reserves.

Springlake was sold to Milotex Pty Ltd in November 2019.

Argent: The Argent Coal Resource will be exploited through opencast truck and shovel and is awaiting finalisation of the environmental licensing and permitting before mining can commence.

Springboklaagte: The mining right for Springboklaagte has been granted and awaits environmental licensing and permitting.

Umcebo

The remaining mine life of the individual operations range up to 11 years while brownfield extensions and greenfield projects can extend the life to beyond 2036. Expiry date of relevant mining/concession licenses are different for each mine, ranging from October 2020 to March 2037. Renewals have been granted for Klippan (renewal granted until 25 September 2022) and Norwesco (renewal granted until 3 October 2020). The Wonderfontein mining right, held by Umsimbithi, expires on 2 June 2037.

Energy Products Coal

Klippan: The mine is currently closed but represents a potential future underground extension to the Wonderfontein Coal Resources.

Wonderfontein: Coal Resource depletion due to mining (-3.3Mt).

Wonderfontein is an opencast truck and shovel operation. The opencast Coal Resources include the No.1, No. 2, No. 3 and No. 4 seams. The Coal Reserves for Wonderfontein are sufficient to support a mine life of 11 years.

Coal Reserve depletion due to mining (-3.2Mt). Coal Reserve reduction due to the exclusion of weathered coal in Pit C (-0.1Mt). Updated Business Plan parameters result in the exclusion of low yield coal along Pit margins (-2.2Mt).

Hendrina: The project area is located south of the town of Hendrina in the province of Mpumalanga. The mining right application covers three discrete blocks of ground named Mooivley East, Mooivley West and Bosmanskrans. The area is traversed by the national road N11 which connects Hendrina and Ermelo. The Hendrina Project is at an advanced exploration stage. It is planned to be developed as an underground mine to supply an Eskom-type product. A mining right application was accepted by the Department of Mineral Resources in June 2016. The application remains pending.

Belfast: The prospecting right encompasses a number of blocks extending approximately 45km from east of Belfast to west of Wonderfontein. The N4 highway, the Gauteng-Maputo railway and Eskom power lines traverse the area.

The renewed prospecting right expired in October 2017. A mining right application, covering parts of the prospecting right area, was lodged in September 2017 and accepted on 11 October 2017. The mining right application outcome is pending.

Norwesco: There are no changes in Coal Resources or Coal Reserves for the current reporting period.

Competent Persons:

CT = Chris Theart; ND, NHD Metal Mining; SAIMM (706513); Group Mining Engineer, Glencore Coal South Africa;

GC = Gerrit Cronjé, BSc Hons Geology; Pr Sc Nat 400128/86, employed by Izimbiwa Coal (Pty) Ltd.

HG = Hugo Grobler B Engineering Mining; MSc Engineering Mining; MCC, SAIMM; employed by Izimbiwa Coal (Pty) Ltd;

KD = Karin van Deventer; (MSc Geochemistry; Pr Sc Nat 400705/15, employed by Suger Bush Consultancy;

MS = Marius Smith; B Sc. Honours Geology; MBA; Pr Sc Nat 400075/03; Group Coal Geologist, Glencore Coal South Africa;

TH = Trevor Howard; B Eng. Mining; Coal Mine Managers Certificate of Competency; SAIMM (701062); Group Mining Engineer, Glencore Coal South Africa;

Energy Products Coal

Colombia Coal Resources and Reserves

Prodeco Coal Resources

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Calenturitas	100%	OC	Thermal Coal (Mt)	140	150	120	120	60	70	KJW
			CV (kcal/kg)	6,300	6,300	6,100	6,200	6,150	6,250	
La Jagua	100%	OC	Thermal Coal (Mt)	50	55	27	28	–	–	KJW
			CV (kcal/kg)	7,100	7,100	7,100	7,050	–	–	
Coal Resources Prodeco			Thermal Coal (Mt)	190	205	147	148	60	70	

Prodeco Coal Reserves

			Coal Reserves		Marketable Coal Reserves		Total Marketable Coal Reserves			
Name of operation	Attributable interest	Mining method	Coal type	Proved 31.12.19	Probable 31.12.19	Proved 31.12.19	Probable 31.12.19	31.12.19	31.12.18	Competent Person
Calenturitas	100%	OC	Thermal Coal (Mt)	55	15	55	15	70	80	OA
			CV (kcal/kg)	6,168	6,116	6,168	6,116	6,157	6,150	
La Jagua	100%	OC	Thermal Coal (Mt)	40	25	40	25	65	70	OA
			CV (kcal/kg)	6,750	6,738	6,750	6,738	6,746	6,750	
Coal Reserves Prodeco			Thermal Coal (Mt)	95	40	95	40	135	150	

Cerrejón Coal Resources

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Carbones del Cerrejón	33.3%	OC	Thermal Coal (Mt)	3,250	3,100	1,250	1,200	600	700	GH
			CV (kcal/kg)	6,550	6,550	6,550	6,600	6,400	6,400	

Cerrejón Coal Reserves

Name of operation	Attributable interest	Mining method	Coal type	Extractable Coal Reserves		Saleable Coal Reserves		Total Saleable Coal Reserves		Competent Person
				Proved 31.12.19	Probable 31.12.19	Proved 31.12.19	Probable 31.12.19	31.12.19	31.12.18	
Carbones del Cerrejón	33.3%	OC	Thermal Coal (Mt)	200	140	190	130	330	375	SC
			CV (kcal/kg)	6,100	6,000	6,100	6,000	6,050	6,100	

Notes

Glencore's Colombian coal interests are located in two different coal provinces; La Guajira Department (Cerrejón) and Cesar Department (Prodeco).

Coal Reserves take into account geological losses, mining losses, contamination and as mined moisture adjustments. Reserves are reported on a ROM moisture basis. Coal Resources are reported on an *in situ* moisture basis.

Saleable Reserves: As sold basis are Coal Reserves adjusted for yield losses in the preparation plant (if applicable) and converted to a saleable moisture basis. The Coal Resource and Coal Reserve estimates tabulated above are stated on a total mine basis as at 31 December 2019.

Coal Resource qualities are reported on an *in situ* moisture basis and Coal Reserve qualities are reported on a gross as received basis. Coal Resources are reported inclusive of those Coal Resources modified to produce Coal Reserves. Coal tonnages are quoted as million metric tonnes

Changes and issues material to the estimation of Coal Resources and Reserves are noted below for specific projects. Reference to production changes between 31 December 2018 and 31 December 2019 are detailed for each producing mine site.

Coal Resource and Coal Reserve totals are rounded to appropriate levels of accuracy in accordance with the 2012 JORC Code and the Glencore Coal Assets rounding procedures.

Values expressed in the text have not been rounded and therefore do not correlate directly with the tables.

Prodeco:

Calenturitas: The geological model was updated with 2019 exploration drilling. Supported by in-pit mapping, this resulted in minor changes to seam thickness and subcrop locations that led to a decrease in coal resources, particularly near identified faults in Sectors A and CD (-1.3Mt Indicated and -2.7Mt Inferred). In updating the base of weathering with new exploration and in-pit data, resources decreased by 0.7Mt. 0.2 Mt of Inferred Resources in seams C195 – C120 in Sector CD were removed from the resource total as these tonnes are now under backfill west of the mined out area in Sector C. There is little likelihood of those tonnes being extracted economically in the future. New drilling has expanded Indicated Resources in Sector CD (+1.2Mt) in seams C420 – C155 and in Sector A, mining advance has elevated some Indicated Resources to Measured confidence.

Marketable Coal Reserves' depletion due to mining (-10Mt) was partially offset by reserves increases due to the

Energy Products Coal

reclassification of reserve status in Sector A (+0.6Mt) and minor changes resulting from geological model updates. The mining pit shell is the same as the one used for the 2018 JORC statement.

The remaining mine life is expected to be 7 years. Expiry date of relevant mining/concession licenses is 2035.

La Jagua: The geological model was updated with 2019 exploration and in-pit data resulting in minor changes to seam thickness and subcrop locations. Base of weathering was updated with recent drill hole data, a review of the weathering horizon and with in-pit data (+0.1Mt). Due to geotechnical issues, an area in Block 5 of CDJ was left in the pit, sterilizing 0.6Mt of coal, mainly in seam M45. The geological model update which included the latest drill hole data and pit mapping resulted in a decrease of -0.2Mt in Coal Resources.

Marketable Coal Reserves' depletion due to mining in 2019 was -5.6Mt. Coal Reserves decreased due to the new geological model (-0.2Mt) and total mine design adjustment to the new geological model reduced coal reserves by -0.2Mt.

Remaining life of mine is expected to be 10 years. Expiry date of relevant mining/concession licenses: Carbones El Tesoro (CET), Consorcio Minero Unido (CMU) and Carbones de La Jagua (CDJ) is between 2027 and 2038.

Cerrejón: In 2019, Coal Resources at Cerrejon totalling approximately 5,100Mt were reported as gross tonnes in situ within a 'geoshell' constrained by the horizontal and vertical distribution of data within the drill hole (data limits) envelope. Approximately 20 Mt of coal occurring in thin (<0.35m) seams were excluded from the Coal Resources. The Coal Resources include coal for which the continuity, quality and mineability are established but occur outside the current LOM plan. Total resources include approximately 780Mt of coal associated with rivers requiring additional permit approvals but exclude approximately 230Mt of coal within 1 km of major towns. Coal Resources comply with current and foreseen mining and marketing criteria and are considered to have reasonable prospects of eventual economic extraction.

Coal Reserves have reduced due principally to depletion by mining (-26Mt) and changes to the LOM plan reflecting uncertainties across various mining areas.

The current mining rights expire in 2033.

Competent Persons

OA = Oscar Alarcon, Technical Services Manager Prodeco, (AusIMM).

KJW = Kerry Whitby, Managing Director, McElroy Bryan Geological Services Pty Ltd (AusIMM).

GH = German Hernandez; BSc, BHPBilliton Certificate of Competent Person; GSSA; APS Geology Superintendent, Carbones del Cerrejón.

SC = Shah Chaudari, Strategic Planning Manager, Cerrejon (AusIMM)

Energy Products Coal

Canada Coal Resources

Name of operation	Attributable interest	Mining Method	Commodity	Measured Coal Resources		Indicated Coal Resources		Inferred Coal Resources		Competent Person
				31.12.19	31.12.18	31.12.19	31.12.18	31.12.19	31.12.18	
Suska	75%	OC	Coking/Thermal Coal (Mt)	–	–	13	13	90	90	KW
			CV (kcal/kg)	–	–	6,100	6,100	6,100	6,100	
Sukunka	75%	UG/OC	Coking Coal (Mt)	45	45	100	100	40	40	KW
Coal Resources Canada			Coking/Thermal Coal (Mt)	45	45	113	113	130	130	

Notes

Glencore's Canadian coal resources and reserves (Sukunka, Suska) occur in the Peace River area of the Province of British Columbia. Additional tenements adjacent to these Peace River projects are targeted for exploration. These include tenement areas identified as Central South, South Cirque and other tenements that extend north and south of the Pine River.

Coal Resource tonnage and quality are reported at an *in situ* moisture basis. Coal Resources are reported in accordance with the JORC Code 2012 edition.

Suska: Coal Resources have not been re-estimated since 2013.

Sukunka: Coal Resources have not been re-estimated since 2015.

Competent Person

KJW = Kerry Whitby, Managing Director, McElroy Bryan Geological Services Pty Ltd (AusIMM).

Energy Products

Oil

Net Reserves (Proven and Probable)¹

	Working Interest Basis								Combined mmboe
	Equatorial Guinea		Chad		Cameroon		Total		
	Oil mmbbl	Gas bcf	Oil mmbbl	Gas bcf	Oil mmbbl	Gas bcf	Oil mmbbl	Gas bcf	
31 December 2018	15	154	102	—	3	—	120	154	147
Revisions	—	(3)	2	—	—	—	2	(3)	(1)
Production	(2)	—	(4)	—	(0.3)	—	(6)	—	(6)
31 December 2019	13	151	100	—	3	—	114	151	142

Net Contingent Resources (2C)¹

	Working Interest Basis								
	Equatorial Guinea		Chad		Cameroon		Total		Combined mmboe
	Oil mmbbl	Gas bcf	Oil mmbbl	Gas bcf	Oil mmbbl	Gas bcf	Oil mmbbl	Gas bcf	
31 December 2018	23	454	61	—	4	—	88	454	166
31 December 2019	23	454	61	—	4	—	88	454	166

¹ "Net" Reserves or Resources are equivalent to Glencore's working interest in the asset/property.

Notes

Equatorial Guinea: Equatorial Guinea reserves and contingent resources consist of Block O (Glencore 25% working interest ("WI")) and Block I (Glencore 23.75% WI) reserves and resources.

The Aseng field (Block I, 23.75% WI) came on stream in November 2011. The field is produced from subsea wells tied back to a Floating Production, Storage and Offloading facility ("FPSO"). Average 2019 gross production was ~18,300 barrels per day.

The Alen field (95% Block O, 25% WI and 5% Block I, 23.75% WI) came on stream in May 2013. Average 2019 gross production was ~7,000 barrels per day. The field is produced from subsea wells tied back to a production platform where condensate is stripped and transported to the Aseng FPSO via a subsea pipeline. The produced gas is currently re-injected into the field but will be commercialised from 2021.

The Aseng and Alen fields have a 25 year exploitation term from approval of a plan of development.

Reserves for Equatorial Guinea were independently assessed by McDaniel & Associates (McDaniel), have been prepared in accordance with the Petroleum Resources Management System (PRMS) and have been extracted without material adjustment from the McDaniel report dated 31 December 2019. Contingent resources are based on Glencore estimates and have been prepared in accordance with PRMS.

Chad: Glencore holds an 85% WI in the Badila and Mangara oil field Exclusive Exploitation Authorisations (EXAs) and a 75% WI in the Krim EXA. The Krim onshore field is due to come on stream in the next few years.

The Badila field is an onshore development which came on stream in September 2013. Oil is transported through an export pipeline to the Chad/Cameroon export pipeline (Totco/Cotco pipeline) with off-take at the Marine Terminal in Cameroon. Average 2019 gross production was ~8,300 barrels per day.

The Mangara field is an onshore development that has been producing since late December 2014. Average 2019 gross production was ~4,300 barrels per day. Oil is transported through an export pipeline to the Totco/Cotco pipeline with off-take at the Marine Terminal in Cameroon.

The EXA's have a 25 year exploitation term after the authorisation of the EXA.

Reserves for Chad were independently assessed by McDaniel, have been prepared in accordance with PRMS and have been extracted without material adjustment from the McDaniel report dated 31 December 2019. Contingent resources are based on Glencore estimates and have been prepared in accordance with PRMS.

Cameroon The first phase of development of the Oak field (Bolongo license, 37.5% WI) came on stream on 7 August 2019. The field is currently produced from two platform wells tied back to third party infrastructure. Average first oil to year end 2019 gross production was ~4,900 barrels per day.

Reserves for Cameroon were independently assessed by McDaniel, have been prepared in accordance with PRMS and have been extracted without material adjustment from the McDaniel report dated 31 December 2019. Contingent resources are based on Glencore estimates and have been prepared in accordance with PRMS.