OTJIKOTO GOLD MINE

Namibia

NI 43-101 TECHNICAL REPORT

Prepared for:
B2Gold Corp.

Effective date:
31 December, 2018.

Prepared by:
Mr Tom Garagan, P.Geo.
Mr Peter Montano, P.E.
Mr Ken Jones, P.E.
Mr John Rajala, P.E.

CERTIFICATE OF QUALIFIED PERSON

I, Tom Garagan, P.Geo, am employed as the Senior Vice President, Exploration with B2Gold Corp. (“B2Gold”), which has its head offices at 595 Burrard St #3100, Vancouver, BC V7X 1J1, Canada.

This certificate applies to the technical report titled “Otjikoto Gold Mine, Namibia, NI 43-101 Technical Report”, that has an effective date of 31 December, 2018 (the “technical report”).

I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, and of the Association of Professional Engineers, Geologists and Geophysicists of Alberta. I graduated from the University of Ottawa with a Bachelor of Science (Honours) degree in Geological Sciences in 1980.

I have practiced my profession for 39 years. In this time I have been directly involved in generating and managing exploration activities, and in the collection, supervision and review of geological, mineralization, exploration and drilling data; geological models; sampling, sample preparation, assaying and other resource-estimation related analyses; assessment of quality assurance-quality control data and databases; and supervision of mineral resource estimates.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).

I visited the Otjikoto Gold Mine most recently from 7–9 February 2017, and 8–15 October, 2017.

I am responsible for Sections 1.1 to 1.8, 1.10, 1.11, 1.23; Section 2; Section 3; Section 4; Section 5; Section 6; Section 7; Section 8; Section 9; Section 10; Section 11; Section 12; Section 14; Section 23; Section 24; Sections 25.1 to 25.4, 25.6; Sections 26.1, 26.2.1, 26.2; and Section 27 of the technical report.

I am not independent of B2Gold as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Otjikoto Gold Mine and project since the start of the B2Gold due diligence study in October 2011.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: 19 March, 2019.

(Signed) “Tom Garagan”
Tom Garagan, P.Geo.

CERTIFICATE OF QUALIFIED PERSON

I, Peter Montano, P.E., am employed as the Project Director with B2Gold Corp. (“B2Gold”), which has its head offices at 595 Burrard St #3100, Vancouver, BC V7X 1J1, Canada.

This certificate applies to the technical report titled “Otjikoto Gold Mine, Namibia, NI 43-101 Technical Report”, that has an effective date of 31 December, 2018 (the “technical report”).

I am a registered Professional Engineer (#42745, Colorado, USA). I graduated from the Colorado School of Mines in 2004 with a B.Sc. in engineering and a B.Sc. in economics.

I have been directly involved in the design, construction, and operation of gold projects in Nicaragua, Namibia, and Mali and have participated in and contributed to projects and studies of gold and coal projects in Venezuela, El Salvador, Australia, and The Philippines.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).

I visited the Otjikoto Gold Mine most recently from October 14–18, 2018.

I am responsible for Sections 1.1 to 1.2, 1.12, 1.13, 1.14, 1.16, 1.18.2, 1.19 (excepting process-related information), 1.20 (excepting process-related information), 1.21, 1.22, 1.23; Section 2; Section 3; Section 15; Section 16; Section 18; Sections 19.2 to 19.4; Section 21 (excepting process-related information in Sections 21.2.5, 21.2.8, 21.3.3 and 21.3.6); Section 22; Sections 25.1, 25.7, 25.8, 25.10, 25.13 (excepting process-related information), 25.14 (excepting process-related information), 25.15; Sections 26.1, 26.2.2, 26.3; and Section 27 of the technical report.

I am not independent of B2Gold as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Otjikoto Gold Mine and Project since the start of the B2Gold due diligence study in October 2011.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: 19 March, 2019

(Signed) “Peter Montano”
Peter Montano, P.E.

CERTIFICATE OF QUALIFIED PERSON

I, Ken Jones, P.E., am employed as the Environmental, Health, Safety and Permitting Manager with B2Gold Corp. ("B2Gold"), which has its head offices at 595 Burrard St #3100, Vancouver, BC V7X 1J1, Canada.

This certificate applies to the technical report titled "Otjikoto Gold Mine, Namibia, NI 43-101 Technical Report", that has an effective date of 31 December, 2018 (the "technical report").

I am a registered Professional Engineer (#42718, Colorado, USA). I graduated from the University of Iowa in 2001 with a B. Sc. in Chemical Engineering. I have practiced my profession for over 15 years. I have developed, conducted and/or directed environmental and social studies including baseline investigations; materials geochemical characterization; hydrologic, air and noise modeling; closure planning and costing; and environmental and social impact assessment for hard rock mining projects in over a dozen countries in North and South America, Africa and Asia. I have developed, implemented and maintained programs for engineering and administrative compliance regarding international environmental, health and safety regulations and best practices at gold projects in Nicaragua, Namibia, the Philippines and Mali.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects (NI 43–101).

I visited the Otjikoto Gold Mine most recently from 10–20 October, 2018.

I am responsible for Sections 1.1 to 1.2, 1.17; Section 2; Section 3; Section 20; Sections 25.1, 25.11; and Section 27 of the technical report.

I am not independent of B2Gold as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Otjikoto Gold Mine and project since the start of the B2Gold due diligence study in October 2011.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: 19 March, 2019

(Signed) "Ken Jones"
Ken Jones, P.E.

CERTIFICATE OF QUALIFIED PERSON

I, John Rajala, P.E., am employed as the Vice President, Metallurgy with B2Gold Corp. ("B2Gold"), which has its head offices at 595 Burrard St #3100, Vancouver, BC V7X 1J1, Canada.

This certificate applies to the technical report titled "Otjikoto Gold Mine, Namibia, NI 43-101 Technical Report", that has an effective date of 31 December, 2018 (the "technical report").

I am a registered professional engineer in the state of Washington (No. 43299) and have a B.S. and M.S in metallurgical engineering from Michigan Technological University (1976) and the University of Nevada – Mackay School of Mines (1981), respectively.

I have practiced my profession for 41 years, during which I have been directly involved in the operations and management of mineral processing plants for gold and base metals, and in process plant design and commissioning of projects located in Africa, Asia, North, Central and South America.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* ("NI 43–101").

I visited the Otjikoto Gold Mine most recently from April 23–25, 2017.

I am responsible for Sections 1.1 to 1.2, 1.9, 1.15, 1.16; 1.18.1; 1.19 (process-related information); 1.20 (process-related information); Section 2; Section 13; Section 17; Sections 18.6, 18.10; Section 19.1; Sections 21.2.5, 21.2.8 (process-related information), 21.3.3, 21.3.6 (process-related information); Sections 25.1, 25.5, 25.9, 25.10, 25.12 (information relating to doré), 25.13 (process-related information), 25.14 (process-related information); and Section 27 of the technical report.

I am not independent of B2Gold as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Otjikoto Gold Mine and project since the start of the B2Gold due diligence study in October 2011. I was responsible for the metallurgical test work, flowsheet development and engineering/design and start-up/commissioning of the Otjikoto process plant.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: 19 March 2019

(Signed) "John Rajala"
John Rajala, P.E.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

This NI 43-101 Technical Report (the Technical Report) contains “forward-looking information” and “forward-looking statements” (collectively, forward-looking statements) within the meaning of applicable Canadian and United States securities legislation, including, but not limited to, B2Gold Corp.’s (B2Gold) objectives, strategies, intentions, expectations, production, cost, capital and exploration expenditure guidance, including the estimated economics of the Otjikoto Mine (Otjikoto Mine or the Project); future financial and operating performance and prospects; anticipated production at our Otjikoto Mine and processing facilities and events that may affect B2Gold’s operations; anticipated cash flows from the Otjikoto Mine and related liquidity requirements; the anticipated effect of external factors on revenue, such as commodity prices, estimation of Mineral Reserves and Mineral Resources, mine life projections, reclamation costs, economic outlook, government regulation of mining operations; expectations regarding community relations and social licence to operate; and any other forward-looking statements identified in Sections 1.11, 1.13, 1.14, 1.17, 1.20, 14, 15, 16, 20, 21, 25, and 26 of this Technical Report, as well as the tables included thereunder. All statements in this Technical Report that address events or developments that B2Gold expects to occur in the future are forward-looking statements. Forward-looking statements are statements that are not historical facts and are generally, although not always, identified by words such as “expect”, “plan”, “anticipate”, “project”, “target”, “potential”, “schedule”, “forecast”, “budget”, “estimate”, “intend” or “believe” and similar expressions or their negative connotations, or that events or conditions “will”, “would”, “may”, “could”, “should” or “might” occur. All such forward-looking statements are based on the opinions and estimates of B2Gold’s management as of the date such statements are made. All of the forward-looking statements in this Technical Report are qualified by this cautionary note.

Forward-looking statements are not, and cannot be, a guarantee of future results or events. Forward-looking statements are based on, among other things, opinions, assumptions, estimates and analyses that, while considered reasonable at the date the forward-looking statements is provided, inherently are subject to significant risks, uncertainties, contingencies and other factors that may cause actual results and events to be materially different from those expressed or implied by the forward-looking statements. The material factors or assumptions that B2Gold identified and were applied by B2Gold in drawing conclusions or making forecasts or projections set out in the forward-looking statements include, but are not limited to: the factors identified in Sections 1.10, 1.11, 14 and 25 (and the tables identified thereunder) of this Technical Report, which may affect the Mineral Resource estimate; the forward-looking statements and factors identified in Sections 1.12, 1.13, 15 and 25 (and the tables identified thereunder) of this Technical Report which may affect the Mineral Reserve estimate; the metallurgical recovery assumptions identified in Section 13 of this Technical Report; the assumptions identified in Table 14-4 of this Technical Report as being used in evaluating prospects for eventual economic extraction; the assumptions identified in Section 15.3 of this Technical Report as forming the basis for converting Mineral Resources to Mineral Reserves, as well as the assumptions identified in Section 15.5; the design and equipment assumptions identified in Table or Figure 17-1 and 17-2 of this Technical Report; the general assumptions identified in Sections 1.14, 1.16, 1.19, 16, 21 and 25 of this Technical Report, as well as the tables included therein; dilution and mining recovery assumptions; assumptions regarding stockpiles; the success of mining, processing, exploration and development activities; the accuracy of geological, mining and metallurgical estimates; anticipated metals prices and the costs of production; no significant unanticipated operational or technical difficulties; the execution of B2Gold's business and growth strategies, including the success of B2Gold's strategic investments and initiatives; the availability of additional financing, if needed; the availability of personnel for exploration, development, and operational projects and ongoing employee relations; maintaining good relations with the communities surrounding the Otjikoto Mine; no significant unanticipated events or changes relating to regulatory, environmental, health and safety matters; no contests over title to B2Gold's properties; no significant unanticipated litigation; certain tax matters; and no significant and continuing adverse changes in general economic conditions or conditions in the financial markets (including commodity prices and foreign exchange rates).

The risks, uncertainties, contingencies and other factors that may cause actual results to differ materially from those expressed or implied by the forward-looking statements may include, but are not limited to, risks generally associated with the mining industry, such as economic factors (including future commodity prices, currency fluctuations, energy prices and general cost escalation), uncertainties related to the continued development and operation of the Otjikoto Mine, dependence on key personnel and employee relations; risks related to political or social unrest or change; operational risks and hazards, including unanticipated environmental, industrial and geological events and developments and the inability to insure against all risks; failure of plant, equipment, processes, transportation and other infrastructure to operate as anticipated; compliance with government and environmental regulations, including permitting requirements and anti-bribery legislation; depletion of Mineral Reserves; volatile financial markets that may affect B2Gold's ability to obtain additional financing on acceptable terms; the failure to obtain required approvals or clearances from government authorities on a timely basis; uncertainties related to the geology, continuity, grade and estimates of Mineral Reserves and Mineral Resources, and the potential for variations in grade and recovery rates; uncertain costs of reclamation activities, and the final outcome thereof; tax refunds; hedging transactions; as well as other factors identified and as described in more detail under the heading "Risk Factors" in B2Gold's most recent Annual Information Form and B2Gold's other filings with Canadian securities regulators and the U.S. Securities and Exchange Commission, which may be viewed at www.sedar.com and www.sec.gov, respectively.

The list is not exhaustive of the factors that may affect B2Gold's forward-looking statements. There can be no assurance that such statements will prove to be accurate, and actual results, performance or achievements could differ materially from those expressed in, or implied by, these forward-looking statements. Accordingly, no assurance can be given that any events anticipated by the forward-looking statements will transpire or occur, or if any of them do, what benefits or liabilities B2Gold will derive therefrom. B2Gold's forward looking statements reflect current expectations regarding future events and operating performance and speak only as of the date hereof and B2Gold does not assume any obligation to update forward-looking statements if circumstances or management's beliefs, expectations or opinions should change other than as required by applicable law. For the reasons set forth above, undue reliance should not be placed on forward-looking statements.

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1.0 SUMMARY

1.1 Introduction

Mr. Tom Garagan, P.Geo., Mr. Peter Montano, P.E., Mr. John Rajala, P.Eng. and Mr. Ken Jones, P.Eng., collectively the Qualified Persons (QPs) prepared a Technical Report (the Report) using Form 43-101F1 on the Otjikoto Gold Operation (Otjikoto Mine or the Project) for B2Gold Corp. (B2Gold). The Otjikoto Mine is located near Otjiwarongo in the Republic of Namibia.

B2Gold Namibia (Proprietary) Limited is the Namibian 100% indirectly-owned B2Gold operating subsidiary. B2Gold holds a 90% attributable Project interest; the remaining 10% interest is held by EVI Mining (Proprietary) Ltd. (EVI), a Namibian empowerment company. B2Gold is operator.

1.2 Terms of Reference

This Report provides updated information on the operation of the Otjikoto Mine, including an updated Mineral Resource and Mineral Reserve estimate. The information will be used to support disclosures in B2Gold's Annual Information Form (AIF).

Units used in the report are metric units unless otherwise noted. Monetary units are in United States dollars (US$) unless otherwise stated. Mineral Resources and Mineral Reserves are classified using the 2014 edition of the Canadian Institute of Mining and Metallurgy (CIM) Definition Standards for Mineral Resources and Mineral Reserves (the 2014 CIM Definition Standards).

1.3 Project Setting

The Otjikoto Mine is located 300 km north of Windhoek, the country's capital, approximately 70 km from the town of Otjiwarongo, and 50 km from the town of Otavi within the Province of Otjozondjupa in the north–central part of the Republic of Namibia. The Project is centred on the Felsenquelle, Gerhardshausen, Otjikoto, Wolfshag, and Erhardshof farms.

Mine-related traffic travels from both the Otavi and Otjiwarongo directions on a daily basis with all traffic using the B1 National Road to access the property. Internal access to the mine area is via a well-maintained network of secondary roads and farm tracks. Given the generally arid climate of the area, these roads are typically trafficable year-round.

The area is characterized by low rainfall with extreme temperature ranges typical of an arid environment. Open pit mining operations are conducted year-round, as are exploration programs. Isolated heavy rainfall events may cause temporary halts in activity.

The mine site is located at an elevation of 1,500–1,510 masl. The greater part of the Project area falls within the tree and shrub savannah zone, which is listed as the dominant vegetation type in central Namibia. The mine site is situated just north of a local surface water divide. However, there are no well-defined surface water drainage features on the site and no major surface water flows or defined channel flows have occurred, or are expected other than local events after heavy rainfall.

There is sufficient surface area for the open pits, waste rock storage facilities (WRSFs), plant, tailings storage facilities (TSFs), associated infrastructure and other operational requirements for the planned life-of-mine (LOM) and mine plan (LOMP) discussed in this Report.

1.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The four exclusive prospecting licences (EPLs) and one mining licence (ML) that make collectively form the Otjikoto Mine cover an area of approximately 254,442 ha.

Maintaining mining lease ML169 requires annual fee payments and filing of bi-annual environmental reports with the Ministry of Environment and Tourism (MET), development of a work program, environmental compliance, commitment to seek local suppliers for fuel and lubricants, approval of the product take-off agreement, and payment of taxes by permanent employees in Namibia. Maintaining the EPLs requires annual fee payments and submission of quarterly exploration activity reports.

B2Gold owns the surface rights of the five farms in the vicinity of the mining operations. Annual land taxes are payable on the farms. Where exploration activities are conducted on ground where the surface rights are held by third parties, B2Gold typically enters into compensation agreements for any land disturbance with the surface rights owner.

A water permit, (#10971) which allowed a maximum abstraction of 1.4 Mm^3 per annum from selected groundwater wells, was granted in 2013 for clearing and construction purposes. In May, 2018, a revised #10971 permit was granted, allowing for 4.4 Mm^3 per annum water extraction from selected groundwater wells subject to certain monitoring and reporting conditions. This permit is current for two years, expiring in 2020, and providing all conditions are met, can be renewed.

The Namibian Minerals Act levies a royalty of 3% on the net sales of gold and silver. There is also a 1% export levy on gross gold revenue. The Otjikoto Project is not subject to any other back-in rights payments, agreements or encumbrances.

To the extent known, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Project that have not been discussed in this Report.

1.5 Geology and Mineralization

The Otjikoto and Wolfshag deposits are considered to be examples of orogenic-style gold deposits.

The major regional structure is the Damara Mobile Belt, which can be divided into a number of sub-parallel tectonostratigraphic zones, separated by regional lineaments. The Otjikoto Mine area is primarily within the Damara sequence tectonostratigraphic zone referred to as the Northern Zone. The Otjikoto area is predominantly underlain by lithologies belonging to the Neoproterozoic Swakop Group, which has been divided into three sub-groups, the Ugab, Usakos, and Navachab Subgroups. The Okonguarri Formation within the Usakos Subgroup hosts the gold mineralization and is overlain and underlain by distinctive glacial diamictite horizons of the Ghaub (Navachab Subgroup and Chuos (Usakos Subgroup) Formations, respectively. Unconformably overlying the Damara sequence are basin-fill lithologies of the late Carboniferous to middle Jurassic Karoo Supergroup. The Karoo Group rocks are in turn unconformably overlain by Cenozoic Kalahari sands, and isolated undifferentiated recent sediments (sand, calcrete, gravel and alluvial deposits.

The Okonguarri Formation is regionally metamorphosed to greenschist facies, and can locally be thermally metamorphosed to mid-amphibolite facies where granitic bodies have intruded the unit. In the mine area, the metamorphic grade reaches middle amphibolite-facies, associated with hydrothermal fluid flow.

B2Gold geological staff have identified a number of intrusions from geophysical data. These intrusions are tentatively ascribed to the Otjiwarongo Batholith, a poorly-documented assemblage of granites (quartz monzonite, biotite granite), alkali granite, pegmatite, quartz syenite and minor granodiorite. The known granite intrusions are situated south of EPL4309, and have not been observed within the general mine area.

Three structural regimes are recognized: recumbent folding (D1), a series of major doubly-plunging anticlines and synclines (D2), and a doming event (D3). Most of the Damara faults mapped in the Otjiwarongo-Otavi Region appear to be related to the D2 deformational event. The main structural control on the Otjikoto–Wolfshag mineralization is interpreted to be parasitic fold hinges between bedding parallel thrusts.

Alteration styles recognized include albitization and amphibole-style, as well as late-stage carbonate.

Surficial deposits of leached accumulations of calcium carbonate and calcrete occur over all of the deposit area and range in depth from 2–15 m. The oxidation depth commonly ranges from 20–40 m with an average of about 35 m. The transition to fresh rock is generally fairly rapid, within 1–4 m. There can be instances of deeper oxidation in association with fracture and/or fault zones.

The Otjikoto deposit has a strike extent of 2.6 km and has been drill tested to 475 m depth below surface. Most of the gold is hosted by a north–northeast striking, thin (<10 cm) sheeted sulphide (+ magnetite)–quartz + carbonate vein system developed in schist (variably albitised) and granofels of the Upper and Middle Okonguarri Formation. High-grade ore shoots occur on the short limbs and within the hinges of intrafolial folds between planar beds. The folded veins and related high-grade gold mineralization occur in a series of distinct en-echelon zones oriented at approximately 010° to 020° north–northeast and plunging at 10–15° (average 12°) to the south–southwest. Gold occurs within the vein system as coarse native gold with a size variation from 5 µm to 400 µm, with the median at about 100 µm. In the shallower and northern portions of the deposit, the veins are pyrite-rich, while in the southern and deeper levels of the deposit the veins are pyrrhotite-dominant.

The Wolfshag deposit has a strike extent of 2.1 km and has been drill tested to 700 m depth below surface. The deposit consists of a series of fold-duplicated mineralized zones hosted in west–northwest or east–southeast-verging fold closure zones. High-grade shoots within the mineralised zones are associated with parasitic folds occurring within the larger fold structure. Gold mineralization can be vein-hosted, or represent replacement or disseminated styles. Vein-hosted mineralization consists of pyrite–calcite + magnetite veins. Locally the veins are folded which is related to higher gold grades. Shear veining usually contains a mix of both replacement and vein style mineralization with both brittle (brecciation) and ductile deformation textures. The replacement style mineralization ranges from moderate, disseminated, to massive pyrite and/or magnetite replacement of calcareous bands and/or marbles. Replacement mineralization tends to be lower grade and is commonly gradational with the shear vein style. Disseminated mineralization tends to be lower grade with fine- to medium-grained magnetite more dominant than fine-grained pyrite.

1.6 History

The first regional gold-focused exploration activity commenced in 1995. Work completed by Avdale Namibia (Pty) Ltd. (Avdale), Rio Algom, Teal Exploration and Mining (Teal), EVI, Vale, African Rainbow Minerals (ARM), Tova Ventures Inc., and Auryx Gold Corp. (Auryx) included geological reconnaissance, airborne magnetic surveys, ground magnetic, electromagnetic and induced polarization surveys, rotary air-blast (RAB), reverse circulation (RC) and core drilling, and Mineral Resource estimation.

B2Gold acquired a 100% interest in Auryx in 2011. Since acquisition, B2Gold has completed additional drilling, a feasibility study in 2012, and has updated Mineral Resource and Mineral Reserve estimates. Commercial production was declared in 2015. Mining is currently conducted from the Otjikoto and Wolfshag pits.

1.7 Drilling and Sampling

Drilling comprises a total of 2,998 holes (325,984 m), consisting of 1,256 core holes (260,436 m), 473 RC holes (40,851 m) and 1,206 RAB holes (23,370 m). Of these totals, 242,014 m of core and RC drill data support the Mineral Resource estimate at Otjikoto and 122,884 m of core and RC drill data support the Mineral Resource estimate at Wolfshag. No RAB drilling is used in estimation.

Core sizes include HQ (63.5 mm core diameter, NQ (47.6 mm), TNW (60.8 mm) and PQ (85 mm). Sieved RAB samples, RC chips, and core are geologically logged. Data recorded for RC and core include lithology, texture, structure, alteration, oxidation state, and veining and mineralisation. Geotechnical information such as total core recovered (TCR), rock quality designation (RQD), joint count, and rock strength is also recorded for core holes. Core is photographed. Drilling quality for both RC and diamond drilling is generally very good.

Upon completion of a set of drill holes, the holes are surveyed by either a contract professional land surveyor or the Otjikoto mine surveyor using Total Station differential global positioning system (DGPS) survey instruments. All drill holes are surveyed using either a single or multi-shot down hole survey instrument (e.g. Reflex Ez-shot) which record the azimuth (magnetic) and dip.

Grade control drilling is undertaken in two 12-hour shifts, using contractor-operated 127 mm diameter RC rigs. Drill spacing varies between the two deposits. At Otjikoto, a 6 m x 12 m drill spacing with a hole dip of -60º and azimuth of 302° is used. The Wolfshag grade control uses an 8 x 10 m drill spacing, -60º dip and 350º azimuth.

Drill section orientation (305° azimuth) for the Otjikoto deposit was originally set up perpendicular to the geophysical targets and structural fabric of the area. The mineralization shoot direction was recognized at a much later stage and therefore the drilling sections are slightly oblique to the shoots, but not to the overall trend of the deposit. The shallower portions of the deposit were drilled on a 25 m x 25 m drill grid and the deeper levels at 25 m x 50 m and 50 m x 100 m drill hole spacing. Drilling on the Wolfshag zone used the Otjikoto grid and therefore the Wolfshag drill sections are also slightly oblique to the main trend of the zone. Drill spacing at Wolfshag is generally 25 m x 55 m for most of the deposit with an area of 25 m x 30 m and some 12.5 m infill on select lines targeting the nose of the upper fold. For both deposits, drilling is generally perpendicular to the mineralization, and drilled thicknesses approximate true thicknesses.

In the opinion of the QP, the quantity and quality of the logged geological data, and the collar, and downhole survey data collected in the exploration and infill drill programs completed, are sufficient to support Mineral Resource and Mineral Reserve estimation and mine planning.

RAB and RC samples are collected on 1 m intervals. RC grade control samples are collected at 2 m intervals. The majority of the core sampling on the project was done at 1 m sample intervals. The minimum sample length was 30 cm for HQ- and 40 cm for NQ-sized core. Three to five metres of material is sampled above and below the mineralized zones, and the zones are sampled continuously, without sample gaps. However, in narrow mineralized zones that are separated by more than 3 m, a gap in the sampling is allowed.

Laboratories used over the Project history include: Anglo American Research Laboratories, Johannesburg, South Africa; Chemex Laboratories, Toronto, Canada (now ALS Chemex); SGS Lakefield Research Africa (Pty) Ltd, Pretoria, South Africa; Moruo Analytical Services; Intertek Genalysis in Perth, Australia, Walvis Bay, Namibia and Johannesburg; ALS Global in Swakopmund, Namibia, and Johannesburg; Bureau Veritas, Walvis Bay; ALS Minerals, Vancouver, Canada; and the Otjikoto mine laboratory. All laboratories hold ISO/IEC 17025, except for the Otjikoto mine laboratory, Intertek Genalysis Walvis Bay and ALS Global Swakopmund which are not accredited. The accreditations for Chemex Laboratories at the time are not known. All laboratories other than the Otjikoto mine laboratory are independent of B2Gold. Currently, sample preparation is performed at ALS Global, Swakopmund, and primary analysis is undertaken by ALS Global, Johannesburg. The Otjikoto mine laboratory is used as an umpire (reference) laboratory.

Sample preparation in early programs crushed to -2 mm and following pulverization, was screened at 106 µm. Current protocols, in place since 2012, require crushing to -2 mm, then screening using a plastic screen to obtain the +106 and -106 size fractions. The +106 size fraction is packaged with the plastic mesh for fire assay, as this step mitigates the possibility of coarse gold becoming stuck in a regular mesh screen. The -106 size fraction is riffle split and packaged for shipping to the analytical laboratory.

Gold grades were determined using a standard fire assay methodology with either an atomic absorption (AA) for samples that assayed ≤10 g/t Au or were reassayed with a gravimetric finish if the sample assayed ≥10 g/t Au. Core and RC samples were sent for multi-element analysis. The most frequently used methods include inductively-coupled plasma-mass spectroscopy (ICP-MS), inductively-coupled plasma-atomic emission spectroscopy (ICP-AES) and X-ray fluorescence (XRF) for the determination of precious metal, base metals and multi-element content. Typically, the analytical packages include the following elements: Au, Pd, Pt, Ag, Al, Ba, Cd, Co, Cu, K, Mg, Mo, Ni, P, S, Sb, Sn, Te, V, W, Zn and Zr. Sulphur analysis was performed on select groups of samples using either a LECO or similar carbon and sulphur analyzer.

As of 7 September, 2018, there were 25,633 specific gravity (SG) measurements available. Methodologies used to collect the data include pycnometer laboratory determinations on RC and drill core pulp samples (5,168 determinations) and the water immersion (Archimedes) method on whole or half core. All of the density determinations used in estimation are from water immersion testwork programs.

QA/QC procedures have been in place since the start of the Project and are documented through procedure manuals. Samples used include blanks, certified reference materials (CRMs) and duplicates. Blanks are inserted at 1:20 rate. The CRM insertion rate was based on the fusion oven charge and was 1:20 at Intertek Genalysis and 1:38 at ALS Minerals. Field duplicate samples were collected at a frequency of 1:20. In addition to QA/QC insertion by B2Gold and predecessors, the analytical laboratories also provide QA/QC data with the sample analytical certificates. Each sample analytical certificate was vetted by the database manager and failures were recorded in a table of failures. This table lists the results of the QA/QC, any follow up action and final decision to include or not include the sample analytical certificate results in resource estimation. All sample analytical certificate results are retained in the database; however, not all sample analytical certificate results can support Mineral Resource estimates. Laboratories are requested to review and/or re-run submittals until the submittal passes QA/QC. Monthly QA/QC reports are prepared documenting the laboratory performance. Current quarterly check assay programs include both coarse reject and minus fraction sample umpires and reject and pulp granulometry evaluation.

A review of sample preparation procedures over time that was completed in 2016 indicated that in some sample batches, coarse material was being left in the minus-fraction submitted for assay. As a result, in late 2016 and early 2017, a re-sampling and re-assaying program was undertaken, consisting of about 14,000 remnant half-core samples. The re-assay data replaced the original analyses in the database.

Only authorized drill and B2Gold or predecessor personnel were allowed at the drilling sites. Core was transported directly to the Otjiwarongo core yard by B2Gold or predecessor personnel. The Otjiwarongo core yard is surrounded by a security fence with the office and complex alarmed and monitored by a local independent security firm. Sample shipments are currently controlled by B2Gold exploration operations and database managers. Transportation to the laboratory is done by an independent bonded courier company (ACT Logistics) with appropriate sign-off documentation accompanying each shipment at both shipping and receiving.

Reference RC chip samples and split rejects are retained in a secure storage facility in Otjiwarongo or at the Otjikoto mine site. Additional laboratory coarse rejects are retained in secure storage facilities in Johannesburg and Walvis Bay. All logged and sampled drill core is kept in the core yard or secure storage facilities in Otjiwarongo or at the Otjikoto mine site. Representative core intervals may be missing for portions of drill holes used for metallurgical and geotechnical testing.

In the opinion of the QP, sample preparation, security, analytical procedures, QA/QC insertion rates, data validation steps, and core and sample storage meet or exceed accepted industry standards. The data are acceptable to support Mineral Resource and Mineral Reserve estimates and can be used in mine planning.

1.8 Data Verification

Laboratory visits by B2Gold staff for the preparation laboratory are done unannounced on a monthly basis. For the analytical laboratory, an independent consultant is also contracted to do unannounced monthly visits. Monthly QA/QC reports are prepared by designated database managers. Prior to conducting Mineral Resource estimates, the modellers and estimators also undertake verification checks.

A number of independent technical reports were prepared on the Project, prior to B2Gold obtaining an interest in the Project. No material issues with the data were identified in these reports. B2Gold prepared a technical report in 2013, detailing the results of a completed 2012 feasibility study. Investigations and data validation in support of the feasibility study identified no material issues with the information available at the time.

As part of site visits from 2011–2018, the QP has personally verified a portion of the data supporting the estimates, including: RC drilling and sampling procedures at the rig during drilling; core drilling at various drills and the core retrieval and handling procedures; core logging and markup procedures and protocols; core photography procedures and quality; core cutting and sampling procedures; core storage and security; SG measurement and SG QA/QC procedures; sample shipping and chain of custody procedures; data entry and data verification procedures; and accuracy of geological interpretations and grade interpretations on section and plan, and in geological models.

The QP is of the opinion that the data are considered acceptable to support Mineral Resource and Mineral Reserve estimates, and can be used for mine planning purposes.

1.9 Metallurgical Testwork

Metallurgical testwork was carried out in support of plant design to treat material from the Otjikoto deposit. Additional testwork conducted on mineralization from the Wolfshag deposit indicated that no major plant design changes were warranted to allow for treatment of this ore.

Testwork completed has included: bottle roll tests; comminution (JKTech drop weight, SMC, Bond ball, Bond rod, Bond low-energy impact, Bond abrasion, unconfined compressive strength); grind circuit modelling; bulk mineralogy (X-ray diffraction (XRD), quantitative evaluation of minerals by scanning electron microscopy (QEMSCAN)); gold deportment (mineral speciation, grain size, liberation, and association); extended-gravity recoverable gold; gravity separation and leaching; cyanide destruction; rheology; and tailings characterization. Laboratories performing with the testwork have included ALS Minerals, SGS Lakefield, and FLSmidth.

Samples selected for metallurgical testing were representative of the various types and styles of mineralization within the different zones. Samples were selected from a range of locations within the deposit zones. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Average life-of-mine gold recoveries were estimated to be 95.6%. During operations, the process plant has been optimized, and is reliably achieving 98% recoveries.

There are no deleterious elements known that would affect process activities or metallurgical recoveries.

1.10 Mineral Resource Estimation

Mineral Resource estimates are reported from two block models, the combined Otjikoto and Wolfshag open pit model and the Wolfshag underground model. The Otjikoto and Wolfshag open pit models were built in 2015 and 2018, respectively, and combined into one model for Mineral Resource and Mineral Reserve pit shell runs and reporting. Core and RC data are used to support the Mineral Resource estimates.

For the Otjikoto deposit, mineralized zones were created using lithology, vein percent, sulphide abundance and gold grade at a nominal 0.3 g/t Au cut-off. Mineralized zone wireframes were identified by the thrust block in which they occur. Using logged rock type and oxidation from exploration drill holes, surfaces were created for the base of calcrete, transition, oxide and mixed. The bottom of calcrete surface was used as a top to the thrust and mineralized zone wireframes. Metallurgical domains are defined by oxidation state and dominant sulphide composition (pyrite/pyrrhotite).

For the Wolfshag deposit, two nested shells were created based on a combination of grade and vein intensity. These were a low grade (LG) domain at a nominal 0.2 g/t Au, and a high grade (HG) domain at a nominal 1 g/t Au. For the open pit model, only the LG domain was used as a boundary in the gold grade estimate. A stratigraphic/structural model was created based on all available geological data. Within each of the modeled stratigraphic units, lithology was assigned by interpolating indicators for each major rock type. Weathering and oxidation surfaces were created from simplified drill logs. Metallurgical domains are defined by oxidation state and dominant sulphide composition.

Bulk densities applied to the Otjikoto block model vary by lithology, mineralization, and oxidation state, ranging from 2.43 in hardpan to 2.84 in sulphide-mineralized albitite. For Wolfshag, densities were interpolated where sufficient data was available. Densities range from 1.9 in soil to 2.98 in some of the Wolfshag high-grade zones. Capping levels were selected based on decile analysis, lognormal probability plots and spatial review of high grades. Capping was applied to assays prior to down-hole compositing. For Otjikoto low grade domains, capping ranged from 4–6 g/t Au and for high grade domains capping ranged from 5–40 g/t Au. For Wolfshag, capping values ranged from 0–1 g/t Au in marble/waste, and 2–50 g/t Au in high-grade zones.

Down-hole composites were set at 2 m lengths. Variograms (correlograms) were run using spherical models.

Otjikoto gold grade estimates are based on a combination of ordinary kriging (OK) of an indicator (at 0.8–0.9 g/t Au) and OK of the high- and low-grade components of the indicator. Wolfshag grades for the open pit model were estimated using OK. Model validation included visual comparison of composites to the block model on screen and paper plots (sections and long sections), comparison of nearest neighbor and block model statistics at zero cut-off, comparison of interpolation methods by easting, northing and elevation on “swath” plots, change of support checks and reconciliation to grade control models.

No Measured Mineral Resources were classified. Indicated and Inferred Mineral Resources were classified based on drill spacing. Any blocks not classified as Indicated or Inferred were reset to a grade of 0.03 g/t Au (mean and median of waste assays) prior to pit optimization and mine planning.

The Otjikoto and Wolfshag open pit sub-cell models were combined into one large sub-celled model in Datamine. The combined model was converted to a whole-block (single grade per block) regularized model to the parent block size of 6 x 12 x 3.33 m. The average gold grade and the density for each whole block were calculated based on the volume-weighted average of all sub-cells within the parent cell. Categorical codes such as lithology, resource classification, and metallurgical domains were applied to the whole block model based on the dominant code inside the parent block. Due to a combination of the modeling methodology (~0.2 g/t Au shells, and no HG), block size and cut-off grades (operational cut-off of 0.25 g/t Au), most dilution is built into the resource model. Diluting tonnes are offset by grade loss due to grade reduction (e.g. if the pre-diluted grade was above a grade threshold (cut-off), the diluted grade would be below that grade threshold).

The down-plunge extension of Wolfshag mineralization is considered an underground mining target. The model uses the same construction approach as recorded for the Wolfshag open pit; however, high-grade zones were used in the underground model. Gold grades were estimated using inverse distance weighting to the third power (ID3).

Model checks included a visual review of block model grades relative to composite grades, comparison of nearest neighbor and block model statistics at zero cut-off and comparison of interpolation methods by easting, northing and elevation on “swath” plots . No Measured Mineral Resources are reported. Indicated and Inferred Mineral Resources were classified based on drill spacing.

Mineral Resources considered potentially amenable to open pit mining methods were constrained within a conceptual pit shell. Mineral Resources potentially amenable to open pit mining are stated above a cut-off of 0.4 g/t Au.

Mineral Resources considered amenable to underground mining methods are reported outside the conceptual pit shell used for reporting Mineral Resources and above a cut-off of 2.6 g/t Au.

1.11 Mineral Resource Statement

Indicated Mineral Resources are reported in Table 1-1, inclusive of those Indicated Mineral Resources converted to Probable Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Inferred Mineral Resources are provided in Table 1-2.

The QP for the resource estimate is Mr. Tom Garagan, P.Geo., Senior Vice President, Exploration, who is an employee of B2Gold. The Qualified Person for the stockpiles estimate is Mr. Peter Montano, P.E., Project Director, who is also an employee of B2Gold. The stockpiles reported include the run-of-mine (ROM) and low-grade (LG) stockpiles.

Factors that may affect the estimates include metal price and exchange rate assumptions; changes to the assumptions used to generate the gold grade cut-off grade; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to density and domain assignments; changes to geological and mineralization shape and geological and grade continuity assumptions; geometallurgical and oxidation assumptions; changes to geotechnical, mining and metallurgical recovery assumptions; change to the input and design parameter assumptions that pertain to the conceptual pit and stope designs constraining the estimates; and assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate.

Table 1-1: Indicated Mineral Resource Statement

Source	Tonnes (x 1,000)	Gold Grade (g/t Au)	Gold Contained Ounces (x 1,000)
Otjikoto Open Pit	18,200	1.13	660
Wolfshag Open Pit	8,800	2.37	670
Wolfshag Underground	100	4.26	10
Run-Of-Mine Stockpile	2,300	0.86	60
Low-Grade Stockpile	9,000	0.43	120
Subtotal – Open Pit and Underground (No Stockpiles)	27,100	1.55	1,350
Total Indicated Mineral Resources Including Stockpiles	***38,400***	***1.24***	***1,540***

Table 1-2: Inferred Mineral Resource Statement

Source	Tonnes (x 1,000)	Gold Grade (g/t Au)	Gold Contained Ounces (x 1,000)
Otjikoto Open Pit	500	0.65	10
Wolfshag Open Pit	2,200	0.77	60
Wolfshag Underground	1,500	5.11	240
Total Inferred Mineral Resources	***4,200***	***2.27***	***310***

Notes to accompany Mineral Resource tables:

1. The Qualified Person for the resource estimate is Mr. Tom Garagan, P.Geo., who is B2Gold's Senior Vice President, Exploration.
2. The Qualified Person for the stockpile estimate is Mr. Peter Montano, P.E., who is B2Gold's Project Director.
3. Mineral Resources have been classified using the 2014 CIM Definition Standards. Mineral Resources are reported inclusive of those Mineral Resources that have been modified to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. The Mineral Resources have an effective date of 31 December, 2018.
5. Mineral Resources are reported on a 100% basis. B2Gold holds a 90% attributable interest; the remaining 10% attributable interest is held by EVI.
6. Mineral Resource estimates that are amenable to open pit mining methods assume a gold price of US$1,400/oz, metallurgical recovery of 98%, and operating cost estimates of US$2.23/t mined (mining), US$12.85/t processed (processing) and US$3.24/t processed (general and administrative).
7. Mineral Resources that are amenable to open pit mining are reported at a cut-off of 0.40 g/t Au.
8. Mineral Resources that are amenable to underground mining are reported at cut-off of 2.60 g/t Au.
9. All tonnage, grade and contained metal content estimates have been rounded; rounding may result in apparent summation differences between tonnes, grade, and contained metal content.

1.12 Mineral Reserve Estimation

Mineral Reserve estimates assume open pit mining methods. Indicated Mineral Resources within the final pit design limits were converted to Probable Mineral Reserves.

B2Gold developed the parameters used in the Mineral Reserve estimation from operating experience at Otjikoto. Cost estimates and other parameters are based on the LOMP which uses 2018 contract labour rates that were ratified in the second quarter (Q2) of 2018. Process recoveries used in the estimate are based on historical production. Export levies and royalties are based on current Namibian laws and agreements. The merged Otjikoto and Wolfshag block model from August 2018 was the basis for the tonnage and grade estimates.

Pit optimization was performed using the Lerchs–Grossmann (L–G) algorithm in Whittle software, at a base case gold price of US$1,250/oz Au. Optimization parameters reflect the Mineral Reserve price, an export levy (1%) and Government of Namibia royalty (3%), and the LOMP operating and sustaining capital costs. Sustaining capital costs were defined as the capital costs required to stay in business, including rebuilding and replacing equipment as necessary, and were included in the validation optimization.

The Mineral Reserve estimate is based on applying a 0.45 g/t Au mill cut-off grade to the LOM production schedule. B2Gold defines the mill cut-off as the gold grade required to cover non-mining costs after process recoveries, selling costs, royalties and export levies are applied. Non-mining costs were defined as stockpile re-handle, processing and G&A operating and plant and facilities sustaining capital costs.

The LOM schedule includes stockpiling low-grade material to be processed at the end of the project and that will be processed as needed to maintain processing throughput rates. Part of this material is not included in the Mineral Reserve estimate because the grade is below the mill cut-off. However, the material was included in the LOMP to provide operational flexibility in a higher gold price environment. Processing of this material will be based on the economics at the time.

1.13 Mineral Reserve Statement

Mineral Reserves are reported using the 2014 CIM Definition Standards. The QP for the estimate is Mr. Peter Montano, P.E., Project Director, a B2Gold employee. Mineral Reserves are reported with an effective date of 31 December, 2018 in Table 1-3, using a gold cut-off grade of 0.45 g/t Au.

Table 1-3: Probable Mineral Reserves Statement

Source	Tonnes (x 1,000)	Gold Grade (g/t Au)	Gold Contained Ounces (x 1,000)
Otjikoto Open Pit	11,700	1.26	480
Wolfshag Open Pit	5,800	2.38	440
Run-of-Mine Stockpile	2,300	0.86	60
Total Probable Mineral Reserves	***19,800***	***1.54***	***980***

Notes to accompany Mineral Reserves table:

1. The Qualified Person for the estimate is Mr. Peter Montano, P.E., who is B2Gold's Project Director.
2. Mineral Reserves are reported using the 2014 CIM Definition Standards.
3. Mineral Reserves have an effective date of 31 December, 2018, and are reported on a 100% basis. B2Gold holds a 90% attributable interest and EVI holds a 10% attributable interest.
4. Mineral Reserves are based on a conventional open pit mining method, gold price of US$1,250/oz, metallurgical recovery of 98%, selling costs of $51.44/oz including royalties and levies, average mining cost of $2.29/t mined, average processing cost of $12.99/t processed, and site general costs of $3.25/t processed. Reserve model dilution and ore loss was applied through whole block averaging such that at a 0.45 g/t cut-off there is a 2.3% decrease in tonnes, a 2.2% reduction in grade, and 4.4% reduction in ounces when compared to the Mineral Resource model. Mineral Reserves are reported above a cut-off grade of 0.45 g/t Au.
5. Tonnes and grade are reported as-delivered to the mill, including mining dilution and losses. Dilution and loss are accounted for in the block model at the selective mining unit (SMU) size of 6 m E x 12 m N x 3.33 m RL.
6. All tonnage, grade and contained metal content estimates have been rounded; rounding may result in apparent summation differences between tonnes, grade, and contained metal content.

Factors that may affect the estimates include: changes to the gold price assumptions; changes to pit slope and geotechnical assumptions; unforeseen dilution; changes to hydrogeological and pit dewatering assumptions; stockpiling assumptions as to the amount and grade of stockpile material required to maintain operations during the wet season; assumptions used when evaluating the potential economics of Phases 3 and 4 of each of the pits; changes to inputs to capital and operating cost estimates; changes to modifying factor assumptions, including environmental, permitting and social licence to operate.

1.14 Mining Methods

The mining operations use conventional open pit mining methods and equipment. Mining is based on a phased approach with stockpiling to bring high-grade forward and provide operational flexibility.

Ten geotechnical domains have been defined in two oxidation domains (calcrete and oxidized; fresh rock), and pit slope angles vary by geotechnical domain. Inter-berm angles range from 30–60º. Beginning at the 1465 RL, 15 m wide geotechnical berms are included in the design on 60 m intervals. These criteria were the basis for the OSA applied in the optimization analysis.

Groundwater is actively extracted ahead of mining from a single dewatering borehole situated between the Otjikoto and Wolfshag pits. Excess water that accumulates in the pit due to groundwater seepage and rainwater accumulation is collected in sumps located in low spots in each pit and pumped to the return water dam.

A phased development strategy was applied in the LOM to smooth the mine production schedule by deferring waste stripping, and to bring high-grade material forward. Tabulations were developed for each of the phases based on the Mineral Reserve gold cut-off grade of 0.45 g/t. The mineralization was then subdivided based on the stockpiling strategy of delaying the processing of most of the low-grade material until the end of the mine life. Development is based on the Otjikoto and Wolfshag deposits each being mined in four phases for a total of eight phases. Phase 1 has already been completed for both deposits. Wolfshag Phase 4 represents the final expansion to the ultimate pit. The current LOM plan assumes processing of approximately 5.5 Mt from the Mineral Resource low-grade stockpile when higher-grade feed is not available. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The stockpile has an average grade of 0.43 g/t Au, which is similar to the break-even processing cut-off grade, so processing of this stockpile will be determined when processing capacity is available.

Where possible, ramps were located in the east wall of both pits to mitigate potential geotechnical hazards associated with planar and wedge-forming structures present in footwall structures along the west wall. A nominal ramp and road width of 27 m, including drainage and safety berms, was used for dual lane truck operation. Ramp widths were reduced to 20 m in the lower levels of the phase designs to allow for single lane haulage on the final benches. Ramp grades were designed to a maximum of 10%. Temporary ramps will be used, as needed, for initial access to stages.

Ore is hauled by truck from the pit to a stockpile, the ROM pad or direct-tipped into the crusher. The highest-grade material is direct-tipped or placed on the ROM pad depending on the plant feed requirements. Production drilling and blasting is done on 10 m benches with patterns and powder factors varying by material type and geological conditions.

Mining operations are scheduled for 365 days per year with a 15% decrease in the production rate during the rainy season, December through March. Vertical advance is limited to two operating benches per pit phase. This will involve the movement of an average of 38.5 Mt/a of material to sustain processing of 3.5 Mt/a. Mine and mill production are scheduled for eight years with the mining rate dropping the last two years with material from the low-grade stockpiles supplementing the process feed.

Haul truck numbers will increase from the current 23 to 26 as the haul distances increase due to the deepening of the pits and distances from the pits to the WRSF. Two Caterpillar 6018 shovels are generally operating on 10 m benches to remove waste. Ore is selectively mined with Liebherr 984 excavators using three flitches of 3.33 m each. These excavators are also used to mine difficult areas. The two R9250 excavators alternate between ore and waste, as needed. Caterpillar 992 and 990 wheel loaders offer flexibility and are used to supplement the mine production and for stockpile reclaim.

1.15 Recovery Methods

The metallurgical testwork results and information in the 2012 feasibility study provided the data to finalize the process design criteria and the Otjikoto mill flowsheet. The process recovery uses conventional designs and equipment.

The original design of the Otjikoto mill was based on a gravity/whole ore leach flow sheet with a nominal treatment rate of 2.5 Mt/a and a plant availability of 94%. A 25% design factor was included for sizing the primary crusher, conveyors, ball mill, thickeners, cyanide destruction circuit, reagent systems and mainstream pumps which would facilitate a future expansion. A pebble crusher was installed in the SAG mill circuit and two leach tanks were added to the leach circuit in the second half of 2015 to expand the mill capacity from 2.5 to 3.1 Mt/a.

Gold is recovered by gravity concentration/intensive leaching and by a cyanide leach/CIP process for treatment of gravity tailings. The Otjikoto mill design is robust and able to process the three major ore types (XR1 – oxide, XR2 – pyrite-dominant, XR3 – pyrrhotite-dominant) and now Wolfshag over the range of ore grades mined, and with variable materials handling and metallurgical characteristics.

The process flow sheet consists of the following: crushing; grinding; gravity concentration and intensive cyanidation; cyanide leaching of gravity tailings; carbon-in-pulp (CIP); cyanide destruction; tailings disposal; acid wash and elution; electrowinning and gold room; carbon regeneration; reagents make-up and distribution; air services and plant water service.

The mill fresh water consumption was 1 Mm^3/a at the mill design throughput of 2.5 Mt/a. Fresh water consumption is now permitted for 2 Mm^3/a with the expanded mill throughput. Fresh water is supplied from wells for both potable and process needs. Average overall plant power consumption during steady state mill operation is approximately 25–26 kWh/t of ore processed. Electrical power is generated on site using heavy fuel oil generators, and by a new solar power plant that was commissioned in 2018. Reagents are conventional for gold operations, and reagent consumptions for Wolfshag ore are similar to Otjikoto ore.

1.16 Project Infrastructure

Surface infrastructure to support operations is in place, and includes: two open pits; processing facilities (grinding and leaching facilities, along with management and engineering offices, change house, workshop, warehouse, and assay laboratory facilities); mine facilities (management and engineering offices, change house, EMV and light vehicle workshops, wash bay, warehouse, explosives magazine, crusher, mine access gate house, return water pump house); administration buildings (facilities for overall site management, safety inductions, and general and administrative functions); accommodation camp; WRSFs; TSF; water management facilities (stormwater and water storage dams, diversions, culverts); landfill facility; power generation facility; and fuel storage facilities (heavy fuel oil (HFO) and diesel).

The TSF was constructed using upstream construction techniques, based on a design by Epoch Resources Pty Ltd (Epoch). A penstock system was constructed in the centre of the paddock to direct return water to the return water pond as quickly as possible. The return water dam was constructed within the larger storm water dam, which was designed with a runoff system to contain a 50-year storm event. The TSF was designed to contain 36 Mt at a deposition rate of 3.0 Mt/a. Review of the as-built and operating parameters of the TSF by Epoch has increased the ultimate capacity to 50 Mt at a deposition rate of 3.5 Mt/a, pending continued annual site visits and analysis. The TSF and ponds are fully lined with high-density polyethylene (HDPE) liner. Monitoring wells and liner under drains are installed and regularly sampled.

Hydraulic designs and water management plans focus on isolating the storm water from the process water and minimizing water use. Storm water and any other non-contact water that flows outside of the disturbed areas is diverted around the facilities with a system of storm water ponds, diversion, and culverts. This system directs the flow to the existing channels and culverts associated with the B1 highway. All water falling directly on the industrial areas (contacted water) or otherwise contacted (fissure water from the mine pit, return and storm water from the tailings facility) is stored and used in the mining and processing facilities.

The power plant was constructed with 24 MW of installed generating capacity, and a 7 MW solar plant was commissioned in 2018.

1.17 Environmental, Permitting and Social Considerations

An Environmental Impact Assessment (EIA), complete with an Environmental Management Plan (EMP) and Mine Closure Framework (MCF), was originally completed for the Otjikoto Gold Mine in June 2012 (2012 EIA). The 2012 EIA updated an earlier impact assessment (completed in September 2011) to include design criteria for the mine, milling circuit, tailings management design and infrastructure.

The 2012 EIA included extensive public consultation and was approved (received Environmental Clearance Certificate (2012 ECC)) by the Ministry of Environment and Tourism (MET), Department of Environmental Affairs in August 2012. The 2012 ECC was incorporated into the Mining Lease Amplification Application approved by the Ministry of Mines and Energy (MME) in December 2012.

A second EIA was completed in 2013 (2013 EIA) for the inclusion of the on-site heavy fuel oil (HFO) power plant and landfill facility to cater for non-hazardous waste disposal (SLR 2013). The Environmental Clearance Certificate (ECC) for the 2013 ESIA was issued by MET in October 2013 (2013 ECC).

An EIA Scoping Report (including an assessment of impacts) was completed in 2014 that included the Wolfshag pit, ancillary infrastructure and an expanded plant capacity (2014 EIA Scoping Report). The EMP was updated to reflect updates to the Project and subsequent environmental mitigation and management measures. A corresponding ECC was issued by the MET in January 2015 (this 2015 ECC superseded previous ECCs). ECCs are valid for a three-year period and so the 2015 ECC was subsequently renewed in 2018 (ECC granted in August 2018). The EMP is currently being updated (2018 EMP) for submittal and approval by the MET. This 2018 EMP will reflect the current status (i.e., include changes to the Project and updates to its environmental mitigation and management measures) of the Project and will be submitted to the MET upon completion.

1.17.1 Environmental Considerations

The various EIA, EIA Scoping Reports or other key environmental assessments have been supported by and/or incorporate the following:

- Numerous baseline studies, including:
  - Air quality;
  - Visual landscape;
  - Groundwater and surface water;
  - Biodiversity;
  - Noise;
  - Archaeology/cultural heritage;
- The process design considerations critical to community health and safety, environment, and social issues;
- The impact of the Project on the environment, proposes monitoring programs for all phases of project development;
- Mitigation strategies to reduce potential project impacts on the receiving environment.

In addition to these key environmental studies, the Otjikoto Mine employs an Environmental Department which is located at the mine site and is responsible for compliance monitoring, administering environmental permits, interfacing with regulators, and maintaining an environmental management system that is in alignment with ISO 14001 requirements.

The Project's environmental management system consists of an overall Environmental Management Plan supported by a number of component management plans and supporting procedures. The EMP and its supporting individual Management Plan's (MP) are "living documents" which will continue to be amended periodically throughout the life of the Project to reflect changes in procedures, practices, Project phase, etc.

In managing environmental risk at the Project, many environmental aspects have been studied in addition to those outlined above. There are no environmental considerations that are known and not discussed in this Report that could materially impact B2Gold's ability to extract the Mineral Resources or Mineral Reserves.

1.17.2 Closure and Reclamation Planning

As part of granting approval for a project under the Environmental Management Act, 7 of 2007, (EMA), a draft closure and rehabilitation plan is required. The Otjikoto project was approved with a mine closure framework (MCF) in 2012 to satisfy the requirement of the EMA. A mine closure and rehabilitation plan has been developed in 2018 for the Otjikoto project and it is in the process of submission to the MET for approval.

The B2Gold annually updates the estimate of its environmental reclamation and closure liabilities. The estimated environmental liabilities as of December 31, 2018 are approximately US$24.8 million.

1.17.3 Permitting Considerations

B2Gold holds all permits required for compliant operations. Permits are renewed as required, if the permits were not granted for the full LOM.

1.17.4 Social Considerations

The Otjikoto Mine operations and activities associated with the mine have socioeconomic impacts on the surrounding communities. A Social Investment Strategy has been developed with the input from key local, regional and national stakeholders to enhance the positive impacts and minimize negative impacts of the mine. A Social Investment Board has been created composed of a majority of external stakeholders, which oversees the development and implementation of annual social investment plans and budgets. Social investment focuses on four key areas: livelihood, education, conservation and health.

The Otjikoto Mine regularly engages stakeholders (e.g., surrounding communities, neighboring landowners/farmers, regulatory authorities) to provide them with information regarding the environmental and social performance of the mine, and to address any issues that are raised. A Community Grievance Mechanism is in place to address any complaints from external stakeholders. B2Gold investigates all grievances and provides a formal response to the complainant. In general, relations with external stakeholders are good and stakeholder grievances have been limited.

1.18 Markets and Contracts

1.18.1 Markets

Otjikoto is an operating mine producing a readily-saleable commodity in the form of doré. Doré produced by B2Gold typically contains approximately 92% Au and 3% Ag. The doré is exported to the Rand Refinery in South Africa.

1.18.2 Commodity Prices and Contracts

Commodity prices used in Mineral Resource and Mineral Reserve estimates are set by B2Gold corporately. The current gold price provided for Mineral Reserve estimation is $1,250/oz, and $1,400/oz for Mineral Resource estimation.

Major contracts include fuel supply, blasting explosives and accessories, and grade control drilling. Contracts are negotiated and renewed as needed. Contract terms are typical of similar contracts in Namibia.

The QP has reviewed commodity pricing assumptions, marketing assumptions and the current major contract areas, and considers the information acceptable for use in estimating Mineral Reserves and in economic analysis.

1.19 Capital Cost Estimates

As the Otjikoto is a steady state operation capital costs are largely comprised of mobile equipment costs (replace and rebuild). An allowance for miscellaneous tools and equipment, small projects, and other minor capital costs has been included for mining, processing, and site general. All capital costs are assumed to be sustaining capital, as the current life of mine plan assumes no expansions to processing or mining capacity.

The capital cost estimate for the LOMP is included as Table 1-4.

1.20 Operating Cost Estimates

Operating costs are based on recent actual costs, projected through the current Mineral Reserve based life of mine plan and supported by recent actual costs including 2018 labour rates and fuel prices. The operating cost estimate for the LOMP is included as Table 1-5.

Table 1-4: Capital Cost Estimate

Area	LOM (US$ million)
Site general and infrastructure	15.9
Mining and processing	90.3
Closure and rehabilitation	20.3
Total	***126.5***

Note: Totals may not sum due to rounding.

Table 1-5: Operating Cost Estimate

Cost Centre	Ore Processed (US$/t)	Gold Produced US$/oz Au
Mining	16.52	438.42
Processing	11.74	311.48
General and administrative	3.04	81.67
Total	***31.30***	***831.57***

Note: Totals may not sum due to rounding.

1.21 Economic Analysis

B2Gold is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration is supported by a positive cash flow.

1.22 Interpretation and Conclusions

Under the assumptions presented in this Report, the Project has a positive cash flow, and Mineral Reserve estimates can be supported.

1.23 Recommendations

The work programs recommended focus on evaluation of the potential for underground operations, and on mine design improvements (phase 1) and additional drilling around a possible future underground mining (phase 2) that is contingent completion of, and positive results from, the first phase of work.

The first phase of work consists of drilling and mine improvement studies, and is budgeted at about $2.6 million. The second phase, if undertaken, is estimated at about $4–$6 million.

2.0 INTRODUCTION

2.1 Introduction

Mr. Tom Garagan, P.Geo., Mr. Peter Montano, P.E., Mr. John Rajala, P.E. and Mr. Ken Jones, P.E., collectively the Qualified Persons (QPs) prepared a Technical Report (the Report) using Form 43-101F1 on the Otjikoto Gold Operation (Otjikoto Mine or the Project) for B2Gold Corp. (B2Gold). The Otjikoto Mine is located near Otjiwarongo in the Republic of Namibia (Figure 2-1).

B2Gold Namibia (Proprietary) Limited is the Namibian 100% indirectly-owned B2Gold operating subsidiary. B2Gold holds a 90% attributable Project interest; the remaining 10% interest is held by EVI Mining (Proprietary) Ltd. (EVI), a Namibian empowerment company. B2Gold is operator.

2.2 Terms of Reference

This Report provides updated information on the operation of the Otjikoto Mine, including an updated Mineral Resource and Mineral Reserve estimate. The information will be used to support disclosures in B2Gold's Annual Information Form (AIF).

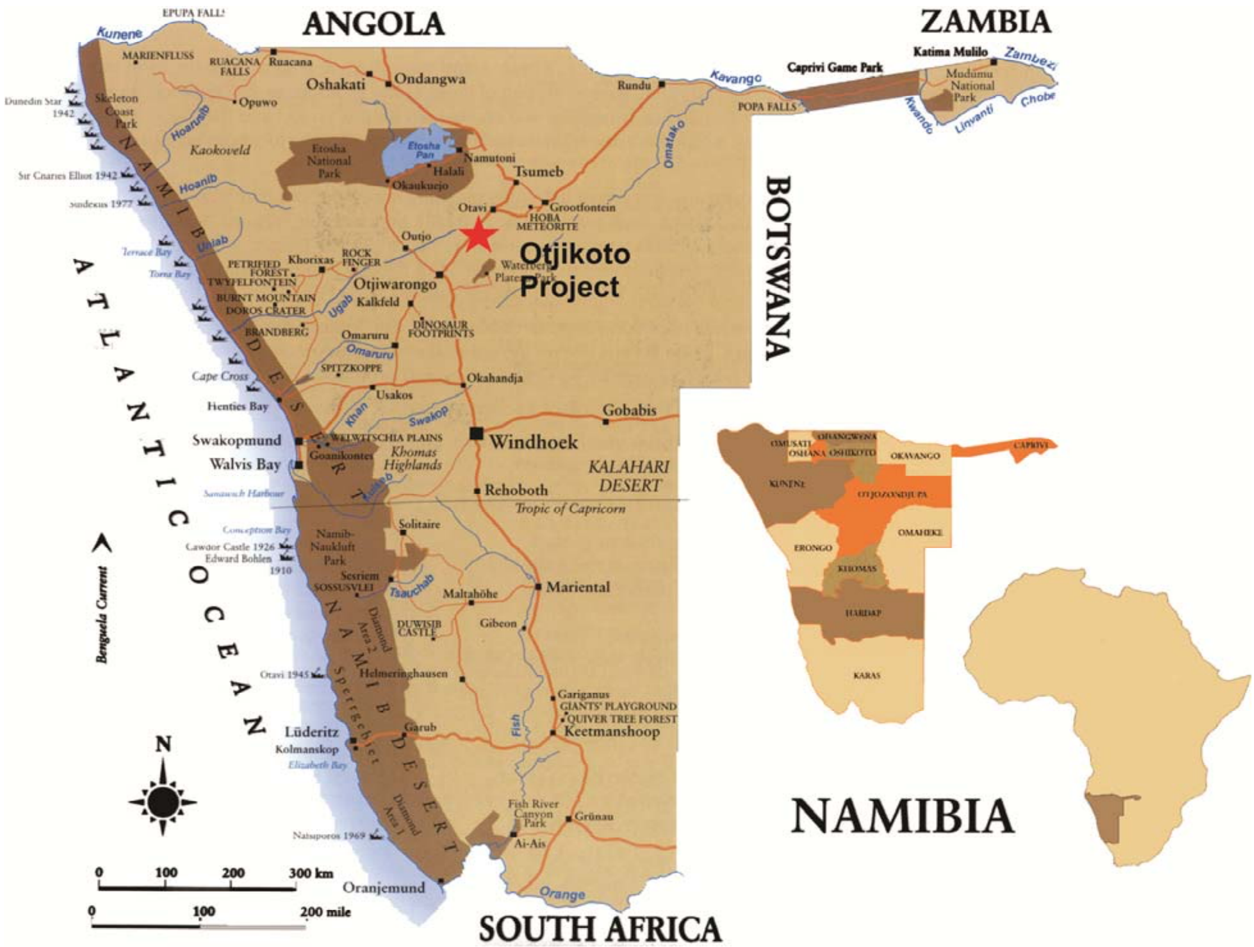
Units used in the report are metric units unless otherwise noted. Monetary units are in United States dollars (US$) unless otherwise stated. Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2003; 2003 CIM Best Practice Guidelines).

2.3 Qualified Persons

The following serve as the qualified persons for this Technical Report as defined in National Instrument 43-101, Standards of Disclosure for Mineral Projects, and in compliance with Form 43-101F1:

- Mr. Tom Garagan, P.Geo.;
- Mr. Peter Montano, P.E.;
- Mr. John Rajala, P.E.;
- Mr. Ken Jones, P.E.

Figure 2-1: Location Plan



Note: Figure prepared by B2Gold, 2018. Image modified after Food and Agriculture Administration of the United Nations (2002).

2.4 Site Visits and Scope of Personal Inspection

Mr. Tom Garagan has visited the mining operations on a number of occasions. His most recent site visits were from 7–9 February 2017, and 8–15 October, 2017. During the visits he inspected selected drill core, the open pit mining operations, toured the mill and laboratory facilities, viewed infrastructure, and discussed aspects of geology, exploration and mining practices with site staff.

Mr. Peter Montano last visited the site from 14–18 October, 2018. During this site visited the mining areas (Otjikoto and Wolfshag pits), waste rock storage facilities (WRSFs), run-of-mine (ROM) pad, and haul roads. During the site visit Mr. Montano reviewed mine operations, 2018 mining progress, and the 2019 budget estimates with mine staff.

Mr. John Rajala has visited the mining operations on a number of occasions, most recently from 23–25 April, 2017. During the last site visit, Mr. Rajala inspected the process plant, reviewed the current process plant operation with the management and metallurgical groups, and reviewed ongoing projects. He also toured the tailings storage facility (TSF).

Mr. Ken Jones visited the Otjikoto operation from 10–20 October, 2018. During the site visit, Mr. Jones viewed the TSF, waste rock storage facilities (WRSFs), ancillary facilities and surrounding area, and discussed with staff improvements to the health, safety and environmental management system, including progressive rehabilitation, surface water management, and provided review and support of technical study on mine materials geochemistry. Mr. Jones also provided input into the development of the asset retirement obligation estimate.

2.5 Effective Dates

There are a number of effective dates pertinent to the Report, as follows:

- Exploration database close-out date for Mineral Resource estimates: 7 July 2018;
- Effective date of the Mineral Resource estimates: 31 December, 2018;
- Effective date of the Mineral Reserve estimates: 31 December, 2018;
- Date of the economic analysis that supports Mineral Reserve estimation: 31 December, 2018.

The overall Report effective date is taken to be 31 December, 2018; and is based on the effective date of the Mineral Reserve and economic analysis that supports the Mineral Reserves.

2.6 Information Sources and References

Reports and documents listed in Section 3 and Section 27 of this Report were used to support preparation of the Report. Additional information was provided by B2Gold as requested. Supplemental information was also provided to the QPs by third-party consultants retained by B2Gold in their areas of expertise.

Information pertaining to surface rights, royalties, environmental, permitting and social considerations, marketing and taxation were sourced from B2Gold experts in those fields as required.

2.7 Previous Technical Reports

B2Gold filed a technical report on the Project in 2013, as follows:

- Lytle, B., Garagan, T., Naismith, A., Kriel, H., Bezuidenhout, G., Smith, G., Wiild, G., and Petrick, W., 2013: Otjikoto Gold Project, NI 43-101 Technical Report Feasibility Study, Province of Otjozondjupa, Republic of Namibia: report prepared for B2Gold, effective date 25 February, 2013.

Prior to B2Gold's interest in the Project, the following reports had been filed by earlier operators:

- McDonald, A., Wanless, M., Kriel, H., Wessels, M., and de Swardt, G., 2011: Otjikoto Gold Project, North-Central Namibia, NI 43-101 Technical Report Preliminary Economic Assessment: technical report prepared by SRK Consulting (South Africa) (Pty) Ltd for Auryx Gold Corp., effective date 1 September, 2011;
- Wanless, M., and Crisp, S. 2009: Otjikoto Gold Project, Otavi Exploration Area, Republic of Namibia: technical report prepared by SRK Consulting for 0824239 BC Limited (Auryx Gold Corp), effective date 31 March, 2010;
- Wanless, M., Winzar, C., and van der Merwe, A.J., 2007: Otjikoto Gold Project, Otavi Exploration Area, Republic of Namibia: technical report prepared by SRK Consulting for TEAL Exploration & Mining Incorporated, effective date 17 September 2007;
- Van der Merwe, A.J., Lomberg, K., and Rupprecht, S., 2005: Otavi Exploration Project, Namibia: technical report prepared by RSG Global for TEAL Exploration & Mining Incorporated, effective date 16 September, 2005.

3.0 RELIANCE ON OTHER EXPERTS

This section is not relevant to this Report.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Introduction

The Otjikoto Mine is located 300 km north of Windhoek, the country's capital, approximately 70 km from the town of Otjiwarongo, and 50 km from the town of Otavi within the Province of Otjozondjupa in the north–central part of the Republic of Namibia.

The Project is centred on the Felsenquelle, Gerhardshausen, Otjikoto, Wolfshag, and Erhardshof farms.

Centroids for the deposits are reported in the WGS84 Zone 33 South coordinate system as follows:

- Otjikoto:
  - Easting: 720196;
  - Northing: 7788742;
  - Elevation: 1506;
- Wolfshag:
  - Easting: 720955;
  - Northing: 7789658;
  - Elevation: 1502.

4.2 Property and Title in Namibia

Information in this subsection is summarized from the Ministry of Mines and Energy (2018), Namibia Chamber of Mines (2018), and KPMG (2014).

4.2.1 Mineral Title

All mining-related activities in Namibia are regulated by the Minerals (Prospecting and Mining) Act of 1992. The Ministry of Mines and Energy (MME) is the agency responsible for preparing policy, strategies and legislative framework, implementing government policies, and granting and monitoring of mineral titles.

Three main types of title can be granted to mining and exploration companies:

- Reconnaissance Licence (RL): Designed for regional, mainly remotely sensing exploration, a reconnaissance licence is valid for six months on a non-renewable basis;

- Exclusive Prospecting Licences (EPL): This three-year licence allows systematic prospecting in areas of up to 1,000 km. It gives exclusive exploration rights to the land and may be extended twice for two-year periods if demonstrable progress is shown. Renewals beyond seven years require special approval from the Minister. It is possible that two or more EPLs can be granted for more than one mineral in the same area. A geological evaluation and work plan are pre-requisites prior to issuing of the EPL;
- Mining Licences (ML): This gives the holder the exclusive mining right in the licence area for a maximum period of up to 25 years. Renewals can be granted for additional 15-year periods. The holder is required to demonstrate the financial and technical ability to develop and operate a mine.

In 2011, the Namibian Government declared gold, copper, rare earth metals, diamonds, uranium and coal to be “strategic metals”. Licences can only be issued for these materials to State-owned companies (e.g. the Epangelo Mining Company (Pty) Ltd (Epangelo)); however, the State-owned companies can enter into joint ventures (JVs) for exploration and development. The decision was not retroactive, and existing licences were not affected. However, if a company applied for a new prospecting or mining licence covering a strategic mineral, the licence could be granted on condition that the licence holders gave first right of refusal to the Namibian Government before approaching any other party.

4.2.2 Surface Rights

Surface rights are separate rights to mineral rights.

4.2.3 Royalties

Royalties levied on mining companies, as per the 1981 Minerals (Prospecting and Mining) Act, range from 2–10% of the market value of the commodity extracted. Currently, the royalty for gold, copper, zinc and other base metals is 3%.

The 1981 Minerals Act includes provision for a penalty royalty (failure to beneficiate minerals in Namibia, if such beneficiation is possible; transfer pricing arrangements; and excessive brokerage fees) as well as for a windfall royalty.

There is also a levy imposed as part of the 2016 Export Levy Act on the export of gold, which is currently set at 1% of gross gold revenue.

4.2.4 Environmental

The Ministry of Environment and Tourism (MET) is the agency with responsibility for environmental governance. The Department of Environmental Affairs includes an environmental impact assessment (EIA) unit that assesses EIA reports and provides clearance to mining and non-mining projects. It also is tasked with environmental compliance oversight.

The Minerals (Prospecting and Mining) Act 33 of 1992 as amended, under section 128 states that the Minister can direct the person who was the holder of a non-exclusive prospecting licence or mineral licence ‘to take all such steps as may be necessary to remedy to the satisfaction of the Minister any damage caused by any prospecting operations and mining operations carried on by such holder to the surface of, and the environment in, such area’.

Section 130 ‘Liability of holders of licences or mining claims for pollution of environment or other damages or losses caused’ requires the holder of the licence or mining claim to report any spillage of minerals to the Minister and are held liable to remedy the damage done to the area.

The Environmental Management Act 7 of 2007 requires the issuance of environmental permits and licenses for a range of activities which would have an impact on the environment. This includes mining operations.

Prior to mining licenses being issued, all applicants are required to complete an environmental contract with the MET. Environmental impact assessments must include considerations such as air pollution, dust generation, water supply, drainage/waste water disposal, land disturbance and protection of flora and fauna.

4.2.5 Water

For protection of water resources, the government of Namibia has formulated the Water Resource Management Act, 2013, which stipulates that a person shall require a licence to extract and use water for commercial use, which can also be combined with a licence to discharge effluents. Under Section 61 of the Act, a borehole licence is issued for the purpose of exploring or extracting minerals which require deepening or enlarging of an existing borehole that may be below the water table. Such a licence can only be issued with a condition that the licence holder has to ensure conservation and protection of water resource. Further, wastage of groundwater in boreholes, wells, shafts, mines or other excavations is prohibited under Section 63 of the Act. A requirement of a licence is prerequisite to dispose of groundwater extracted from a mine or any underground work which has also been mandated under Section 109(1)(d) of the Minerals (Prospecting and Mining) Act.

4.2.6 Fraser Institute Survey

B2Gold has used the Investment Attractiveness Index from the 2017 Fraser Institute Annual Survey of Mining Companies report (the Fraser Institute survey) as a credible source for the assessment of the overall political risk facing an exploration or mining project in Namibia.

B2Gold has relied on the Fraser Institute survey because it is globally regarded as an independent report-card style assessment to governments on how attractive their policies are from the point of view of an exploration manager or mining company, and forms a proxy for the assessment by industry of political risk in Namibia from the mining perspective.

The Fraser Institute annual survey is an attempt to assess how mineral endowments and public policy factors such as taxation and regulatory uncertainty affect exploration investment.

Overall, Namibia ranked 54 out of 91 jurisdictions in the attractiveness index survey in 2017; 39 out of 91 in the policy perception index; and 60 out of 91 in the best practices mineral potential index.

4.3 Project Ownership

Mineral tenure is held in the name of B2Gold Namibia Pty Ltd. (B2Gold Namibia). B2Gold Namibia is indirectly owned by B2Gold (90%), and EVI Mining (Proprietary) Ltd., (EVI), a Namibian empowerment company (10%).

4.4 Mineral Tenure

The four EPL licences and one mining licence that make collectively form the Otjikoto Mine cover an area of approximately 254,442 ha.

Table 4-1 summarizes the current tenure holdings within the defined Project area, and Table 4-2 outlines the reporting and other obligations that must be met to retain the mineral title in good standing. The tenure locations are shown in Figure 4-1.

Maintaining ML169 requires annual fee payments and filing of bi-annual environmental reports with the MET, development of a work program, environmental compliance, commitment to seek local suppliers for fuel and lubricants, approval of the product take-off agreement, and payment of taxes by permanent employees in Namibia.

Applications for renewal for EPLs 4309 and 2410 have been lodged. Maintaining the EPLs requires annual fee payments, submission of quarterly exploration activity reports to the MME, and submission of bi-annual environmental reports with the MET.

Exploration on EPL4309 is conducted under the terms of an Environmental Clearance Certificate (ECC) issued by the MET on August 4, 2016; this ECC remains in good standing for a period of three years. The ECCs for EPLs 6219 and 6228 have yet to be issued by the MET.

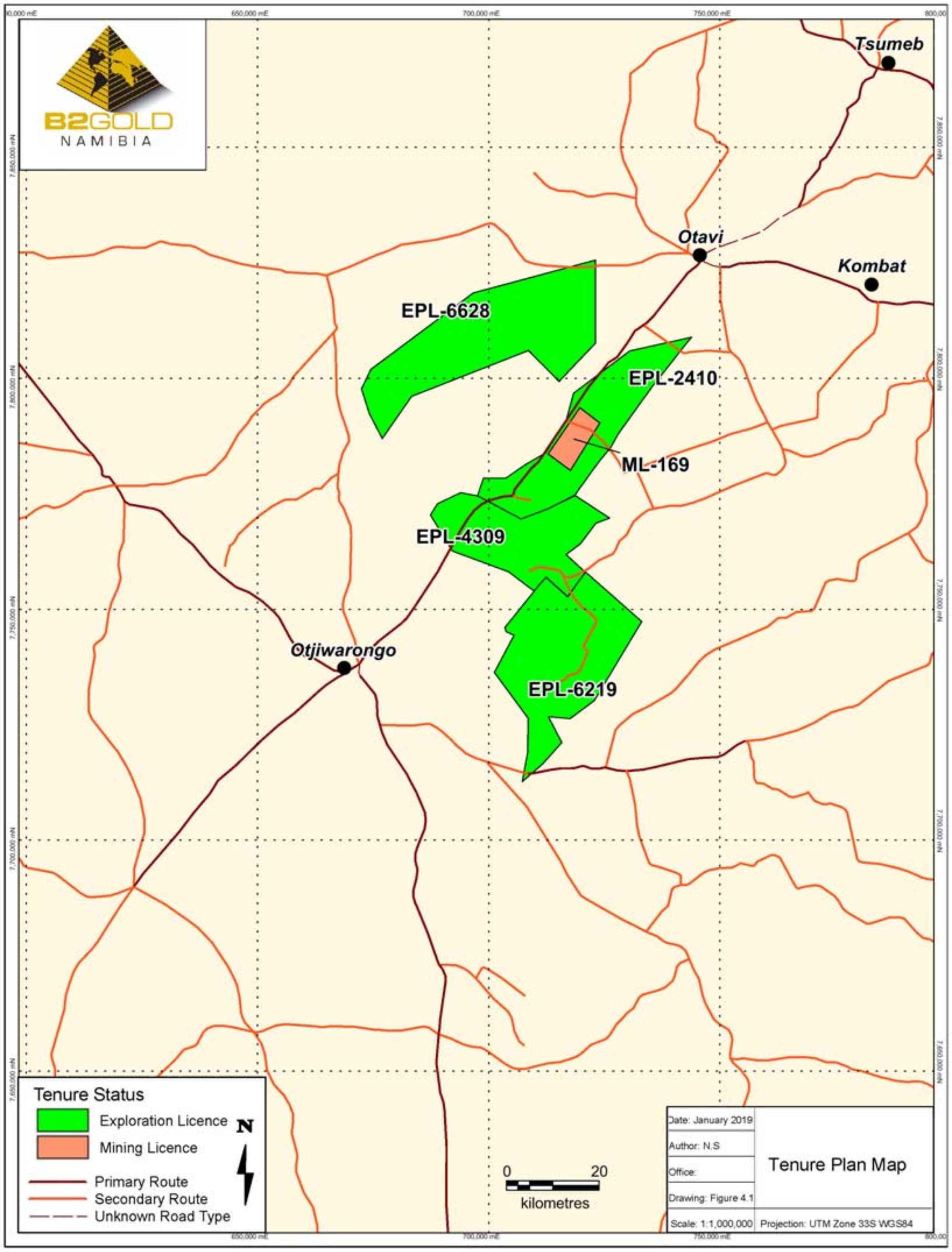
Table 4-1: Mineral Tenure Summary Table

Tenure Type	Tenure Number	Tenure Name	Tenure Held By (Company)	Inception Date	Application Date	Original Area (ha)	Reduced Area (ha)
EPL	2410	Area 9 (Otjikoto) (Otavi)	B2Gold Namibia (Pty) Ltd	15/09/1997	15/05/2012	90,585.00	47,534.0467
EPL	4309	Area 16 (Rabbit Ears) (Otavi)	B2Gold Namibia (Pty) Ltd	15/06/2011	15/07/2009	97,881.00	46,950.8889
EPL	6219	Elandsvreugte (Otjiwarongo)	B2Gold Namibia (Pty) Ltd	08/08/2017	18/12/2015	70,276.41	70,276.41
EPL	6628	Plesston (Otavi)	B2Gold Namibia (Pty) Ltd	06/12/2017	01/03/2017	82,747.06	82,747.06
ML	169	Otjikoto Mining Licence	B2Gold Namibia (Pty) Ltd	04/12/2012	13/09/2010	6,933.99	6,933.99
							254,442.3956

Table 4-2: Mineral Tenure Obligations Table

Tenure Type	Tenure Number	Application Type	MME Status	From	To	MME Reporting	Annual Fee (N$)	Annual Fee to be Paid Before Date	Renewal Application Payment (N$)	Progress
EPL	2410	Renewal application lodged	current	15/09/2016	14/09/2018	14/06/2018	5,000.00	14/09/2018	5,000 to be paid on renewal (payment done)	Report submitted
EPL	4309	Renewal application lodged	current	15/06/2016	14/06/2018	14/03/2018	5,000.00	18/06/2016	5,000 to be paid on renewal (payment done)	Report submitted
EPL	6219	new application	current	08/08/2017	07/08/2020	07/05/2020	8,000.00	07/08/2018	Not applicable	Not applicable
EPL	6628	new application	current	06/12/2017	05/12/2020	05/09/2020	9,000.00	05/12/2018	Not applicable	Not applicable
ML	169		current	04/12/2012	03/12/2032		10,000.00	04/12/2018	Not applicable	Not applicable

Figure 4-1: Tenure Location Plan



4.5 Surface Rights

B2Gold's surface rights holdings consist of five farms:

- Felsenquelle;
- Gerhardshausen;
- Otjikoto;
- Wolfshag;
- Erhardshof.

Land taxes are due on the farms. The 1995 Agricultural and Commercial Land Reform Act levies a land tax; the rates of such land taxes are determinable on nationality, size of the farm, activities and number of farms held by a particular owner as determined by the Ministry of Land Reform.

Where exploration activities are conducted on ground where the surface rights are held by third parties, B2Gold typically enters into compensation agreements for any land disturbance with the surface rights owner.

4.6 Water Rights

A water permit, (#10971) which allowed a maximum abstraction of 1.4 Mm^3 per annum from selected groundwater wells, was granted in 2013 for clearing and construction purposes. In May, 2018, a revised #10971 permit was granted, allowing for 4.4 Mm^3 per annum water extraction from selected groundwater wells subject to certain monitoring and reporting conditions. This permit is current for two years, expiring in 2020, and providing all conditions are met, can be renewed.

4.7 Royalties and Encumbrances

The Namibian Minerals Act levies a royalty of 3% on the net sales of gold and silver. There is also a 1% export levy on gross gold revenue.

The Otjikoto Project is not subject to any other back-in rights payments, agreements or encumbrances.

4.8 Permitting Considerations

Permitting considerations for operations are discussed in Section 20.

4.9 Environmental Considerations

Environmental considerations for operations are discussed in Section 20.

4.10 Social License Considerations

Social licence considerations for operations are discussed in Section 20.

4.11 Comment on Property Description and Location

To the extent known, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Project that have not been discussed in this Report.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

The Otjikoto Mine area can be reached from the capital city, Windhoek, some 300 km to the south, along the B1 National Road, which is a surfaced road in excellent condition. Windhoek is connected by direct commercial air travel from several European countries, South Africa and other African countries.

The large regional town of Tsumeb, a mining centre in its own right, is located some 110 km north of the Project area, also along the B1 National Road. A domestic airport is located at Tsumeb, currently with both scheduled and charter flights connecting with Windhoek.

The smaller town of Otavi lies some 50 km north from the Otjikoto Mine area near the cross roads of the main north–south B1 National Road, the road to Grootfontein and the road to Outjo. Otjiwarongo is the nearest town to the site and is approximately 70 km away.

Mine-related traffic travels from both the Otavi and Otjiwarongo directions on a daily basis with all traffic using the B1 National Road to access the property.

Internal access to the mine area is via a well-maintained network of secondary roads and farm tracks. Given the generally arid climate of the area, these roads are typically trafficable year-round.

5.2 Climate

The area is characterized by low rainfall with extreme temperature ranges typical of an arid environment.

Annual rainfall trends from the onsite weather station (SLR, 2018) indicate summer rainfall (December to March) and dry winter months (June to August). The highest annual rainfall recorded was 789.2 mm in the 2013–2014 hydrological year (starting on October 1); the lowest was 318.2 mm in 2009.

Temperatures recorded from the on-site weather station varied from -5ºC (in winter) to 37.9ºC (in summer). The coldest months are June, July and August; the warmest months are October, November and December.

The prevailing wind field is from the east and east–southeast and stronger winds are experienced during August, September and October.

The annual evaporation rate is in excess of 2,500 mm.

Mining and exploration activities are typically conducted on a year-round basis. Isolated heavy rainfall events may cause temporary halts in activity.

5.3 Local Resources and Infrastructure

Permanent employees live either in Otavi or Otjiwarongo.

Namibia has established mining and construction industries; however, training programs are in place to ensure sufficient trained personnel for mine operations.

A discussion on the infrastructure for the mining operation is included in Section 18.

5.4 Physiography

The mine site is located at an elevation of 1,500–1,510 masl.

The greater part of the Project area falls within the tree and shrub savannah zone, which is listed as the dominant vegetation type in central Namibia.

The mine site is situated just north of a local surface water divide. However, there are no well-defined surface water drainage features on the site and no major surface water flows or defined channel flows have occurred, or are expected other than local events after heavy rainfall.

5.5 Seismicity

The seismicity of Namibia is considered moderate with earthquakes concentrated along the coastal escarpment and topographically high zones of the Namaqua and Damara Orogenic belts. Other earthquakes are mainly associated with major fault systems in the country (Mine Technics, 2018).

During an assessment of the seismic risk to mining operations conducted in 2018, Mine Technics (2018) noted that:

"*Most of Namibia, including the central-north and north-eastern regions, fall in a seismic hazard rating where the probability is only 10% that peak ground acceleration g (gravity acceleration, m/s^2) will exceed 0.2 m/s^2 in 50 years. This probability number varies with time; i.e. it is lower for shorter periods and higher for longer periods. The probability that ground acceleration will exceed 0.2 m/s^2 in a mine or open pit operating life of 10 to 15 years will be substantially lower than 10%".*

Low-level earthquake activity has been recorded regionally. The highest intensity event recorded in the Project vicinity is a magnitude 4.8 event in 1980, centred about 25–30 km to the north of the mining operation.

5.6 Sufficiency of Surface Rights

There is sufficient surface area for the open pits, waste rock storage facilities, plant, tailings storage facilities, associated infrastructure and other operational requirements for the planned life-of-mine and mine plan discussed in this Report.

6.0 HISTORY

6.1 Exploration History

A summary of the exploration history is provided in Table 6-1. Early exploration efforts reported in previous technical reports focused on base metals and those areas are outside the current Project holdings. The first regional gold-focused exploration activity commenced in 1995.

Avdale Namibia (Pty) Ltd. (Avdale), a subsidiary of Anglovaal Mining Ltd (Anglovaal), identified 12 “high-priority” gold target areas in 1998. The Otjikoto deposit was “Area 9”.

Several small-scale amethyst quarries are present on the Project, but are not in the immediate deposit areas.

6.2 Production

There is no known commercial production from the Otjikoto area prior to B2Gold.

B2Gold declared commercial production from the Otjikoto open pit on 15 February, 2015. Production to 31 December, 2018 is summarized in Table 6-2.

Table 6-1: Exploration History

Company/Entity	Date	Comment
Kennecott Exploration SWA (Pty) Ltd (Kennecott)	1968–1969	Work conducted along and beyond the northern boundary of the current Project area. Detailed geological and geochemical field mapping during exploration for Cu, Pb and Zn. Soil sampling identified a number of Cu anomalies, some of which were followed up by more detailed soil sampling surveys and trenching. Apart from a small Cu deposit on the farm Rietfontein 344 (outside the current Project area), no mineralisation was found that was considered to required further investigation.
Falconbridge SWA (Pty) Ltd (Falconbridge)	1973–1974	Work conducted along and beyond the northern boundary of the current Project area. Partial overlap with the earlier Kennecott claims. Exploration for Cu, Pb and Zn. Geological mapping and geochemical sampling were carried out, sometimes to detailed scale. Several Zn anomalies were found, often together with anomalous Pb concentrations. A few Cu anomalies were also detected. Completed induced polarization (IP) and magnetic ground geophysical surveys. Undertook some drilling, but in areas outside the current Project boundary.
Tsumeb Corporation (Pty) Ltd (Tsumeb)	1975	Work conducted along and beyond the northern boundary of the current Project area. Partial overlap with the earlier Kennecott and Falconbridge claims. Exploration for Cu, Pb and Zn. Reconnaissance soil sampling, 50 m intervals; field mapping at 1:5,000 scale, magnetic ground geophysical survey, exploration pits sunk on Cu anomalies in Askevold Formation rocks. Identified non-laterally continuous Cu mineralization.
Anglo American Corporation (Anglo)	1985	Work conducted along and beyond the northern boundary of the current Project area. Claim area the same as an earlier Kennecott claim. Exploration for Cu, Pb and Zn. Collected soil samples, mapped at 1:500 scale, completed magnetic and gravity ground surveys
Goldfields Prospecting Corporation (Pty) Ltd (Goldfields)	1991	Work conducted along and beyond the northern boundary of the current Project area. Claim area the same as areas investigated by Kennecott, Falconbridge, Tsumeb and Anglo. Exploration for Cu, Pb and Zn. Compiled regional 1: 1:10,000 scale geological map. Undertook some drilling, but in areas outside the current Project boundary.
Ongopolo Mining and Processing (Pty) Ltd	unknown	Formerly Tsumeb. Exploration for Cu, Pb and Zn. No recorded on-ground work.
Avdale Namibia (Pty) Ltd. (Avdale)	1993	Incorporated as a wholly-owned subsidiary of Anglovaal Mining Ltd (Anglovaal)
	1995	Project generation team initiated regional compilation work
	1997–1998	Contracted a number of airborne magnetic surveys over the area. After merging with the government airborne data, 12 high priority targets identified for testing. One of the targets was an intense, NE–SW trending, 9 km long

Company/Entity	Date	Comment
		linear magnetic feature centred on the Otjikoto farm (Area 9).
	1998	EPLs granted. Field and photo-geological surveys used to produce both direct exploration targets and stratigraphic and structural interpretations. Ground magnetic, electromagnetic and induced polarization surveys were conducted over the Otjikoto farm geophysical anomaly, followed by a program of shallow (max 20 m depth) RAB drilling. Identified anomalous gold mineralization.
Rio Algom	1998	Formed the Otavi Project JV with Avdale
Avdale	1998	Core hole discovers the Otjikoto gold deposit.
	2003	Rio Algom acquired by Billiton (which became BHP Billiton with the subsequent merger of Billiton with BHP.)
Avdale	2003	15 000 m RC and core drilling program. Anglovaal/Avdale acquired by African Rainbow Minerals (ARM). JV on the Otavi Project terminated, with Avdale retaining a 100% interest and BHP-Billiton having no back-in rights
Teal Exploration and Mining (Teal)	2005	ARM forms Teal to hold its non-South African exploration assets. Teal listed in Canada, Otavi Project operated by Teal through in-country subsidiary Avedale. At the time of the Canadian listing, ARM had a direct 64.9% interest in Teal with investors having the remaining 35.1%. A SPECTREM airborne electromagnetic (AEM) survey completed February 2005 by Spectrem Air Limited, tested a total of 75 km of strike. Completed initial Mineral Resource estimate.
EVI	2007	Purchased an 8% interest in Avdale; effectively an 8% interest in the Otjikoto Project.
Teal	2008	A total of 512 diamond and reverse circulation (RC) holes drilled, comprising a total of 66 601 m completed on project by year-end. Mineral Resource estimates updated in 2007, 2009.
Vale and ARM	2009	Formed a 50:50 joint venture by delisting Teal. Vale purchased a 15% interest in Teal from ARM, thereby creating a 50:50 joint venture for the purposes of developing Teal's Zambian copper assets. Teal's Namibian assets considered non-core and flagged for sale.
BC Ltd	2010	Private Canadian company; acquired the Otjikoto Project from Teal. BC Ltd agreed to merge with the publicly listed company Tova Ventures Inc. (Tova). On June 25, 2010 Tova completed the acquisition of Teal's 92% interest in the Otjikoto Project. On June 21, 2010 Tova was renamed as Auryx Gold Corp. (Auryx).
Auryx	2010–2011	Commenced its drilling program on its Otjikoto site in July 2010 and drilled 161 diamond drill holes for 39 700 m and 85 RC holes for 6 919 m. Drill tested targets 900 m to the northeast of the Otjikoto Mineral Resource, 400 m to the east of the Mineral Resource, and targets immediately proximal to the Mineral Resource. Three new zones of gold mineralization identified: the East 1 shoot, the West 1 shoot, and the southwest hanging wall zone.

Company/Entity	Date	Comment
		Completed a preliminary economic assessment assuming open pit mining methods on the Otjikoto deposit in 2011. Updated Mineral Resource estimates. Identified the K2 (now Wolfshag) deposit in 2011, a few hundred metres to the northeast of the proposed Otjikoto open pit.
B2Gold	2011	On December 22, 2011, B2Gold acquired 100% of the shares of Auryx and Auryx became a wholly-owned subsidiary of B2Gold
	2012	Completed a feasibility study on Otjikoto. Updated Mineral Resource estimates, and first-time disclosure of Mineral Reserves. Mining licence granted for Otjikoto Mine. Minor exploration drilling at Wolfshag.
EVI	2013	Increased Project stake to 10% for a consideration of US$5 million. In addition, as partial consideration for the issuance to EVI Gold of common shares of B2Gold, EVI Gold transferred its rights to acquire an additional 5% interest in the Otjikoto project to B2Gold. This results in B2Gold holding 90% and EVI 10% of the Project.
B2Gold	2013–2014	Permitting and construction activities for Otjikoto Mine. Extensive drill program at Wolfshag with the zone extended to 1,750 m along strike to a depth of 650 m below surface. Otjikoto first gold pour December 10, 2014.
	2015	Otjikoto Mine commercial production declared on February 28, 2015 and Otjikoto Mine officially opened. Continued drilling at Wolfshag. First-time declaration of Mineral Resources for Wolfshag. Completed initial mining studies. Received environmental clearance for the Wolfshag open pit operations on January 26, 2015. Mill expansion to 3.0 Mt/a completed in September 2015.
	2016	Mining commences from Wolfshag open pit in conjunction with ongoing mining at Otjikoto. Mill throughput increased to 3.3 Mt/a in 2016.
	2017	Drill testing of several exploration targets close to the Otjikoto mine site to evaluate potential for open pit or underground targets.
	2018	Infill drilling at Wolfshag.

Table 6-2: Production History

Period	Mill Feed (t)	Mill Feed Grade Gold (g/t Au)	Mill Recovery Gold (%)	Precious Metals Production	
				Gold (oz Au)	Gold (kg Au)
2014	152,875	1.558	93.52	7,160	223
2015	2,834,399	1.626	98.35	145,696	4,532
2016	3,468,487	1.520	98.09	166,286	5,172
2017	3,492,286	1.731	98.57	191,534	5,957
2018	3,445,932	1.530	98.71	167,346	5,205
				678,022	***21,089***

Note: 2014–2015 production figures reflect mine start-up.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The major regional structure is the Damara Mobile Belt, part of a network of orogenic Neoproterozoic (1,000–542 Ma) mobile belts in Africa that represent suture zones between continental fragments. The Damara Orogeny (~850–460 Ma) developed as a result of successive phases of spreading, rifting, subduction and continental collision between the Kalahari, Congo and Río de la Plata Cratons.

The Damara Mobile Belt can be divided into a number of sub-parallel tectonostratigraphic zones, separated by regional lineaments. The Otjikoto Mine area is primarily within the tectonostratigraphic zone referred to as the Northern Zone (Figure 7-1). Figure 7-2 is a stratigraphic summary of the key units within the Damaran stratigraphy of the Northern Zone.

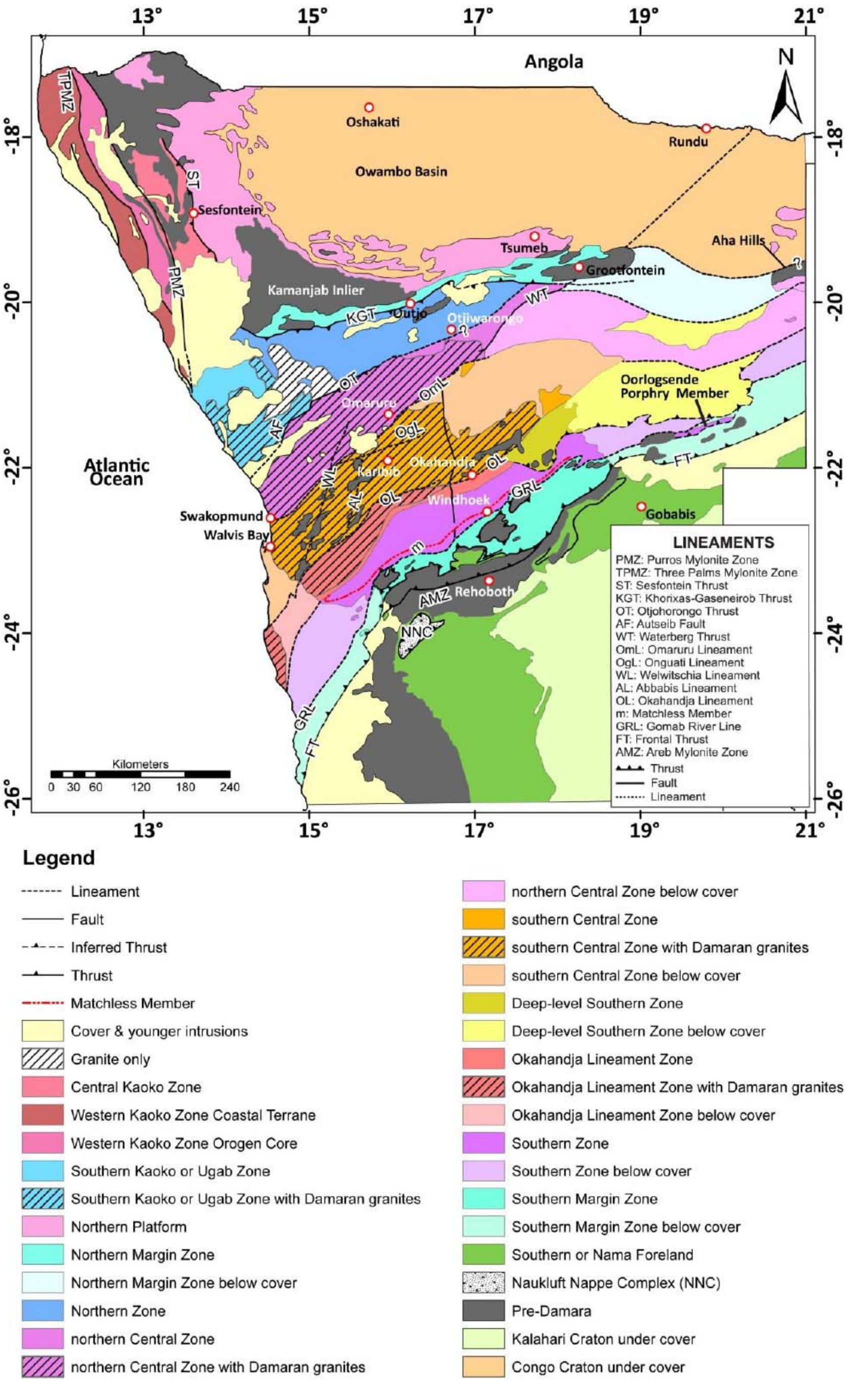
The basal unit is the Palaeoproterozoic Huab Metamorphic Complex, which consists of a lower metasedimentary sequence and an upper metavolcaniclastic sequence. These sequences were intruded by mafic sills and dykes and granitic material, forming mega-sills and plutons, which were transformed by later metamorphism into amphibolite (mafic rocks) and quartz–feldspar–biotite gneiss and felsic orthogneiss (felsic rocks), respectively (Jelsma et al., 2018).

This basement is unconformably overlain by rocks of the Nosib Group. The Nosib Group consists of arkosic quartzite west and north of Otjiwarongo, possibly the volcanic rocks of the Naauwpoort Formation, and gneissic arkosic quartzite and amphibolite containing garnet and cordierite of the Tsaun Formations.

Overlying the Nosib Group with an angular unconformity are rocks of the Neoproterozoic Swakop Group, further subdivided from lowermost to uppermost as follows:

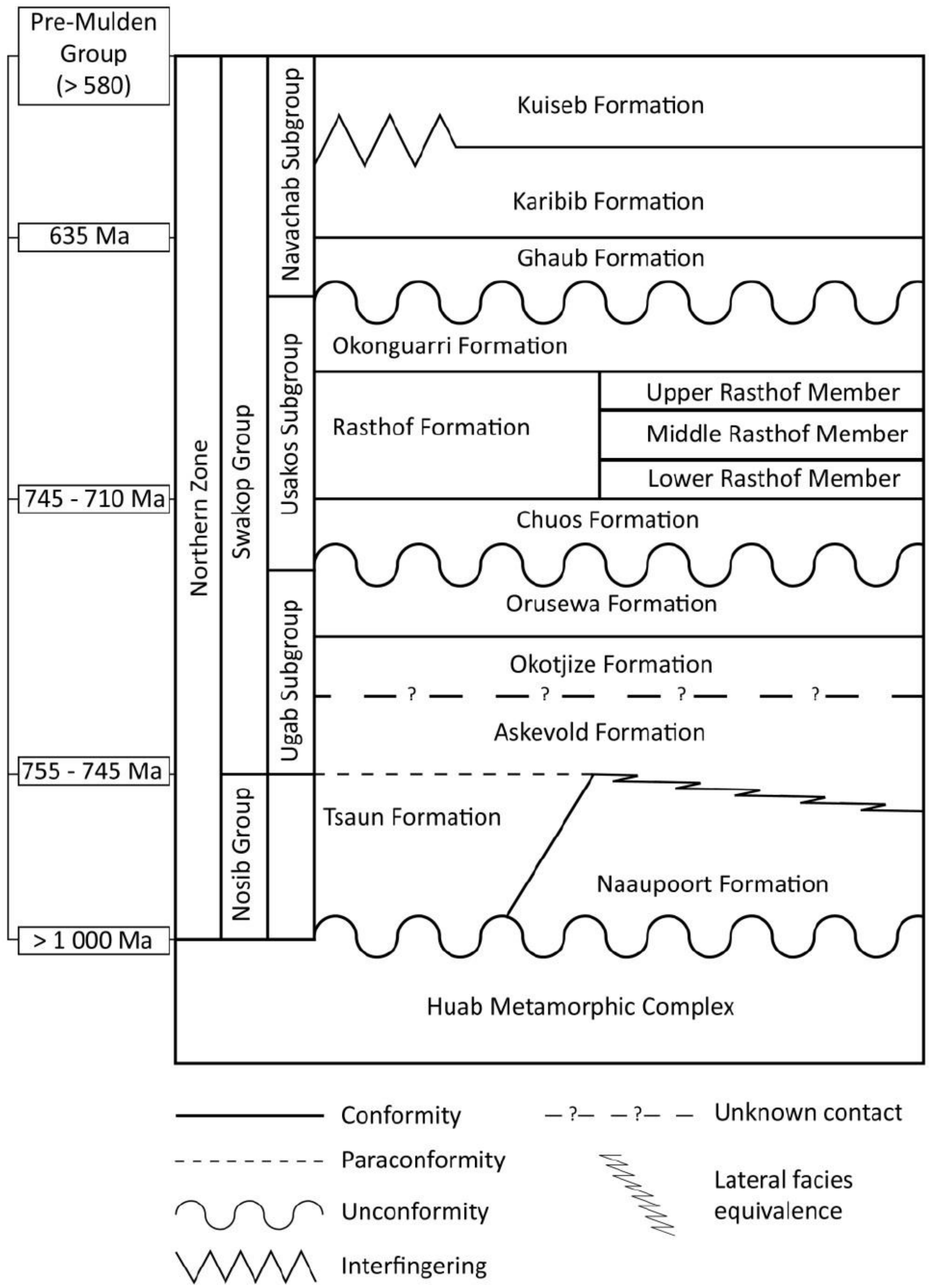
- Ugab Subgroup: Askevold, Okotjize, and Orosewa Formations. Consists of a marine, shallow-water, mixed carbonate-clastic sequence, which grades from on-shore facies in the north to off-shore facies in the south:
  - Askevold Formation: agglomerate with lesser amounts of schistose lithologies, basic lava and chloritised schist;
  - Okotjize Formation: iron formation intercalated with dolostone and ferruginous quartzite;
  - Orosewa Formation (uppermost unit): schists overlain by quartzites; conformably overlies Okotjize Formation;

Figure 7-1: Damara Belt Tectonostratigraphic Zones



Note: Figure from Rankin, 2015.

Figure 7-2: Regional Stratigraphy



Note: Figure from Rankin, 2015.

- Usakos Subgroup: Chuos, Rasthof, and Okonguarri Formations:
  - Chuos Formation: forms a sharp erosional contact with the underlying lithologies. Consists of a matrix-supported glacial diamictite containing clasts of amphibolite, Naauwpoort Formation ignimbrite, gneiss, granite, schist and carbonate and iron formations. Much of the Chuos Formation is highly ferruginous;
  - Rasthof Formation: carbonate cap sequence;
  - Okonguarri Formation (uppermost unit): interbedded succession of siliciclastic and mixed siliciclastic, calcareous and dolomitic turbidites, quartz–biotite schist, and pelite. Typically wedged between Chuos and Ghaub Formation diamictites;

- Navachab Subgroup: Ghaub, Karibib, and Kuiseb Formations:
  - Ghaub Formation: carbonate-clast diamictite, overlain by dropstone-bearing, bedded shale and siltstone;
  - Karibib Formation: thick sequence of dolomitic limestone with subordinate marble, dolostone and metapelite;
  - Kuiseb Formation (uppermost unit): metagreywacke, marly metapelite and quartzite.

Unconformably overlying the Damara sequence are basin-fill lithologies of the late Carboniferous to middle Jurassic Karoo Supergroup. In Namibia, these units are preserved, from south to north, in the Karaburg, Aranos, Waterberg, Huab and Owambo subsidiary basins (Figure 7-3). Four of the five main stratigraphic groups which comprise the Karoo of South Africa are typically recognised in Namibia: the Dwyka, Ecca, “Stormberg" and Drakensberg Groups (Pickford, 1995). The Waterberg sub-basin may contain correlatives of the Beaufort Group (Catuneanu et al., 2005).

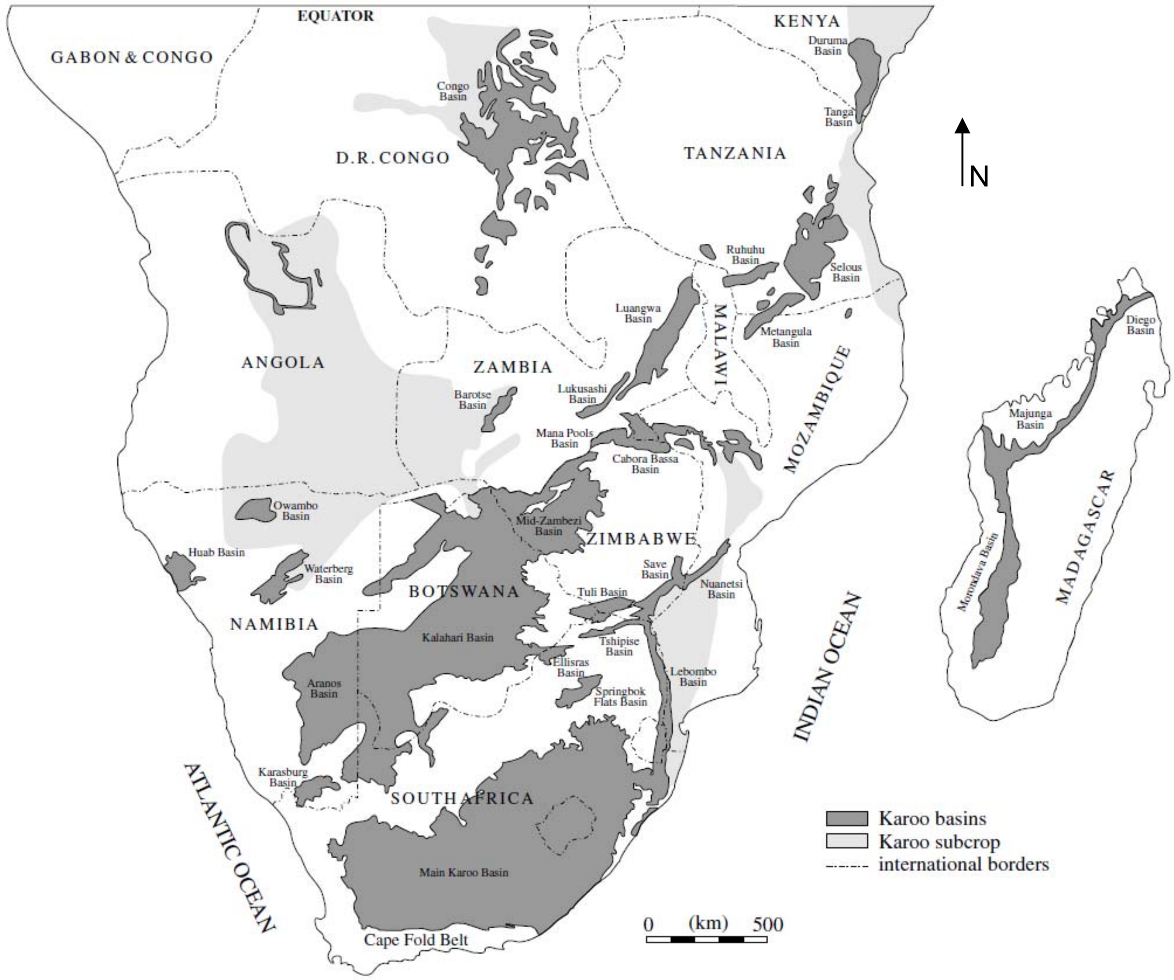
The major units within the Karoo basins, summarized from Catuneanu et al., (2005), include:

- Dwyka Group and equivalents: silt-dominated marine diamictites with dropstones, turbidite and debris flows, tillites, sandstone and conglomerate, glacial or periglacial lacustrine sediments;

- Ecca Group and equivalents: mixed clastic sediments (sandstones, siltstones, mudstones, carbonaceous mudstones) with rare minor carbonates;

- Beaufort Group equivalents: argillaceous sediments, sandstones, playa lake sediments;

Figure 7-3: Distribution of Karoo Basins



Note: Figure from Catuneanu et al., 2005. Map north is to top of figure.

- Stormberg Series (Molteno, Elliot and Clarens Formation equivalents): fluvial conglomerates and sandstones, overlain by aeolian sediments and red-beds;
- Drakensberg Group equivalents: flood basalts.

The Karoo Group rocks are in turn unconformably overlain by Cenozoic Kalahari sands, and isolated undifferentiated recent sediments (sand, calcrete, gravel and alluvial deposits; Schreiber, 2012).

7.2 Project Geology

7.2.1 Lithologies

Overview

The Otjikoto area is predominantly underlain by lithologies belonging to the Swakop Group. The Okonguarri Formation hosts the gold mineralization and is overlain and underlain by the distinctive glacial diamictite horizons of the Ghaub and Chuos Formations, respectively.

Outcrop in the Project area is limited to Karibib Formation marbles, with most of the region covered by a thick layer of calcrete, transported Kalahari Group sands, and soil.

The geological knowledge of the area has been principally interpreted from a combination of geophysical work and drilling. Review of the airborne electromagnetic SPECTREM geophysical survey, in particular, mapped out the non-conductive marble of the Karibib Formation and the marble units hosted within the Okonguarri Formation. High resolution airborne magnetics and ground surveys have provided additional details on distribution of the main stratigraphic units.

Project Geology

Table 7-1 summarizes the geology of the general Project area. A stratigraphic column is included as Figure 7-4 and a geology plan as Figure 7-5.

B2Gold geological staff have identified a number of intrusions from geophysical data as shown in Figure 7-5; these are in addition to intrusions mapped by the Geological Survey of Namibia, or recognised by AVMIN and Anglo Vaal staff as documented in Sanz (2005). These intrusions are tentatively ascribed to the Otjiwarongo Batholith, a poorly-documented assemblage of granites (quartz monzonite, biotite granite), alkali granite, pegmatite, quartz syenite and minor granodiorite (Sanz, 2005). A pegmatite sample assumed to be part of this suite in the Otjikoto region returned an age date of ~550 Ma. There is also a possibility that some of the intrusive bodies may be part of the Mesozoic Damaraland Intrusive Suite, which forms a broad swath of anorogenic ring complexes, stocks, plugs and diatremes in northern Namibia.

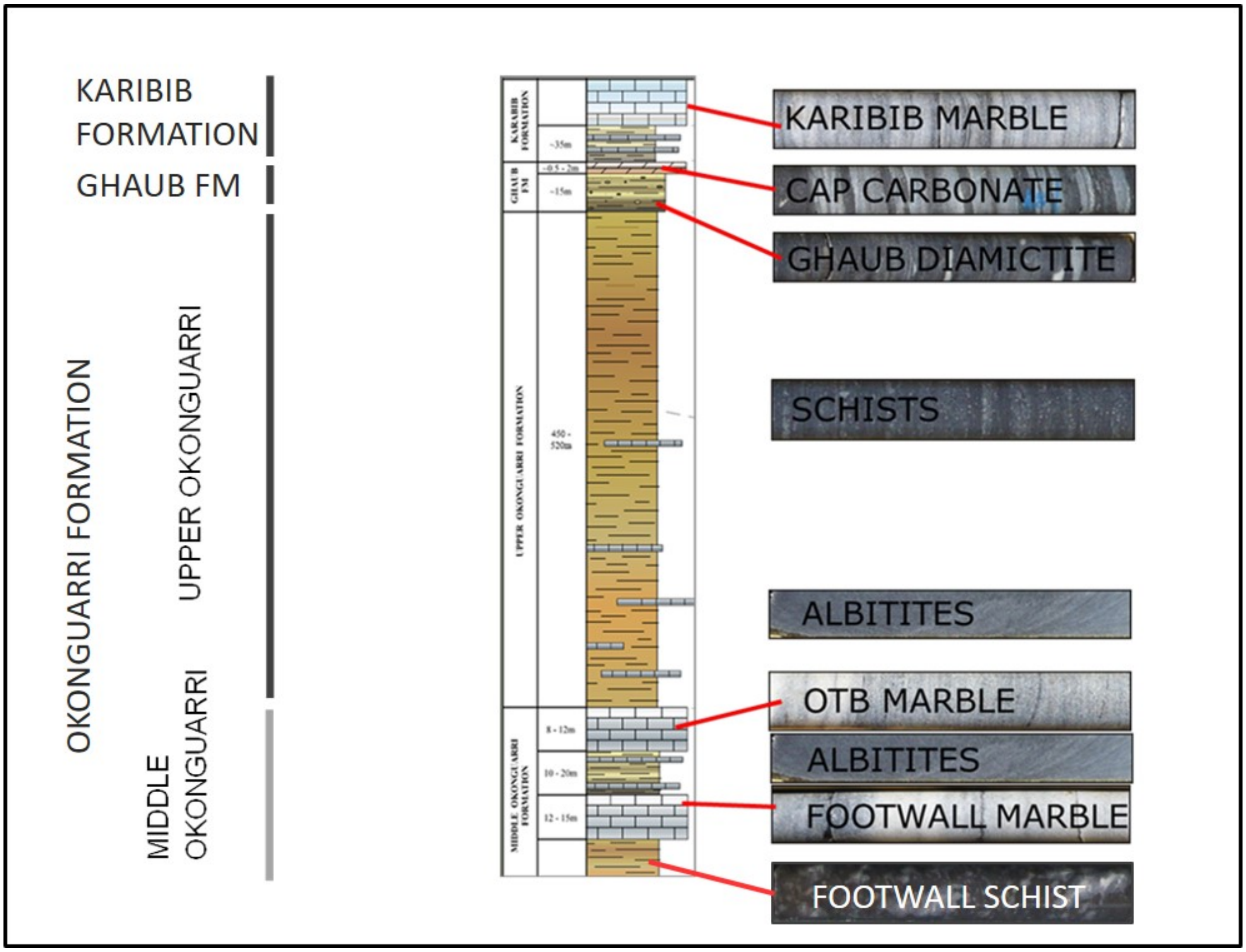
Figure 7-5 also includes an informal unit that is locally termed the Tirol marble. This unit may either underlie the Chuos Formation, or alternatively, overlie it and the Rasthof Formation and form the base of the Okonguarri Formation in the Otjikoto mine area.

Table 7-1: Project Geology

Unit	Description
Soil	Present as a relatively thin 10 to 20 cm veneer over the deposit, but commonly ranges to a maximum depth of 2 m. The soil horizon is poorly developed and commonly organic rich and/or mixed with the transported sediments
Kalahari Group aeolian soils and sands	Aeolian soils and sands have been transported into the area and generally fill local depressions.
Calcium carbonate and calcrete	Surficial deposits of leached accumulations of calcium carbonate and calcrete occur over all of the deposit area and range in depth from 2–15 m with thicker development in local topographic depressions and fault zones. Calcrete varies from hardpan to powdered calcrete. Hardpan calcrete is hard and commonly has a conglomeratic appearance with rounded to angular fragments of partially to completely calcretized bedrock fragments within a calcrete matrix. Powdery calcrete consists of zones of powdery calcite/clay and is normally found in discontinuous lenses and/or as lining in dissolution cavities within the hardpan calcrete.
Karibib Formation	Marbles occur as ridge-forming areas of outcrop in the eastern and northern portion of the property. The marbles commonly are white to light grey, medium to coarse grained, massive to banded and predominantly composed of calcite. Locally they are intercalated with biotite schist bands towards the base of the Karibib Formation. The Karibib marbles in the region have thicknesses of 50 to >100 m. Karibib schist units of variable thickness have been intersected below the marble, principally to the west and south of the main deposit. The schist is commonly dark grey, fine grained, massive to weakly foliated metagreywacke biotite schist
Ghaub Formation	The Cap dolomite is intersected above the Ghaub diamictite and is a thin (10 cm to 1 m), commonly cream colored and well laminated unit. The Ghaub diamictite is intersected to west the west, east and south of the main deposit and ranges in thickness from 10–25 m. The unit is light grey colored and readily identifiable by the presence of elongated clasts of variable composition ranging in size from <1–+5 cm. The clasts represent glacial derived drop stones and thus the unit is a diamictite. The Ghaub Formation is strongly sheared to the west of the Otjikoto deposit. A dark grey to black, sometimes graphitic, shale/schist unit underlies the Ghaub Formation. West of the Otjikoto deposit this unit contains disseminations and lenses of vuggy fine-grained pyrite.
Okonguarri Formation	Schist units that are variably composed of a mix of biotite and feldspar (plagioclase dominant) with lesser quartz, dolomite, calcite and garnet. They have poor to well-developed schistosity with foliation commonly parallel or sub-parallel to primary bedding or metamorphic banding. Graded bedding is preserved in some of the schist. The schist units are derived from semi-pelitic, pelitic, marl and psammitic units in a turbiditic sedimentary package. The schist tends to be quite competent but of variable hardness, usually directly related to the biotite content and/or degree of schistosity. Three main marble bands (hanging wall, OTB and footwall) occur in the Okonguarri Formation. The hanging wall marble is a discontinuous coarse-grained marble horizon(s) which is believed to have been boudinaged during folding or thrusting. The OTB marble forms the structural footwall of the main mineralized zone and represents the most important, and distinctive, marker horizon in the deposit area. Most drill holes within the Otjikoto deposit bottomed in the OTB marble. The OTB consists of weakly banded, white to light grey, medium to coarse grained calcite crystals. The thickness of the OTB is relatively uniform

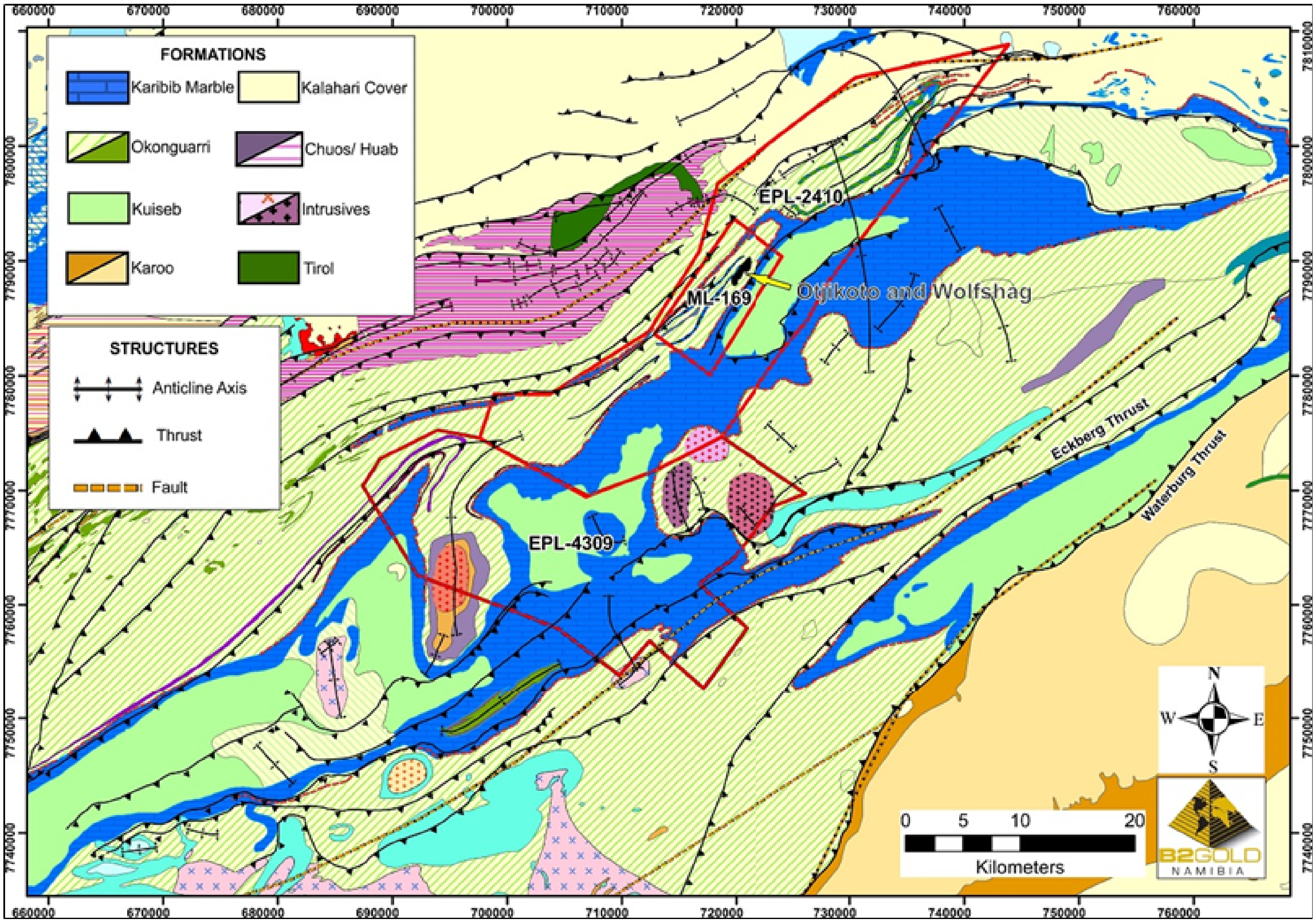
	(averaging 10 m) throughout the Otjikoto deposit area. It forms an essentially flat tabular unit dipping at approximately 25º to the east–southeast (125° azimuth). The footwall marble is located approximately 20–30 m below the OTB marble in the Otjikoto deposit area. The footwall marble is similar in appearance to the OTB but tends to have more biotite crystals present, forming weak banding. It is commonly 15–20 m thick.
Middle Okonguarri Formation	Biotite and biotite-garnet schist units occur below the footwall marble.

Figure 7-4: Project Stratigraphy



Note: Figure prepared by B2Gold, 2018.

Figure 7-5: Project Geology Plan



Note: Figure prepared by B2Gold, 2018.

7.2.2 Weathering

Surficial deposits of leached accumulations of calcium carbonate and calcrete occur over the deposit area and range in depth from 2–15 m with thicker development in local topographic depressions and fault zones. The calcrete varies from hardpan to powdered calcrete. The former is hard, and commonly has a conglomeratic appearance with rounded to angular fragments of partially to completely calcretized bedrock fragments within a calcrete matrix. The latter represents zones of powdery calcite/clay and is normally found in discontinuous lenses and/or as lining in dissolution cavities within the hardpan calcrete.

The oxidation depth commonly ranges from 20–40 m with an average of about 35 m. The transition to fresh rock is typically rapid, within 1–4 m. There can be instances of deeper oxidation in association with fracture and/or fault zones.

7.2.3 Structure

Overview

Three structural regimes are recognized:

- D1: recumbent folding
- D2: a series of major doubly-plunging anticlines and synclines. The folds vary in closure from open to tight and in attitude from upright to overturned, occasionally recumbent. A fairly abrupt swing in axial trend of D2 folds from northeast–southwest to more or less east–west has regional significance within the Otjiwarongo–Otavi area. The major D2 folds are internally quite complex structures with numerous parasitic folds on the flanks of the major structures
- D3: doming event. Disrupts and refolds D2 fold structures, particularly in the area south of Otjikoto. Several Nosib Group-cored domes or relatively short, northeast-trending, doubly-plunging anticlinal structures can probably be ascribed to this event. However, several domal structures in the Otjikoto area have been investigated and found to be related to the intrusion of circular granitic bodies.

Most of the Damara faults mapped in the Otjiwarongo-Otavi Region appear to be related to the D2 deformational event. A number of closely spaced strike-slip faults are interpreted from photo geology and geophysics. These are probably related to the earlier phase of the D2 event. Late brittle faults, particularly of northwest and east–west orientation, are interpreted to be late, possibly of Karoo age (Permian to Jurassic). Some of these faults remain seismically active.

Project Structure

Faults

Thrust faults and related horse duplex complexes are interpreted for Otjikoto and Wolfshag zones (Figure 7-6). An overall cartoon schematic showing the interpreted structural setting is included as Figure 7-7. The complex folding discussed in the next sub-section is interpreted to in part reflect drag folding related to the thrusts.

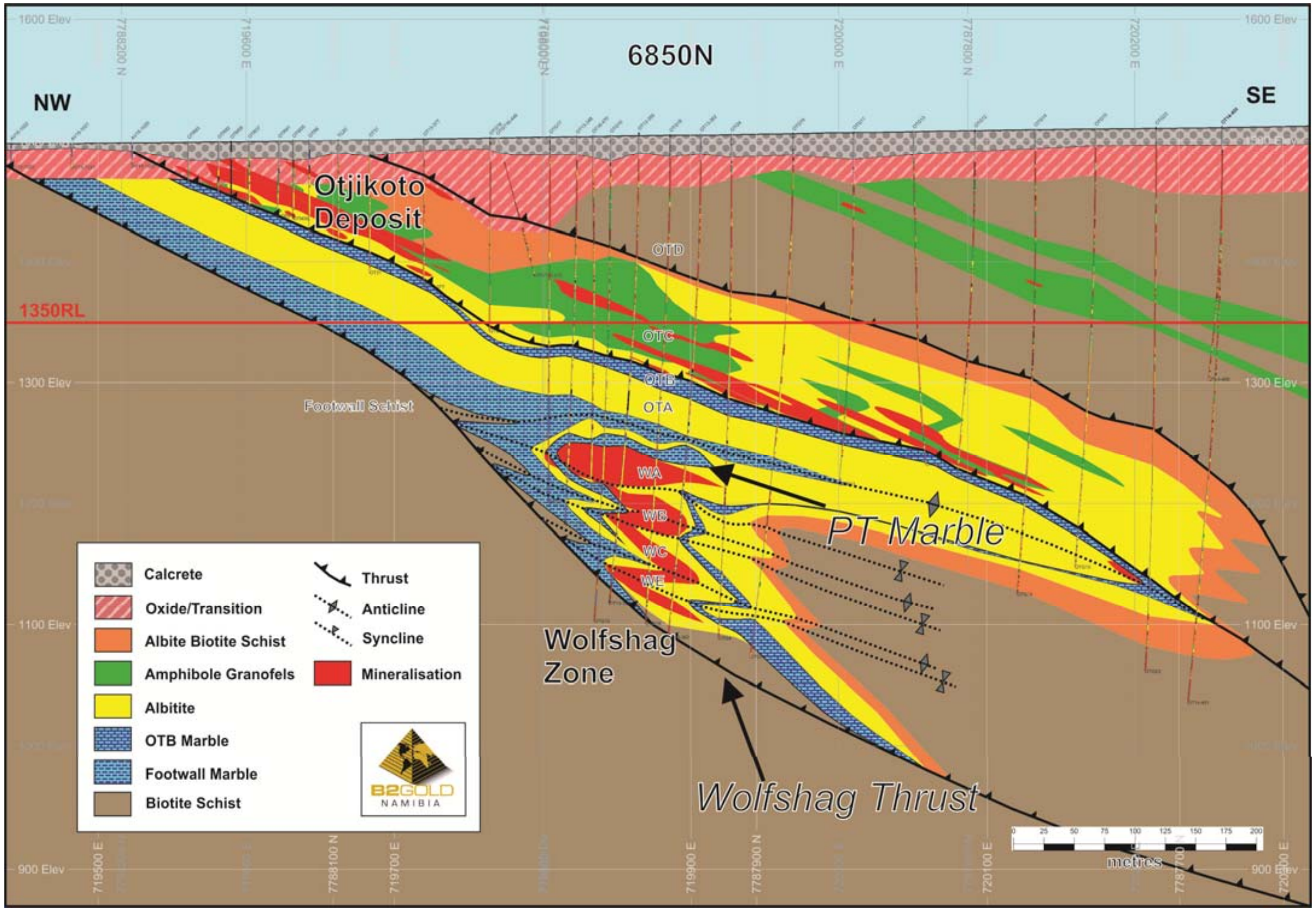
The Wolfshag zone is interpreted to be the multiple recumbently folded OTA zone between the OTB and Footwall marbles. The PT marble is within the OTA. Within the deposit area the Okonguarri Formation is divided into the OTC (host to Otjikoto mineralization) and the OTD horizons with inferred thrusts separating the horizons, the structural top of the OTB marble, and the Middle Okonguarri Formation (refer to Figure 7-6).

The main structural control on the Otjikoto–Wolfshag mineralization is interpreted to be parasitic fold hinges between bedding parallel thrusts with the lower-most thrust called the Wolfshag Thrust (WT). The thrusting had left-lateral transpressional movement (i.e. southeast over northwest) during the main Damaran regional deformation and metamorphic event. Sodic metasomatism was related to this event and resulted in widespread albitization. The mineralized shoots follow the fold hinges which on average plunge 10–15° to the southwest at azimuth 190° to 200°direction, and the dip of the mineralized shoots follows the fold hinges.

Several generations of late brittle faults cross cut the Project area. The fault locations are mostly based on a combination of photo-geological interpretation, topography, drill core logging and geophysical interpretation. Two of the steep east–west-oriented haematitic brittle fault gouge zones have been confirmed in the Wolfshag pit. The mineralized zones do not appear to be significantly displaced by these structures. The north–northwest-oriented brittle faults are commonly steeply westerly-dipping and show minimal displacement.

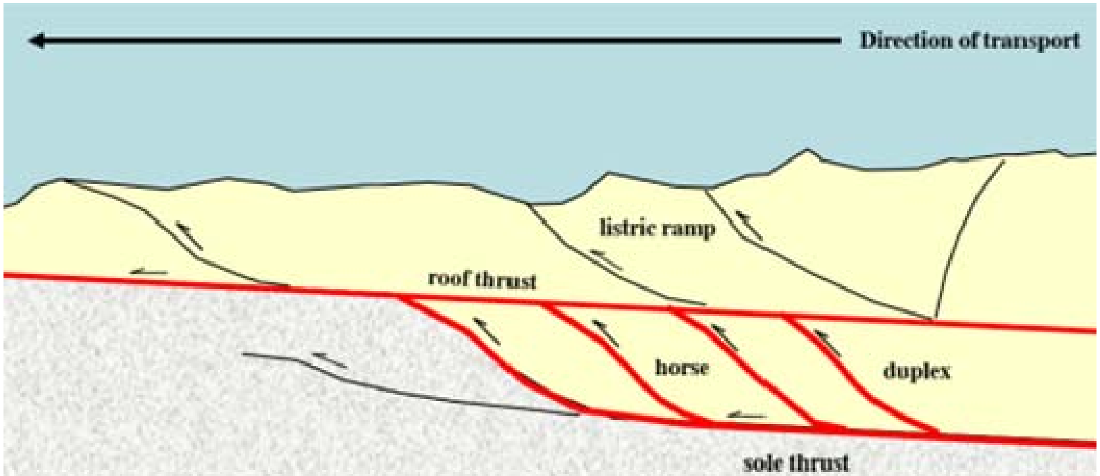
Distinctive chalky-altered albitite, characterized by white, very fine-grained albite, calcite and swelling-clay minerals occur within the Wolfshag zone. Medium- to coarse-grained euhedral pyrite is a common accessory mineral in these zones, particularly in the deeper levels of the Wolfshag zone. The chalky zones can be as thick as several metres width but are most commonly <5 cm wide in core. These zones are believed to be dissolution zones associated with groundwater.

Figure 7-6: Cross-Section Showing Interpreted Structures and Locations of Otjikoto and Wolfshag Deposits



Note: Figure prepared by B2Gold, 2018.

Figure 7-7: Schematic Showing Regional Structural Interpretation



Note: Figure prepared by B2Gold, 2018.

Tension gash veins occur nearly orthogonal to the main veins (including folded veins) and compositional banding is commonly steeply-dipping, and east–west oriented.

They occur as discrete veins and in association with the brittle and shear veins. The gashes are predominantly filled with pyrite and/or magnetite with low amounts of calcite or iron carbonate present and are more abundant in Wolfshag than in Otjikoto.

Folding

A broad open synform occurs east of the deposit, defined by the Karibib Formation marble cored by Kuiseb Formation schist. West of the synform the Okonguarri Formation is partially sheared and with tight isoclinal, recumbent fold geometries. A recumbent antiform with parasitic folding on the limbs defines the hanging wall (east) of the Otjikoto deposit. Further to the west, the Ghaub and Karibib Formations are repeated in a tight, attenuated, recumbent synform (termed locally the “Karibib hook”).

Detailed structural studies of the Otjikoto deposit by Dr. Karl Kasch and John Fedorowich, during the exploration phase, and later by David Rhys, support the current interpretations.

Sedimentary Layering

Primary sedimentary layering is often well preserved, with graded bedding on the millimetre- and centimetre-scale. The stratigraphy is generally the right way up in the OTC-hosted Otjikoto deposit. Multiple grading reversals are evident in the Wolfshag zone, indicating complex folding.

Foliations and Lineations

The dominant fabric (S1) in the deposit area is parallel to sub-parallel to bedding (S0) and strike 035° with dip at 25° to the southeast. A second set of foliations (S3) is rarely developed, but where present, is usually in association with folds.

Rotation of garnets and other local shear fabrics indicate the presence of high strain zones within the deposit area. The orientation of the high strain zones appears to be bedding parallel, and believed to be of Damara age.

Pesce et al. (2010) defined a mineral lineation with average trend of 010° and plunge of 11° degrees to the southwest. In some cases, it was observed that the sulphides follow the same lineation direction. This lineation is believed to be parallel to the plunge of fold hinges and associated high-grade ore shoots

7.2.4 Metamorphism

Overview

The Okonguarri Formation is regionally metamorphosed to greenschist facies, and can locally be thermally metamorphosed to mid-amphibolite facies where granitic bodies have intruded the unit. The known granite intrusions are situated south of EPL4309, and have not been observed within the Project area.

Project Metamorphism

In the Project area, the metamorphic grade is middle amphibolite-facies, associated with hydrothermal fluid flow. The local presence of kyanite and sillimanite suggests relatively high pressures and moderate temperatures.

Negonga (2018) calculated a 534–555°C temperature for the Otjikoto vein formation from fluid inclusion measurements.

7.2.5 Alteration

Overview

Albitization of all the lithologies in the Otjikoto area is widespread. Chlorite, amphibole, carbonate and biotite alteration are also common. Depending on the intensity and type of alteration and original host rock composition, the following alteration “lithologies” have been systematically logged: albitite, albite–biotite schist, garnet–albite–biotite schist, amphibole-bearing albitite, garnet–amphibole metasediment and banded biotite–amphibole metasediment. Calcareous biotite schist is also present, with much of the carbonate believed to be introduced.

The albitization throughout the sedimentary sequence indicates widespread sodium metasomatism. The intense albitization of the granofels and schist observed at Otjikoto is unusual in the Northern Zone of the Damara Orogen. The albitization may have occurred relatively early in the tectonothermal history and may be unrelated to the gold-mineralizing event. However, albitization probably changed the rheology of the host rocks and made them prone to fracturing during deformation.

Project Alteration

The amphibole-bearing units have been grouped together at Otjikoto into a HORN unit and the albite-altered beds/bands into an ALB unit. Both the HORN and ALB units are more competent and harder than the SCHIST unit. Where garnets are present, the schist lithologies are also abrasive.

Amphibole-style (HORN) alteration is absent in the Wolfshag zone, and albitization tends to be much stronger than at Otjikoto. There is a late carbonate (calcite + dolomite) alteration which overprints the albitization as both a pervasive texture, and as “crackle” fracture fill. The crackle fill is often associated with fine-grained, disseminated magnetite and/or pyrite.

7.3 Deposit Descriptions

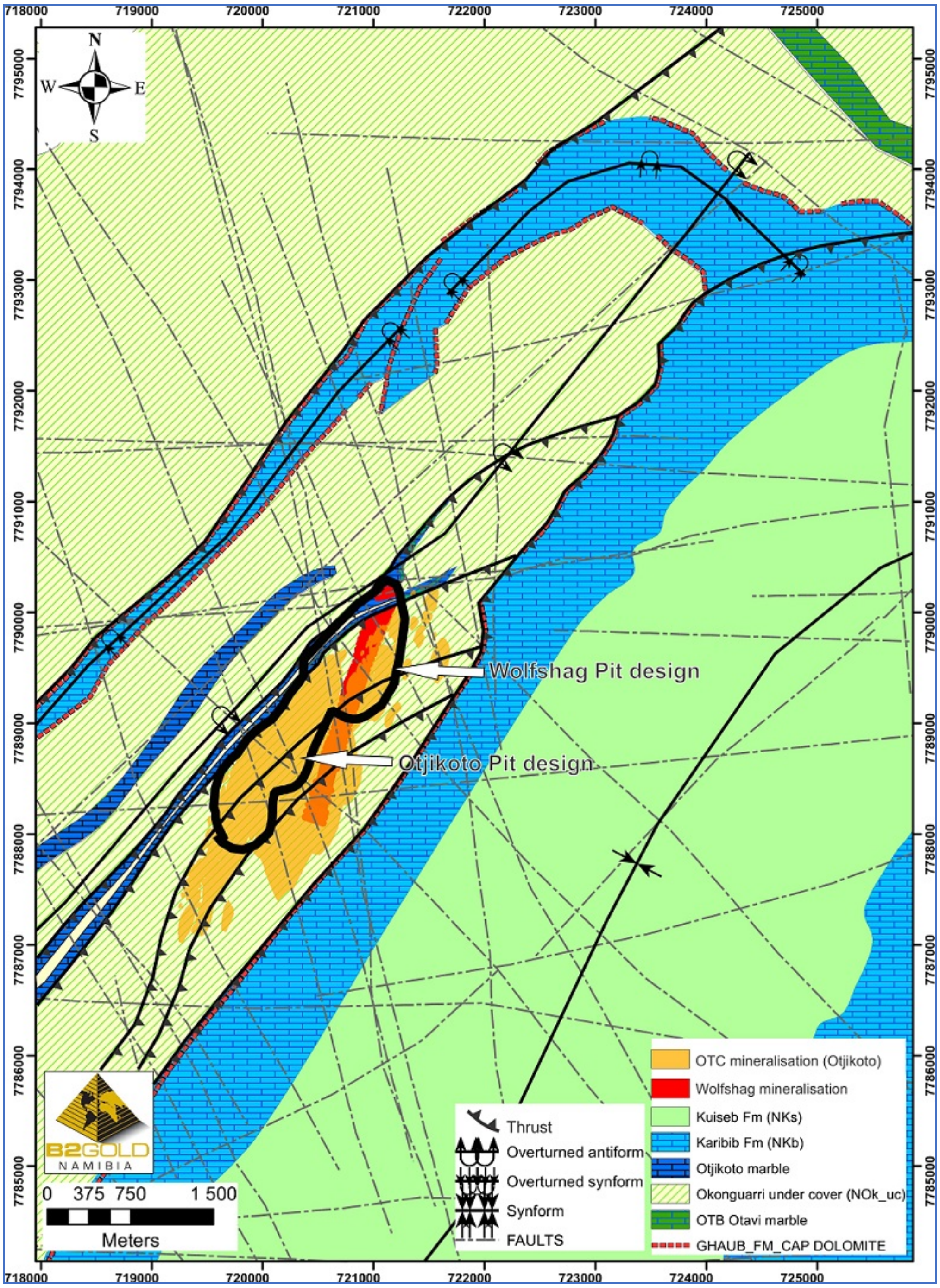
The general geology of the Otjikoto and Wolfshag areas is provided in Figure 7-8.

7.3.1 Otjikoto

The deposit has a strike extent of 2.6 km and has been drill tested to 475 m depth below surface.

Most of the gold is hosted by a north–northeast striking sheeted vein system that is more than 40 m wide. Individual veins are thin (<10 cm) and consist of sulphide (+ magnetite)–quartz + carbonate veins developed in schist (variably albitised) and granofels of the Upper and Middle Okonguarri Formation. High-grade mineralized shoots occur on the short limbs and within the hinges of intrafolial folds between planar beds.

Figure 7-8: General Deposit Geology



Note: Figure prepared by B2Gold, 2018.

The major lithologies are (Figure 7-9; Figure 7-10):

- OTD biotite schist: hosts minor bedding-parallel veins with irregularly distributed gold values; Upper Okonguarri Formation;
- OTC albitite–hornfels unit: hosts most of the mineralized vein system; basal unit of the Upper Okonguarri Formation;
- OTB calcitic marble: unmineralized, 6–10 m thick; Middle Okonguarri Formation;
- OTA albite biotite schist–albitite: hosts minor bedding-parallel veins with irregularly distributed gold values; 20–30 m thick; Middle Okonguarri Formation;
- Footwall calcitic marble: unmineralised, 15–25 m thick; Middle Okonguarri Formation;
- Footwall biotite schist: unmineralised; Middle Okonguarri Formation.

The sheeted vein swarm lies at an angle of 20° to 30° to a set of north–northeast-trending linear structures, and the majority of the veins lie parallel to an S0/S1 transposition foliation which approximates bedding. The folded veins and related high-grade gold mineralization occur in a series of distinct en-echelon zones oriented at approximately 010° to 020° north–northeast and plunging at 10–15° (average 12°) to the south–southwest.

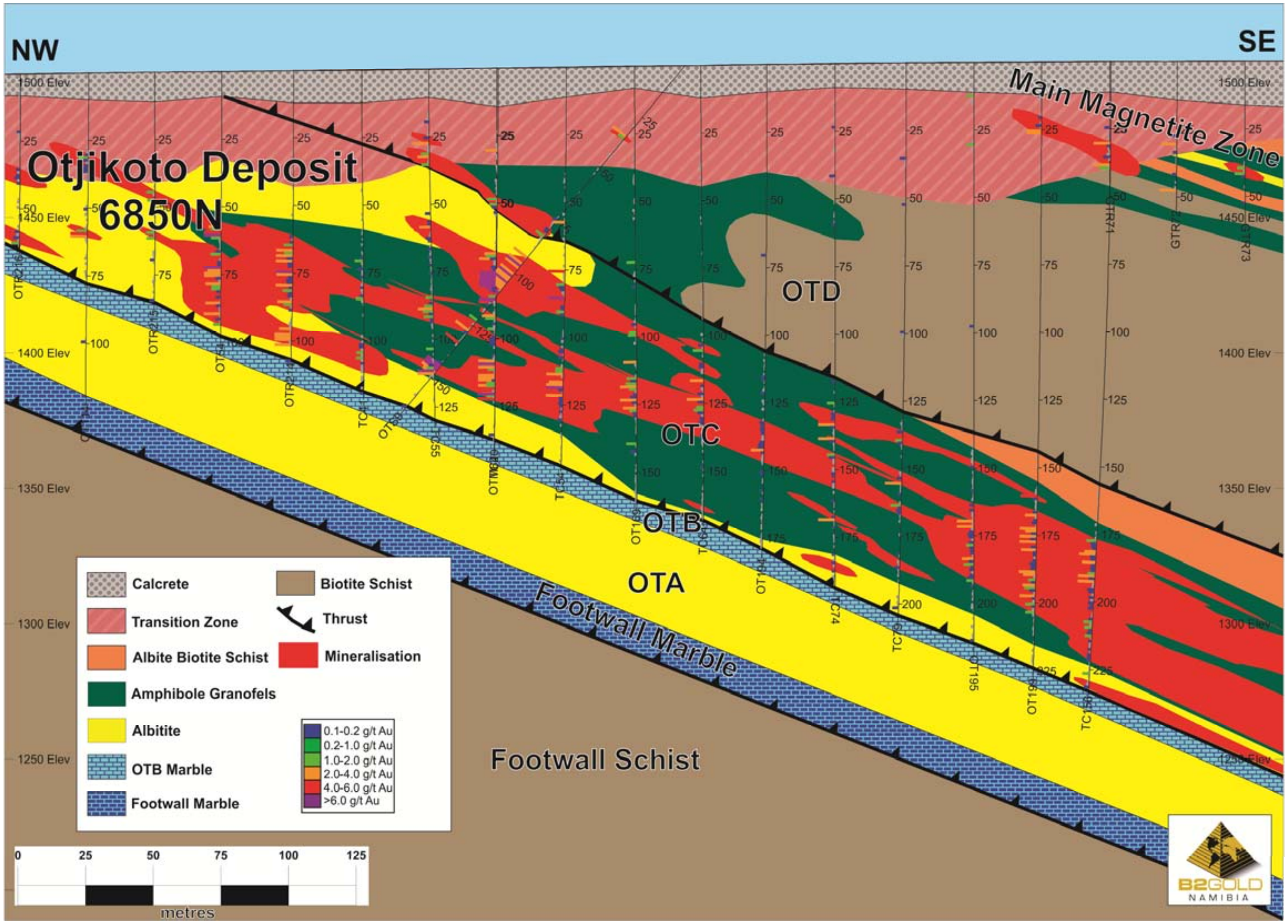
Vein concentrations range from one to 30 veins per metre, with a higher vein concentration within the Central and West shoots. Vein contacts are commonly irregular. Brecciation within and adjacent to the veins is common.

In the shallower and northern portions of the deposit, the veins are pyrite-rich, while in the southern and deeper levels of the deposit the veins are pyrrhotite-dominant. Veins proximal to the OTB marble, the bottom or footwall veins tend to be carbonate-rich while those in the rest of the deposit contain a mix of quartz–calcite and iron carbonate. Pyrite within the pyrite-dominant veins tends to have a vuggy texture.

Chalcopyrite is rare, and small (<10 μm) grains of maldonite (Au_2Bi) were observed during metallurgical testwork on the pyrite-dominant veins. Marcasite is also present in the shallower, pyrite-dominant vein systems.

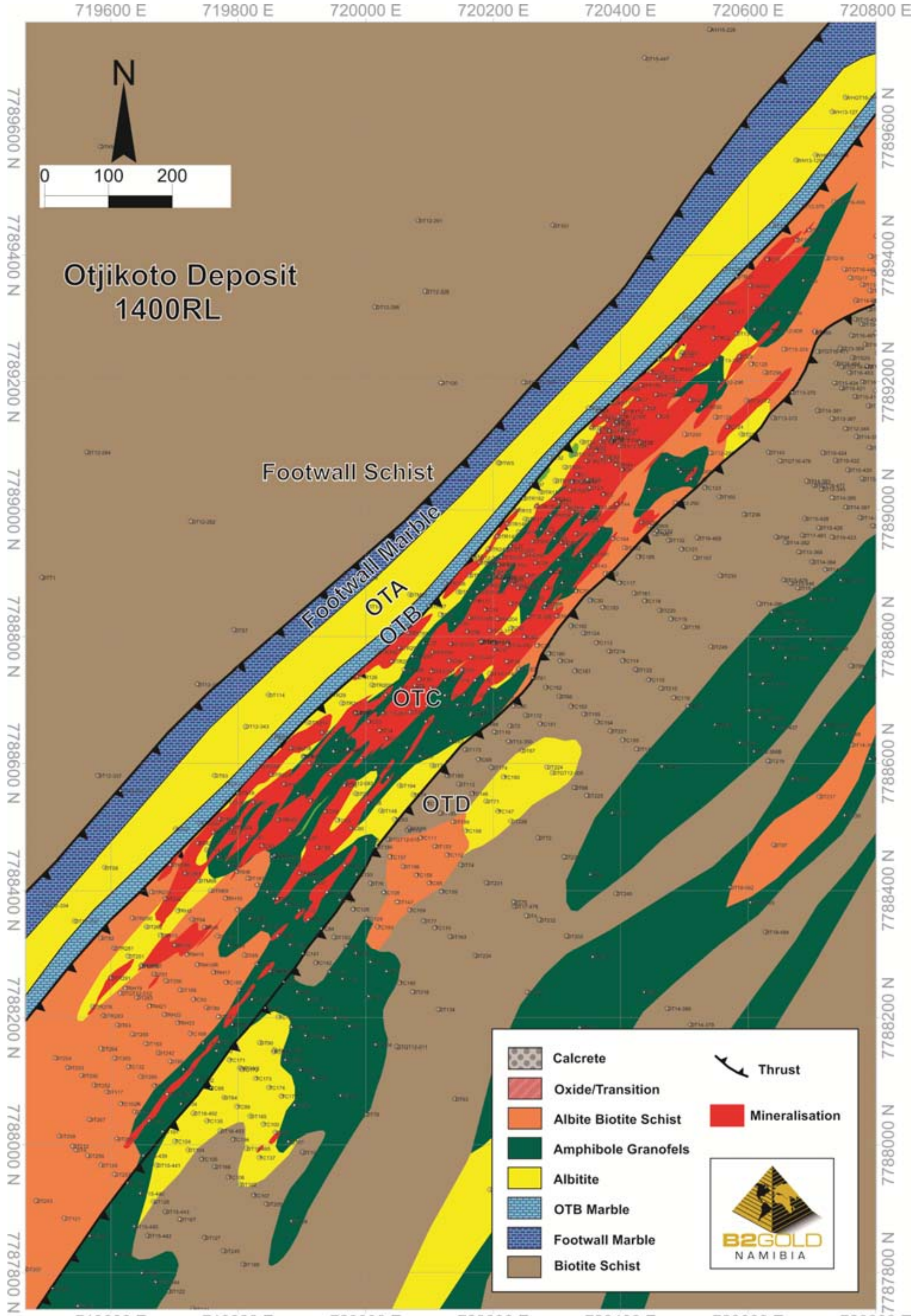
Magnetite represents an important constituent of the veins, ranging from trace amounts to 100% of individual veins. Granular to massive magnetite is more common than bladed “feathery” magnetite. The granular magnetite veins are commonly hosted by the intensively albitized metasediments.

Figure 7-9: Simplified Cross-Section, Otjikoto Deposit (6850 N)



Note: Figure prepared by B2Gold, 2018.

Figure 7-10: Simplified Plan View, Otjikoto Deposit (1400 RL)



Note: Figure prepared by B2Gold, 2018.

Within the oxide zone the sulphides commonly weather to hematite and/or limonite.

Quartz, calcite, dolomite, siderite, biotite and ankerite are the main gangue minerals. Other important gangue minerals in the veins include garnet, amphibole and to a lesser extent chlorite and muscovite/sericite.

Silicate + sulphide vein assemblages show very variable proportions of the constituent minerals. Garnets within and on the haloes of veins tend to be larger than the host rock garnets.

Gold occurs within the vein system as coarse native gold with a size variation from 5 µm to 400 µm, with the median at about 100 µm. No specific location for gold has been noted. It has been observed adjacent to and within sulphides, along fractures, adjacent to and within garnets, within magnetite, on the edges of amphiboles and chlorite, and as free gold in quartz and carbonate.

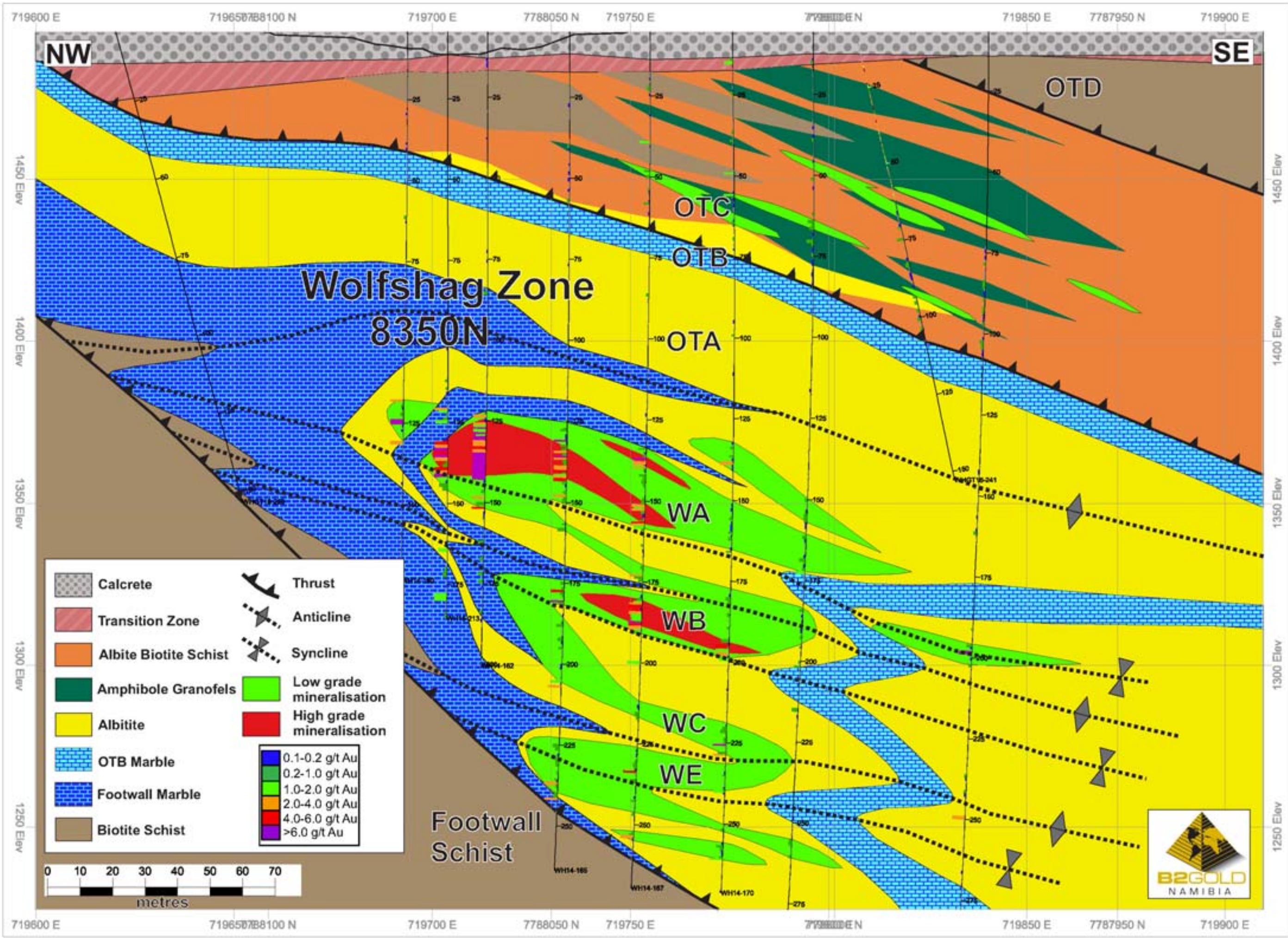
7.3.2 Wolfshag

The deposit has a strike extent of 2.1 km and has been drill tested to 700 m depth below surface.

The Wolfshag deposit is hosted within the fold duplicated OTA horizon enveloped between the Footwall (west) and OTB (east) marbles, and stratigraphically below the Otjikoto OTC zone. Albitite is the major lithology within the zone (Figure 7-11), with minor albite–biotite schist and marble bands in places.

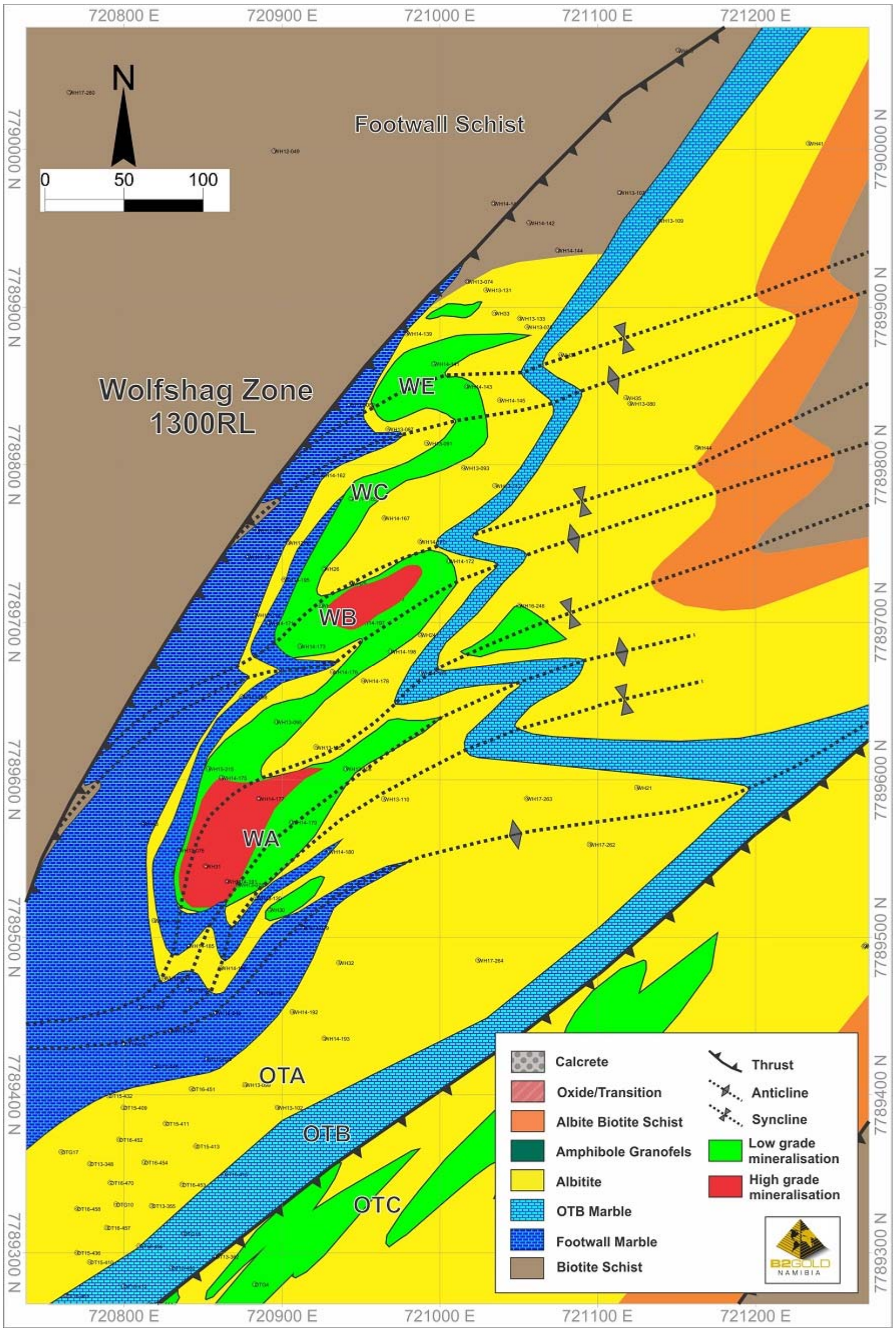
The deposit consists of a series of fold-duplicated mineralized zones alphabetically subdivided from WA to WE into either west–northwest or east–southeast-verging fold closure zones (Figure 7-12). The zones steepen and narrow to the south. High-grade shoots within the mineralised zones are associated with parasitic folds occurring within the larger fold structure. The shoots plunge at 15° to 20° to the south–southwest, sub-parallel to the Otjikoto deposit shoots. The dip of the shoots is parallel to the axial planes of the folds (5 to 20°) to the east–southeast.

Figure 7-11: Simplified Cross-Section, Wolfshag Deposit (8350 N)



Note: Figure prepared by B2Gold, 2018.

Figure 7-12: Simplified Plan View, Wolfshag Deposit (1300 RL)



Note: Figure prepared by B2Gold, 2018.

The mineralized shoots include:

- WA: West–northwest-verging fold closure. Ranges in width from 160–215 m and can be as much as 40 m thick. Higher gold grades occur on the upper, downward-facing limb, nearer to the western fold nose;
- WB: East–southeast-verging fold closure connected to WA by a low-grade, upward facing inverted limb. Ranges in width from 75–135 m, and can be as much as 30 m thick. The higher gold grades occur in the lower downward-facing limb;
- WC: Inverted limb between WB and WE. Ranges in width from 95–115 m and can be as much as 25 m thick. Higher gold grades occur near the east-verging fold closure adjacent to WE, but are less continuous than those of the WA and WB zones;
- WE: West–northwest-verging fold closure. Ranges in width from 65–110 m and can be as much as 35 m thick. Higher gold grades occur on either limb nearer to the west-verging fold nose.

Gold mineralization can be vein-hosted, or represent replacement or disseminated styles.

Vein-hosted mineralization consists of pyrite–calcite + magnetite veins. These shear which tend to be brittle fracture-fill-related, with ragged edges, and most commonly parallel to subparallel to the compositional banding. Locally the veins are folded which is related to higher gold grades. Shear veining usually contains a mix of both replacement and vein style mineralization with both brittle (brecciation) and ductile deformation textures.

The replacement style mineralization ranges from moderate, disseminated, to massive pyrite and/or magnetite replacement of calcareous bands and/or marbles. Replacement mineralization tends to be lower grade and is commonly gradational with the shear vein style.

Disseminated mineralization tends to be lower grade with fine- to medium-grained magnetite more dominant than fine-grained pyrite.

7.4 Prospects/Exploration Targets

Prospects are discussed in Section 9.

7.5 Comments on Geological Setting and Mineralization

The understanding of the Project geology and mineralization is sufficient to support Mineral Resource and Mineral Reserve estimation and mine planning.

8.0 DEPOSIT TYPES

8.1 Deposit Model

No definitive deposit model has been accepted for the Otjikoto and Wolfshag deposits, and the deposit genesis is still debated. Models that have been suggested include:

- Orogenic lode gold deposits: based on the fact that the systems are open to depth and show both lateral and vertical continuity down plunge on shoots, which is typical of Archean and Neoproterozoic orogenic systems
- Structurally-controlled end member of an iron oxide–copper–gold (IOCG) system: based on the presence of high concentrations of magnetite at Otjikoto coupled with the low concentrations of quartz, both of which are uncommon in orogenic deposits.

This Report considers the Otjikoto and Wolfshag deposits to be part of a group of Namibian deposits, including Navachab, that have more similarities to each other than to the above suggested models, based on current knowledge.

The features of the well-studied Navachab deposit include:

- Sediment-hosted; rock types include marbles, biotite schists and calc-silicates;
- Amphibolite to granulite metamorphic facies;
- Two distinct mineralization styles:
  - Main “high grade” shoot is a semi-massive sulphide replacement body, the MC skarn. The MC skarn shoot has a pipe-like geometry that plunges at 020° azimuth to the north–northeast, and is at least 2,000 m. A second, similar, shoot sits structurally above and to the northeast of the MC skarn;
  - Strong sheeted quartz-sulphide vein system. The sheeted vein zone is a large, lower grade, shear derived, extensional vein array;
- Skarn assemblages: garnet ± tremolite/actinolite ± clinopyroxene + K-feldspar + quartz depending on host lithology;
- The main sulphide mineral is pyrrhotite, with minor chalcopyrite, sphalerite, pyrite, arsenopyrite and maldonite;
- Gold is most commonly free, with lower amounts locked within maldonite;
- Deposit is cut by lamprophyre, aplite and pegmatite dykes;
- Damara-age, structurally-controlled mineralization related to a combination of doming, dextral shearing and thrusts;

- Low magmatic component to hydrothermal fluids but possible high heat flow due to intrusions.

Similarities between Navachab, and Otjikoto and Wolfshag include:

- Nearly identical relative stratigraphic position;
- Similar ore shoot direction and shallow plunge but different plunge direction (south versus north);
- Gold is free;
- Pyrrhotite dominant in deeper levels;
- En-echelon vein systems and shoots extending to depth.

Deposit differences include:

- Otjikoto
  - Lack of direct intrusive association (no pegmatites);
  - High magnetite content of veins;
  - Low quartz but high sulphide veins;
  - No direct skarn or calc-silicate association;
  - Strong sodic enrichment in alteration (which may in part have played a role in creating a more brittle host rock);
  - Very low bismuth and low arsenic;
  - Generally higher free gold content (more nuggety)
  - Zonation from pyrite- to pyrrhotite-dominant domains

- Wolfshag
  - Calcite rich and quartz poor veins;
  - Coarse blotchy pyrite in veins;
  - Replacement zones magnetite-pyrite rich and lack skarn assemblages;
  - Shear veins more prevalent than brittle veins;
  - Intense albitization and carbonate alteration.

8.2 Comments on Deposit Types

The local setting of the Otjikoto and Wolfshag deposits is reasonably well understood.

An exploration model that uses the common features of the Navachab, Otjikoto and Wolfshag deposits would be acceptable as a regional targeting tool.

9.0 EXPLORATION

9.1 Introduction

The bedrock geology within the deposit area is covered by 10–15 m of calcrete, with only sporadic outcrops of Karibib Marble. The exploration program therefore had to rely on a combination of airborne and ground geophysical surveys to map bedrock geology and identify exploration targets for drill testing. Systematic drilling of the geophysical anomalies led to the discovery of the Otjikoto gold deposit.

9.2 Grids and Surveys

The pre-mining topography was established from a LiDAR survey completed by Southern Mapping Company on behalf of Teal Mining in 2008. Pixel resolution was 0.15 m, and topographic contours were provided at 0.5, 2 and 5 m contour intervals.

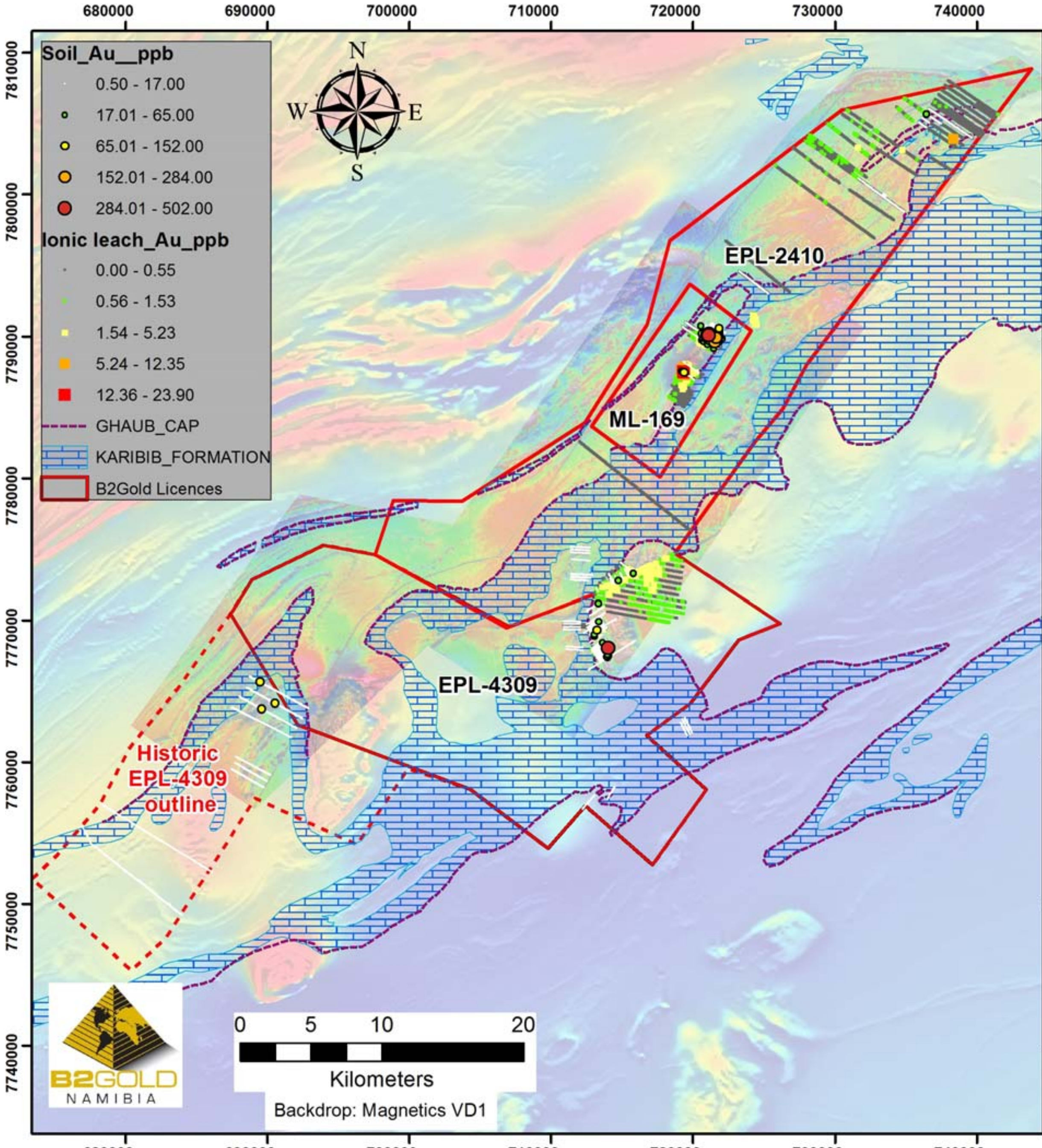
9.3 Geochemistry

Avdale completed an initial orientation survey over the Otjikoto deposit in 2001 which found the -180 fraction collected at the calcrete soil interface was the best medium to sample. In general, the soil horizon is poorly developed, and the coarse gold which is characteristic of the deposit makes it difficult to get a representative sample at any sample site. The initial soil survey thus identified spot anomalies of gold but no well-defined anomaly over the mineralization at either deposit.

Soil sampling was conducted from 2012 to 2014 over selected areas within EPL2410 and EPL4309, with 10,114 samples collected. Samples were typically spaced at 20 m intervals. During 2014, an enzyme leach sampling program was completed within EPL2410, totalling 225 samples. Samples were collected at 20 m station spacings. In 2015–2016, an ionic leach program was completed on selected areas within EPL2410 and EPL4309. Station spacing was 40 m, and a total of 6,994 samples were collected.

Sample locations are shown in Figure 9-1.

Figure 9-1: Geochemical Sampling



Note: Figure prepared by B2Gold, 2018.

9.4 Geophysics

9.4.1 Airborne Geophysical Surveys

Airborne geophysical surveys completed to date are summarized in Table 9-1. These datasets were merged and interpreted by Corner Geophysics and EarthMaps (Klauss Knupp).

The Otjikoto deposit is indicated by a distinct magnetic high in the analytical signal of the processed high resolution airborne magnetic data covering the Otjikoto area (Figure 9-2) and is probably related to the magnetite and pyrrhotite content of the mineralization.

The Wolfshag shoots are situated under the Otjikoto deposit and while the OTC mineralization is weaker, the presence of the overlying pyrrhotite and magnetite-bearing sheeted veining, in particular the East 1 and Mag 2 shoots, effectively masks the underlying Wolfshag shoots (Figure 9-3).

Where the Wolfshag zone contacts the base of the calcrete layer, it has a moderate magnetic and low electromagnetic response.

9.4.2 Ground Geophysical Surveys

Various ground geophysical surveys were conducted over the Otjikoto deposit area to follow-up airborne geophysical anomalies. Ground geophysical surveys were done at grid line spacing ranging from 50–200 m.

Magnetics

A total of 468.7 line km of ground magnetic surveys has been conducted.

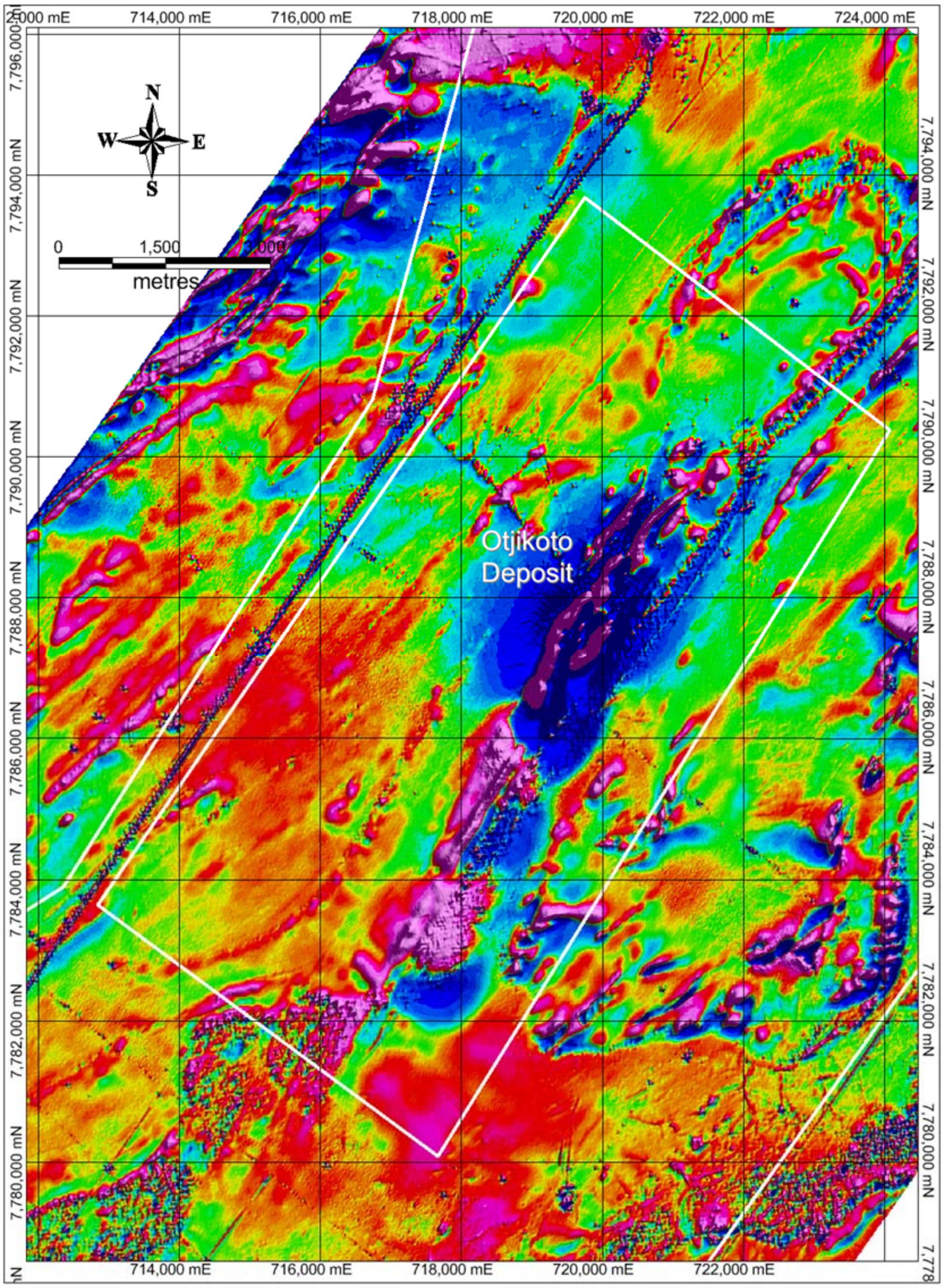
Previous operators found detailed ground magnetics surveys to be a useful tool to aid in defining the mineralized zones; however, shallow, magnetite rich bands, particularly in the southern and eastern portions of the deposit, partially mask the more important pyrrhotite-rich sheeted vein mineralization.

B2Gold uses the 2011 and 2013 NRG airborne magnetic survey data in preference to ground magnetic survey results.

Table 9-1: Airborne Geophysical Surveys

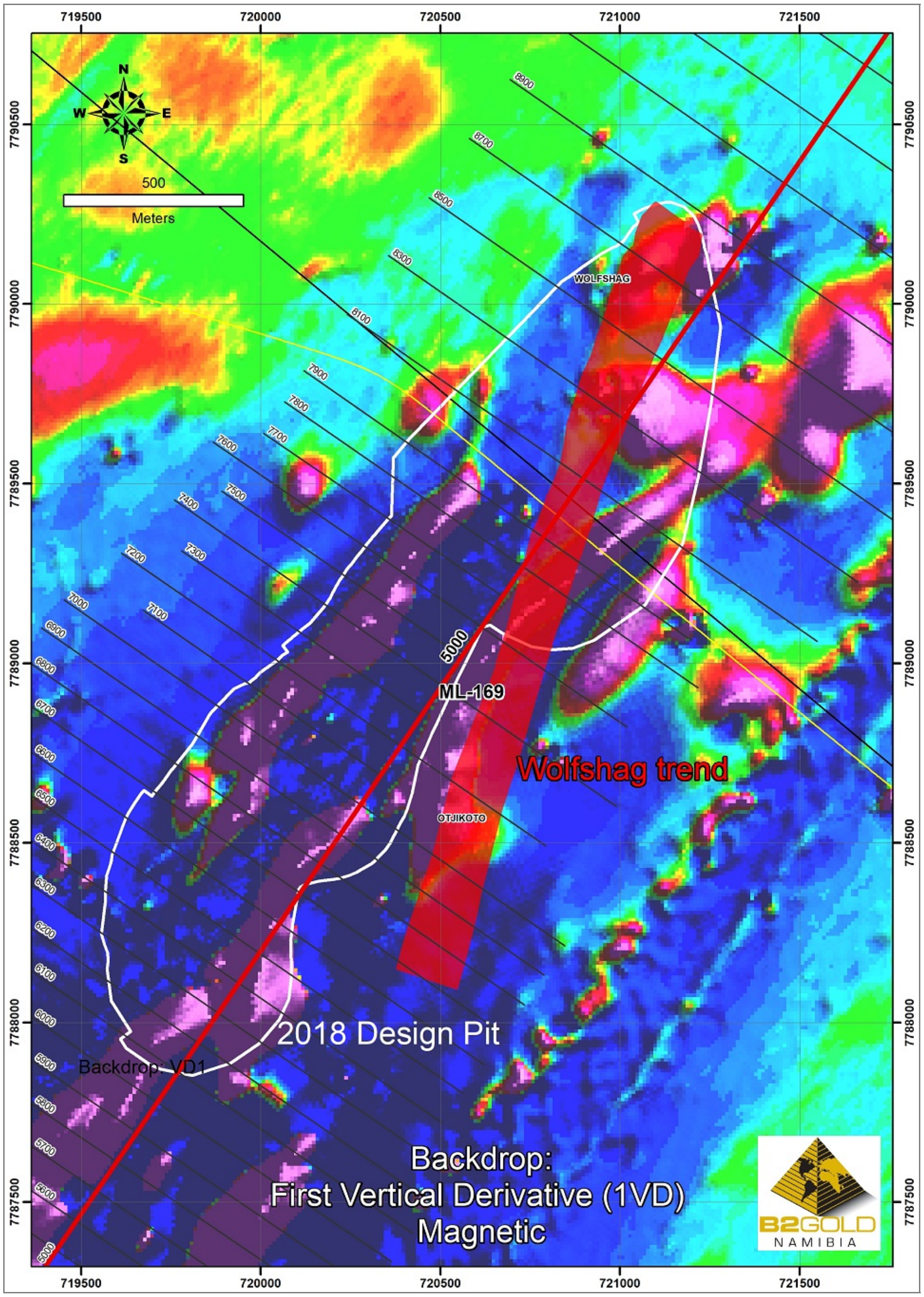
Operator	Survey Type	Date	Line Spacing (m)	Line Kilometres (km)
Fugro Geodass	Magnetics, radiometrics	1998	200	2.500
Geotem AEM	Electromagnetic	2001	400	1,290
Namibian MME	Magnetics, radiometrics	2004	200	
Aster	Satellite imagery			
Spectrum AEM	Electromagnetic	2005	200	3,655
NRG high-resolution helicopter	Magnetics, radiometrics	2011	50	8,650
NRG high-resolution helicopter	High resolution magnetics	2013	50	4,553, with tie lines

Figure 9-2: High Resolution NRG Magnetics, Otjikoto (first vertical derivative)



Note: Figure prepared by B2Gold, 2014.

Figure 9-3: High Resolution NRG Magnetics, Wolfshag (first vertical derivative)



Note: Figure prepared by B2Gold, 2018.

Induced Polarization

A total of 286.7 line km of induced polarization (IP) surveys has been conducted.

In 2005 the Otjikoto grid was surveyed at 100 m line spacing with an IP gradient array (a = 50 m) using a number of electrode setups.

The Wolfshag zone is not evident in the chargeability response in this survey with the zone flanked by stronger responses. There is a weak resistivity response over the zone but this is secondary relative to the adjacent areas.

As part of a 2012 condemnation program select lines were resurveyed using an IP pole–dipole array. A weak resistivity low was visible, but no chargeability high over the Wolfshag zone was observed.

Ground Electromagnetics, NSAMT and CSAMT

A total of 96.7 line km of Max-Min electromagnetic surveys has been completed.

Previous operators conducted a number of fixed horizontal loop frequency domain Max-Min electromagnetic (EM-34) surveys, with a strong emphasis in the area of good magnetic/IP responses. In most instances, relatively good conductors were located at fairly shallow depths, except in the southern portion of the Otjikoto farm where depths in excess of 200 m were interpreted. It is worth noting the decrease in conductivity in both the northern and southern portions of the survey area despite the presence of good chargeable material. This indicates a change in the nature of the mineralization away from the main magnetic responses.

Natural source audio-frequency magnetotellurics (NSAMT; 18 line km) and controlled-source audio-frequency magnetotellurics (CSAMT; a single 4 km line) were tested at Otjikoto by previous operators.

B2Gold has found that the Spectrum AEM data provides similar or better results.

9.5 Petrology, Mineralogy, and Research Studies

B2Gold and predecessor companies commissioned a number of petrological and mineralogical studies, in support of exploration vectoring, deposit understanding, and metallurgical designs.

Research and publications on the Otjikoto Project include:

- Curtis, C., 2006: Stable Isotope Evidence for the Origin of the Otjikoto Gold Deposit: BSc (Hons) thesis, University of Cape Town;
- Rankin, W., 2015: Cross-Border Correlation of the Damara Belt in Namibia and Equivalent Lithologies in Northwestern Botswana from Potential Field and Magnetotelluric Interpretations: MSc thesis, University of Witwatersrand;

- Pesce, E., Hitzman, M., Wilton, J., and Lombard, A., 2010: The Otjikoto Gold Deposit, Northern Namibia, and the Exploration Potential It Represents: Colorado: Colorado School of Mines: 1–2;
- Negonga, L.A., Greyling, L.N., and Harris, C., 2016: The Origin and Formation of the Albitite Marker, Otjikoto Gold Mine, Central Namibia: American Geosciences Institute, paper no. 5250;
- Fletcher, B.A., MacKinnon, H.F. and Lombard, A.P.J., 2017: Otjikoto Gold Deposit: Discovery and Exploration of Namibia's Second Major Gold Mine: NewGenGold 2017, Perth, Western Australia, November 14–15, 2017.

9.6 Exploration Potential

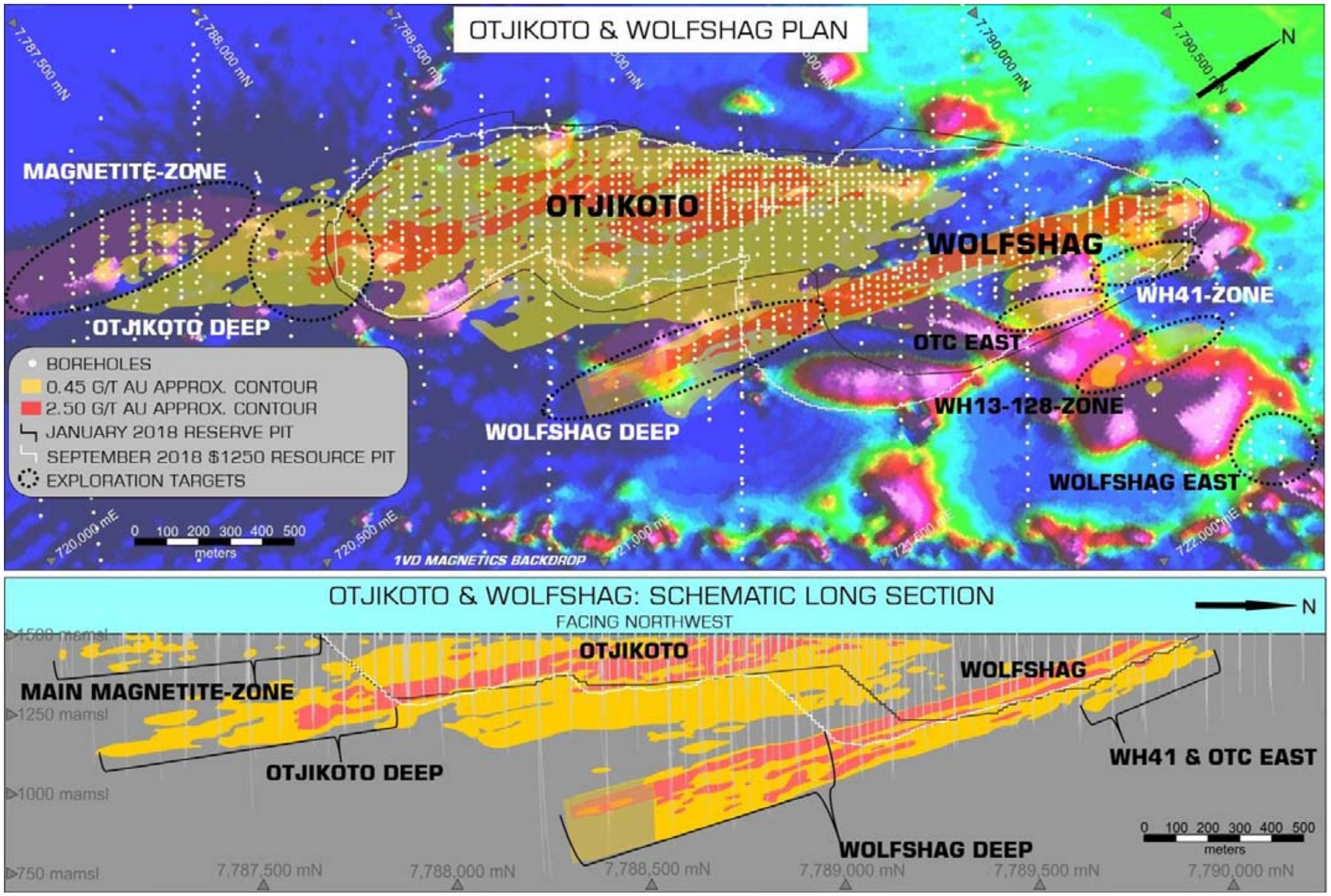
Exploration at Otjikoto remains focused on testing targets proximal to the current mine operations. The highest-priority targets are the continued testing of the down plunge continuation of the Otjikoto and Wolfshag shoots below the current pit limits. In addition to these targets, Figure 9-4 outlines several other areas that are considered prospective.

Regional exploration work is ongoing with geophysics used as the principal tool to define targets under the extensive calcrete cover. These programs are focusing on the Okonguarri Formation, where it is situated between the Footwall Marble and Karibib Formation marble.

9.7 Comments on Exploration

Exploration programs to date have identified the Otjikoto and Wolfshag deposits. Exploration targets remain to be investigated at depth, down-plunge of the current open pits, and in the vicinity of the deposits.

Figure 9-4: Near-Mine Exploration Targets



Note: Figure prepared by B2Gold, 2018.

10.0 DRILLING

10.1 Introduction

Drilling completed to date includes rotary air blast (RAB), RC, and core drilling.

Table 10-1 summarizes the drilling to 31 December, 2018 on a Project-wide basis, excluding grade control drilling. Drill hole collars are shown in Figure 10-1 by drill type for the Project as a whole. Of this drilling 242,014 m of core and RC drilling supports the Mineral Resource estimate at Otjikoto and 122,884 m of core and RC drilling supports the Mineral Resource estimate at Wolfshag. Table 10-2 and Table 10-3 show the drilling used for Mineral Resource estimation by drill type, and collar locations are shown for each deposit area in Figure 10-2 and Figure 10-3. No RAB drilling is used in estimation.

10.2 Drill Methods

Drillcon Africa (Pty) Ltd, Ferrodrill Namibia (Pty), Xplor Drilling (Pty) Ltd and Eben Rautenbach have been employed to carry out the RAB and RC drilling. RC drilling used a 4¾ inch (~120 mm) bit while later phases of RC drilling used 5½ inch (138 mm). RAB drilling used a 4¾ inch (~120 mm) bit.

Core drilling contractors have included Drillcon Africa (Pty) Ltd, Ferrodrill Namibia (Pty) Ltd, JGM Drilling and Exploration CC and Günzel Drilling using UDR2000DLS drill rigs, Atlas Copco C8C, C6C and CS14 rigs and a Christensen CS14 drill rig. Core sizes include HQ (63.5 mm core diameter), NQ (47.6 mm), TNW (60.8 mm) and PQ (85 mm).

Core was obtained using wire-line methods and unloaded from the core barrel, as drilled, into a 3 m “V” groove core stand, washed and fitted together. Each run was measured and recoveries calculated. Core was systematically placed into wooden, aluminium, or plastic core trays in the same orientation as it came out of the core barrel.

Blocks were placed after each core run, indicating depth and recoveries for the run. A written record of each run was maintained by the drilling contractor. Core boxes were marked with the drill hole identity number, the intersection interval (start and final depths in that box), an arrow indicating which side is down-the-hole, and the box number. The driller, drilling supervisors and drill geologist ensured the correct placement of the drill core in the core boxes.

Core boxes were collected in the field by B2Gold staff and delivered to the B2Gold core logging and storage facility in Otjiwarongo.

Table 10-1: Project Drill Summary Table

Year	Number Core Holes	Core Metreage (m)	Number RC Holes	RC Metreage (m)	Number RAB Holes	RAB Metreage (m)	Total Number Holes	Total Metreage (m)
1998					63	1,328	63	1,328
1999	12	3,398			300	6,112	312	9,510
2000	11	2,101					11	2,101
2001	10	1,512	10	733			20	2,245
2003	47	6,488	48	3,995			95	10,483
2004	18	1,519					18	1,519
2005	25	6,011			35	585	60	6,596
2006	69	15,375	76	4,485			145	19,860
2007	154	25,182	153	13,642			307	38,824
2008	57	10,386	39	2,730			96	13,116
2010	28	8,757	72	5,995			100	14,752
2011	204	50,698	54	6,405			258	57,103
2012	176	24,004	21	2,866			197	26,870
2013	129	22,564					129	22,564
2014	110	29,514			91	1,801	201	31,315
2015	74	20,605			462	8,552	536	29,157
2016	67	15,740			270	5,345	337	21,085
2017	15	3,651					15	3,651
2018	50	12,929			48	975	98	13,904
Totals	***1,256***	***260,436***	***473***	***40,851***	***1,206***	***23,370***	***2,998***	***325,984***

Note: table excludes grade control drilling.

Figure 10-1: Project Drill Collar Location Plan

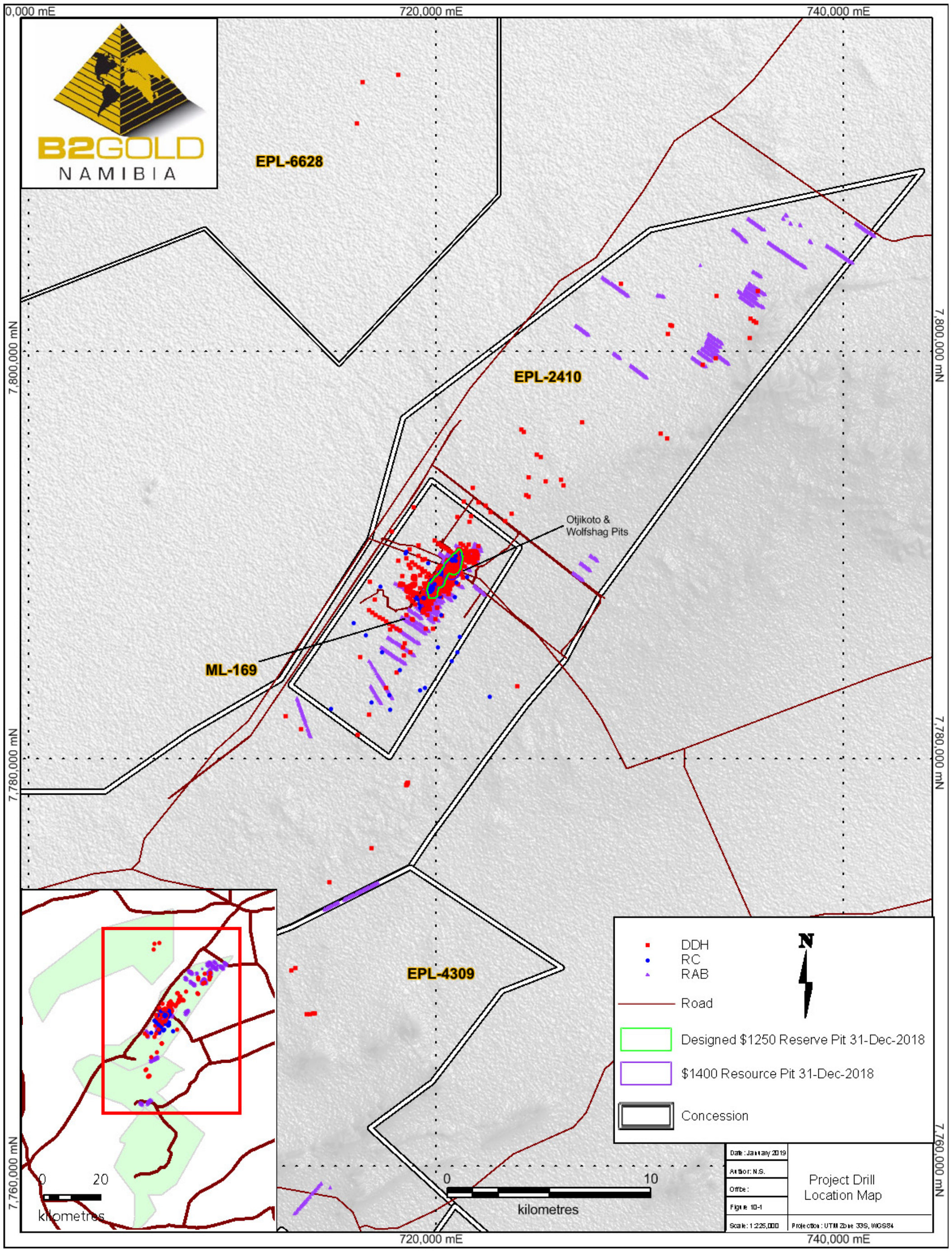


Table 10-2: Otjikoto Mineral Resource Drill Summary Table

Drill Type	Number of Drill Holes	Metreage (m)
Core	978	204,101
RC	448	37,913
Total	***1,426***	***242,014***

Table 10-3: Wolfshag Mineral Resource Drill Summary Table

Drill Type	Number of Drill Holes	Metreage (m)
Core	447	121,248
RC	24	1596
Total	***471***	***122,844***

Figure 10-2: Otjikoto Mineral Resource Drill Collar Location Plan

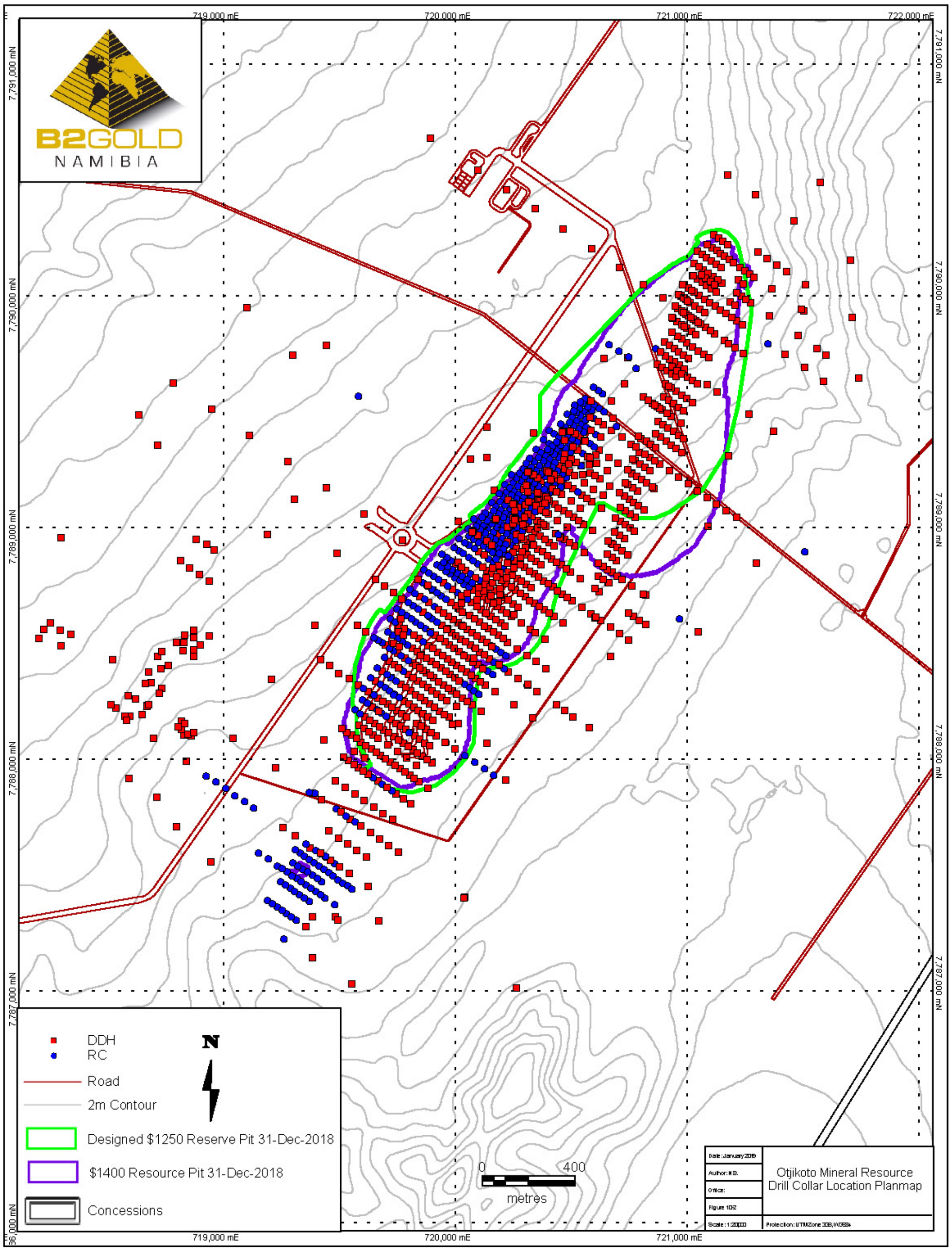
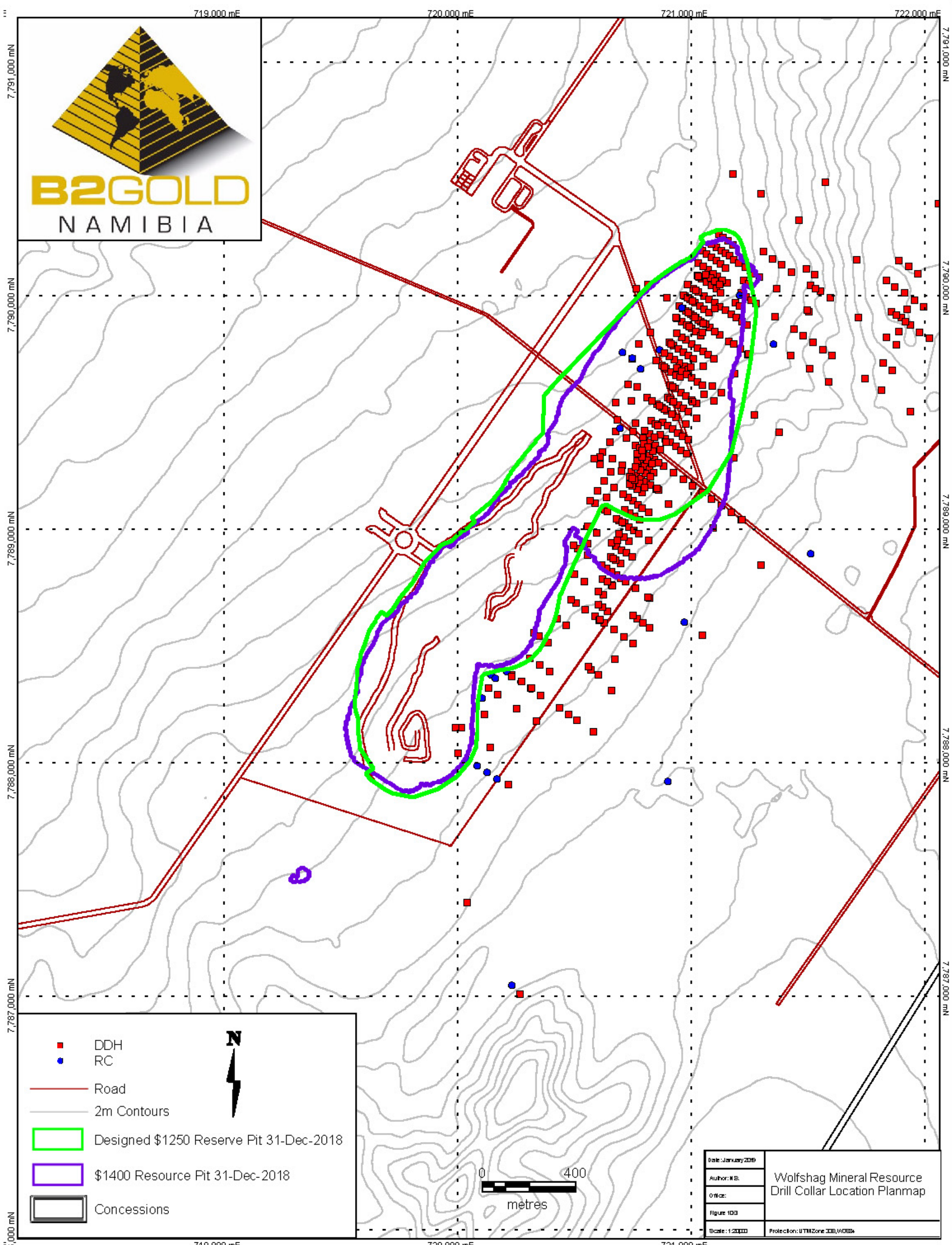


Figure 10-3: Wolfshag Mineral Resource Drill Collar Location Plan



10.3 Logging Procedures

Sieved RAB samples are logged at the drill site.

All RC drill holes were logged at the drill site during drilling with logging based on examination of a representative sample of washed chips collected from the sample split. RC geological logs capture the following:

- Unit code: a summarized geological classification of the depth of oxidation and major identifiable units;
- Rock type: an observation of the predominant rock type in each metre sample;
- Vein (RC): a visual estimate of the total percentage of vein material per metre sample and the relative proportion of important economic and gangue minerals.

Historically the core logging was conducted by recording information in two log types for each borehole:

- Geological log of main units and rock; and
- Vein log including each individual vein and its mineralogy.

In 2012, the core logging format was changed to allow for capture of all crucial geological data on a single form. In addition, the change in format allowed for the entry of alteration information and structural data, which had previously not been captured.

Current core logging practices capture:

- Unit code: summarized geological classification of major identifiable rock units;
- Oxidation state: an observation of the state of oxidation of the major units;
- Texture: a classification of the arrangement of the constituent grains or crystals in the major rock units;
- Structure type: identification of the type of structures and all major lithological contacts and their measurements;
- Alteration: an observation of the type of alteration within a rock unit and an estimate of its relative intensity;
- Veining and mineralisation: a visual estimate of the total vein percentage within a unit or sample and the relative composition of important economic and gangue minerals within the veins;
- Total core recovered (TCR): a measure of the total length of core within the run, including any broken material;

- Rock quality designation (RQD): a measure of the sum of lengths of complete cylindrical core that is greater than 10 cm;
- Joint count: a visual estimate of the number of joint sets present, based on the joint sets identified;
- Rock strength: a classification of rock strength into weak or strong using the International Society for Rock Mechanics and Rock Engineering (ISRM) table.

Core is photographed both wet and dry, after logging and sample markup but before cutting.

10.4 Recovery

Drilling quality for both RC and diamond drilling is generally very good. The recovered sample masses are recorded on appropriate field logging sheets by the field geologist.

The overall average RC mass recovery was 87.45%. The average RC recovery within the mineralized zones above 40 m elevation was 80.85% and the average recovery below 40 m elevation was 89.72%. The relatively lower percentage recovery above 40 m is related to the oxidized nature of both host rock and mineralization.

Core recovery is documented at the drill by the drilling contractor and again during the geotechnical logging and for every sample during detailed logging.

At Otjikoto, apart from the very weathered near-surface, the diamond core recoveries were very good, averaging 99.88% within the mineralized zone.

Core recoveries at Wolfshag are for the most part very good with limited core loss associated with the near-surface core, ‘chalky’ shears, fault zones, and in fault related dissolution zones in the marbles. Overall core recoveries in the mineralized zone average 99.40% to 99.52% in the low- and high-grade zones respectively.

10.5 Collar Surveys

Drill holes were initially spotted on cut grid lines, with stations and lines based on a combination of theodolite and measuring tape. For angled holes, the set-ups made use of siting pickets for drill orientation line up. The line-up was checked with compass and head inclination set with Brunton compass or degree rule device.

Upon completion of a set of drill holes, the holes were surveyed by a contract professional land surveyor or the Otjikoto mine surveyor using Total Station differential global positioning system (DGPS) survey instruments.

10.6 Downhole Surveys

All drill holes were surveyed using either a single or multi-shot down hole survey instrument (e.g. Reflex Ez-shot) which recorded the azimuth (magnetic) and dip.

Prior to 2012, downhole survey measurements were taken at 50–100 m intervals, and in 2012 at 25 m intervals at Otjikoto deposit.

From 2013 onwards, the down-hole survey was completed at 6 m (multi-shot) or 25 m intervals depending on the drilling contractor. Multishot readings were downloaded directly from the Reflex instrument into Reflex data capture software.

Corrections to the magnetic azimuth were made in accordance to the magnetic field declination in the area.

10.7 Geotechnical and Hydrological Drilling

Eight holes (1,303 m) were drilled in 2012 for Otjikoto open-pit stability studies. The detailed geotechnical logging and sampling of these holes was completed by personnel from SRK Consulting Inc., Johannesburg, South Africa. A series of 44 shallow drill holes (1,021 m total) were drilled in 2012–2013 for civil studies of the proposed process plant and crusher sites. An additional 12 Otjikoto geotechnical holes (2,269 m) were drilled in 2018. Between 2014 and 2018, 41 Wolfshag geotechnical drill holes (8,088 m) were completed.

A total of 19 hydrogeological (water monitoring/supply) holes (2,398 m) have been drilled.

Figure 10-4 and Figure 10-5 show the locations of the geotechnical and hydrological drill holes.

10.8 Metallurgical Drilling

To provide sample material for testing of the different mineralization types within the Otjikoto deposit, 38 new metallurgical test sample drill holes (2,664 m) were drilled in 2012 and an additional 27 “historic” holes were sampled. All 2012 metallurgical holes were twins of previous RC and/or diamond drill holes.

Six Wolfshag metallurgical test holes (806 m) were completed in 2014.

Figure 10-4 and Figure 10-5 include the drill hole collars of the metallurgical drill holes.

Figure 10-4: Otjikoto Hydrological, Geotechnical, Metallurgical and Condemnation Drill Collar Location Plan

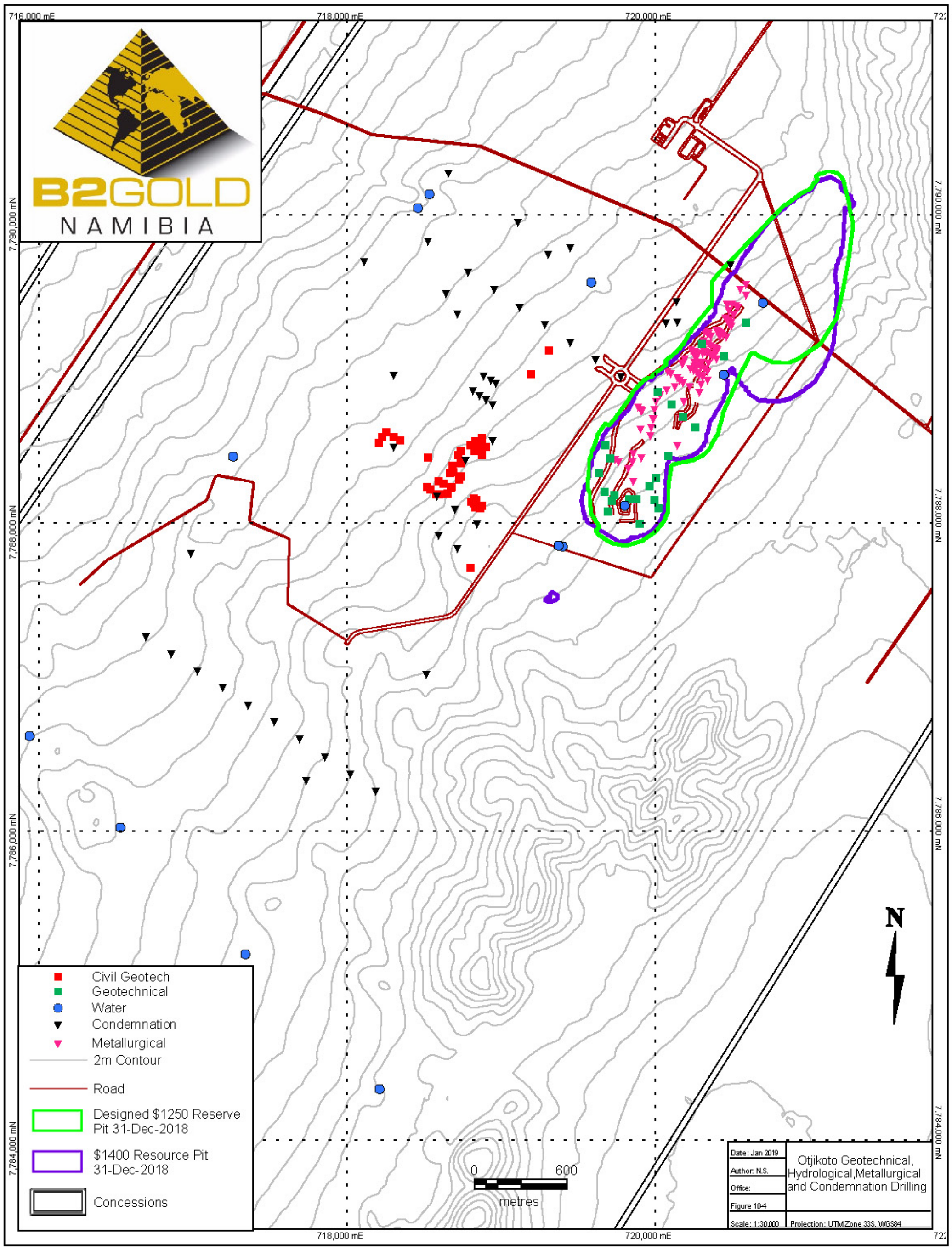
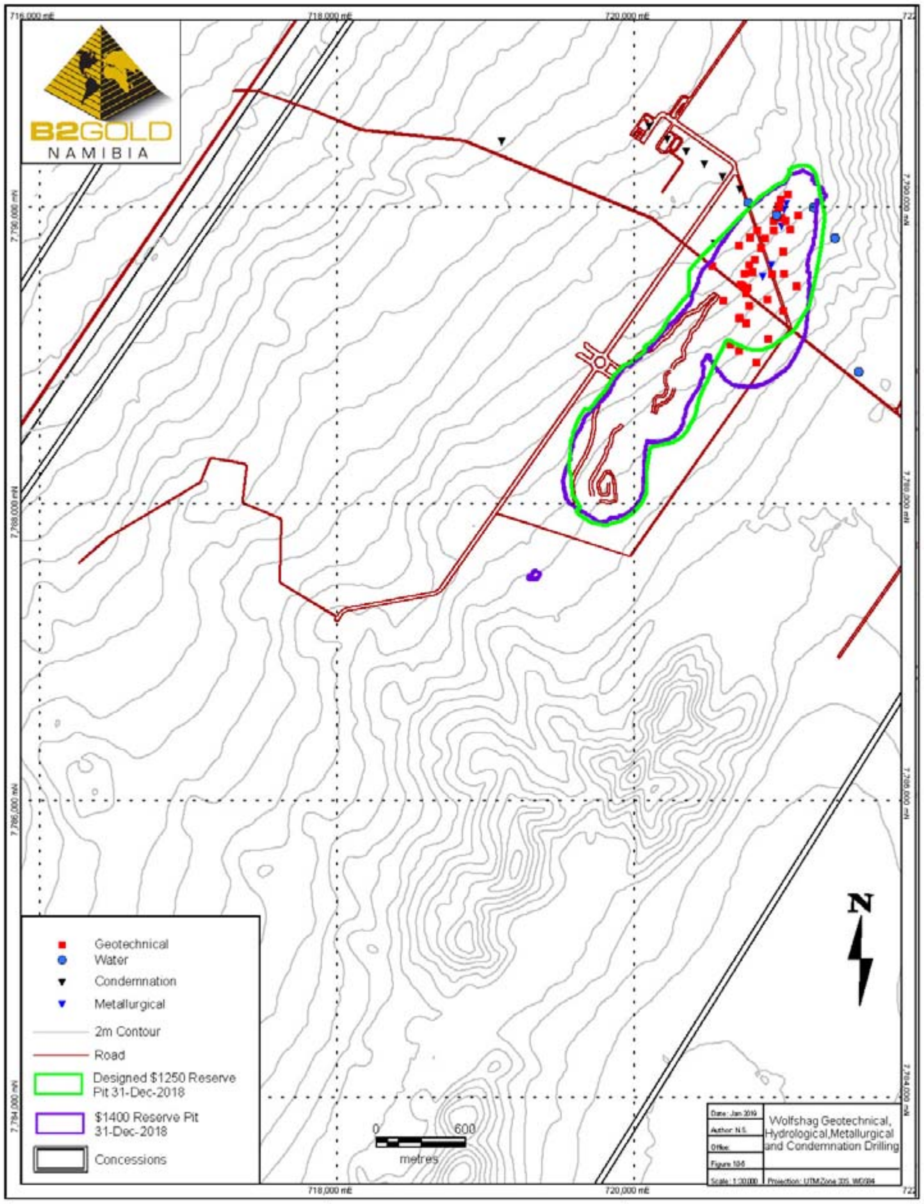


Figure 10-5: Wolfshag Hydrological, Geotechnical, Metallurgical and Condemnation Collar Location Plan



10.9 Condemnation

A total of 49 holes were drilled in 2012 as condemnation of the proposed infrastructure locations. An additional seven condemnation holes (1,198 m) were drilled between 2013 and 2016. No significant zones of mineralization were intersected under the areas that were planned to host infrastructure.

Figure 10-4 and Figure 10-5 show the collar locations of the condemnation drill holes.

10.10 Grade Control

Grade control drilling is undertaken in two 12-hour shifts, using contractor-operated 127 mm diameter RC rigs. Drill spacing varies between the two deposits. At Otjikoto, a 6 m x 12 m drill spacing with a hole dip of -60º and azimuth of 302º is used. Wolfshag grade control uses an 8 x 10 m drill spacing, -60º dip and 350º azimuth.

Drill holes are typically 26 m in depth to provide 20 m of coverage (i.e. two 10 m bench heights) and a 2 m subdrill to the third bench to provide sample overlap. Preliminary and final grade control models are produced from the assay data, whereby the preliminary model is produced from the 50% coverage on the second bench, and the final grade control model is produced for the upper bench with 100% coverage.

Quality assurance and quality control measures consist of whole sample recovery testwork performed by weighing the total material recovered per sample interval and comparing the value with theoretical expected weight per interval. Density is measured for selected samples.

10.11 Sample Length/True Thickness

10.11.1 Otjikoto

Initial exploration holes at Otjikoto were angled (10 holes), but owing to the relatively shallow dip of the mineralization and structural fabric it was decided that the deposit could be delineated with vertical holes. All of the RC holes were drilled vertically. Condemnation and geotechnical holes were drilled as angled holes during the prefeasibility and feasibility drilling.

The orientation of drill sections (305° azimuth) was originally set up perpendicular to the geophysical targets and structural fabric of the area. The mineralization shoot direction was recognized at a much later stage and therefore the drilling sections are slightly oblique to the shoots, but not to the overall trend of the deposit. The mineralization shoot direction was recognized at a much later stage and therefore the drilling sections are slightly oblique to the shoots, but not to the overall trend of the deposit.

The shallower portions of the deposit were drilled on a 25 m x 25 m drill grid and the deeper levels at 25 m x 50 m and 50 m x 100 m drill hole spacing. Infill holes were usually stopped just before or within the OTB marble marker horizon.

Drilling is generally perpendicular to the mineralization, and drilled thicknesses approximate true thicknesses.

10.11.2 Wolfshag

Drilling on the Wolfshag zone used the Otjikoto grid and therefore the Wolfshag drill sections are also slightly oblique to the main trend of the zone.

Drill spacing at Wolfshag is generally spaced at 25 x 55 m for most of the deposit with an area of 25 x 30 m and some 12.5 m infill on select lines targeting the nose of the upper fold (formerly WA).

Drill holes were usually stopped within the footwall “blotchy” schist or the footwall marble to the west of Wolfshag mineralization.

Drilling is generally perpendicular to the mineralization, and drilled thicknesses approximate true thicknesses.

10.12 Comments on Drilling

In the opinion of the QP, the quantity and quality of the logged geological data, collar, and downhole survey data collected in the exploration and infill drill programs are sufficient to support Mineral Resource and Mineral Reserve estimation and mine planning as follows:

- Core and RC logging meets industry standards for gold exploration;
- Collar surveys have been performed using industry standard instrumentation;
- Downhole surveys were performed using industry standard instrumentation;
- Recovery data from core and RC drill programs are acceptable;
- Drill orientations are generally appropriate for the mineralization style and the orientation of mineralization for the bulk of the deposit area (refer to drill sections in Section 7);
- Drilling has generally been done at regularly-spaced intervals and is considered representative of the deposit. Drilling was not specifically targeted to the high-grade portions of the deposit, rather, a relatively consistent drill spacing was completed.

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Sampling Methods

11.1.1 RAB

RAB samples are collected on 1 m intervals, at a sample weight of about 25–30 kg. Samples are split using a riffle splitter into left (L1) and right (R1) samples. The R1 sample is split in half in a three-stage process until approximately 3 kg samples (L3 and R3) are obtained. The R3 sample is placed in a clearly-labelled A4 plastic bag and sent to the laboratory for analysis.

The L3 sample is also placed in a clearly-labeled A4 plastic bag and transported to the core yard to be kept as a reference sample. In the field, the L1 sample is dry screened using a 500 µm sieve and a representative portion of the +500 µm sample is placed in a clearly-labelled chip tray which is transported to the core yard for logging.

11.1.2 RC

RC samples were collected on 1 m intervals and split using a riffle splitter into left (L) and right (R) samples. The sampling procedure is outlined in Figure 11-1.

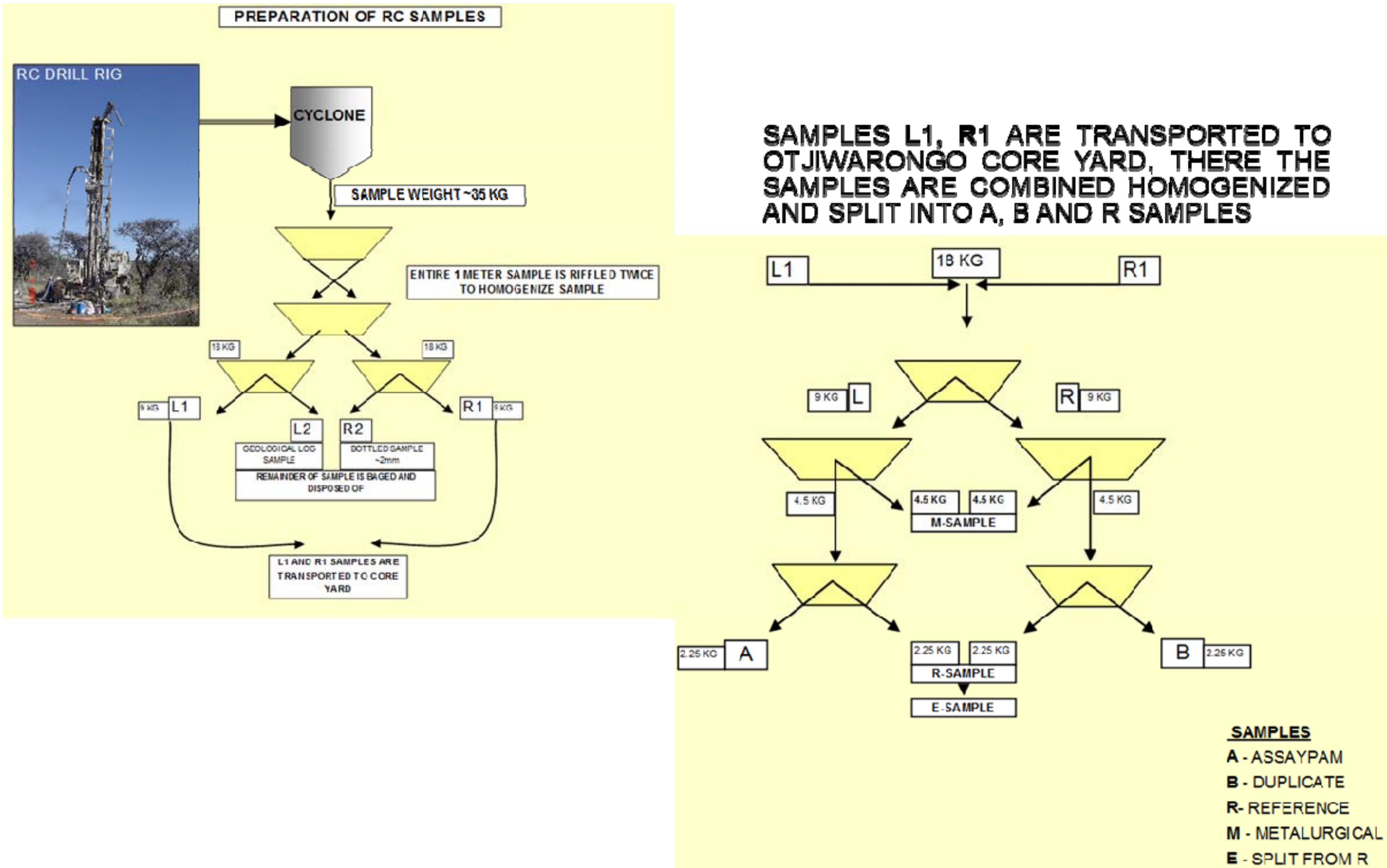
The L2 sample was dry screened using a 2 mm sieve and the +2 mm sample placed in a clearly labelled 500 mL plastic bottle, which was transported to the core yard for additional detailed geological logging or retained as a reference sample. In the field, the R2 sample was wet screened using a 2 mm sieve and the +2 mm fraction logged for drilling control and geological information.

11.1.3 Core

The core was oriented, and a low point-line placed on the maximum dip of the prevalent dip of the fabric. A second reference line was also placed down the entire length of the core to ensure that a standard half (the top half) of the core is always sampled. Metre depth marks were placed on the core. The core was then geologically logged. The minimum sample length was 30 cm for HQ- and 40 cm for NQ-sized core.

The core was split in half along the low point line with a core cutting saw. Fresh water was used at all times while cutting and the diamond saw blades were cleaned with a blank medium (such as concrete) on a regular basis to prevent possible contamination. A quarter split of core was taken as a field duplicate.

Figure 11-1: RC Sampling Method



Note: Figure provided by B2Gold, 2018.

The majority of the sampling on the project was done at 1 m sample intervals. Three to five metres of material was sampled above and below the mineralized zones, and the zones were sampled continuously, without sample gaps. In narrow mineralized zones that are separated by more than 3 m, a gap in the sampling was allowed.

Early-stage sampling had samples labeled by hole number and end-of-sample depth. In 2012, the protocols were revised with sampling done on geology and introduction of a numeric sample tag system with information on each sample marked in the detailed logs, in the sample tag books, and on the core and boxes, as a further check on sampling.

Samples were organized into shipments and QA/QC samples inserted in the sample stream.

11.1.4 Grade Control

RC grade control samples are collected at 2 m intervals and split using an inline cone splitter with a catch and dump box arrangement. The first sample is discarded (0–2 m) if there is sufficient sub-drill from the bench above, due to generally poor recovery and possible contamination by mining of the bench above. The “A” sample (7–10 kg) is bagged for transport to the onsite laboratory for screen fire assay. The laboratory sample is identified with pre-printed heat-resistant barcode tags, one inside the bag and one attached to the neck of the bag. The “B” sample is sieved (>2 mm) and the coarse chippings are put in labelled bags for later chip logging.

The splitter and catch box are cleaned with compressed air between each drill hole.

11.2 Density Determinations

As of 7 September, 2018, there were 25,633 specific gravity (SG) measurements available. Methodologies used to collect the data include:

- Pycnometer laboratory determinations on RC and drill core pulp samples (5,168 determinations);
- Water immersion (Archimedes) methodology on whole or half core. Core samples could be unwaxed or waxed (3,063 unwaxed collected prior to 2008, and 17,402 waxed collected since 2003; after 2008, all density samples were waxed).

Initial comparisons between the pycnometer and water immersion methodologies indicated that results were quite similar (Wilton, 2006) so a program of systematic pycnometer determinations was initiated. In 2012, however, a review of the pycnometer data versus the Archimedes data found that the pycnometer on pulp data over-estimated the SG in the oxide zone by 6–12 % and was 2.5% high in the mineralized fresh rock. As a result, current estimates are based on Archimedes method sampling using waxed core.

SG samples subject to the Archimedes method were collected for the complete drill hole for numerous holes. In 2012, a program of systematic sampling was undertaken whereby representative samples were taken of all lithologies, and at regular intervals (every 25 m), from a series of core holes scattered throughout the deposit. "Composite" samples were also collected, consisting of the measurement of all cores within the 1–2 m mineralized zones.

All samples were air dried, weighed dry, then coated with several thin layers of paraffin wax. Air bubbles were purged, and the core resealed with wax as needed. Samples were allowed to cool for approximately 30 min prior to weighing again dry and then within a water bath using a suspended basket balance set up. The SG calculations for each sample were completed via a set of automatic formulas using an Excel spreadsheet. Unusual SG values were rechecked.

11.3 Analytical and Test Laboratories

The laboratories used for sample preparation and analysis over the Project history are summarized in Table 11-1.

Currently, sample preparation is performed at ALS Global, Swakopmund, Namibia. Primary analysis is undertaken by ALS Global, Johannesburg, RSA. The Otjikoto mine laboratory or ALS Chemex in Vancouver, Canada, are used as umpire (reference) laboratories.

11.4 Sample Preparation and Analysis

11.4.1 Sample Preparation

Sample preparation for gold and multielement analysis in the early programs consisted of:

- Crush complete sample to -2 mm;
- Pulverize entire sample (3 minutes in LM5 "ring and puck" mill);
- Screen with 106 µm sieve;
- Accurate weight determined for both fractions (after pulverizing mass);

Table 11-1: Sample Preparation and Analytical Laboratories

Laboratory	Period Used	Purpose	Accreditations	Independent of B2Gold or Predecessor
Anglo American Research Laboratories, Johannesburg RSA	Initial regional	Primary analytical laboratory	ISO/IEC 17025	Yes
Chemex Laboratories, Toronto, Canada (now ALS Chemex)	Initial regional	Primary analytical laboratory	Unknown	Yes
SGS Lakefield Research Africa (Pty) Ltd, Pretoria RSA	October 2005 to May 2011	Primary analytical laboratory	ISO/IEC 17025	Yes
Moruo Analytical Services	Pre-2010	Primary analytical laboratory	ISO/IEC 17025	Yes
Intertek Genalysis, Perth, Australia	Pre-2010	Primary analytical laboratory	ISO/IEC 17025	Yes
Intertek Genalysis, Walvis Bay, Namibia	November 2003 to August 2013	Sample preparation	Not Accredited	Yes
Intertek Genalysis, Johannesburg, South Africa	November 2003 to August 2013	Primary analytical laboratory	ISO/IEC 17025	Yes
ALS Global, Swakopmund, Namibia	December 2005 to date	Sample preparation	Not accredited	Yes
ALS Global, Johannesburg, South Africa	December 2005 to date	Primary analytical laboratory	ISO/IEC 17025	Yes
Bureau Veritas, Walvis Bay, Namibia	September 2012 to September 2016	Umpire laboratory	ISO/IEC 17025	Yes
ALS Minerals, Vancouver, Canada	December 2016 to date	Umpire laboratory	ISO/IEC 17025	Yes
Otjikoto mine laboratory	January 2018	Umpire laboratory	Not accredited	No

Later, the preparation method for gold and multielement analysis was modified such that:

- Each sample is dried and crushed to -2 mm;
- A maximum of 1.2 kg sample is riffle split and pulverized in an LM2 JC2000 bowl.
- The prepared pulp sample is then screened using a plastic screen to obtain the +106 and -106 size fractions;
- The +106 size fraction is packaged with the plastic mesh for fire assay, as this step mitigates the possibility of coarse gold becoming stuck in a regular mesh screen;
- 250 g of the -106 size fraction is riffle split and packaged for shipping to the analytical laboratory.

Sample preparation for LECO analysis consisted of the following. The pulped sample was weighed out and placed in a ceramic dish or boat. An accelerant was added to act as a flux and improve fluidity and oxidation of the carbon and sulphur. Heating was accomplished in a high frequency induction furnace as this provides both speed and accuracy. Any sulphur or carbon was converted to SO_2 or CO_2, respectively. These gases absorb infrared radiation at specific wavelengths which is proportional to the concentration of the carbon or sulphur in the sample. Any water in the sample was removed by passing the gases produced through magnesium perchlorate as water interferes with the analysis. Standards of known carbon or sulphur concentration were used for calibration.

11.4.2 Gold Analyses

Metallic Versus Fire Assay Comparisons

During the initial phase of exploration of the Otjikoto deposit, the presence of coarse particulate gold was noted. In order to resolve the high nugget effect within the sampling results, discussions were held with numerous analytical laboratories regarding the optimal assay procedure to accurately establish the gold content of the sample material. Samples from inside and outside the mineralized zone were selected and an orientation screen fire assay program at SGS Lakefield (referred to as 'pulps' and 'metallics') was undertaken in 2011.

An orientation batch of 128 RC samples was submitted to confirm the applicability of this method. The results of the orientation samples found that 39.4% of the gold occurs in the +106 µm and 60.6% in the -106 µm size fraction (Avdale, 2004) and that one screen fire assay is equivalent to 14 individual fire assays (Lytle, et al., 2013).

This confirmed that significant coarse gold is present in the deposit and the screen fire assay methodology provides a more representative analysis of the gold content of the samples.

In 2012, a separate internal study was completed to look into the viability (operationally) of using a straight fire assay versus the screen fire methodology. Screen fire assays consistently reported higher grade in the 0.4–3.5 g/t gold range but fire assays are similar, to slightly higher, in the >3.5 g/t gold range. This had implications for defining ore-waste boundaries around the cut-off range.

In 2013, a similar study was conducted based on duplicate fire and metallic screen assays for the majority of the Wolfshag samples submitted for analysis in 2013. The study concluded that <9 g/t gold fire assay underreports the gold in a sample relative to the metallic screen assay procedure, except in the 1.5–3.0 g/t range.

Analytical Methods

The analytical method consisted of:

- +106 µm size fraction assayed (fire assay) to completion (typically 10–50 g);
- -106 µm size fraction initially split with a rotary splitter; a riffle splitter is currently used;
- Two -106 µm size fraction sub-samples are fire assayed (50 g);
- Resultant gold grades combined using weighted (mass) calculation.

Gold grades were determined using a standard fire assay methodology with either atomic absorption (AA) for samples that assayed ≤10 g/t Au or were reassayed with a gravimetric finish if the sample assayed ≥10 g/t Au. Assay method codes for each certificate of analysis are preserved in the database.

Sample material submitted to Intertek Genalysis and ALS Minerals closely followed this method, except that two 25 g aliquots (GEN1 and GEN2) from the -106 µm fraction were combined for each sample to determine the gold grade of the -106 µm fraction. The equation is:

$$\text{Au (g/t)} = \frac{(\text{Au (g/t) +106 µm x weight of +106µm}) + (\text{weighted average of two Au (g/t) -106 µm x weight of -106 µm})}{\text{total weight of sample after pulverizing}}$$

11.4.3 Multi-Element Analyses

Core and RC samples were sent for multi-element analysis. The most frequently used methods include inductively-coupled-plasma mass-spectroscopy (ICP-MS), inductively-coupled-plasma atomic-emission-spectroscopy (ICP-AES) and X-ray fluorescence (XRF) for the determination of precious metal, base metals and multi-element content.

Typically, the analytical packages include the following elements: Au, Pd, Pt, Ag, Al, Ba, Cd, Co, Cu, K, Mg, Mo, Ni, P, S, Sb, Sn, Te, V, W, Zn and Zr.

The analyses were completed at Intertek Genalysis in Perth and ALS Minerals in Vancouver.

11.4.4 LECO Analyses

Sulphur analysis was performed on select groups of samples using either a LECO or similar carbon and sulphur analyzer.

The LECO and carbon and sulphur analyses were completed at Intertek Genalysis in Perth and ALS Minerals in Vancouver.

11.5 Quality Assurance and Quality Control

11.5.1 Density

A QA/QC program for the SG measurements was initiated in 2012 with the use of borosilicate glass cylinders of known SG as reference standards and the monitoring and control of the immersion bath temperature. The bath temperature was kept at approximately 22°C, as per ASTM C97-96 and ASTM C914-95. The standards were measured every ~20 samples. The SG of the standards was plotted regularly as a check on the quality of the overall testing procedures.

11.5.2 Analytical QA/QC

Introduction

QA/QC procedures have been in place since the start of the Project and are documented through procedure manuals. Samples used include blanks, certified reference materials (CRMs) and duplicates. In addition to QA/QC insertion by B2Gold and predecessors, the analytical laboratories also provide QA/QC data with the sample analytical certificates.

Each sample analytical certificate was vetted by the database manager and failures were recorded in a table of failures. This table lists the results of the QA/QC, any follow-up action and the final decision to include or not include the sample analytical certificate results in resource estimation. All sample analytical certificate results are retained in the database; however, not all sample analytical certificate results can support Mineral Resource estimates. Laboratories are requested to review and/or re-run submittals until the submittal passes QA/QC.

Monthly QA/QC reports are prepared documenting the laboratory performance

Blanks

Dolomite aggregate (50 mm fragments) from a local source in Otjiwarongo has been used as the blank material for the Project. Blanks are inserted at 1:20 rate.

The failure threshold is deemed to be 10 x the detection limit, i.e. >100 ppb. To date, the contamination rate is not an issue with any of the primary analytical laboratories.

Initial blank failures mostly correlate with blank “wash” samples inserted after samples with visible gold to minimize the potential carry-over of gold into the next samples. In some cases, the failure pertained to a sample mix up, in which case the error was examined and rectified.

Certified Reference Materials

Three CRM standard groups, low-, medium- and high-grade, are used to monitor laboratory precision and accuracy. The standards were purchased from OREAS, Australia, and CDN Resource Laboratories, Canada.

The CRM insertion rate was based on the fusion oven charge:

- Intertek Genalysis: 1:20;
- ALS Minerals: 1:38.

Prior to 2012, the failure rate was based on ± 20% of the expected mean value (EV) of the CRM and warning at 10% of EV. In 2012, this was changed to the greater of ±10% or ± 3 standard deviations (3SD) of the CRM mean. Warning limits were set at ±2SD, with failure based on two or three consecutive 2SD CRM warnings falling on the same side of the warning limit, interpreted to indicated that a laboratory bias may be present.

Duplicates

Field duplicate samples were collected at a frequency of 1:20.

Commencing in 2012, in addition to the field duplicates, preparation and pulp duplicates were requested to ensure precision was monitored after all preparation phases.

The overall precision of the various laboratories is poor, about 20% for pulp duplicates. This is due to the high nugget component of the gold mineralization.

11.5.3 Resampling

A review of sample preparation procedures over time that was completed in 2016 indicated that in some sample batches, coarse material was being left in the minus-fraction submitted for assay. As a result, in late 2016 and early 2017, a re-sampling and re-assaying program was undertaken, consisting of about 14,000 remnant half-core samples. The re-assay data replaced the original analyses in the database.

11.5.4 Check Assays

Current quarterly check assay programs include both coarse reject and minus fraction sample umpires and reject and pulp granulometry evaluation.

11.6 Databases

11.6.1 History

Prior to 2004, the database and QA/QC management was performed by an external consulting group.

From 2004 to 2012 the database management was under the supervision of Dr. Stephen Frindt. The database in use was the Standardized Approach Borehole Log Evaluation (Sable). Dr. Frindt was in direct consultation with the Sable software developers. The Sable database provided an export format which could be directly exported to resource modelling software.

During 2012, all Sable data were moved over to a Microsoft Access database. The Access database was checked against the Sable database for errors in conversion. The original Sable database was preserved for reference and all original Sable tables were retained in the Access database.

11.6.2 Data Upload

Logs

Prior to 2012, all logged data was captured on paper and entered by the geologist and/or the database personnel into the Sable Sputnik remote data entry module. Once entered into Sputnik, the field data was checked and verified by the logging geologist and signed-off on prior to entry into the database by the database manager. Within Sable, a series of checks/data verifications were performed which examined the data for issues such as overlapping samples. A report was produced by Sable and any errors were identified, addressed and corrected in the original data and the final database.

From 2012–2018, all logged data have been entered into Excel templates by data entry personnel. Inputs in various Excel columns are locked in a “data validation” format which only allowed correct coding to be entered within the Excel spreadsheet. The entered data are then printed out and a 100% check is done against the original logged data or other original information (e.g. downhole survey data). A further check is completed by the logging geologist prior to the data being entered into the Access database by the database manager.

Downhole Survey Data

Downhole survey data were received as hand-written pieces of paper from the drill foremen, or as a digital download from the Reflex Ez-Shot instrument. In the case of the hand-written information these data were manually entered into an Excel file and checked. As a further verification, the data were occasionally checked against the actual instrument data in the field and downloaded from the instrument (Reflex Ez-shot) and checked against the written information. Data downloaded from the survey instrument were loaded directly into the database. Obvious errors in drill hole downhole survey data were flagged as do-not-use, "N", in the database. As an additional check, a plot was completed of drill holes and any sudden jogs in the drill hole traces were reviewed for validity.

Collar Survey Data

Collar survey data received from the professional surveyors were loaded directly into the database and the original copies retained and kept with each drill hole file. Temporary field GPS drill collar coordinate data were removed from the database and replaced with the final survey data.

Assay Data

Prior to 2012, all assay data were received from the laboratories in the form of csv files and directly imported into the Sable database.

From 2012–2018, csv files received from the laboratories required a reformat prior to importation into Access. The reformatting is completed by a macro(s), reducing the chance of human error. The original analytical information is not tampered with and the raw data are imported into the database. The original and digital assay certificates are retained in separate files for reference and for verification against the database information.

As a quick review for obvious errors, a visual check of each certificate of analysis is completed prior to importing any assay data into the database.

In all cases of data falling below the detection limit, the values are reported as half the detection limit (e.g. for gold <0.01 g/t is reported as 0.005).

11.6.3 Backups

A master of the databases is maintained by the database manager. The database is copied and backed up on the B2Gold servers in Otjiwarongo and Vancouver, Canada on a regular basis.

Original data are very well organized with all original documentation kept in individual drill hole files, which include all logged information, original assay certificates, and survey information.

11.7 Sample Security

Only authorized drill and B2Gold or predecessor personnel were allowed at the drilling sites.

The Otjiwarongo core yard is surrounded by a security fence with the office and complex alarmed and monitored by a local independent security firm.

Unloading of the core tube was controlled by the driller and site geologists. Checks were done at site to ensure all core was placed in the boxes correctly prior to transport to the logging facility. The drill geologist and senior personnel signed-off on the detailed daily drill reports at site and took possession of the core at that time.

Core was transported directly to the Otjiwarongo core yard by B2Gold or predecessor personnel.

Sample shipments are currently controlled by B2Gold exploration operations and database managers. Transportation to the laboratory is done by an independent bonded courier company (ACT Logistics) with appropriate sign-off documentation accompanying each shipment at both shipping and receiving. Sample shipment damage, if any, was noted by the laboratory upon receipt, and B2Gold personnel were immediately notified. Additionally, the laboratory immediately notifies B2Gold of any discrepancies between sample submittal information, shipment weights and samples received by the laboratory. Any issues are addressed before preparation of the samples commences.

11.8 Sample Storage

Reference RC chip samples and split rejects are retained in a secure storage facility in Otjiwarongo or at the Otjikoto mine site. Additional laboratory coarse rejects are retained in secure storage facilities in Johannesburg, South Africa and Walvis Bay, Namibia.

All logged and sampled drill core is kept in the core yard or secure storage facilities in Otjiwarongo or at the Otjikoto mine site. Representative core intervals may be missing for portions of drill holes used for metallurgical and geotechnical testing.

11.9 Comments on Sample Preparation, Analyses and Security

In the opinion of the QP, sample preparation, security, analytical procedures, QA/QC insertion rates, data validation steps, and core and sample storage meet or exceed industry standards. The data are acceptable to support Mineral Resource and Mineral Reserve estimates and can be used in mine planning.

12.0 DATA VERIFICATION

12.1 Internal Data Verification

The internal checks undertaken by database staff prior to, and as part of, data upload into the Project database are described in Section 11.7.2.

During numerous site visits from 2011 to 2018, the QP personally inspected:

- RC drilling and sampling procedures at the rig during drilling;
- Diamond drilling at various drills and the core retrieval and handling procedures;
- RC sample splitting procedures;
- Core metre and low line marking and geotechnical assessment procedures;
- Core logging procedures, protocols and geological control;
- Core photography procedures and quality;
- Core cutting and sampling procedures;
- Core storage and security;
- SG measurement and SG QA/QC procedures;
- Sample shipping and chain of custody procedures;
- Data entry and data verification procedures;
- Spot inspections of data filing and organization;
- Database management procedures;
- Accuracy of geological interpretations and grade interpretations on section and plan, and in geological models.

Laboratory visits to the preparation laboratory are done unannounced on a monthly basis to monitor:

- Sample receiving and laboratory information management system (LIMS) system;
- Sample preparation (drying, crushing, pulverizing and splitting etc.);
- Quality control (instrument maintenance, instrument calibration and control samples, quality control charts etc.).

For the analytical laboratory, an independent consultant is also contracted to do unannounced monthly visits to check:

- Operating conditions;

- Sample blending prior to analysis;
- Overall view of analytical procedures from start to finish;
- Any other issues as per instructions.

Monthly QA/QC reports are prepared by designated database managers, and include:

- Documentation of the vetting of every certificate of analysis and actions taken as recorded in the various tables of failure;
- Tracking of the laboratory performance, through charting of blank, CRM, and field, preparation and pulp duplicates;
- Verification of primary laboratory quality (biases) through comparison of external umpire laboratory data.

Prior to conducting Mineral Resource estimates, the modellers and estimators undertake the following checks:

- Geological interpretation of the model wireframes including oxide surfaces, lithology model, mineralization wireframes on section and plan;
- Exploratory data analysis to determine capping levels, composite lengths and geologic model tagging;
- Comparison of grade in drill holes and adjacent blocks in model;
- Comparison of final block model resource with previous resource models;
- Comparison of final grade estimation model with different techniques of estimation.

12.2 External Data Verification

A number of independent technical reports were prepared on the Project, prior to B2Gold obtaining an interest in the Project. These are listed in Section 2.7. No material issues with the data were identified in these reports.

B2Gold prepared a technical report using Form 43-101F1 in 2013, detailing the results of a completed 2012 feasibility study. Investigations and data validation in support of the feasibility study identified no material issues with the information available at the time.

12.3 Comments on Data Verification

The checks performed by B2Gold staff, including the continuous QA/QC checks conducted by the database administrator and Project geologists on the assay data and geological data, plus the unannounced visits to the preparation and assay laboratories are in line with or above industry standards for data verification. These checks have identified no material issues with the data or the Project database.

The 2013 technical report included a review of data verification. No material issues with the data or the Project database were identified at that time.

As part of site visits from 2011–2018, the QP has personally verified a portion of the data supporting the estimates, including: RC drilling and sampling procedures at the rig during drilling; core drilling at various drills and the core retrieval and handling procedures; core logging and markup procedures and protocols; core photography procedures and quality; core cutting and sampling procedures; core storage and security; SG measurement and SG QA/QC procedures; sample shipping and chain of custody procedures; data entry and data verification procedures; and accuracy of geological interpretations and grade interpretations on section and plan, and in geological models.

As a result of the data verification, the QP concludes that the Project data and database are acceptable for use in Mineral Resource and Mineral Reserve estimation, and can be used to support mine planning.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

Metallurgical testwork was carried out in support of plant design to treat material from the Otjikoto deposit. Additional testwork conducted on mineralization from the Wolfshag deposit indicated that no major plant design changes were warranted to allow for treatment of this ore. The following subsections provide a summary of the metallurgical testwork performed and the projected recovery estimates.

13.2 Metallurgical Testwork

13.2.1 Testwork Completed on Otjikoto Deposit

Testwork completed on the Otjikoto deposit is summarized in Table 13-1. The four composite types tested were:

- XR1: oxide;
- XR2: pyrite + marcasite-dominant mineralization;
- XR3: pyrrhotite-dominant mineralization;
- XR4: mixture of XR2 and XR3 sulphide mineralization.

13.2.2 Testwork Completed on Wolfshag Deposit

Testwork performed on samples from the Wolfshag deposit is summarized in Table 13-2. Initial work in 2012 consisted of bottle roll tests. A more comprehensive testwork program was conducted in 2014.

Wolfshag Samples

In 2014, composites were generated from drill core for the following metallurgical tests:

- Comminution;
- Metallurgical recovery;
- Recovery variability.

The majority of test samples were collected from within the revised March 2014 proposed ‘optimum’ pit shell; not the highest NPV pit shell.

Table 13-1: Feasibility Study Metallurgical Testwork Summary, Otjikoto

Laboratory	Testwork Conducted
Jenike and Johanson	Particle density determination, compressibility tests, loose and compacted bulk density tests, flow function tests, wall friction determination, critical chute angle determination.
SGS Lakefield	JK dropweight; Bond low-energy impact tests; Bond rod mill grindability tests; Bond ball mill grindability tests; Bond abrasion tests; SMC tests; comprehensive chemical analysis; gold deportment study; QEMSCAN; sample preparation and head analysis; gravity concentration; intensive cyanidation of gravity concentrate; direct cyanidation of gravity tails at 100, 150, and 200 mesh; direct cyanidation of gravity tails CIL/CIP tests on gravity tails at the optimum grind size; bulk cyanidation on bulk tails at the optimum grind size to produce feed for cyanide destruction testwork; thickener and tailings characterization testwork; leach and carbon adsorption kinetic tests; determination of carbon-loading isotherms; modelling to simulate a full-scale CIP circuit; batch SO_2/air cyanide destruction tests; continuous SO_2/air cyanide destruction tests; overall gold balance; solution and solids analysis; modified acid-base accounting; net acid generation testing; deionized water testing; TCLP testing; whole rock analyses; SG testing; determination of particle size distribution; settling tests; drained settling tests; standard Proctor tests; determination of Atterberg limits; air drying tests
Rocklab	Unconfined (uniaxial) compressive tests with elastic modulus
CANMET	Leach optimization testwork on XR3 to evaluate: inclusion of a pre-treatment stage at 0.5 h, 4 h, 7 h, 8 h; lead nitrate addition at 50 g/t, 100 g/t and 250 g/t; cyanide concentration at 200 ppm, 300 ppm, 400 ppm, 500 ppm; pre-treatment pH at 8 and 10.5; oxygen addition instead of air. Leach optimization testwork on XR1 and XR2 based on the optimum leach conditions for XR3 to evaluate cyanide concentration at 200 ppm, 300 ppm, 400 ppm, 500 ppm.
FLS Knelson	E-GRG testwork; intensive cyanidation of gravity concentrates
FLS	Bench-scale sedimentation tests including: flocculant screening; determination of optimum feed solids dilution; settling tests; thickener underflow rheology measurements, gravity circuit modelling studies.
AMEC	Rowe cell consolidation with hydraulic conductivity; triaxial tests.

Table 13-2: Metallurgical Testwork Summary, Wolfshag

Laboratory	Testwork Conducted
ALS Minerals	Bottle roll tests
SGS Lakefield	Comminution (JKTech drop weight, SMC, Bond ball, Bond rod, Bond low-energy impact, Bond abrasion, unconfined compressive strength), grind circuit modelling. Bulk mineralogy (X-ray diffraction (XRD), quantitative evaluation of minerals by scanning electron microscopy (QEMSCAN)). Gold deportment (mineral speciation, grain size, liberation, and association). Extended-gravity recoverable gold. Gravity separation and leaching. Cyanide destruction. Rheology. Tailings characterization
FLSmidth	Bond low-energy impact test

A total of 2,258 kg of Wolfshag zone composite test samples were shipped to SGS Lakefield in Ontario, Canada, for testing.

Master metallurgical composites “WA composite” and “WB composite” were collected to provide representative samples of the Wolfshag WA and WB shoots respectively. a third master composite, “M2”, was assembled from half-core, but as a combined WA and WB shoot sample rather than an individual Wolfshag shoot. The composite contained more WA than WB samples since WA is the dominant shoot in the resource.

Sixteen recovery variability samples were compiled to provide test material representing different gold grade ranges, shoots, mineralization and geographic distribution. Hanging wall and footwall dilution was commonly added to most of the composite samples. Two oxidized mineralized shoot samples, OX1 and OX2, were collected from the north end of the zone. These are lower grade, reflecting the lower overall gold content in the lower shoots in the northern part of the zone. Samples with minor oxide component were included in several variability composites and in the master composites to reflect presence of oxidized fault zones and their area of influence within the zone. One sample, “Clay 1”, provided a test sample with high clay content. The sample represents an upper end member for clay content with the clay a combination of clay gouge and chalky (clay-calcite) shears.

Six holes were drilled to provide material for comminution testwork. The holes were drilled as intermediate (12.5 m centres) holes rather than twins in order to provide additional geological information for the resource model.

Two “bulk” commination PQ whole core samples were compiled, and the core shipped intact in core boxes to SGS Lakefield. The first sample was considered to be representative of the average mineralization in the WA shoot, while the second composite was albitite dominant and considered more representative of a lower-grade interval of the WA shoot.

Comminution variability composites were selected from the drilled HQ core intervals and the whole core shipped to SGS Lakefield in plastic pails. Four composite samples were collected from the HQ core to provide a range of characteristics to test for comminution variability over a limited geographic distribution. These composites were collected from the WA shoot. Overall the samples represent visually moderate and lower-grade portions of the WA shoot. A fifth sample was added of “high-grade” material from a combination of the WA and WB shoot. All samples contain internal and 0.5 to 1 m of hanging wall and footwall dilution, commonly consisting of either albitite or marble.

Comminution

JKTech and SMC Testing

JK drop-weight tests were performed on the two PQ core comminution composites. The data was interpreted by Contract Support Services, the North American agent for JKTech.

In addition to the JK drop-weight test, an SMC test was performed on the two PQ core comminution composites, as well as on the five variability samples. The SMC test is an abbreviated version of the standard JK drop-weight test performed on rocks from a single size fraction (-31.5/+26.5 mm in this case).

The Comm-1 sample was characterized as soft with respect to both resistance to impact (A × b) and abrasion breakage (t_a), while sample Comm-2 was categorized as medium for these two parameters. The A x b from the variability samples ranged from 48.4 to 92.9, which placed the samples in the soft to medium range of hardness. The relative specific gravity varied from 2.66 to 2.83.

Bond Tests

The Bond low-energy impact test determines the Bond crusher work index (CWI), used to calculate power requirements for crusher sizing. The test was performed on the two PQ core comminution composites. Between 19 to 20 rock specimens in the -75/+50 mm size fraction were shipped to FLSmidth for the completion of the Bond low-energy impact test. With a CWI value of 6.3 and 9.1 kWh/t, the Comm-1 and Comm-2 composites were categorized as soft and medium, respectively, which is coherent with the drop-weight test results.

All seven comminution samples were submitted for the Bond rod mill test at 14 mesh (1,180 µm). All the samples were characterized as very soft, with the exception of samples Comm-2 and Comm-VAR 1, which fell in the soft category with RWI's of 11.7 and 11.6 kWh/t, respectively.

Bond ball mill grindability tests were performed at 150 mesh of grind (106 µm) on all seven comminution samples, plus the Main Composite. All the samples were characterized as very soft, with the exception of samples Comm-2 and Comm-VAR 1, which fell in the soft category with Ball mill Work Indices (BWI) of 10.8 and 11.7 kWh/t, respectively.

All seven comminution samples were submitted for Bond abrasion testing. The abrasion indices (Ai) ranged from 0.149 g up to 0.239 g for all samples tested, which placed the Wolfshag samples in the medium range of abrasiveness.

Unconfined Compressive Strength Test

Unconfined compressive strength (UCS) testing was performed on the two comminution composites. For each composite, between four to five full core pieces were submitted for testing. The testwork was completed at the SGS Beckley site, located in West Virginia, United States. During the tests, axial force, axial deformation, and circumferential deformation variables were recorded to generate UCS along with Young's Modulus. The UCS averaged 78.4 and 60.1 MPa, for samples Comm-1 and Comm-2, respectively. The two samples were categorized as soft with respect to UCS.

Grinding Circuit Design

A simulation program was completed by SGS Lakefield to estimate the throughput rate of the Wolfshag samples using the grinding circuit designed for the Otjikoto deposit.

It was requested to perform the simulations in both SAB (semi-autogenous grind (SAG) mill followed by a ball mill) and SABC (SAB with a pebble crusher) configurations with a SAG mill feed F_{80} of 150 mm. The product size target was a P_{80} of 74 µm for both grinding circuit configurations.

The simulations were performed on the average and 85th percentile results from the Otjikoto deposit, as well as on the seven individual samples from the Wolfshag deposit, along with its average. An average CWI of 7.7 kWh/t was assumed for the five Wolfshag variability samples based on results of the crushing work indices for the two Wolfshag PQ core composites.

Modelling assumed that the SAG mill would be equipped with a trommel and the trommel undersize would feed a vibratory screen, while the trommel oversize would feed the pebble crusher. The classification screen oversize would be returned to the SAG mill while the screen undersize would feed the ball mill circuit. A trommel aperture of 13 mm was used for the simulations and aperture of 4 mm was simulated for the classification screen.

The evaluation was carried out using the JKSimMet software, along with Bond's third theory of comminution. All the simulations were performed with a SAG mill charge level of about 25%, which is the average in the JKSimMet model database, and is considered optimal for throughput. The power requirement to the ball mill circuit was calculated using the RWI, BWI, and the third theory of comminution, after correction for the fines in the SAG product with the phantom cyclone technique. The operating power requirement for the pebble crusher was calculated using the CWI and the third theory of comminution.

The ball mill power requirements were reported at the motor input. The average crusher power requirements, calculated using the Bond crushing work index, were reported at the motor input. Bond's equation reports the crusher power at the motor output, and thus a correction factor of 0.95 was applied for drive losses. The total gross power was obtained by adding the power requirements for the pebble crushing, SAG milling and ball milling. The total specific power requirement was calculated by dividing the gross power requirement by the total feed rate.

For the variability simulations, a constant ball charge of 12% was assumed in the SAG mill and the SAG mill speed was varied to maximize the throughput rate. B2Gold indicated that the SAG mill speed can be varied from 50% to 82% of its critical speed. The ball mill power requirement was adjusted by varying the mill load to achieve a P_{80} of 74 µm.

The throughput rate was maximized by increasing the SAG mill speed up to 82% of the critical speed. The SAG ball charge was fixed at 12%. The maximum throughput rate was limited to 381 t/h (3.0 Mt/a), or 25% above the original plant design target (2.4 Mt/a). The final grind P_{80} was fixed at 74 µm and the ball mill power allowed to vary since the ball mill power requirement would be much lower in a SAB configuration compared to SABC configuration (finer T_{80} and lower throughput rate). The maximum throughput rate of 381 t/h was achieved for all the samples simulated. The average ball mill power draw to achieve a P_{80} of 74 µm was 1,941 kW, at a throughput rate of 381 t/h.

An additional SAB simulation was done at the request of B2Gold using the hardest sample from the Wolfshag deposit (Comm-VAR 1). The simulation was performed with a SAG ball charge of 15% and a speed of 78% of the critical speed, without throughput limitation. A maximum theoretical throughput rate of 428 t/h (3.4 Mt/a) was reached and 3,370 kW were required at the ball mill to achieve the target grind size.

The same exercise was performed with the SABC circuit. The throughput rate was maximized by increasing the SAG mill speed up to 82% of the critical speed. The SAG ball charge was fixed at 12%. The maximum throughput rate was limited to 475 t/h (3.7 Mt/a), or 25% above the target (3.0 Mt/a). The final grind P_{80} was fixed at 74 µm and the ball mill power requirement was calculated.

As for the SAB simulations, the maximum throughput rate of 475 t/h was achieved for all the samples. The average ball mill power draw to achieve a P_{80} of 74 µm was 2,574 kW.

An additional SAB simulation was done using sample Comm-VAR 1. The simulation was performed with a SAG ball charge of 15% and a mill speed of 78% of the critical speed, without throughput limitation. A maximum theoretical throughput rate of 507 t/h (4.0 Mt/a) was achieved. The circuit was ball mill limited and a final P_{80} of 77 µm could only be achieved.

The SAG-specific power requirements ranged from 8.1 to 9.5 kWh/t for the SAB, and from 6.7 to 7.8 kWh/t for the SABC configuration. The ball mill specific power requirements for a P_{80} of 74 µm ranged from 3.5 to 7.6 kWh/t for the SAB, and 3.8 to 8.0 kWh/t for the SABC configuration. The overall specific power requirements ranged from 12.0 to 16.8 kWh/t for the SAB, and 10.9 to 15.6 kWh/t for the SABC configuration.

Mineralogy

August 2014

One sample, identified as Main Comp, was submitted for mineralogical examination by SGS Lakefield, which included bulk mineralogy, and gold deportment (mineral speciation, grain size, liberation, and association).

The sample was dominantly composed of plagioclase (38%), with moderate ankerite (19%), calcite (18%), and quartz (14%), with minor amounts of pyrite (4%), Fe-oxides (2%), and trace amounts (<2%) of chlorites/clays and other minerals.

The sample was preconcentrated by heavy liquid separation (HLS) at an SG of 3.1 to obtain a sink and float fraction. The sink fraction and a ~60 g aliquot of HLS float, were submitted for superpanning (SP) to obtain several SP fractions. Gold was concentrated in the HLS sink fractions, accounting for 96% of the total gold assay, with 7% of the total sample mass, respectively. The majority of gold in the HLS sink fraction was further concentrated in the SP tip and SP sulphides fractions, which account for 71% of the total gold assay, with 3% of the total sample mass, indicating a highly-efficient gravity recovery.

Gold and silver minerals were identified using an optical microscope and scanning electron microprobe energy dispersive spectroscopy (SEM-EDS) analysis. The major gold mineral is native gold (Au >75%, Ag <25%), with few silver/antimony (allargentum [$Ag_{1-x}Sb_x$]), and silver/tellurium (hessite [Ag_2Te] and stutzite [Ag_5Te_3]) minerals. Unknown alloys of Ag–Pb–Te, Ag–Te, and Ag–Te–Cu were also identified.

A total of 108 gold grains were identified using optical microscopy and SEM-EDS on polished sections of the SP product, including 47 liberated (with an average size of

27.3 µm), 20 exposed (with an average size of 4.6 µm), and 41 locked (with an average size of 8.5 µm).

By frequency, 78% of all gold grains are ≤10 µm in size, 13% are between 10 and 30 µm, and 9% are >30 µm, while by surface area, these account for 0.7%, 2.6%, and 97%, respectively. Of the >30 µm gold grains, the coarsest grains (over 100 µm) account for only 3.7% by frequency, but >85% by surface area.

October 2014

A total of 19 samples were examined by SGS Lakefield; 16 were recovery variability samples and three were metallurgical composites; Main composite, WA composite and WB composite.

Head analysis, of all the samples, performed in triplicate, showed the averages of the three determinations ranged from 2.54 g/t Au (WB Composite) to 6.46 g/t Au (WA Composite). The Main composite head grade was 3.75 g/t Au. The recovery variability samples head grades ranged from 0.61 g/t Au (WB2) to 12.3 g/t Au (WA8). The metallurgical composites prepared under the first phase of the project head grades were generally lower; they ranged from 1.64 g/t Au (XR1) to 1.75 g/t Au (XR3). The variability samples from this phase ranged from 0.31 g/t Au to 9.8 g/t Au.

The sulphide content varied significantly in the recovery variability samples, from <0.05% in OX2 to 3% in WB8. The sulphide content of the Main composite, WA composite and WB composite were 2.22%, 1.80% and 1.69% respectively.

A deportment study on the Main composite confirmed that greater than 85% of the gold grains (based on surface area) are coarser than 100 µm. The major gold mineral was native gold.

An extended-gravity recoverable gold (E-GRG) test was performed on each of the metallurgical composites. Over 80% of the gold was found to be gravity recoverable, at a grind size of 80% passing 83 µm to 93 µm.

All of the samples were subjected to gravity separation at a grind size of 80% passing 74 µm. The gravity concentrates were intensively leached, and the tailings were leached under standard conditions. The overall gold recovery and extraction for the metallurgical recovery composites was very similar, the lowest value was 98.7% and the highest 99.0%. The range of recovery variability results was slightly larger; the lowest value was 96.5% and the highest 99.3%.

Cyanide destruction testwork was also undertaken on a sample of Main Composite. Using the SO_2/air process, it was determined that the pulp tested was amenable to cyanide destruction. Low levels of SO_2, i.e. equivalent to 3 g SO_2 per g of weak acid dissociable cyanide (CN_{WAD}) or 0.18 g SO_2 per litre of feed pulp and no additional copper reduced the CN_{WAD} in the pulp to 0.1 mg/L. This level was significantly less than the 10 mg/L target.

Two samples were submitted for rheology testwork, one was a leached pulp containing clay (Clay 1) and the other was a sample of the Main Composite that had been subjected to cyanide destruction (CND). The critical solids density (CSD) is the solids density value range above which a small increase of the solids density causes a significant decrease of the flowability of the slurry. The CSD value range is also predictive of the maximum underflow solids density achievable in a commercial thickener. Practically, the CSD delineates the underflow density and pumpability ranges achievable in practice, with reasonable friction pressure losses for economically-feasible operation.

The CSD of Clay 1 CN 42 Pulp thickened sample was approximately 54% w/w solids, displaying a yield stress of 42 Pa under unsheared flow conditions and 10 Pa under sheared (i.e. post constant shearing) conditions. Based on the yield stress responses, the “CIP/CIL pre-optimized feed solids density” was ~47% w/w solids which displayed ~10 Pa yield stress; the CIP/CIL pre-optimized feed solids density is the probable target solids density for CIP/CIL feed pulps that results in a yield stress that is less than 10 Pa. The 10 Pa yield stress is considered as an acceptable upper-limit for efficient mass transfer in the leaching and adsorption process.

It was recommended that the gold adsorption kinetics and equilibrium testing (followed by subsequent modelling) should be conducted at ~47.0% and 42.5% w/w solids, which corresponded to approximately 10 and 4 Pa yield stress cut-off values.

Results

Overall, the metallurgical testwork results indicated that the Wolfshag deposit had similar metallurgical characteristics to Otjikoto.

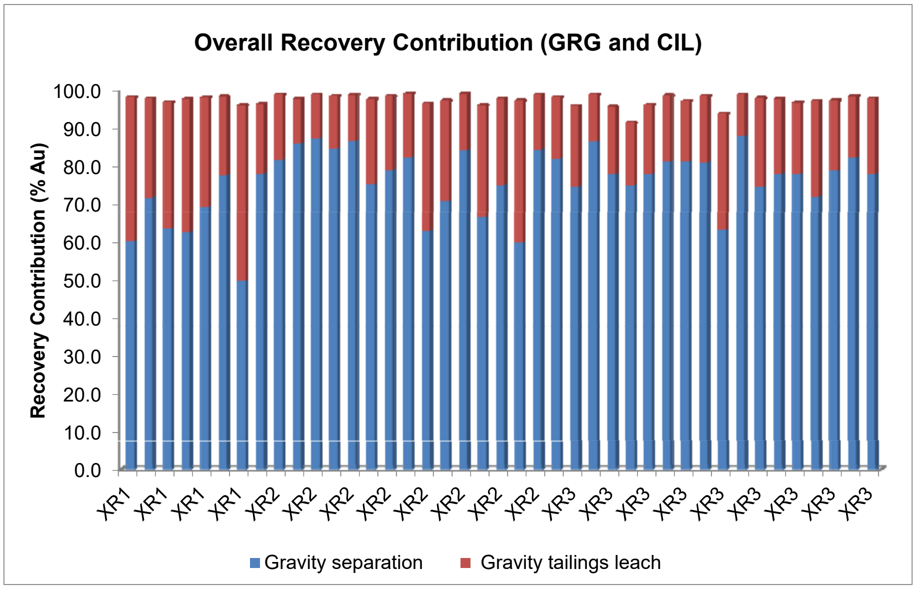
13.3 Recovery Estimates

13.3.1 Otjikoto

Average life-of-mine gold recoveries were estimated to be 95.6% based on the initial testwork. The contribution of the total GRG recovery (gravity and intensive dissolution) and leach recovery to the overall recovery is shown in Figure 13-1.

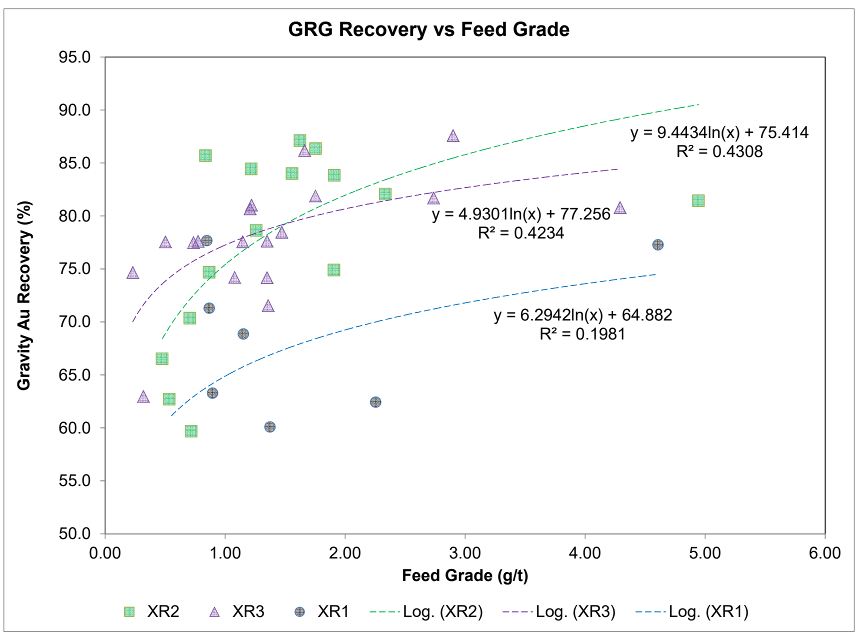
Figure 13-2 shows the relationships between sample head grade and GRG recovery. It is clear that a lot of scatter or variability exists, and that poor correlations are observed, as reflected in the R2 of the correlations. It therefore does not seem prudent to link gravity recovery estimates to feed grade, given that the average GRG contribution is 75%, and that a poor fit is observed between gravity recovery and feed grade.

Figure 13-1: Overall Recovery Forecast, Otjikoto (from variability testwork)



Note: Figure prepared by B2Gold, 2012.

Figure 13-2: Total GRG Recovery as a Function of Head Grade for Otjikoto (from variability testwork)



Note: Figure prepared by B2Gold, 2012.

In order to provide an estimation of plant recovery based on the variability samples and testing that was performed at SGS Lakefield, a statistical analysis of the testwork results was conducted.

Statistical Analysis of Variability Test Work Recovery Using Monte Carlo

Monte Carlo probability distributions (derived from variability test results) for the overall recovery achieved in the variability tests were prepared. This analysis has only been performed for the XR1, XR2 and XR3 test results as the three tests conducted on the XR2-3 (XR4) ore samples does not provide sufficient data to provide any meaningful results from a statistical analysis. Figure 13-3 to Figure 13-5 show the probability distributions for the XR1, XR2 and XR3 test results. Figure 13-6 is the resulting estimated full-scale plant recovery distribution.

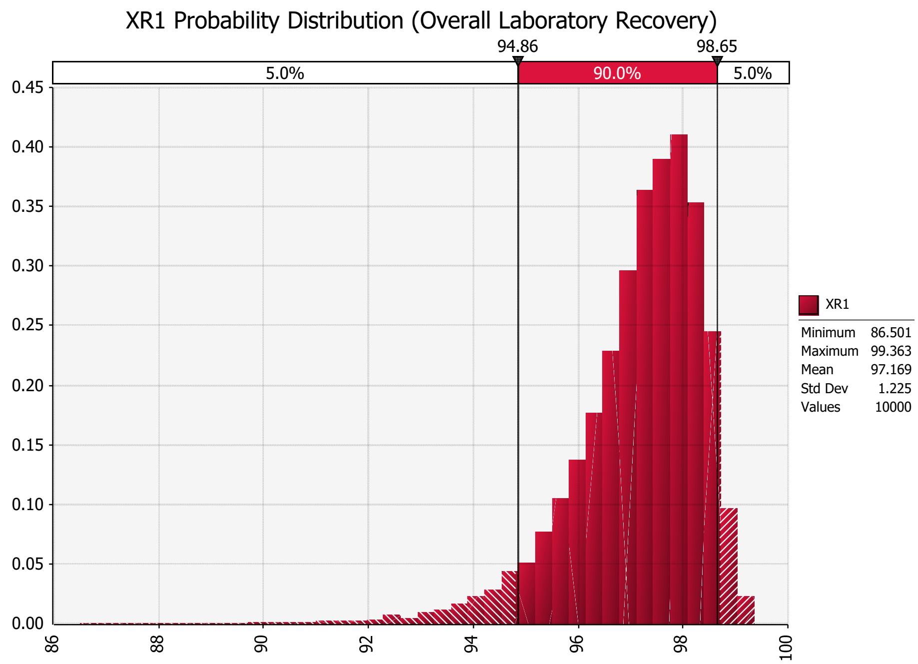
At the request of Mr. J. Rajala of B2Gold, empirical models (based on mean correlations) were used for estimating plant recovery, mine cut-off grade and for the purpose of financial modelling. These recovery estimates were for full scale plant operations based on the mine production schedule and planned mill feed grade. The grade/recovery curves and empirical equations were used to estimate gold recovery as function of head grade particularly for gold grades near cut-off.

The empirical correlations presented in Figure 13-7 to Figure 13-9 provide a logarithmic data fit to the laboratory recoveries as determined from the test work carried out on the variability composite samples using the optimized leach conditions. These model-predicted recoveries were then further discounted by 1.5% in order to obtain an estimate of the plant recovery based on the mill feed grade and mine production schedule.

The discounted calculated recoveries from the empirical models presented in Figure 13-7 to Figure 13-9 are shown relative to the discounted expected recovery ranges for the 95% confidence intervals as detailed in Figure 13-6. It should be noted that the recovery estimate for the XR2-3 (XR4) ore type was determined based on the averaged results for XR2 and XR3 as there was not enough available information from test work to provide a more accurate recovery estimate for this ore type.

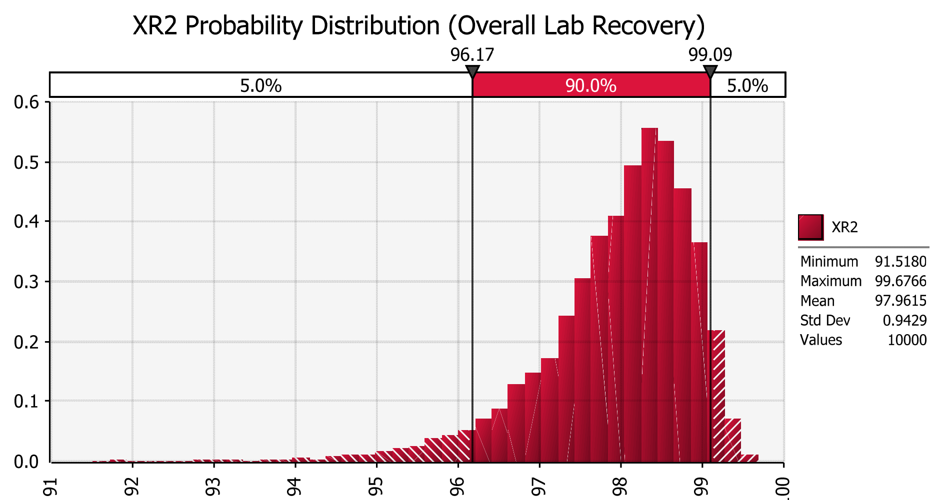
Figure 13-10 to Figure 13-13 show that based on mill feed grades as presented in the mine production schedule, the discounted calculated plant recovery estimates fall within the 90% recovery confidence interval as determined from the Monte Carlo analysis and presented in Figure 13-6.

Figure 13-3: XR1 Monte Carlo Probability Distribution of Variability Testwork Recovery



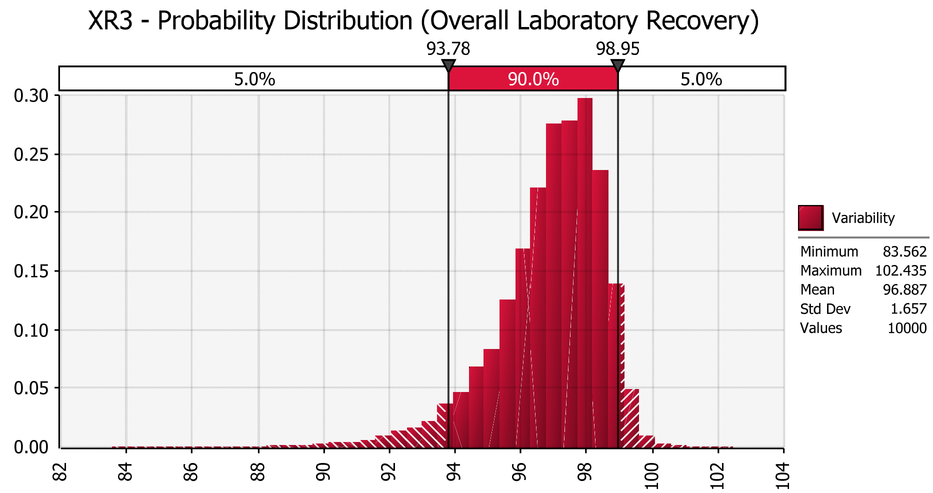
Note: Figure prepared by B2Gold, 2012.

Figure 13-4: XR2 Monte Carlo Probability Distribution of Variability Testwork Recovery



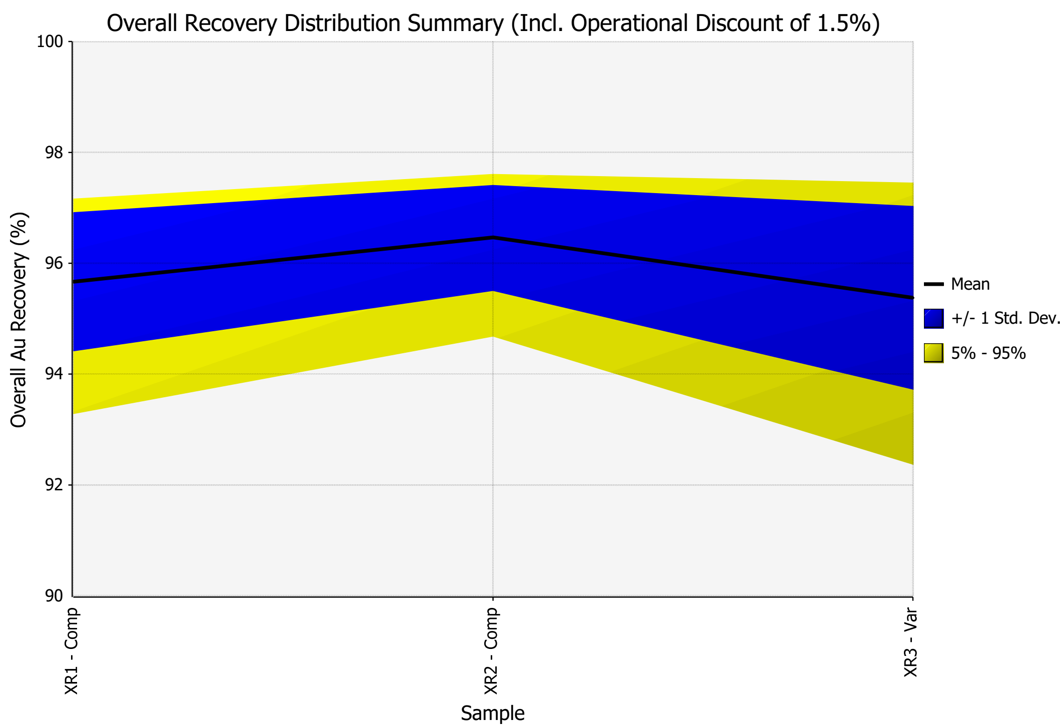
Note: Figure prepared by B2Gold, 2012.

Figure 13-5: XR3 Monte Carlo Probability Distribution of Variability Testwork Recovery



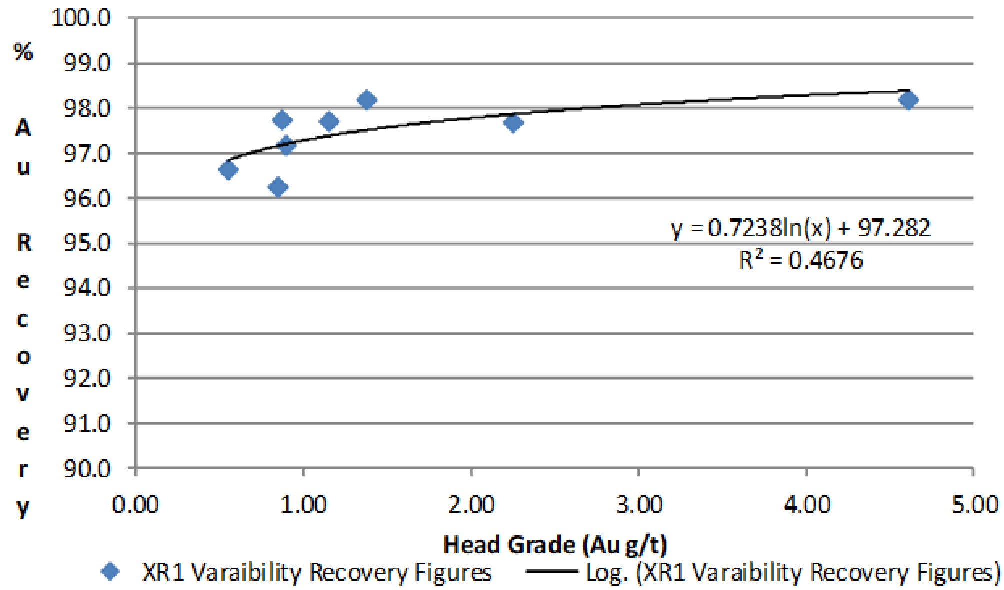
Note: Figure prepared by B2Gold, 2012.

Figure 13-6: Estimated Full Scale Plant Recovery Distribution for XR1, XR2 and XR3



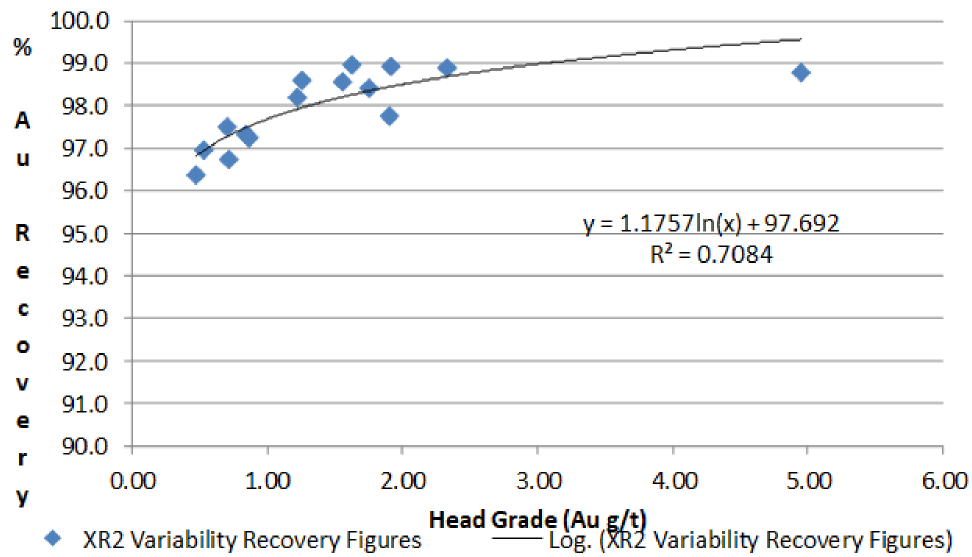
Note: Figure prepared by B2Gold, 2012.

Figure 13-7: Overall Gold Recovery as a function of Head Grade for the XR1 Variability Composites



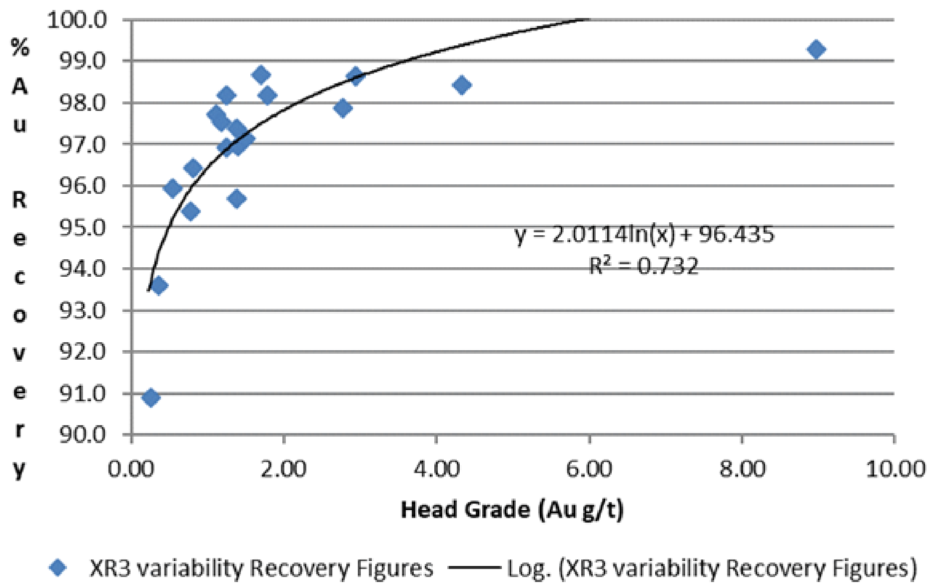
Note: Figure prepared by B2Gold, 2012.

Figure 13-8: Overall Gold Recovery as a Function of Head Grade for the XR2 Variability Composites



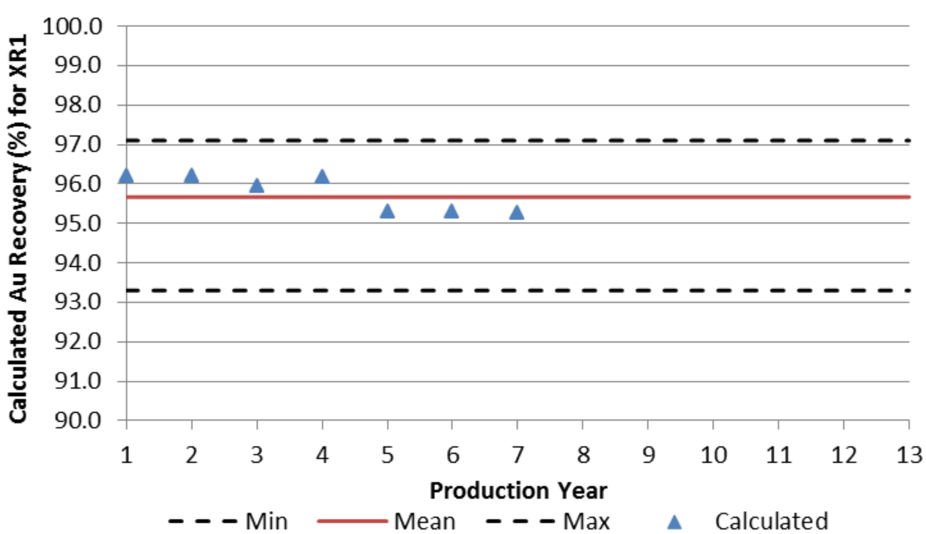
Note: Figure prepared by B2Gold, 2012.

Figure 13-9: Overall Gold Recovery as a function of Head Grade for the XR3 Variability Composites



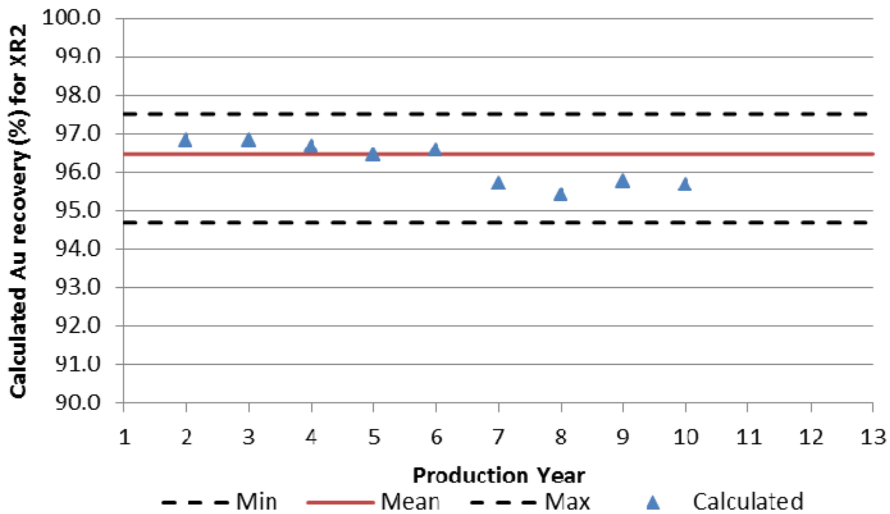
Note: Figure prepared by B2Gold, 2012.

Figure 13-10: Calculated Au Recovery based on Empirical Model Fit and Mine Production Schedule for XR1



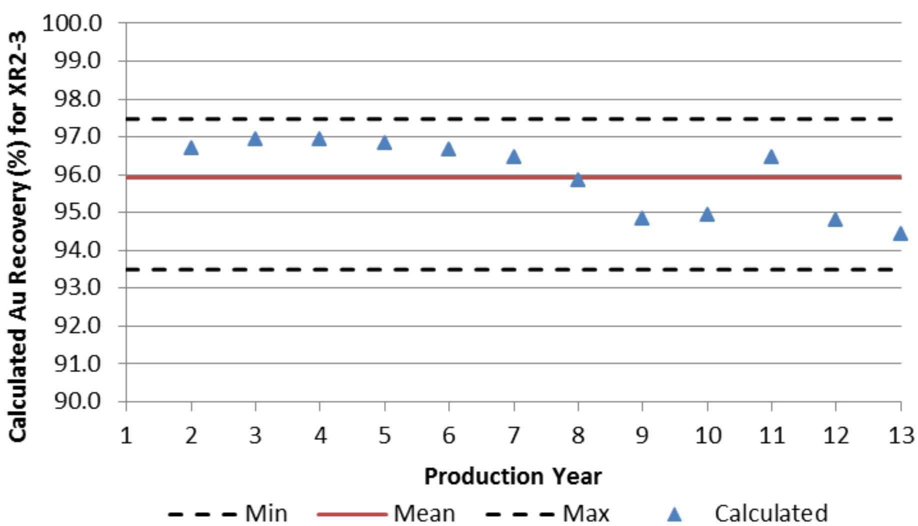
Note: Figure prepared by B2Gold, 2012.

Figure 13-11: Calculated Au Recovery based on Empirical Model Fit and Mine Production Schedule for XR2



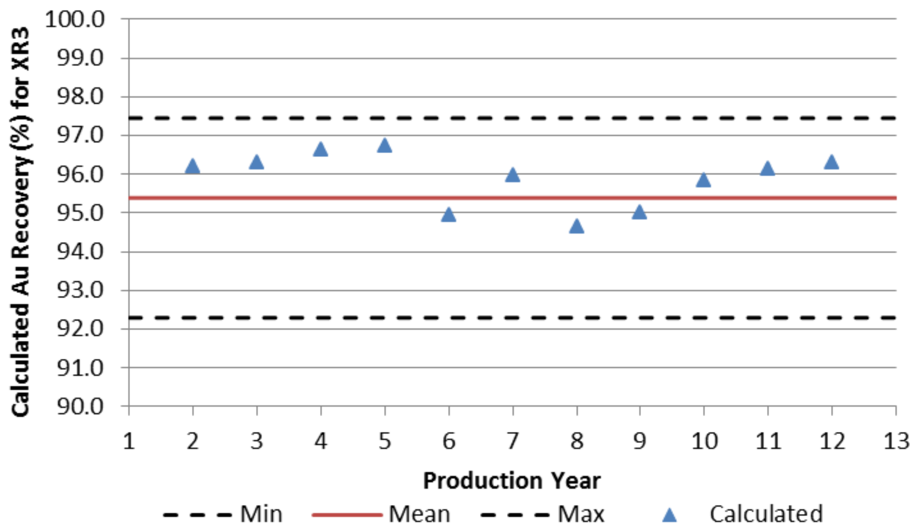
Note: Figure prepared by B2Gold, 2012.

Figure 13-12: Calculated Au Recovery based on Empirical Model Fit and Mine Production Schedule for XR2-3 (XR4)



Note: Figure prepared by B2Gold, 2012.

Figure 13-13: Calculated Au Recovery based on Empirical Model Fit and Mine Production Schedule for XR3



Note: Figure prepared by B2Gold, 2012.

13.3.2 Wolfshag

Wolfshag laboratory gravity/leach gold recoveries from the SGS Lakefield test work were very similar to the Otjikoto feasibility study recoveries, so plant recoveries were also be predicted to be very similar for Wolfshag ores.

13.3.3 Results

Metallurgical recoveries over the production period to date were included in Table 6-2. The average life-of-mine (LOM) gold recovery forecast for the plant is 98%, based on operational data and optimization since plant start-up.

13.4 Metallurgical Variability

Samples selected for metallurgical testing were representative of the various types and styles of mineralization within the different zones. Samples were selected from a range of locations within the deposit zones. Sufficient samples were taken so that tests were performed on sufficient sample mass.

13.5 Deleterious Elements

No deleterious elements are known from the processing perspective.

13.6 Comments on Mineral Processing and Metallurgical Testing

The Wolfshag and Otjikoto ores are expected to support average LOM gold metallurgical recoveries of 98%. There are no deleterious elements known that would affect process activities or metallurgical recoveries.

14.0 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Mineral Resource estimates are reported from two block models, the combined Otjikoto and Wolfshag open pit model and the Wolfshag underground model. The Otjikoto and Wolfshag open pit models were built in 2015 and 2018, respectively, and combined into one model for Mineral Resource and Mineral Reserve pit shell runs and reporting.

Core and RC data are used to support the Mineral Resource estimates. The cut-off dates for the databases used in estimation were:

- Otjikoto open pit: June 22, 2015. Based on 1,426 core and RC holes (242,014 m). A portion of the holes have lithology information only;
- Wolfshag open pit and underground: July 7, 2018. Based on 471 core and RC drill holes (122,844 m).

Figure 14-1 shows the extents of the models used in estimating Mineral Resources. In this figure, the Otjikoto model extent is shown in green, and the Wolfshag model in tan.

14.2 Otjikoto Open Pit

14.2.1 Geological Models

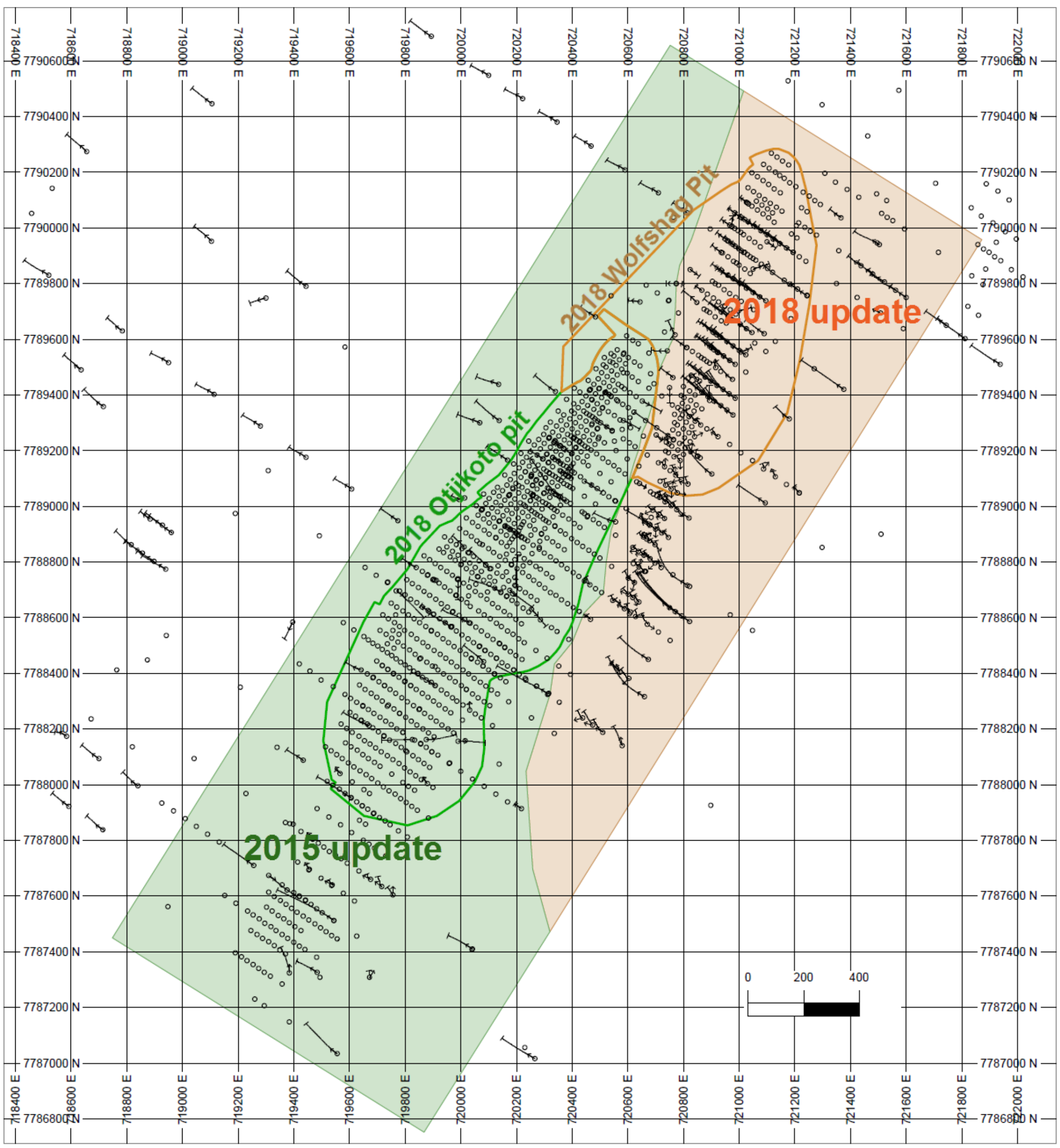
Lithology and mineralization zone models were built using the commercially-available Leapfrog Geo software.

Thrust Block Domains

Site staff interpreted a full set of sections containing thrust block boundaries. The sections were geo-referenced and digitized in Leapfrog. Intervals were selected, then modifications to the interpretations were made to reconcile between sections. Thrust block boundaries were generally selected at contacts of major lithological changes.

The Otjikoto thrust model consists of nine, approximately sub-parallel, blocks.

Figure 14-1: Mineral Resource Block Model Extents



Note: Figure prepared by B2Gold, 2018.

Mineralized Domains

Mineralized zones were created using lithology, vein percent, sulphide abundance and gold grade at a nominal 0.3 g/t Au cut-off. Grades slightly below 0.3 g/t Au were included along the margins of zones or along strike/dip for the sake of continuity. The 0.3 g/t Au threshold was chosen due to the proximity to a natural break that distinguishes mineralized from non-mineralized material at approximately 0.25–0.35 g/t Au. In addition, the value is below the resource reporting cut-off of 0.4 g/t. The thrust block model was used to limit the mineralized zoned wireframes. Individual mineralized zones do not cross thrusts (although sometimes there is mineralization on either side of a thrust).

Mineralized zone wireframes were identified by the thrust block in which they occur. Illustrative figures showing the geology and mineralization were included in Section 7.

Oxidation and Weathering Domains

Surfaces were created for the base of calcrete, transition, oxide and mixed. These surfaces were based on logged rock type and oxidation from exploration drill holes.

The bottom of calcrete surface was used as a top to the thrust and mineralized zone wireframes. Statistics indicated mineralization does not occur within calcrete and the base of calcrete should be used as a hard boundary for grade estimation.

Metallurgical Domains

Metallurgical domains are defined by oxidation state and dominant sulphide composition. The domains modeled include oxide (Metdomain = 1), pyrite-dominant (Metdomain = 2), pyrrhotite-dominant (Metdomain = 3), pyrite–pyrrhotite mixed (Metdomain = 4) and Wolfshag pyrite-dominant (Metdomain = 5).

The average pyrite-to-pyrrhotite ratio across Otjikoto shows a zonation of sulphide species with some internal variability. A polygon “cookie-cutter” was used to tag the block model with these domains.

14.2.2 Exploratory Data Analysis

A comparison of gold grades relative to various logged geological parameters and intensities indicated that lithology and vein percent are the only useful logging parameters for modeling. The majority of ore-grade material occurs in hornfels or (what is logged as) albitite with >2% veining. Logged pyrite and pyrrhotite abundances also show weak correlations with gold grades.

14.2.3 Density Assignment

Bulk densities applied to the block model vary by lithology, mineralization, and oxidation state, ranging from 2.43 in hardpan to 2.84 in sulphide-mineralized albitite.

14.2.4 Grade Capping/Outlier Restrictions

Capping levels were selected based on decile analysis, lognormal probability plots and spatial review of high grades. Capping was applied to assays prior to down-hole compositing. For low grade domains, capping ranged from 4–6 g/t Au and for high grade domains capping ranged from 5–40 g/t Au.

14.2.5 Composites

A new composite was started at grade zone and structural domain contacts. Composite length varies a little to avoid small residuals at the end of intervals. The down-hole composite length for Otjikoto is 2 m.

14.2.6 Variography

Variograms (correlograms) were run for the indicator, low-grade, high-grade and all grades (for direct ordinary kriging (OK) estimates). All variograms were modeled with spherical models. The Otjikoto grade variograms for the most important domains in terms of ore production have a nugget effect around 0.4 with the first structure at about 80% of the sill at 25–30 m and the second structure having down dip ranges of 45–50 m, and down plunge (strike) ranges of 90 m.

14.2.7 Estimation/Interpolation Methods

The model is rotated 32° clockwise about the Z-axis, and a parent block size of 6 m x 12 m x 3.3 m was used, with sub-celling to 3 m x 3 m x 0.11 m. The estimate was completed using commercially-available Datamine software.

An indicator was created that identified zones above a nominal 0.8–0.9 g/t Au cut-off. This threshold corresponded to a modest natural break in grade distribution. High-grade indicator values (1) were assigned to intervals of contiguous zones above or near the chosen threshold. Spatially-isolated assays above 0.8 g/t Au were not designated as high grade. Some consideration was given to adjacent drill holes while assigning the indicator, so marginal material may have been designated as “high-grade” for continuity’s sake even though the material did not strictly meet the 0.8 g/t Au cut-off. Given the grade variability and relatively high nugget effect, this definition is considered reasonable. The indicator was interpolated into the block model using ordinary kriging (OK) interpolation.

High- and low-grade values (components of the indicator) were also estimated using OK. The high and low grades were combined into a single block grade using a 20/80 rule. For interpolated indicator values less than 0.2, the block was assigned the low-grade value, for indicator values between 0.2 and 0.8, the indicator was used to calculate the weighted average of high- and low-grade values. For indicators greater than 0.8, the block was assigned the high-grade value.

Hard boundaries were applied between mineralized zones of different structural/stratigraphic groups (STRTGRP) and between mineralization and waste.

Search Parameters

Search parameters were set up to ensure that blocks would be informed by, on average, 5–6 drill holes in the core of the deposit. Search ellipse parameters and search criteria are provided in Table 14-1.

Average rotation of the search ellipse was 44° clockwise looking down the positive Z-axis, 24° counter-clockwise looking down the positive Y-axis, and 34° counter-clockwise looking down the positive Z-axis. For all interpolation runs, model variogram and search orientations were controlled by Datamine's dynamic anisotropy. Using this method, orientations were assigned within specified limits to each block based on the local wireframe/interpretations.

14.2.8 Block Model Validation

The block models were validated using the following methods:

- Visual comparison of composites to the block model on screen and paper plots (sections and long sections). The indicator adequately creates zones for high-grade/low-grade domaining and is representative of the volume of each material. Although some local over- and under-estimates were observed, they are minor in extent and common to this type of estimate. Final grades are representative of the drill hole data;
- Comparison of nearest-neighbor (NN) and block model statistics at zero cut-off are within 5% for indicated and 10% for inferred blocks, which is considered an acceptable difference;
- Comparison of interpolation methods by easting, northing and elevation on "swath" plots show the final model reasonably tracks the declustered composites (NN) but is very slightly lower on all plots, suggesting a level of conservatism;
- Change of support checks are within reasonable levels of the final estimated block grades at the resource cut-off grade.

Table 14-1: Otjikoto Search Parameters

Domain	Search Pass 1 (m)	Min Pass 1 (#)	Max Pass 1 (#)	Search Pass 2 (m)	Min Pass 2 (#)	Max Pass 2 (#)	Search Pass 3 (m)	Min Pass 3 (#)	Max Pass 3 (#)	Max per DH (#)
Direct Au	35 x 60 x 15	5	18	52.5 x 90 x 22.5	5	18	70 x 120 x 30	1	18	3
Indicator	35 x 60 x 15	5	18	52.5 x 90 x 22.5	5	18	70 x 120 x 30	1	18	3
LG/HG Au	35 x 60 x 15	5	18	52.5 x 90 x 22.5	5	18	70 x 120 x 30	1	18	3
Waste	35 x 60 x 15	5	18	52.5 x 90 x 22.5	5	18	70 x 120 x 30	1	18	3

Note: # = number of informing samples, DH = drill hole.

14.3 Wolfshag Open Pit

The Wolfshag open pit model was updated in 2018 following initial mining at Wolfshag open pit. Interpretations and models for lithology, structural, mineralized zone and grade models were part of the update. Geotechnical, metallurgical, and acid rock drainage (ARD) models were not updated and the 2015 model is the current model for those parameters. Grade control data were not used directly for solid modeling or grade estimation but were used as an overall guide to the interpretations, and for validation of the open model.

14.3.1 Geological Models

Mineralized Domains

Two nested shells were created based on a combination of grade and vein intensity:

- Low-grade (LG) domain at a nominal 0.2 g/t Au threshold was chosen as the contact between mineralized material with anomalous gold values. The threshold is somewhat flexible depending on the geological description (vein %), and grades in adjacent samples and adjacent drill holes;
- High-grade (HG) domain is at a nominal 1 g/t Au threshold and was selected to separate contiguous high-grade (generally >5 g/t Au) from low grade material. High-grade material generally coincides with increased veining intensity which was used to decide the boundary in marginal cases. Lithology was also used in marginal cases where dramatic grade changes occurred at changes in lithology (especially at marble contacts).

The mineralized domain wireframes were created in Datamine by linking 25–50 m spaced vertical cross section interpretations that were reconciled in three-dimensions (section, level and long section). Illustrative figures showing the geology and mineralization were included in Section 7.

For the open pit model, only the low-grade domain was used as a boundary in the gold grade estimate. Preliminary models using the high-grade boundary as a hard or semi-soft boundary did not reconcile well with mine production data. The high-grade domain was used for setting capping levels in the open pit model.

Stratigraphic/Structural Model

A stratigraphic/structural model was created based on all available geological data. The stratigraphic model wireframes were created in Datamine using the same methodology as used for the mineralized domains. The units modeled include the East (OTB) Marble, PT marble (located within the OTA stratigraphic sequence) or FW marbles) and west (FW) marble in addition to the WH thrust (located at the base of the Wolfshag zone and the FW marble). Figure 7-6 is a cross-section showing the stratigraphy, lithology and structure.

Lithology Model

Within each of the modeled stratigraphic units, lithology was assigned by interpolating indicators for each major rock type: fine-grained biotite–(albite) schist (Albbio), amphibole (BbandAmp), hornfels, marble, schist, hardpan and fault. The dominant rock type was applied to the block/sub-block.

Oxidation and Weathering

Weathering and oxidation surfaces were created from simplified drill logs using Leapfrog. The surfaces created include bases of soil, hardpan, transition, oxide and mixed.

Metallurgical Domains

The metallurgical domains were described in Section 14.2.1. Unlike Otjikoto, which shows a zonation of sulphide species with some internal variability, Wolfshag is pyrite-dominant.

14.3.2 Exploratory Data Analysis

Analysis of gold grades by logged geology completed earlier show similar results to the work done on Otjikoto only. Higher-grade material occurs in what is logged as albitite with higher vein percentages.

14.3.3 Density Assignment

Bulk density was estimated within stratigraphic/structural domains using inverse-distance squared (ID2) interpolation.

Blocks that are further from drilling were assigned the mean bulk density values from measurements based on domain, oxidation and mineralization state. Where insufficient measurements were available, bulk densities were based on factored values from domains where data were available. Bulk density assignments range from 1.9 in soil to 2.98 in the Wolfshag A lower high-grade zone.

14.3.4 Grade Capping/Outlier Restrictions

Assays were capped prior to compositing. Two capping levels for each domain/sub-domain (AUC1/AUC2) were determined, based on probability plots, deciles and the location of outlier samples. Both capping levels were estimated into the block model and combined to produce the final grade model. The range of capping values for the two capping levels included:

- High-grade mineralized zones: Low-cap values range from 12–50 g/t Au and high-cap values range from 12–80 g/t Au;
- Low-grade mineralized zones: low-cap values range from 1–20 g/t Au and high-cap values range from 1–30 g/t Au;
- Marbles/waste: low-cap values range from 0.4–1 g/t Au and high-cap values range from 1–2 g/t Au.

14.3.5 Composites

Two-metre downhole composites were created with breaks at each mineralization domain contact; however, high-grade contacts were ignored. Widths were varied if necessary, to avoid residuals at the end of intervals.

To mitigate the problem of hinge composites (wide and many composites) overpowering limb composites (thin and few composites), any interval composed of only one composite was divided into two. For example, if an entire intersection was 2 m wide (so one composite), it would be divided into two 1 m composites effectively doubling the weight of that intersections.

14.3.6 Variography

Variograms (correlograms) were run on 2 m capped composites for each interpolation domain. The data were not normalized prior to use. Some individual domains were grouped where insufficient data existed for useful variography on an individual basis.

14.3.7 Estimation/Interpolation Methods

The block model is rotated 32° clockwise about the Z-axis. This is the same block model layout used for the main Otjikoto deposit. Grades for the open pit model were estimated using OK into parent blocks of 6 m x 12 m x 3.3333 m by domain. A NN model and an ID2 model were also created for comparison and validation. Sub-cells were created at wireframe boundaries down to a dimension of 3 m in the X and Y directions and to 0.11111 m in the Z dimension.

Hard boundaries were used at the low-grade/waste contact, so only composites within the low-grade domain were used to estimate grades of blocks in that domain. In the final estimate, block grades were estimated using 3 x 4 x 2 discretization points.

Search Parameters

The default rotation of the search ellipse was 50° clockwise looking down the positive Z-axis, 20° counter-clockwise looking down the positive Y-axis, and 35° counter-clockwise looking down the positive Z-axis. This is the average orientation of the Wolfshag ore shoots. For all interpolation runs, search orientations were controlled by Datamine's dynamic anisotropy.

Search parameters are summarized in Table 14-2.

Final Block Grades

Three capping levels for each interpolation run were completed, termed the high-cap, low-cap and no-cap runs. Final block grades were calculated by combining high-cap and low-cap estimates. Any block within 27 x 49 x 7 m (0.7 of an ellipse with dimensions of 38 x 70 x 10 m) of a high-capped composite were assigned grades estimated using the higher-capped composites (AUC1). All other blocks were assigned grades estimated using the lower-capped values (AUC2).

This method was used to constrain the very high grades in the top hinge area (formerly WA) from overpowering narrower, lower-grade data in the limbs, while still assigning high grades where data supported such assignments.

The ID2 model was used for small discontinuous zones, since no meaningful variography was available for these domains.

Table 14-2: Wolfshag Search Parameters

Domain	Search Pass 1 (m)	Min Pass 1 (#)	Max Pass 1 (#)	Search Pass 2 (m)	Min Pass 2 (#)	Max Pass 2 (#)	Search Pass 3 (m)	Min Pass 3 (#)	Max Pass 3 (#)	Max per DH (#)
All	38 x 70 x 10	4	15	57 x 105 x 15	4	15	76 x 140 x 20	2	15	3

Note: # = number of informing samples, DH = drill hole.

14.3.8 Block Model Validation

Cross sections and levels for comparing the block model to composite grades were reviewed in detail. Overall block grades are a good representation of composites with a reasonable level of smoothing. Over-projections of low and high grades were local and were most apparent in very narrow zones.

The difference between the mean grade of the NN and OK models at a zero cut-off are within 5% for all major domains. Larger differences were seen in individual discontinuous, lower tonnage, zones but were still within 10%.

Swath plots for the major domains show that the OK model tracks the NN model quite well, with no apparent biases. Minor exceptions occur at the ends of domains where the estimated tonnage is quite small.

14.4 Combined Otjikoto and Wolfshag Open Pit Model

The Otjikoto and Wolfshag open pit subcell models were combined into one large subcelled model in Datamine. The combined model was converted to a whole-block (single grade per block) regularized model to the parent block size of 6 x 12 x 3.33 m.

The average gold grade and the density for each whole block were calculated based on the volume-weighted average of all sub-cells within the parent cell. Categorical codes such as lithology, resource classification, and metallurgical domains were applied to the whole block model based on the dominant code inside the parent block.

Due to a combination of the modeling methodology (~0.2 g/t Au shells, and no HG), block size and cut-off grades (operational cut-off of 0.25 g/t Au), most dilution is built into the resource model. Diluting tonnes are offset by grade loss due to grade reduction (e.g. if the pre-diluted grade was above a grade threshold (cut-off), the diluted grade would be below that grade threshold).

The re-blocked model was used for Mineral Reserve and Mineral Resource pit shell runs. The Mineral Resource is reported from the subcell model.

14.5 Wolfshag Underground

The down-plunge extension of Wolfshag mineralization is considered an underground mining target. Sections 14.3.1, 14.3.2, 14.3.3, 14.3.4, and 14.3.5 regarding the Wolfshag open pit model also apply to the Wolfshag underground model.

14.5.1 Estimation/Interpolation Methods

The Wolfshag underground block model used the same model layout as the open pit model (refer to Section 14.3.7). Gold grades were estimated using inverse distance weighting to the third power (ID3) into the parent block size of 3 x 6 x 3.33 m. This estimation technique was used to reduce over-smoothing the gold grade estimates.

Hard boundaries were used at the high-grade/low-grade domain contact and the low-grade/waste contact (only composites within a domain were used to estimate the domain).

Search ellipse orientations for the underground model and how grade capping was handled were implemented the same way as the open pit model estimates (refer to Section 14.3.7). Search parameters are provided in Table 14-3.

14.5.2 Model Validation

The visual review of block model grades relative to composite grades shows block model grades reasonably match the drill hole composite grades and the high- and low-grade domains are honoured in the estimates. The ID3 and NN estimates at zero cut-off, and swath plots of ID3, NN and raw data compare well with no apparent biases.

14.6 Classification of Mineral Resources

14.6.1 Otjikoto Open Pit

Mineral Resources potentially amenable to open pit mining methods were classified as follows:

- No Measured Mineral Resources were classified;
- Indicated Mineral Resources required a drill spacing of at least 25 m x 50 m;
- Inferred Mineral Resources required a drill spacing of at least 100 m x 100 m.

Polygons were drawn around the areas that met the above drill spacing criteria. Some less continuous zones were reclassified from Indicated to Inferred based on poor grade or geological continuity. Any blocks not classified as Indicated or Inferred were reset to a grade of 0.03 g/t Au.

Table 14-3: Wolfshag Underground Search Parameters

Domain	Search Pass 1 (m)	Min Pass 1 (#)	Max Pass 1 (#)	Search Pass 2 (m)	Min Pass 2 (#)	Max Pass 2 (#)	Search Pass 3 (m)	Min Pass 3	Max Pass 3 (#)	Max per DH (#)
All	38 x 70 x 10	4	15	57 x 105 x 15	4	15	76 x 140 x 20	2	15	3

14.6.2 Wolfshag Open Pit

Mineral Resources potentially amenable to open pit mining methods were classified as Indicated and Inferred using the following criteria:

- Indicated: Upper portions of the main Wolfshag folds that are drilled to 25 x 25 m drill spacing or 25 x 50 m with some infill drill holes;
- Inferred: Areas of 25 x 50 m in lower folds at Wolfshag or in areas of 25 x 50 m with gaps in the upper zones to a maximum of 50 x 100 m. Isolated zones were categorized as Inferred despite meeting the spacing requirement.

No Measured Mineral Resources were classified.

14.6.3 Wolfshag Underground

Mineral Resources amenable to underground mining are classified as follows:

- No Measured Mineral Resources are reported;
- Indicated Mineral Resources are drilled to approximately 25 x 25 m spacing;
- Inferred Mineral Resources are drilled to approximately 50 x 100 m spacing.

14.7 Reasonable Prospects of Eventual Economic Extraction

14.7.1 Open Pit

Mineral Resources considered potentially amenable to open pit mining methods were constrained within a conceptual pit shell that used the parameters in Table 14-4. Based on these costs and assumptions, the break-even cut-off grade is 0.35 g/t Au. Mineral Resources potentially amenable to open pit mining are stated above a cut-off of 0.4 g/t Au.

Table 14-4: Conceptual Pit Optimization Input Parameters for Resource Reporting

Item	Value
Gold price	$1,400
Maximum pit slopes	30–60º; varies by geotechnical domain
Base Mining cost	$1.95/t mined + $0.03/10 m sinking rate
Mine sustaining capital	$0.28/t mined
G&A mining (34% of total G&A)	$0.09/t mined
Average mining L–G input cost	$2.32/t mined
Processing operating cost	$12.24/t processed
Process & facilities sustaining capital cost	$0.61/t processed
G&A processing cost	$2.14/t processed
Average processing L–G input cost	$14.99/t processed
Process recovery Au	98.0%
Selling cost	$51.44/oz produced
Gold royalty	2% of net revenue
Export levy	2% of gross revenue
Pit generation method	Lerchs-Grossmann
Mining recovery	100%
Mining dilution	Built into the model
Mill cut-off	Calculated: 0.35 g/t Au Applied: 0.40 g/t Au

Note: G&A = general and administrative; L–G = Lerchs-Grossmann pit optimization; average mining L–G input cost and average processing L–G input costs based on LOM averages.

14.7.2 Underground

Mineral Resources considered amenable to underground mining methods are reported outside the conceptual pit shell used for reporting Mineral Resources and above a cut-off of 2.6 g/t Au. This cut-off is based on conceptual underground engineering and cost studies performed internally by B2Gold.

Blocks outside the main folded Wolfshag zone but above 2.6 g/t Au, were not reported since these are generally small and discontinuous and are therefore unlikely to be mined.

14.8 Mineral Resource Statement

Indicated Mineral Resources are reported in Table 14-5 inclusive of those Indicated Mineral Resources converted to Probable Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Inferred Mineral Resources are provided in Table 14-6.

The QP for the resource estimate is Mr. Tom Garagan, Senior Vice President of Exploration and an employee of B2Gold. The Qualified Person for the stockpiles estimate is Mr. Peter Montano, P.E., Project Director, who is also an employee of B2Gold.

14.9 Factors That May Affect the Mineral Resource Estimate

Factors that may affect the Mineral Resource estimates include:

- Metal price and exchange rate assumptions;
- Changes to the assumptions used to generate the gold grade cut-off grade;
- Changes in local interpretations of mineralization geometry and continuity of mineralized zones;
- Changes to geological and mineralization shape and geological and grade continuity assumptions
- Density and domain assignments;
- Geometallurgical and oxidation assumptions;
- Changes to geotechnical, mining and metallurgical recovery assumptions;
- Change to the input and design parameter assumptions that pertain to the conceptual pit and stope designs constraining the estimates;
- Assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate.

There are no other known environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

Table 14-5: Indicated Mineral Resource Statement

Source	Tonnes (x 1,000)	Gold Grade (g/t Au)	Gold Contained Ounces (x 1,000)
Otjikoto Open Pit	18,200	1.13	660
Wolfshag Open Pit	8,800	2.37	670
Wolfshag Underground	100	4.26	10
Run-Of-Mine Stockpile	2,300	0.86	60
Low-Grade Stockpile	9,000	0.43	120
Subtotal – Open Pit and Underground (No Stockpiles)	27,100	1.55	1,350
Total Indicated Mineral Resources Including Stockpiles	***38,400***	***1.24***	***1,540***

Table 14-6: Inferred Mineral Resource Statement

Source	Tonnes (x 1,000)	Gold Grade (g/t Au)	Gold Contained Ounces (x 1,000)
Otjikoto Open Pit	500	0.65	10
Wolfshag Open Pit	2,200	0.77	60
Wolfshag Underground	1,500	5.11	240
Total Inferred Mineral Resources	***4,200***	***2.27***	***310***

Notes to accompany Mineral Resource tables:

1. The Qualified Person for the resource estimate is Mr. Tom Garagan, P.Geo., who is B2Gold's Senior Vice President, Exploration.
2. The Qualified Person for the stockpile estimate is Mr. Peter Montano, P.E., who is B2Gold's Project Director.
3. Mineral Resources have been classified using the 2014 CIM Definition Standards. Mineral Resources are reported inclusive of those Mineral Resources that have been modified to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. The Mineral Resources have an effective date of 31 December, 2018.
5. Mineral Resources are reported on a 100% basis. B2Gold holds a 90% attributable interest; the remaining 10% attributable interest is held by EVI.
6. Mineral Resource estimates that are amenable to open pit mining methods assume a gold price of US$1,400/oz, metallurgical recovery of 98%, and operating cost estimates of US$2.23/t mined (mining), US$12.85/t processed (processing) and US$3.24/t processed (general and administrative).
7. Mineral Resources that are amenable to open pit mining are reported at a cut-off of 0.40 g/t Au.
8. Mineral Resources that are amenable to underground mining are reported at cut-off of 2.60 g/t Au.
9. All tonnage, grade and contained metal content estimates have been rounded; rounding may result in apparent summation differences between tonnes, grade, and contained metal content.

14.10 Comments on Section 14

Mineral Resources are classified using the 2014 CIM Definition Standards.

There is upside potential for the estimates if mineralization that is currently classified as Inferred can be upgraded to higher-confidence Mineral Resource categories.

15.0 MINERAL RESERVE ESTIMATES

15.1 Introduction

Mineral Reserves are estimated using open pit mining methods.

B2Gold developed the parameters used in the Mineral Reserve estimation from operating experience at Otjikoto. Cost estimates and other parameters are based on the life-of-mine (LOM) plan (LOMP) which uses 2018 contract labour rates that were ratified in the second quarter (Q2) of 2018. Process recoveries used in the estimate are based on historical production. Export levies and royalties are based on current Namibian laws and agreements. The merged Otjikoto and Wolfshag block model from August 2018 was the basis for the tonnage and grade estimates.

Indicated Mineral Resources within the final pit design limits were converted to Probable Mineral Reserves. There are no Measured Mineral Resources in the block model.

15.2 Mineral Reserves Statement

Mineral Reserves are reported using the 2014 CIM Definition Standards. The Qualified Person for the estimate is Mr. Peter Montano, P.E., Project Director, a B2Gold employee. Mineral Reserves are reported effective 31 December, 2018 in Table 15-1, using a gold cut-off grade of 0.45 g/t Au.

15.3 Factors that May Affect the Mineral Reserves

Factors that may affect the Mineral Reserve estimates include:

- Changes to the gold price assumptions;
- Changes to pit slope and geotechnical assumptions;
- Unforeseen dilution;
- Changes to hydrogeological and pit dewatering assumptions;
- Stockpiling assumptions as to the amount and grade of stockpile material required to maintain operations during the wet season;
- Assumptions used when evaluating the potential economics Phases 3 and 4 of each of the pits;
- Changes to inputs to capital and operating cost estimates;
- Changes to modifying factor assumptions, including environmental, permitting and social licence to operate.

Table 15-1: Probable Mineral Reserves Statement

Source	Tonnes (x 1,000)	Gold Grade (g/t Au)	Gold Contained Ounces (x 1,000)
Otjikoto Open Pit	11,700	1.26	480
Wolfshag Open Pit	5,800	2.38	440
Run-of-Mine Stockpile	2,300	0.86	60
Total Probable Mineral Reserves	***19,800***	***1.54***	***980***

Notes to accompany Mineral Reserves table:

1. The Qualified Person for the estimate is Mr. Peter Montano, P.E., who is B2Gold's Project Director.
2. Mineral Reserves are reported using the 2014 CIM Definition Standards.
3. Mineral Reserves have an effective date of 31 December, 2018, and are reported on a 100% basis. B2Gold holds a 90% attributable interest and EVI holds a 10% attributable interest.
4. Mineral Reserves are based on a conventional open pit mining method, gold price of US$1,250/oz, metallurgical recovery of 98%, selling costs of $51.44/oz including royalties and levies, average mining cost of $2.29/t mined, average processing cost of $12.99/t processed, and site general costs of $3.25/t processed. Reserve model dilution and ore loss was applied through whole block averaging such that at a 0.45 g/t cut-off there is a 2.3% decrease in tonnes, a 2.2% reduction in grade, and 4.4% reduction in ounces when compared to the Mineral Resource model. Mineral Reserves are reported above a cut-off grade of 0.45 g/t Au.
5. Tonnes and grade are reported as-delivered to the mill, including mining dilution and losses. Dilution and loss are accounted for in the block model at the selective mining unit (SMU) size of 6 m E x 12 m N x 3.33 m RL.
6. All tonnage, grade and contained metal content estimates have been rounded; rounding may result in apparent summation differences between tonnes, grade, and contained metal content.

15.4 Pit Optimization

Whittle optimization analyses were conducted as part of the 2018 LOMP process. The objective was to confirm that the ultimate pit design is valid and determine where upside potential and risks might exist in the design.

Phases have been included in the mine design and production schedule to bring ounces forward where possible, which benefits the cash flow, and to smooth production.

Parameters used in the validation optimization are shown in Table 15-2. These reflect the gold price for Mineral Reserves, changes in the application of the export levy and Namibian royalty and the LOMP operating and sustaining capital costs. Sustaining capital costs were defined as the capital costs required to stay in business, including rebuilding and replacing equipment as necessary, and were included in the validation optimization.

Table 15-2: Pit Optimization Input Parameters

Parameter	Units	Value
Base mine operating cost	$/t mined	2.01
Mine sustaining capital cost	$/t mined	0.28
Average Whittle mining costs	$/t mined	2.29
Processing cost	$/t processed	12.33
G&A costs	$/t processed	3.25
Process & facilities sustaining capital cost	$/t processed	0.66
Whittle process cost	$/t processed	16.24
Gold selling costs	$/oz	51.44
Gold royalty	% of net revenue	3.0
Export levy	% of gross revenue	1.0
Base case/reserve gold price	$/oz	1,250
Net gold price	$/oz	1,199
Gold process recovery	%	98
Whittle gold cut-off grade	g/t	0.45

An export levy of 1%, and a 3% royalty payment to the Namibian Government were applied to net and gross revenue, respectively. The application of these to the Mineral Reserve gold price of US$1,250/oz, results in a net gold price of US$1,199/oz.

Overall slope angles (OSA) were applied in Whittle based on the geotechnical recommendations made by MineTechnics (refer to discussion in Section 16.1). OSA were applied to each of the nine geotechnical zones define around the pit, and account for the inclusion of roads and ramps.

Results from the analysis confirmed that the LOM ultimate pit design is valid. These analyses also showed that Wolfshag phase 4 has a high incremental strip ratio and as a result is sensitive to changes in mining costs.

The US$1,250/oz Au price shell was selected as the basis for validation of the ultimate pit. This shell was selected because it maximizes the mine life and ounce production while producing a positive cash flow, based on current assumptions. Sensitivity analysis on the selected pit indicated that changes in gold price had the greatest impact because the metal price is a factor in the cut-off grade, which controls the conversion of low-grade material between ore and waste within shells, and in defining the pit depth, as the revenue has to cover the mining costs.

Additional information on the pit designs is included in Section 16.

15.5 Basis of Mineral Reserve Estimate

Mineral Reserve estimation was based on the LOMP pit and WRSF designs and mine and mill production schedules. Figure 15-1 shows the overall mine layout.

Mine and mill production scheduling was based on a stockpiling strategy whereby the highest grades were sent to the process plant as they were mined, and the remaining lower-grade material was sent to an appropriate grade-based stockpile.

The Mineral Reserve estimate assumes a 0.45 g/t Au cut-off grade, which is slightly higher than the calculated mill cut-off of 0.43 g/t Au. B2Gold defines the mill cut-off as the gold grade required to cover non-mining costs after process recoveries, selling costs, royalties and export levies are applied. Non-mining costs were defined as stockpile re-handle, processing and G&A operating and plant and facilities sustaining capital costs. Table 15-3 contains the parameters used to define the gold cut-off grade on a $/t processed basis.

Average mining costs are US$2.01/t mined and mine sustaining capital costs average $0.28/t mined; however, these are not included in the cut-off grade calculation because they are a sunk cost.

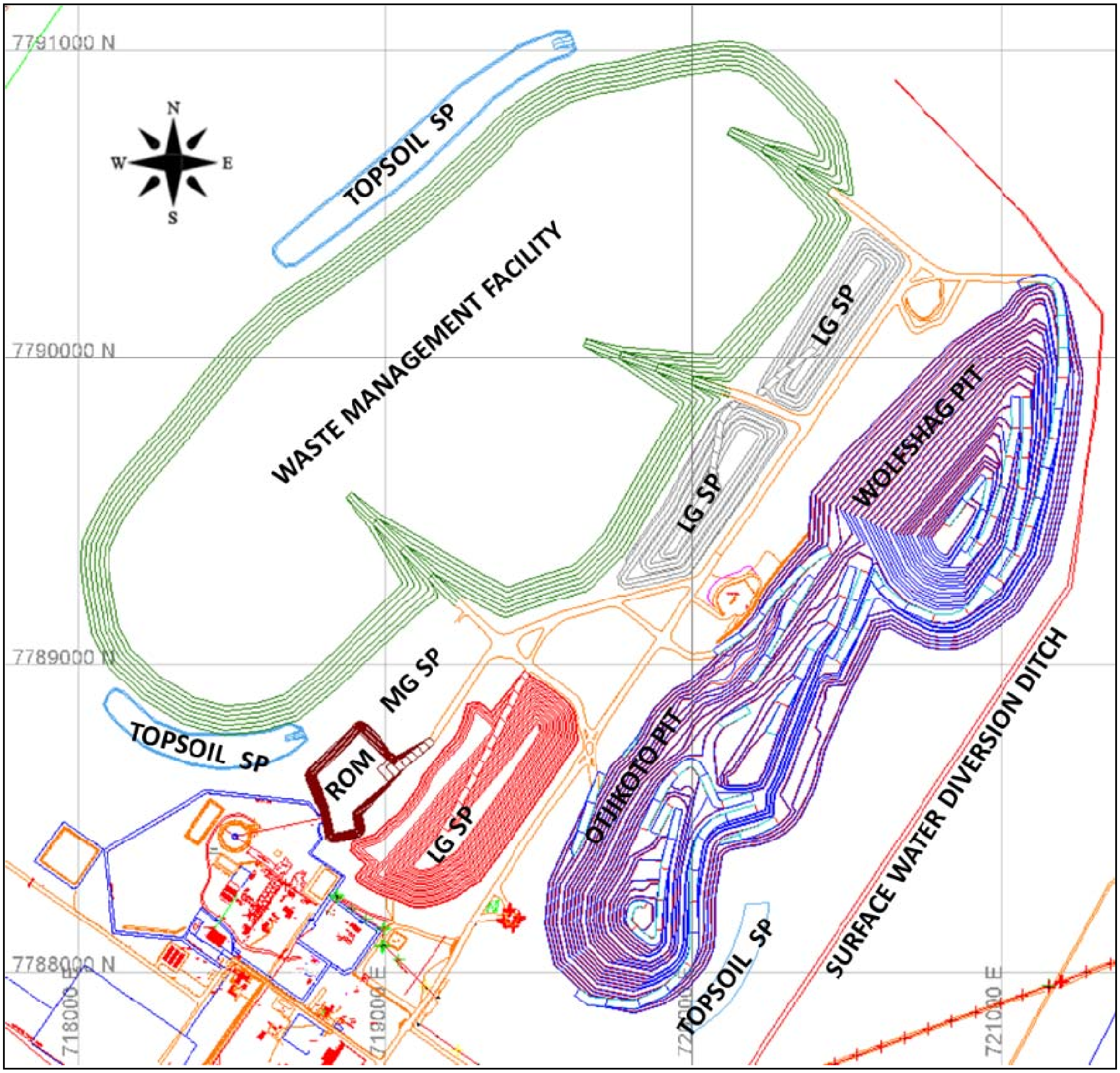
Dilution and loss are accounted for in the block model at the selective mining unit (SMU) size of 6 m E x 12 m N x 3.33 m RL so additional mining dilution and loss factors were not applied in the Mineral Reserve estimation. The dilution approach used in the block model is discussed in Section 14.4.

The derivation of the cut-off grade is discussed in Section 16.4.1.

15.6 Comments on Section 15

Mineral Reserves are reported in accordance with the 2014 CIM Definition Standards.

Figure 15-1: Mine Layout Plan



Note: Figure prepared by B2Gold, 2018. SP = stockpile, ROM = run-of-mine.

Table 15-3: Mill Gold Grade Cut-off Parameters

Parameter	Units	Value
Processing cost	$/t processed	12.33
G&A costs	$/t processed	3.25
Process & facilities sustaining capital costs	$/t processed	0.66
Total breakeven cost	$/t processed	16.24
Gold royalty	% of net revenue	3.0
Export levy	% of gross revenue	1.0
Gold selling costs (including royalty and levy)	$/oz	51.44
Base case/reserve gold price	$/oz	1,250
Net gold price	$/oz	1,199
Gold process recovery	%	98.0
Mill gold cut-off grade	g/t Au	0.43
Mineral Reserve gold cut-off grade	g/t Au	0.45

16.0 MINING METHODS

16.1 Overview

The mining operations use conventional open pit mining methods and equipment. Mining is based on a phased approach with stockpiling to bring high-grade forward and provide operational flexibility. Phase 1 of each of the Otjikoto and Wolfshag pits has been completed leaving three phases to be mined in each pit.

Mine production will be 38.5 Mt/a for better utilization of the mining equipment over the life and this results in an anticipated eight-year mine life.

16.2 Geotechnical Considerations

Pit slope domains and other parameters used in the design are detailed in Table 16-1. The locations of the zones outlined in Table 16-1 are shown schematically in Figure 16-1.

Beginning at the 1465 RL, 15 m wide geotechnical berms are included in the design on 60 m intervals. These criteria were the basis for the OSA applied in the optimization analysis.

16.3 Hydrogeological Considerations

The general climate is arid; however, there are intense short duration rainfall events during the rainy season. To deal with the runoff from these events, a diversion channel was incorporated into the mine design to divert surface water away from the active mining area to a settling pond adjacent to the northern limit of the Wolfshag pit.

Water is pumped from the settling pond to be used for dust suppression on haul roads.

Groundwater is actively extracted ahead of mining from a single dewatering borehole situated between the Otjikoto and Wolfshag pits. Excess water that accumulates in the pit due to groundwater seepage and rainwater accumulation is collected in sumps located in low spots in each pit and pumped to the return water dam.

16.4 Open Pit Design

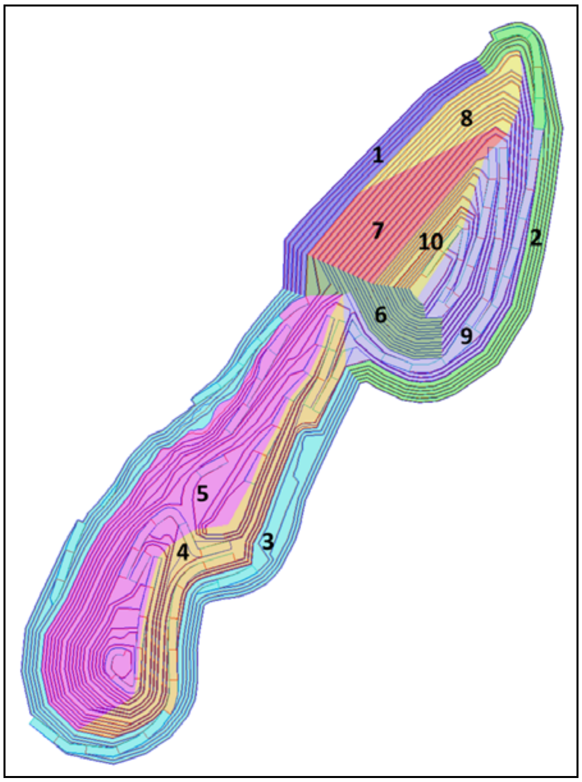
Pit optimization assumptions were provided in Section 15.1.

A phased development strategy was applied in the LOM to smooth the mine production schedule by deferring waste stripping, and to bring high-grade material forward. Tabulations were developed for each of the phases based on the Mineral Reserve gold cut-off grade of 0.45 g/t. The mineralization was then subdivided based on the stockpiling strategy of delaying the processing of most of the low-grade material until the end of the mine life.

Table 16-1: Pit Slope Design Parameters (UPDATE)

Rock Type	Zone	Bench Height (m)	Batter Angle (°)	Berm Width (m)	Inter-Berm Angle (°)
Calcrete & Oxidized	1	10	70	10.4	35
	2	10	80	10.4	40
	3	10	75	9.0	40
Fresh Rock	4	20	80	8.0	60
	5	10	75	9.0	40
	6	10	90	10.4	44
	7	10	70	13.6	30
	8	10	70	10.4	35
	9	20	80	10.4	55
	10	10	70	6.3	45

Figure 16-1: Schematic Showing Geotechnical Zones



Note: Figure prepared by B2Gold, 2018. As an indicator of scale in this schematic, the ultimate pit will be 2.8 km long.

Development is based on the Otjikoto and Wolfshag deposits each being mined in four phases for a total of eight phases. Phase 1 has already been completed for both deposits. Wolfshag Phase 4 represents the final expansion to the ultimate pit shown in Figure 16-2. Otjikoto and Wolfshag phase designs are shown in Figure 16-3 and Figure 16-4, respectively.

Phase development will also mitigate the geological, geotechnical and economic risks for the Project, considering the ultimate pit is 2.8 km in length and has separate pit bottoms for the Otjikoto and Wolfshag deposits. Additionally, it allows for phase designs to be modified as mining progresses based on operational experience, exposed ground conditions, and changes in economic conditions. This is particularly beneficial for Phases 3 and 4 at both deposits, since these phases have higher production costs per ounce due to higher strip ratios and the greater depth to reach high-grade ore.

Where possible, ramps were located in the east wall of both pits to mitigate potential geotechnical hazards associated with planar and wedge-forming structures present in footwall structures along the west wall. A nominal ramp and road width of 27 m, including drainage and safety berms, was used for dual lane truck operation. Ramp widths were reduced to 20 m in the lower levels of the phase designs to allow for single lane haulage on the final benches. Ramp grades were designed to a maximum of 10%.

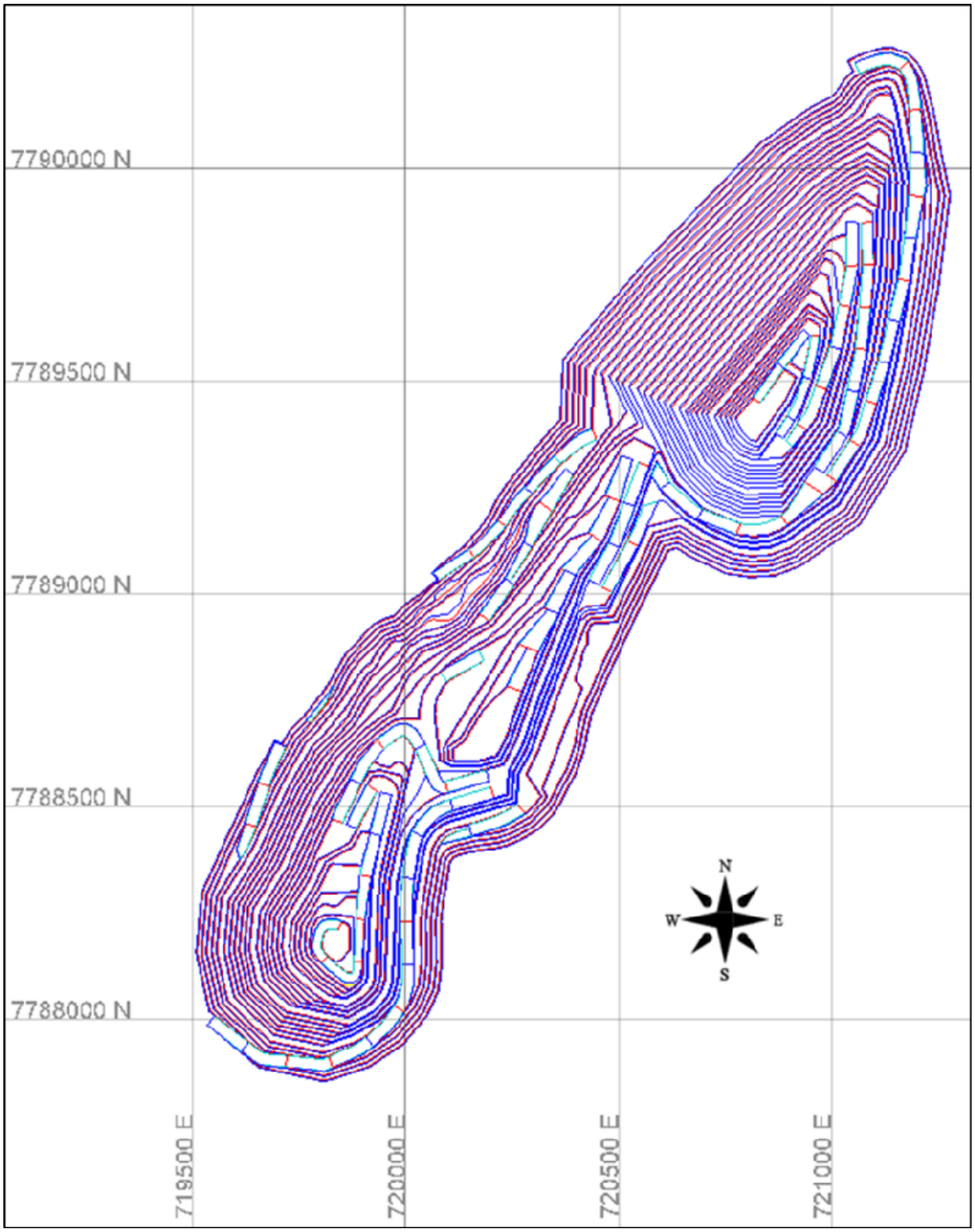
Temporary ramps will be used, as needed, for initial access to stages. Most of these will be mined out as successive phases are mined at different levels. Where these ramps are left, they will act as geotechnical berms to limit the inter-ramp slope angle.

16.5 Operational Cut-off Grades

A mill gold cut-off grade of 0.45 g/t was calculated based on the parameters in Table 16-2. This is defined as the gold grade required to cover non-mining costs after process recoveries, selling costs, royalties and export levies are applied. Non-mining costs were defined as stockpile re-handle, processing and G&A operating and plant and facilities sustaining capital costs. Mining costs were considered a sunk cost and were not included.

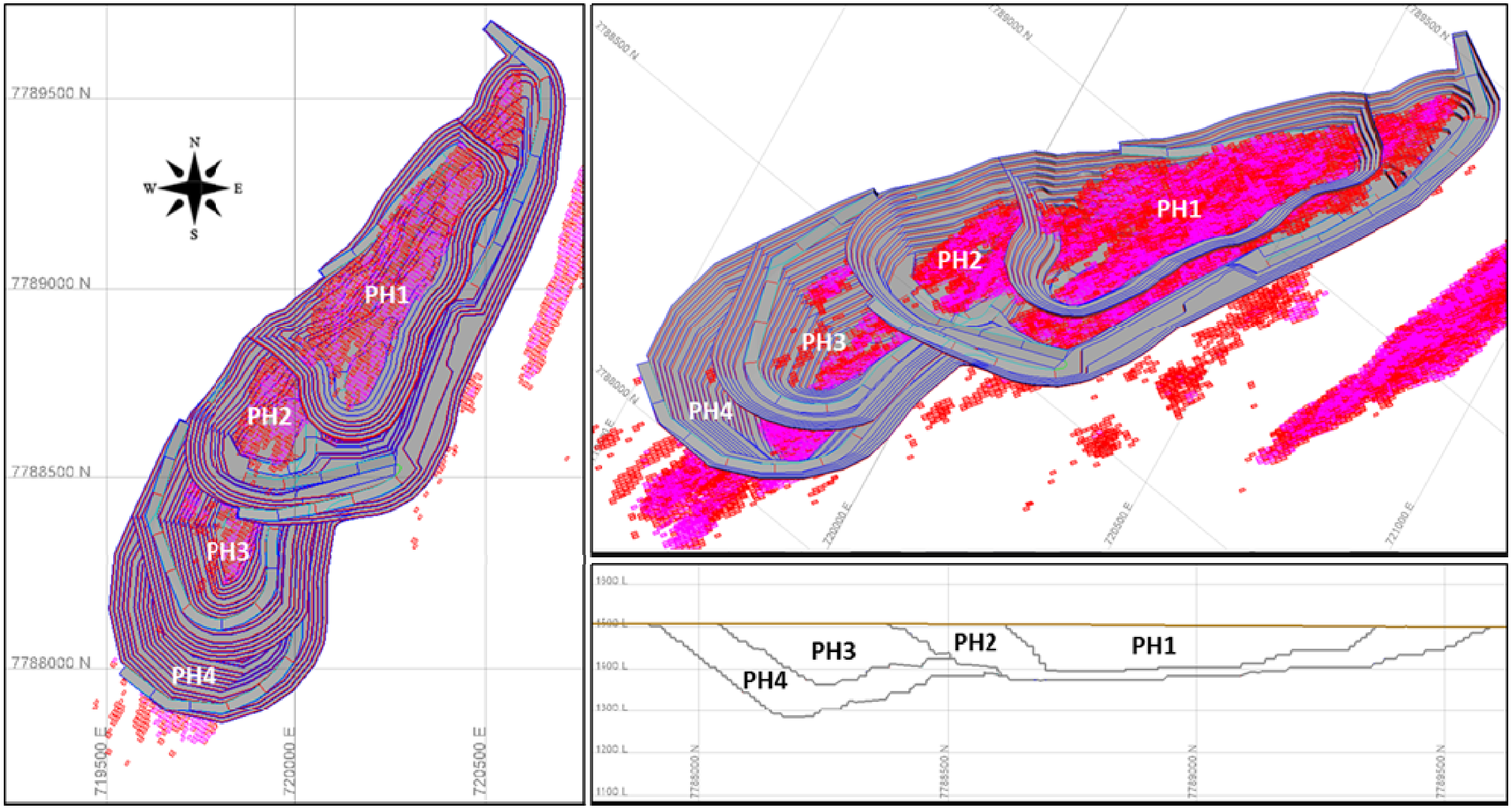
For mill production scheduling a stockpiling strategy was developed based on bringing high-grade ounces forward thus delaying the processing of low-grade. This strategy was based on processing the highest grades as they were mined and stockpiling the remaining ore in the appropriate grade-based stockpile.

Figure 16-2: Ultimate Pit Design



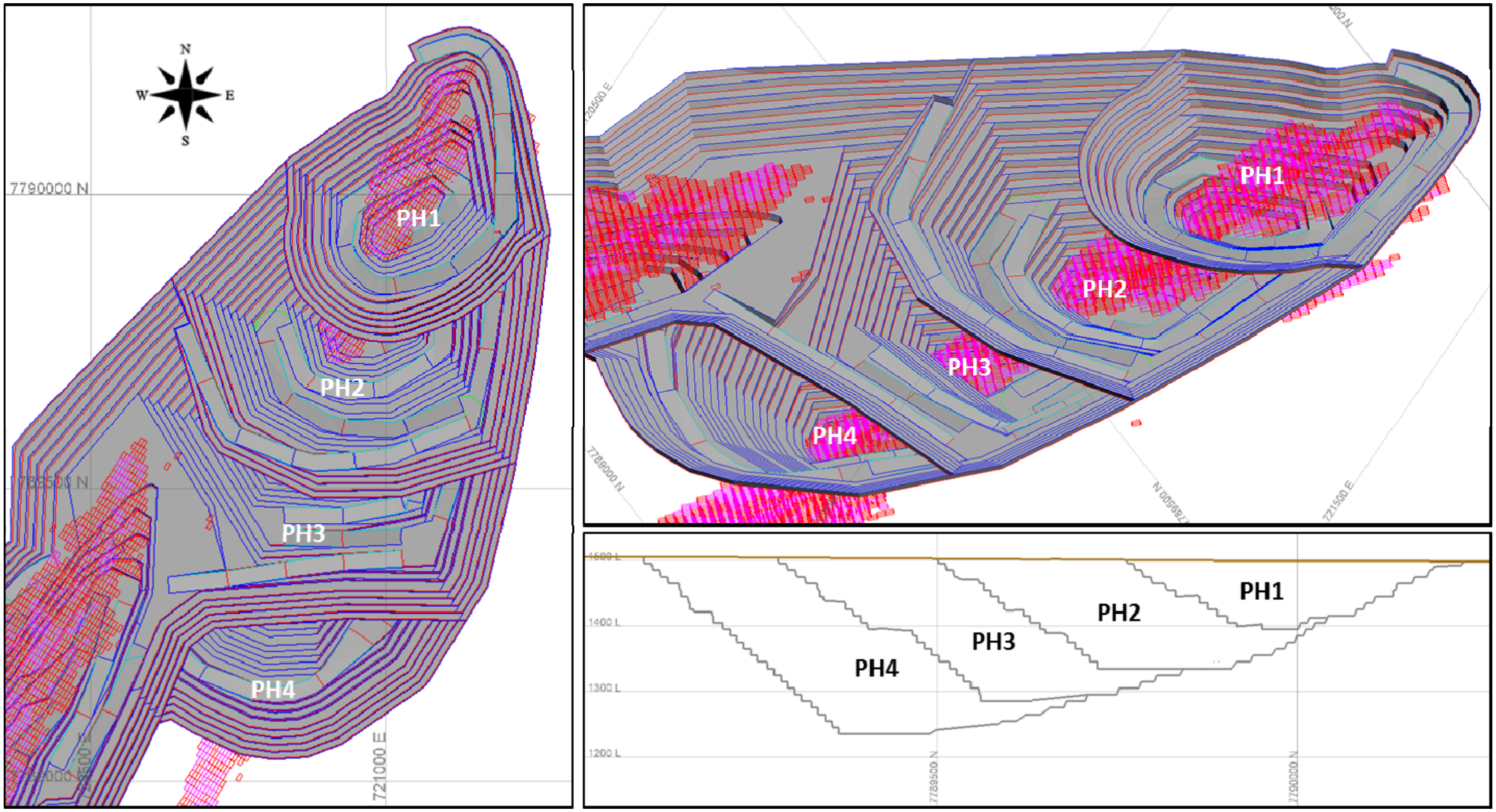
Note: Figure prepared by B2Gold 2018.

Figure 16-3: Otjikoto Phase Designs



Note: Figure prepared by B2Gold, 2018. Blocks shown are colour-coded by grade. Blocks coded as red average 1.0–1.5 g/t Au. Blocks coded as magenta have grades >1.5 g/t Au.

Figure 16-4: Wolfshag Phase Designs



Note: Figure prepared by B2Gold 2018. In this figure, blocks shown are colour-coded by grade. Blocks coded as red average 1.0–1.5 g/t Au. Blocks coded as magenta have grades >1.5 g/t Au.

Table 16-2: Gold Cut-off Grade Parameters

Parameter	Units	Value
Processing cost	$/t processed	12.33
G&A costs	$/t processed	3.25
Process & facilities sustaining capital costs	$/t processed	0.66
Total breakeven cost	$/t processed	16.24
Gold royalty	% of net revenue	3.0
Export levy	% of gross revenue	1.0
Gold selling costs	$/oz	51.44
Base case/reserve gold price	$/oz	1,250
Net gold price	$/oz	1,199
Gold process recovery	%	98.0
Mill gold cut-off grade	g/t	0.45

Gold grade ranges used in the production schedule to execute this strategy were defined as follows:

- Mineralization >1.0 g/t Au was classified as high grade (HG), and fed directly into the crusher or placed on the run-of-mine (ROM) pad;
- Mineralization between 0.8–1.0 g/t Au was classified as medium–high grade (MHG) for processing as necessary, with surplus quantities used to maintain ROM inventories for blending;
- Mineralization between 0.6–0.8 g/t Au was classified as medium grade (MG) for processing as necessary, with surplus quantities stockpiled for future use;
- Mineralization between 0.25–0.6 g/t Au was classified as low-grade (LG) for stockpiling and processing at the end of the mine life or to meet processing feed tonnage requirements when higher-grade mineralization is unavailable.

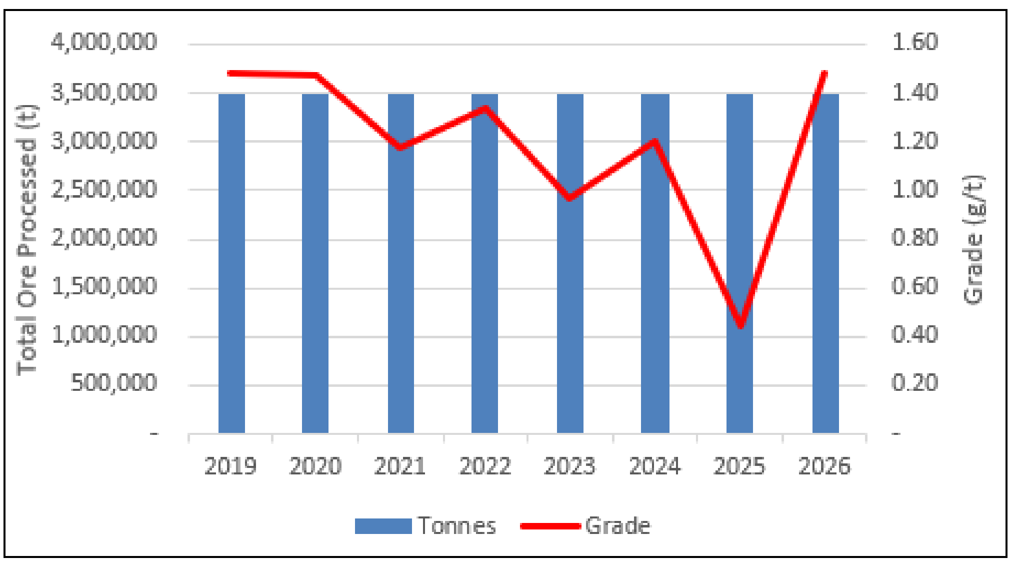
16.6 Production Schedule

Mine and mill production scheduling was done on an annual basis for the LOM. A summary of the LOM mine and mill production schedules are presented in Figure 16-5 and Figure 16-6, respectively.

Figure 16-5: LOM Mine Production Tonnes and Grade

Note: Figure prepared by B2Gold 2018

Figure 16-6: LOM Processed Tonnes and Grade



Note: Figure prepared by B2Gold 2018

Mining operations are scheduled for 365 days per year with a 15% decrease in the production rate during the rainy season, December through March. With the de-rate in production, this equivalent to operating 348 days per year. Other than planned maintenances periods the plant is scheduled to operate 24 hours a day. Mill feed will be provided from the ROM stockpiles or grade bin stockpiles when the mine is not producing ore.

Mine and mill production are scheduled for eight years with the mining rate dropping the last two years with material from the low-grade stockpiles supplementing the process feed. Production is based on mining the Otjikoto and Wolfshag deposits through a sequence of three remaining phases each. Vertical advance is limited to two operating benches per pit phase. This will involve the movement of an average of 38.5 Mt/a of material to sustain processing of 3.5 Mt/a. Gold grade range stockpiles have been incorporated into the production schedule to bring ounces forward by delaying the processing of low-grade material (<0.6 g/t Au), until later in the mine life.

Otjikoto and Wolfshag will be mined simultaneously to expose sufficient ore to sustain the plant feed, at the highest grade possible, throughout the mine life. Anywhere from one to three phases will be mined simultaneously within each deposit. Generally, ore will be sourced at depth from the most advanced phases where grades are usually the highest.

In the current LOM plan approximately 5.5 Mt of Indicated Mineral Resources from the low-grade stockpile are processed when Mineral Reserves are not available. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The average grade of the low-grade stockpile is 0.43 g/t Au, similar to the breakeven processing cut-off grade but lower than the Mineral Reserve cut-off grade (0.45 g/t Au). Processing of this stockpile will be determined when processing capacity is available.

16.7 Operations

Ore is hauled by truck from the pit to a stockpile, the ROM pad or direct-tipped into the crusher. The highest-grade material is direct-tipped or placed on the ROM pad depending on the plant feed requirements. Over the Project life it is assumed that 75% of the ore will be stockpiled and re-handled. Up to one week's supply of ore can be placed on the ROM pad.

Material from the ROM pad is directly loaded into the crusher by a CAT 990 wheeled loader. Stockpiled ore is reclaimed using the same loader and direct-tipping where possible. However, for longer distances, CAT 777 trucks are used to transport the ore and dump it into the crusher.

Mining operations are scheduled 24 hours per day, 365 days per year. Three daily shifts of eight hours each are completed by mine operations personnel.

16.8 Blasting and Explosives

Production drilling and blasting is done on 10 m benches with patterns and powder factors varying by material type and geological conditions. Production blast holes are generally 165 mm in diameter. Pre-split and trim blast holes along the final pit walls are generally 127 mm in diameter. Pre-split holes are generally spaced 1.5 m apart.

Bulk emulsion is loaded into both production and buffer holes, with a minimum stemming length of 3.3 m. However, stemming length varies according to rock type and other geologic conditions. Cartridge explosives are used for pre-split holes.

16.9 Grade Control

Production experience has shown that selective mining can be maintained on the benches to allow for the proper classification of material by grade range. The RC grade control drilling is conducted in campaigns targeted to stay two benches ahead of mining. Blast hole samples are then used in conjunction with the grade-control model to delineate the ore and waste zones for mine production.

Drill hole patterns and length as well as sampling interval vary by material type:

- Ore and select waste: typically, a 6 m x 12 m pattern;
- Waste: typically, a 100 m x 100 m pattern.

16.10 Mining Equipment

Table 16-3 lists the current and peak mining equipment requirements for the remaining mine life.

This fleet provides the flexibility to allow for the simultaneous mining of multiple phases and deposits.

Haul truck numbers will increase from the current 23 to 26 as the haul distances increase due to the deepening of the pits and distances from the pits to the WRSF.

Two Caterpillar 6018 shovels are generally operating on 10 m benches to remove waste. Ore is selectively mined with Liebherr 984 excavators using three flitches of 3.33 m each. These excavators are also used to mine difficult areas. The two R9250 excavators alternate between ore and waste, as needed. Caterpillar 992 and 990 wheel loaders offer flexibility and are used to supplement the mine production and for stockpile reclaim.

Table 16-3: Mine Equipment Requirements

Mining Equipment	Current Units	Peak Units
CAT 6018 Shovel	2	2
Liebherr R9250 Excavator	2	2
Liebherr 984 Excavator	1	1
CAT 374 Excavator	2	2
CAT 777 Haul Trucks	23	26
CAT 740 Articulating Haul Trucks	6	6
CAT D6 Dozer	1	1
CAT D9 Dozer	3	3
CAT D10 Dozer	3	3
Cat 844 Wheel Dozer	3	3
Cat 16M Motor Grader	2	2
CAT 140K Motor Grader	1	1
CAT 992 Wheel Loader	1	1
CAT 990 Wheel Loader	2	2
CAT 774 Water Truck	1	1
Cat 740 Water Truck	3	3
Service Truck	2	2
Sandvik D25K Blasthole Drill	2	2
CAT MD Series Blasthole Drill	7	7

16.11 Comments on Section 16

The mining operations use conventional open pit mining methods and equipment. Four pit phases are planned for each of the Otjikoto and Wolfshag pits. Phase 1 of each pit is complete.

There is upside potential for the estimates if mineralization that is currently classified as Mineral Resources potentially amenable to underground mining methods can be converted to Mineral Reserves following appropriate technical studies.

17.0 RECOVERY METHODS

17.1 Process Flowsheet

The metallurgical testing presented in Section 13 and information in the 2012 feasibility study provided the data to finalize the process design criteria and the Otjikoto mill flowsheet. The final overall flowsheet is provided in Figure 17-1.

17.2 Plant Design

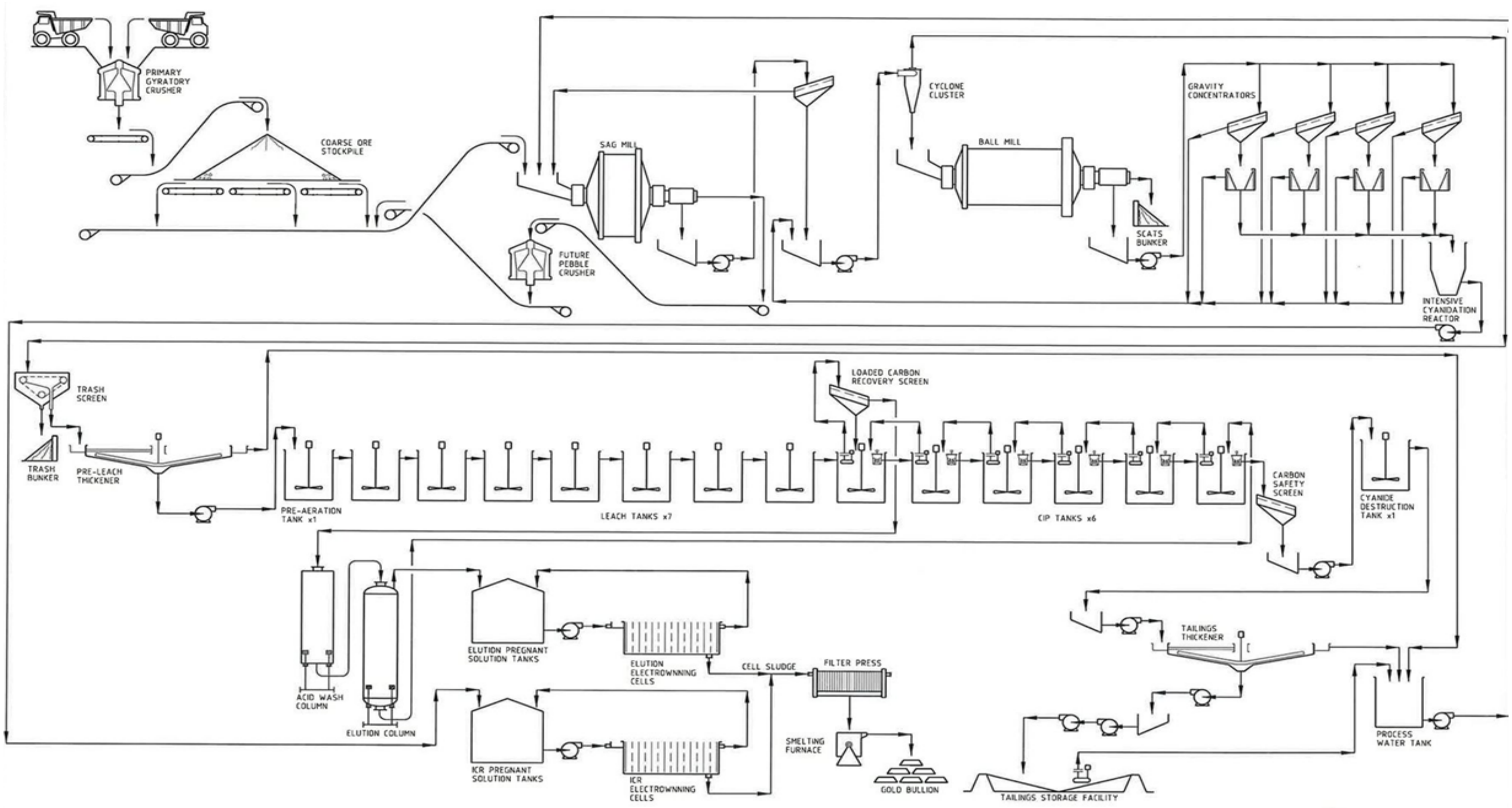
The original design of the Otjikoto mill was based on a gravity/whole ore leach flow sheet with a nominal treatment rate of 2.5 Mt/a and a plant availability of 94%. A 25% design factor was included for sizing the primary crusher, conveyors, ball mill, thickeners, cyanide destruction circuit, reagent systems and mainstream pumps which would facilitate a future expansion. A pebble crusher was installed in the SAG mill circuit and two leach tanks were added to the leach circuit in the second half of 2015 to expand the mill capacity from 2.5 to 3.1 Mt/a.

Gold is recovered by gravity concentration/intensive leaching and by a cyanide leach/CIP process for treatment of gravity tailings. The Otjikoto mill design is robust and able to process the three major ore types (XR1 – oxide, XR2 – pyrite-dominant, XR3 – pyrrhotite-dominant) and now Wolfshag over the range of ore grades mined, and with variable materials handling and metallurgical characteristics.

The process flow sheet consists of the following:

- Crushing;
- Grinding;
- Gravity concentration and intensive cyanidation;
- Cyanide leaching of gravity tailings;
- Carbon-in-pulp (CIP);
- Cyanide destruction;
- Tailings disposal;
- Acid wash and elution;
- Electrowinning and gold room;
- Carbon regeneration;
- Reagents make-up and distribution;
- Air services and plant water service.

Figure 17-1: Process Flowsheet



Note: Figure prepared by B2Gold, 2018.

The major process design criteria are presented in Table 17-1.

The mill flow sheet consists of the following unit operations.

17.2.1 Ore Receiving and Crushing

The crushing circuit has a 42 in x 65 in (1,067 mm x 1,651 mm) gyratory crusher, with a nominal throughput rate of 440 t/h. Run-of-mine ore from the open pit operations is delivered by 100 t trucks to the crusher. The crushed product at a P_{80} of 150 mm, is conveyed to a 7,000 t (live capacity) mill feed stockpile.

17.2.2 Grinding Circuit

The grinding circuit consists of a 24 ft diameter (Ø) x 14.5 ft effective grinding length (EGL) (7.11 m Ø x 4.42 m EGL) SAG mill operated in closed circuit with a trommel for pebble screening on the mill discharge and a vibrating screen to produce ball mill circuit feed. The SAG mill product is combined with tailings from the gravity concentration circuit before being pumped to a classification cyclone cluster. Cyclone underflow is fed to a 16.5 ft diameter x 28 ft EGL (5.03 m Ø x 8.53 m EGL) ball mill and the entire ball mill discharge is fed to a gravity concentration circuit for recovery of coarse free gold.

Both grinding mills are powered with 4,000 kW (5,364 HP) synchronous motors. The circuit is designed to produce an 80% passing product size (P_{80}) of 75 µm.

A pebble crusher was added to the SAG mill circuit for the plant expansion to 3 Mt/a.

17.2.3 Gravity Concentration and Intensive Leaching

The gravity concentration circuit consists of four Knelson 48-inch (1,219 mm) concentrator units, which are operated in parallel. The gravity concentrate collected from the Knelson units is stored and then processed by intensive cyanide leaching in a ConSep CS8000 Acacia Reactor on a batch basis. The design allows for processing of batches on either a 24 hour or a 48-hour basis.

Table 17-1: Key Process Design Criteria, Original Plant Design

Table 17.1: Otjikoto Major Process Design Criteria		
Criteria	**Unit**	
Operating Year	d	365
Annual Mill Throughput	Mtpa	2.5
Feed Grade (Life-of-Mine)	g/t	1.42
Crusher Availability	%	65.0
Crushing Throughput	mtph	440
Crushing Work Index (XR3)	kWh/t	16.9
Mill Availability	%	94.0
SAG Mill Feed Size, 80% Passing	µm	150,000
Grinding Throughput	mtph	304
Ball Mill Circulating Load	%	300
Bond Ball Mill Work Index (XR3)	kWh/t	9.3
Bond Abrasion Index (XR3)	g	0.466
Grind Size, 80% Passing	µm	75
Gravity Gold Recovery (XR3)	%	70.8
Leach Residence Time (XR3)	hr	48
CIP Residence Time	hr	6
Cyanide Consumption (XR3)	kg/t	0.59
Overall Gravity+Leach/CIP Recovery (Life-of-Mine)	%	95.6
Average Annual Gold Production (years 1-5)	oz	141,000
Average Annual Gold Production (LOM)	oz	112,000

17.2.4 Cyanide Leach Circuit

Cyclone overflow from the grinding circuit is thickened in a pre-leach thickener (20 m diameter x 3 m sidewall) to achieve a solids content of 45% in the underflow product prior to cyanidation. The leach circuit comprises one pre-aeration tank (15.8 m diameter x 18.0 m high) and seven original leach tanks (each 15.8 m diameter x 18.0 m high) plus two tanks added in the plant expansion (also 15.8 m diameter x 18.0 m high) to maintain the design leach residence time of 48 hours.

17.2.5 Carbon-in-Pulp Circuit

The CIP circuit consists of six CIP tanks (9.3 m diameter x 9.8 m high) in series with a design residence time of one hour per tank at 3.1 Mt/a throughput. The circuit is designed for carbon concentrations in the range 15–25 g/L with loaded carbon batch transfers of 5 t every 24-hour cycle.

17.2.6 Cyanide Destruction

The Otjikoto cyanide destruction circuit is based on the SO_2/Air process and consists of a single tank (10.8 m diameter x 11.2 m high) with a design residence time of one hour. The circuit is designed to reduce weak acid dissociable cyanide (CN_{wad}) concentrations to less than 10 ppm.

17.2.7 Tailings Thickening and Disposal

Product slurry from the cyanide destruction circuit is thickened in a tailings thickener (20 m diameter x 5 m sidewall) to achieve an underflow density of 55–65% solids. Thickened tailings are pumped to a tailings impoundment and water reclamation facility situated approximately 3 km from the mill.

17.2.8 Acid Wash, Elution and Carbon Regeneration

Loaded carbon is processed in 5 t batches on a 24-hour cycle for recovery of gold. The loaded carbon is treated in an acid wash followed by elution and regeneration of barren carbon in a rotary kiln. The design of the elution circuit is based on the pressure-split Anglo-American Research Laboratories process (pressure-split AARL) with a 5 t strip column capacity. Gold is recovered in the eluate stream during the elution process.

17.2.9 Electrowinning and Gold Room

The electrowinning circuit treats eluate from the carbon elution circuit and pregnant solution from the Acacia Reactor on a batch basis for the recovery of gold from solution, using atmospheric sludging electrowinning cells. Electrowinning sludge is fluxed and smelted in an induction furnace to produce gold bars for shipment to a refinery.

17.3 Energy, Water, and Process Materials Requirements

17.3.1 Reagents

The reagent make-up and distribution facilities cater for the make-up, storage and distribution of the following reagents:

- Sodium cyanide;
- Caustic soda;
- Hydrated lime;
- Lead nitrate;
- Hydrochloric acid;

- Sodium metabisulphite (SMBS);
- Copper sulphate;
- Flocculant;
- Elution de-scalant;
- Process water anti-scalant.

Reagent consumptions for Wolfshag ore are similar to Otjikoto ore, based on laboratory test work.

17.3.2 Plant Services

The design includes facilities for the generation, storage and distribution of the following air services:

- Plant and instrument air at a design pressure of 7.5 bar;
- Leach air supply at a design pressure of 3.0 bar;
- Cyanide destruction air supply of 3.0 bar.

The design includes storage and distribution facilities for the following plant water services:

- Process water;
- Reclaim water;
- Fresh water;
- Fire water;
- Potable water;
- Gland service water.

17.3.3 Water

The mill fresh water consumption was 1 Mm^3/a at the mill design throughput of 2.5 Mt/a. Fresh water consumption is now permitted for 2 Mm^3/a with the expanded mill throughput.

Fresh water is supplied from wells for both potable and process needs.

17.3.4 Power

Average overall plant power consumption during steady state mill operation is approximately 25–26 kWh/t of ore processed. Electrical power is generated on site using heavy fuel oil generators, and by a new solar power plant that was commissioned in 2018.

17.4 Comments on Recovery Methods

The process recovery uses conventional designs and equipment.

18.0 PROJECT INFRASTRUCTURE

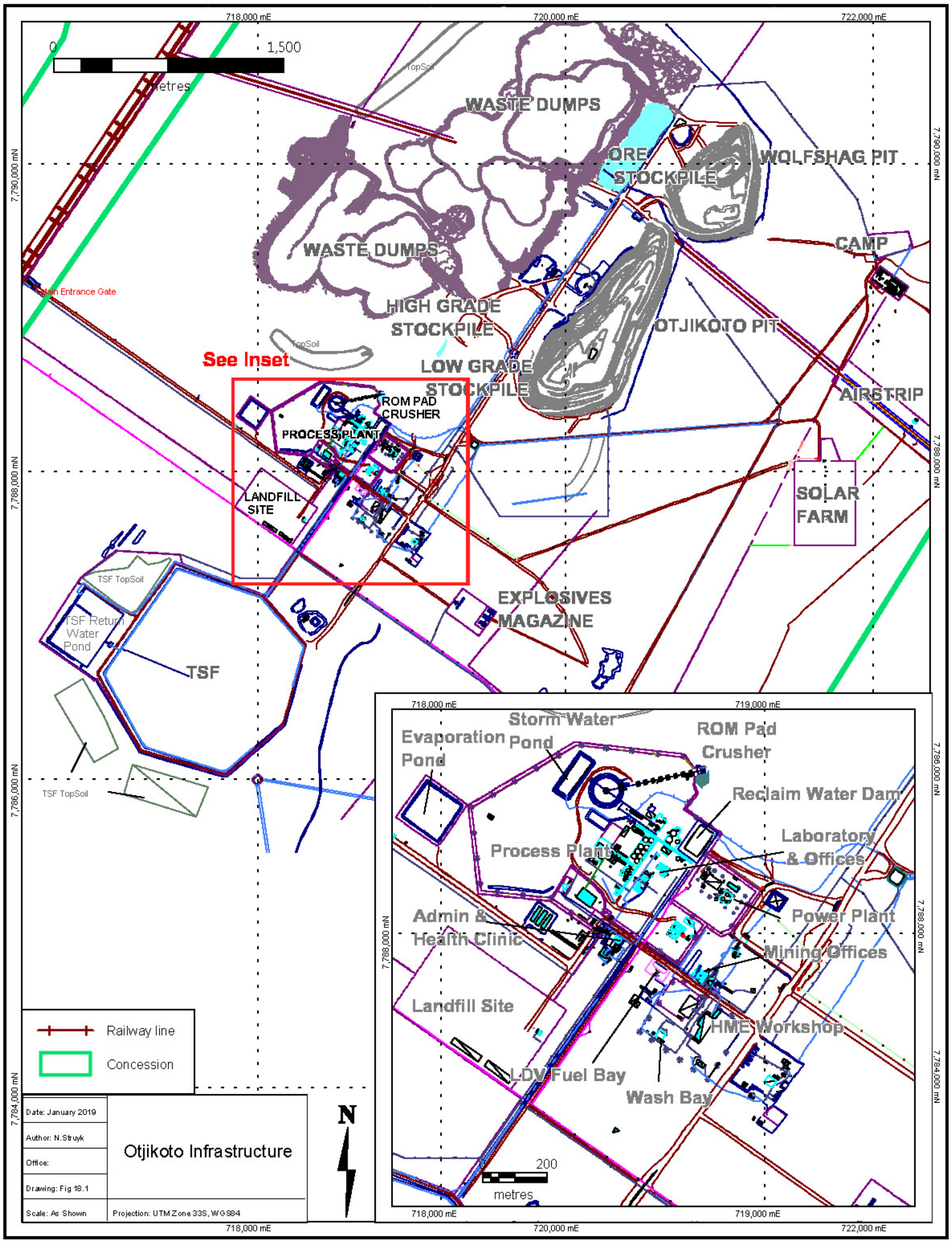
18.1 Introduction

Surface infrastructure to support operations is in place, and includes:

- Two open pits;
- Processing facilities: grinding and leaching facilities, along with management and engineering offices, change house, workshop, warehouse, and assay laboratory facilities;
- Mine facilities: management and engineering offices, change house, EMV and light vehicle workshops, wash bay, warehouse, explosives magazine, crusher, mine access gate house, return water pump house;
- Administration buildings: facilities for overall site management, safety inductions, and general and administrative functions;
- Accommodation camp;
- Waste rock storage facilities;
- Tailings storage facilities;
- Water management facilities: stormwater and water storage dams, diversions, culverts;
- Landfill facility;
- Power generation facility;
- Fuel storage facilities: heavy fuel oil (HFO) and diesel.

Figure 18-1 is an infrastructure layout plan, and includes an inset plan showing the major buildings area.

Figure 18-1: General Infrastructure Layout Plan



Note: Figure prepared by B2Gold, 2019.

18.2 Road and Logistics

The Otjikoto Mine area can be reached from the capital city, Windhoek, some 300 km to the south along the B1 national road, which is a surfaced road in excellent condition. Windhoek is connected by direct commercial air travel from several European countries, South Africa and other African countries.

The large regional town of Tsumeb, a mining centre in its own right, is located some 110 km north of the project area, also along the B1 road. A domestic airport is located at Tsumeb, currently with both scheduled and charter flights connecting with Windhoek.

The smaller town of Otavi lies some 50 km north from the Otjikoto Mine area near the cross roads of the main north–south National Road B1, the road to Grootfontein and the road to Outjo. Otjiwarongo is the nearest town to the site and is approximately 70 km away.

Mine access is from the B1 national highway directly to the administration area via a dedicated, private mine access road.

All roads near and connecting the administration, processing and mine facilities are appropriately sized for two-way traffic and constructed using locally-available gravel. Remote roads such as pipeline and borehole access are single lane with pull-outs.

Large equipment, construction materials, diesel fuel, HFO, process reagents and other bulk supplies are trucked to the mine site from the port at Walvis Bay.

18.3 Stockpiles

Stockpiles include low grade, medium grade, and active ROM stockpiles. The low-grade stockpiles are located southeast of the ROM pad and to the west of the WRSFs (refer to Figure 15-1). The stockpiles have sufficient LOMP storage capacity; however, they could be expanded vertically and horizontally as needed.

A medium grade stockpile is located to the north of the ROM pad. Active stockpiles (medium and high grade) are located on the ROM pad.

18.4 Waste Storage Facilities

Waste rock storage facilities are located to the west of the ultimate pit (refer to Figure 15-1). An OSA of 18° was used in the design of the WRSFs with 15 m wide berms developed at 10 m vertical intervals. The remaining WRSF capacity is about 250 Mt, and there is sufficient footprint area available to add capacity if needed.

18.5 Tailings Storage Facilities

The TSF was constructed using upstream construction techniques, based on a design by Epoch Resources Pty Ltd (Epoch). A penstock system was constructed in the centre of the paddock to direct return water to the return water pond as quickly as possible. The return water dam was constructed within the larger storm water dam, which was designed with a runoff system to contain a 50-year storm event.

The TSF was designed to contain 36 Mt at a deposition rate of 3.0 Mt/a. Review of the as-built and operating parameters of the TSF by Epoch has increased the ultimate capacity to 50 Mt at a deposition rate of 3.5 Mt/a, pending continued annual site visits and analysis.

The TSF and ponds are fully lined with HDPE liner. Monitoring wells and liner under drains are installed and regularly sampled.

A layout plan for the TSF is included as Figure 18-2. Additional facility information is provided in Section 20.2.

18.6 Water Management

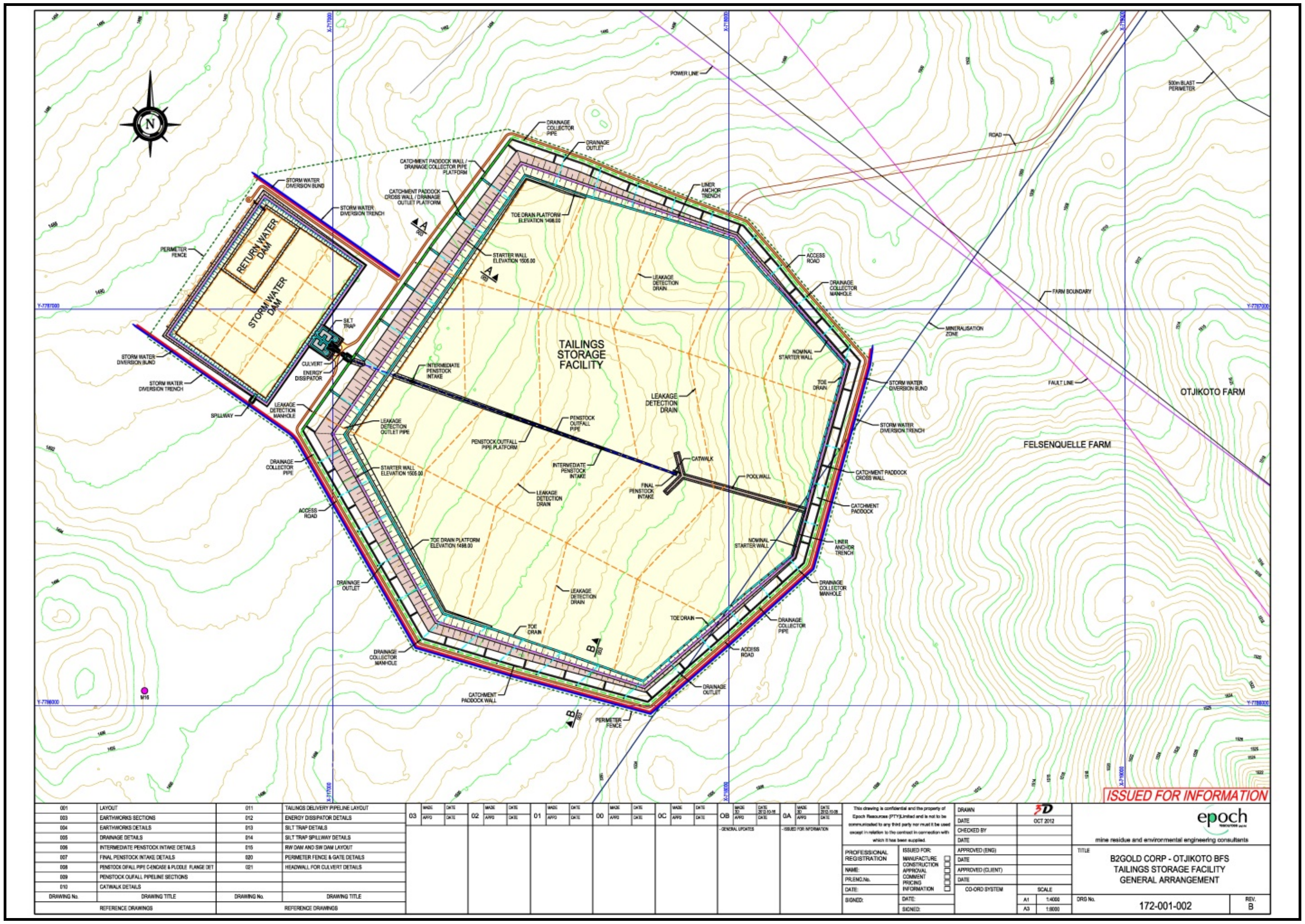
The Otjikoto Mine is in an arid location with rainfall occurring only during the rainy season, most significantly December through March. Hydraulic designs and water management plans focus on isolating the storm water from the process water and minimizing water use. There are no permanent or seasonal waterways on the site, but sheet flows and small channel flows can occur during high intensity/short duration storms.

Storm water and any other non-contact water that flows outside of the disturbed areas is diverted around the facilities with a system of storm water ponds, diversion, and culverts. This system directs the flow to the existing channels and culverts associated with the B1 highway.

All water falling directly on the industrial areas (contacted water) or otherwise contacted (fissure water from the mine pit, return and storm water from the tailings facility) is stored and used in the mining and processing facilities.

The largest stormwater dam is designed with a capacity of 14,000 m^3 to contain all water falling on the processing facility terrace during a 1:50 year rainfall event. The smaller storm water dam provides capacity of 4,000 m^3 and is sited to contain all runoff from the mining facilities. Both storm water dams include spillways and silt traps.

Figure 18-2: Tailings Storage Facility Layout



Note: Figure prepared by Epoch, 2012

The reclaim process water dam receives water from the tailings storage facility and is capable of storing 4,000 m^3 in an HDPE-lined pond. Water pumps supply water from the dam to the processing plant. The second water storage dam is the pit dewatering dam. Pit water is pumped from the in-pit sump and dewatering bore holes to the pond near the southeast pit crest. The dam provides water for dust suppression and mineral processing.

18.7 Camps and Accommodation

B2Gold employees live in the surrounding communities. A small onsite contractor camp can be used if required.

18.8 Power and Electrical

Generators supply power to the plant at 6.6 kV to permit a bypass facility around the SAG mill variable speed drive and to dispense with the otherwise needed 11/6.6 kV transformers to supply the mills. The power plant was constructed with 24 MW of installed generating capacity. A 7 MW solar plant was commissioned in 2018.

The generators are fuelled with HFO, transported to the mine site from Walvis Bay.

18.9 Fuel

A storage facility with minimum 10 days fuel supply supports the generators.

18.10 Water Supply

Potable water is supplied from bore holes.

Process water is sourced from the reclaim process water dam and supplemented with water from the pit dewatering dam as required. Water for dust suppression and other mining-related requirements is also sourced from the pit dewatering dam.

18.11 Comments on Section 18

Infrastructure required to support the LOMP is in place.

19.0 MARKET STUDIES AND CONTRACTS

19.1 Market Studies

No market studies are currently relevant as Otjikoto is an operating mine producing a readily-saleable commodity in the form of doré. Doré produced by B2Gold typically contains approximately 92% Au and 3% Ag. The doré is exported to the Rand Refinery in South Africa.

19.2 Commodity Price Projections

Commodity prices used in Mineral Resource and Mineral Reserve estimates are set by B2Gold corporately. The current gold price provided for Mineral Reserve estimation is $1,250/oz, and $1,400/oz for Mineral Resource estimation.

19.3 Contracts

Major contracts include fuel supply, blasting explosives and accessories, and grade control drilling. Contracts are negotiated and renewed as needed. Contract terms are typical of similar contracts in Namibia that B2Gold is familiar with.

19.4 Comments on Section 19

The doré produced by the mine is readily marketable. Metal prices are set corporately for Mineral Resource and Mineral Reserve estimation, and the gold price used for Mineral Resources and Mineral Reserves in this Report was $1,400/oz and $1,250/oz respectively.

The QP has reviewed commodity pricing assumptions, marketing assumptions and the current major contract areas, and considers the information acceptable for use in estimating Mineral Reserves and in the economic analysis that supports the Mineral Reserves.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Environmental Studies and Considerations

An Environmental Impact Assessment (EIA), complete with an Environmental Management Plan (EMP) and Mine Closure Framework (MCF), was originally completed for the Otjikoto Gold Mine in June 2012 (2012 EIA; SLR 2012). The 2012 EIA updated an earlier impact assessment (completed in September 2011) to include design criteria for the mine, milling circuit, tailings management design and infrastructure. The 2012 EIA details:

- The EIA process followed (including legal requirements);
- The baseline studies completed, including:
  - Air quality;
  - Visual landscape;
  - Groundwater and surface water;
  - Biodiversity;
  - Noise;
  - Archaeology/cultural heritage;
- The process design considerations critical to community health and safety, environment, and social issues;
- The impact of the Project on the environment, proposes monitoring programs for all phases of project development;
- Mitigation strategies to reduce potential project impacts on the receiving environment.

The 2012 EIA included extensive public consultation and was approved (received Environmental Clearance Certificate (2012 ECC)) by the Ministry of Environment and Tourism (MET), Department of Environmental Affairs in August 2012. The 2012 ECC was incorporated into the Mining Lease Amplification Application approved by the Ministry of Mines and Energy (MME) in December 2012.

A second EIA was completed in 2013 (2013 EIA) for the inclusion of the on-site heavy fuel oil (HFO) power plant and landfill facility to cater for non-hazardous waste disposal (SLR 2013). The Environmental Clearance Certificate (ECC) for the 2013 ESIA was issued by MET in October 2013 (2013 ECC).

An EIA Scoping Report (including an assessment of impacts) was completed in 2014 that included the Wolfshag pit, ancillary infrastructure and an expanded plant capacity

(2014 EIA Scoping Report). At this time the EMP was updated to reflect updates to the Project and subsequent environmental mitigation and management measures. A corresponding ECC was issued by the MET in January 2015 (this 2015 ECC superseded previous ECCs). ECCs are valid for a three-year period and so the 2015 ECC was subsequently renewed in 2018 (ECC granted in August 2018).

The EMP is currently being updated (2018 EMP) for submittal and approval by the MET. This 2018 EMP will reflect the current status (i.e., include changes to the Project and updates to its environmental mitigation and management measures) of the Project and will be submitted to the MET upon completion. Table 20-1 presents a summary of some of the key environmental considerations of the Otjikoto Mine operation.

The EMP and its supporting individual Management Plan's (MP) are "living documents" which will continue to be amended periodically throughout the life of the Project to reflect changes in procedures, practices, Project phase, etc.

In addition to these key environmental studies, the Otjikoto Mine employs an Environmental Department which is located at the mine site and is responsible for compliance monitoring, administering environmental permits, interfacing with regulators, and maintaining an environmental management system that is in alignment with ISO 14001 requirements. In carrying out these tasks, many environmental aspects have been studied in addition to those outlined above. There are no environmental considerations that are known and not discussed in this Report that could materially impact B2Gold's ability to extract the Mineral Resources or Mineral Reserves.

20.2 Tailings and Waste Disposal

20.2.1 Tailings Disposal

The tailings storage facility (TSF) is situated on relatively level ground (elevation 1,493.5 mamsl) to the south of the processing mill. The TSF is constructed as a ring embankment structure with a compacted, earthen fill starter embankment and cyclone sand embankment raises above the starter embankment. The TSF collects all mill tailings discharge (supernatant and slurry), the only other inflow to the TSF is direct precipitation on the tailings surface. Surface water is decanted through a penstock decant structure to a return water dam for recycle to the process mill. The TSF and return water dam are constructed with an HDPE liner and seepage collection system to eliminate seepage from the facility to the receiving environment.

Table 20-1: Environmental Considerations

Area	Comment
Air quality	Otjikoto Mine operations generate dust from activities such as drilling, blasting, hauling, loading, stockpiling, crushing, screening, conveying and driving. B2Gold committed to prevent and mitigate adverse potential impacts to air quality from its operational activities. The objective is to prevent unacceptable air quality related pollution impacts. Operational controls to reduce potential air quality pollution impacts are in place, and a program is implemented to monitor ambient dust, particulate, matter (PM10), and fugitive emissions of nitrogen dioxides and sulphur dioxides from the operation of fuel combustion mobile machinery and equipment. Performance is measured and evaluated against the best practice standards, the South African National Air Quality standards (SANAS).
Surface water/storm water	There are no rivers, or major drainage channels within the mining license area. The topography is mainly flat with washes which carry surface/storm water run-off in a southwesterly direction during heavy rain events. B2Gold committed to minimize mixing of clean and contact water systems, and to prevent pollution of surface water run-off due to industrial effluent, domestic effluent and spillages. Surface run-off mainly occurs during the rainfall season only. Surface run-off and stormwater around the mining area, pits and haul roads has been diverted away from the mine pits and facilities via a stormwater channel, and around haul roads by a drainage system leading towards the northwest. Surface run-off through the processing plant is diverted into a stormwater pond. A TSF diversion/stormwater channel is in place. B2Gold has a wastewater disposal exemption permit (no. 666) which obligates the operations from discharging wastewater and effluents into the environment. A surface/storm water and wastewater/effluent sampling program is in place to monitor, manage and mitigate any potential impacts. Surface/storm water is sampled for potential contamination that could extend beyond the mining area.
Groundwater	The Otjikoto water management standard and groundwater monitoring programs guide the management of groundwater extraction, use and potential risks and impacts. An annual groundwater report on the status of the groundwater is submitted to the Department of Water Affairs (DWA) as a requirement of the abstraction permit. The water used is recycled for reuse in the process plant. About 40% is recycled each year. Groundwater levels are measured to understand and manage the potential loss of groundwater. The groundwater levels around the Otjikoto Mine have not changed significantly since pre-mining conditions. Seasonal fluctuation is observed in several boreholes during the dry winter months. Groundwater levels within the mine area have remained constant with the exception of the boreholes closest to the Otjikoto and Wolfshag open pits which have declined by up to 30 m due to the pit dewatering activities that are required for safe operations. The quality of groundwater is monitored to ensure that any changes to the quality can be resolved as quickly as possible. The water quality monitoring results to date confirm that the groundwater quality both within the mine area and regionally is of excellent quality (Group A) and is characterized by neutral pH (around 7) and low total dissolved salts (EC <150 mS/m). There is no indication of groundwater contamination since operations started.
Biodiversity	Managing biodiversity involves a process of land clearing/disturbance application before any area is disturbed. Field assessments are conducted on the area to be affected prior to clearing, these include recording and mapping of significant fauna and flora observed in a particular area. The Department of Forestry is consulted, as appropriate, and permits are acquired for the destruction of protected trees whenever necessary.

Area	Comment
	The operations are adjacent to a game farm where wildlife could escape into the ML area. Potential risks to fauna are mitigated through barriers to prevent access into mine facilities by wildlife. The mine site boundary is fenced, berms are in place, and high-risk facilities have a secondary fence or barrier.
Topsoil	Topsoil has been stockpiled since the project construction phase. A total of about 2 Mm^3 of topsoil has been stockpiled for rehabilitation. Several topsoil stockpiles store topsoil. A portion has been used for progressive rehabilitation since 2015, and it is planned that much of the remaining material will be used as a growth media in the rehabilitation of the WRSF.
Waste	Waste is managed through the process of routine monitoring and inspection of waste areas, maintenance of resources, continuous awareness training of employees and contractors on waste practices, safe storage and transportation of waste and maintenance of waste-related records. Waste management is guided by the process of recovering as much reusable and recyclable waste materials as possible, treating and disposing the rest of the waste material which cannot be reused or recycled. The EMP commitment is to ensure proper storage, recycling, reusing, removal, transportation and disposal of non-hazardous solid waste and hazardous solid waste including medical waste.
Heritage	The few heritage finds in the Otjikoto Mine area were identified during EIA studies and have been registered with the National Heritage Council. Archeological sites of significance identified during the EIA studies have been preserved to prevent any potential disturbances to these sites. There have been no new archaeological finds since operations commenced. A chance find process procedure is in place to inform and provide awareness to field employees and contractors.
Noise	Noise and vibration monitoring occur within a 15 km radius of the blasting zone to measure air-blast and vibration and evaluate potential impacts. The monitoring threshold used is the recommended best practice guidelines of 135 dB as per the United States Bureau of Mines. An ambient noise monitoring program commenced in November 2017.
Visual	B2Gold will continue to minimize visual impacts as a result of mining activity. Steps that have been taken to date include progressive rehabilitation to vegetate areas such as the WRSFs and the TSF wall; use of non-reflective materials in building construction; ensuring the colour of buildings and facilities blends in with the surrounding environment; and use of localized lighting that is directed to specific site areas and as much as practicable does not emit light beyond the work task or security area.

The current crest elevations of the TSF embankment is 1,508.5 mamsl, the starter embankment crest elevation is 1,505 mamsl. and the cyclone sands embankment extends an additional 3.5 m above the starter embankment. The embankment is planned to be raised to a final elevation of 1,538 m (for a total TSF embankment height of 44.5 m) at a future rate of rise over the life of the mine between 2.5 and 3.1 metres per year.

The current tailings surface pond holds a maximum of 323,000 Mm^3 of water. The surface pond water volume is minimized to the extent practical, with excess water decanted from the facility to be returned to the processing mill. The surface pond volume fluctuates seasonally with the wet season and larger pond volumes occurring typically from December to March; in 2018 the maximum surface pond volume was estimated at approximately 285,000 Mm^3.

As of December 2018, the TSF contained approximately 13.4 Mt of tailings. The current mine plan projects the total tailings to the end of mine life at approximately 50 Mt.

20.2.2 Waste Disposal

The waste rock storage facility (WRSF) is situated on relatively level ground north of the processing mill and west of the open mine pits. A relatively small proportion (approximately 2.5%) of the waste rock is potentially acid generating, but the considerably larger proportion of waste rock with excess neutralisation potential can be used to mitigate the risk of acid rock drainage. In addition, portions of the WRSF are constructed with a 5 m base layer of calcrete to provide neutralizing capacity for any seepage that may leave the facility.

The WRSF design consists of 10 m benches, with a current facility height of approximately 15 m and a final design height of 30 m. Waste rock is deposited by end tipping within the WRSF and tip faces are pushed down to a final slope angle of approximately 18 degrees (1V:3H) in preparation for rehabilitation.

As of December 2018, the WRSF contained approximately 78.5 Mt of waste rock.

20.3 Water Management

As the Otjikoto Mine is located in an arid environment, with minimal annual precipitation, effective water management is an important aspect to the Otjikoto operation. Our water resource management efforts are focused on keeping clean water clean and minimizing the amount of water impacted by mining activities.

A principal diversion channel is used to intercept storm water run-off from the east before it enters the operations, diverting water to the north and west around the open pits and waste rock dump. Smaller diversion channels also direct water to the west around the TSF and around the mill and processing infrastructure.

Water is recycled at the operation to the greatest extent practical; management of the TSF water inventory requires that recycling of water to the mill is maximized. A portion of pit borehole dewatering water is re-injected to the groundwater aquifer to minimize groundwater abstraction. Water is treated in two processes on site. Two small sewage treatment plant treats site domestic waste water to acceptable discharge limits and this effluent is discharged to lined ponds and is evaporated. The site does not discharge water to surface water or groundwater receptors.

20.4 Site Monitoring

The Otjikoto Mine employs an Environmental Department which is located at the mine site and is responsible for compliance monitoring, administering environmental permits, interfacing with regulators, and maintaining an environmental management system that is in alignment with ISO 14001 requirements.

The Project's environmental management system consists of an overall Environmental Management Plan supported by a number of component management plans and supporting procedures. These plans and procedures outline the management and mitigation measures that are implemented at the site to manage and reduce potential environmental impacts to acceptable levels. The Environmental Management Plan was in the process of being updated in 2018 to reflect the current status of the Project and once completed will be submitted to the MET for approval.

Specific component plans in place include:

- Stakeholder Consultation/Communication Management Plan;
- Safety and Security Management Plan;
- Surface Water/Storm Water Management Plan;
- Groundwater Management Plan;
- Air Quality Management Plan;
- Noise & Vibrations Management Plan;
- Biodiversity Management Plan;
- Visual Management Plan;
- Archaeology Management Plan;
- Traffic Management Plan;
- Socio-Economic Management Plan;

- Resource Management Plan;
- Soil Management Plan;
- Waste Management Plan.

Performance on these EMP management plans is reported on a bi-annual basis within the three years of the valid ECC and a three-year performance report is required for a renewal of the ECC. The EMP and its supporting individual Management Plans (MP) are "living documents" which will continue to be amended periodically throughout the life of the Project to reflect changes in procedures, practices, Project phase, etc.

20.5 Permitting

Various permits and authorizations are required for the Otjikoto Gold Mine. B2Gold currently holds all environmental permits required for operations.

20.5.1 Environmental Clearance Certificate (ECC)

The 2015 ECC for the Otjikoto operations was renewed in 2018. The Otjikoto Mine received approval to continue with operations, with the issue of the August, 2018 ECC. The 2018 ECC requires that the Otjikoto Mine operations continue with the monitoring and evaluation of environmental performance with established targets for improvements as per the 2018 EMP. The 2018 approval was granted based on the performance of the Otjikoto project against its initial EMP over the Project's first three years of operations. The ECC is valid for three years, requiring renewal in 2021.

20.5.2 Mining Licence

ML 169 for the Otjikoto Mine Project was granted to Auryx Gold Namibia (Pty) Ltd in December 2012, and the licence holder/company name was changed to B2Gold Namibia (Pty) Ltd in July 2013. The mining licence is issued in respect of base and rare metals and industrial minerals and precious metals with conditions on environmental protection (Part 3).

20.5.3 Approval of Mine Closure and Rehabilitation Plan

As part of granting approval for a project under the Environmental Management Act 7 of 2007, (EMA), a draft closure and rehabilitation plan is required. The Otjikoto project was approved with a mine closure framework (MCF) in 2012 to satisfy the requirement of the EMA. A mine closure and rehabilitation plan has been developed in 2018 for the Otjikoto project and it is in the process of submission to the MET for approval. The closure and rehabilitation plan will be reviewed every two years to reflect the current closure and rehabilitation developments of the project.

20.5.4 Additional Permits and Authorizations

Several additional permits and authorizations are required for the Project. B2Gold holds all environmental permits required for operations. Key environmental permits granted since 2015 are summarized in Table 20-2. Permits marked as "in progress" are currently in the process of being renewed.

Other than as outlined in this Report section, B2Gold is not aware of any significant permits or environmental factors that may affect the right or ability to continue operations. Additionally, B2Gold is not aware of any reasons why all additional environmental operational permits will not be granted.

20.6 Mine Reclamation and Closure Considerations

Namibian legislation requires that a draft mine closure and rehabilitation plan is developed at the early phase of a project (EMA, 2017) and that mines decommission and clean up at closure (Minerals Act, 1991).

The initial, approved Mine Closure Framework (2015) was updated by an SLR Group company (SLR) in April 2018. As detailed in this 2018 Rehabilitation and Closure Plan, the mine area will be restored to a functioning post-mining land use. The initial proposed post-mining land use includes game farming and nature conservancy, however, determination and agreement (with surrounding communities, regulatory authorities and other relevant stakeholders) of final post-mining land use requires additional closure-specific consultation with stakeholders.

Closure objectives were developed taking into account the local environmental context of the existing mining operation, regulatory and corporate requirements, perceived stakeholder expectations (informed by stakeholder consultation undertaken as part of environmental assessment processes) and Industry Best Practice considerations. Key objectives include:

- Comply with Namibian legal requirements;
- Comply with B2Gold's legally binding commitments and conform to B2Gold's internal and Corporate requirements;
- Reduce or eliminate adverse environmental effects once the mine ceases operations;
- Protect the environment by using safe and responsible closure practices;

Table 20-2: Summary of Additional Permits and Authorizations Required for the Otjikoto Gold Mine

Aspect	Permit/ Licence No	Description	Status
Air quality	Approval	Scheduled processes certificate	In progress
Electricity	93/613	Generation and transmission of electricity - licence (amended to include solar input)	Current
Emergency	Otjozondjupa 125	Health clinic	Current
Emergency	Otjozondjupa 130	Ambulance	Current
Environment	ECC	Environmental clearance certificate (ECC) for Otjikoto Mine operations (2018 – 2020)	Current
Biodiversity	—	Tree harvesting permit - land clearing and disturbance of protected trees	In progress
Biodiversity	0064/2018	Nursery licence - protected/indigenous plants	Current
Explosives	19/2/23/1(319)	Licence for explosives magazines	Current
Explosives	28/1/2/1/14729	Transporting and conveyance of explosives	Current
Fuel	CI/2649/2013	Bulk fuel farm certificate, storage of fuel	Current
Fuel	CI/2713/2015	LDV fuel farm certificate, storage of fuel	Current
Fuel	CI/2713/2018	Power plant fuel farm certificate, storage of fuel	Current
Mining	ML 169	Mining licence	Current
Mining	Approval	Accessory works permit	Current
Radiation	9-0/0023	Authorisation for radioactive sources	Current
Transport	*Various*	Vehicle registrations, licences, roadworthy etc	Current
Waste	N/A	Onsite landfill (approved through ECC)	Current
Waste	666	Waste water and effluent disposal exemption permit	In progress
Water	11385	Borehole drilling for monitoring	Current
Water	10971	Water abstraction for mining/dewatering purposes	Current

- Establish conditions which are consistent with the predetermined end use objectives; i.e., re-establish a landscape that can over time regenerate sustainable endemic vegetation communities and ensure that an ecologically functioning (fauna and flora) environment is left behind;
- Reduce the need for long-term monitoring and maintenance by establishing effective physical, chemical and ecological stability of disturbed areas.

B2Gold has made decommissioning and closure-related commitments in EIA and EMP documents, covering aspects such as stakeholder communication; third-party safety and security; biodiversity; surface water and groundwater; effluent and spillages waste management; air quality; heritage; rehabilitation; waste management and socio-economics.

The concepts for reclamation and closure of the main Otjikoto Mine facilities includes:

- Mine pits: Final pit voids will be left open and will be provided with perimeter berms and security fencing to restrict access to humans and wildlife. Preliminary assessments indicate that long-term water management of pit water flows (surface water and groundwater) will not be necessary;
- Tailings storage facility: The tailings impoundment will be provided with an engineered cover system designed to reduce infiltration of surface water into the underlying tailings to convey surface water runoff off of the facility. Once tailings deposition has ceased, the phreatic surface within the deposited tailings will gradually reduce as part of the natural drawdown process. Drawdown will result in ongoing seepage from the toe and blanket drains that are present above the TSF lining system. This seepage will be collected in the solution trench around the TSF and will be directed to the lined return water dam. Once the drawdown process is complete, seepage will reduce to de minimis volumes and no further active management is anticipated. Thereafter, the remaining infrastructure (e.g., return water dam) will be decommissioned and removed/disposed of appropriately;
- Waste rock storage facility: The waste rock storage facility will be capped with an engineered cover system designed to reduce infiltration of surface water into the underlying waste rock and to convey surface water runoff off of the facility. The slopes of the facility will be rehabilitated to reduce long-term erosion and minimize long-term maintenance;
- Onsite infrastructure: All infrastructure not needed for the post-closure requirements will be decommissioned. Hazardous material and high value components will be removed and the remainder of the facilities demolished and removed/disposed of in accordance with regulatory requirements. Disturbed land will be landscaped into a natural form to blend with the surrounding topography,

and rehabilitated to form stable landforms. Rehabilitation will be in accordance with the approved post-mining land use.

The rehabilitation and closure plans include a combination of progressive rehabilitation in addition to final closure planning. Progressive rehabilitation has taken place on the initial, completed benches of the WRSF, on the TSF starter wall embankments and along sections of roads no longer needed for the mining operations.

Rehabilitated areas will require aftercare and maintenance to ensure closure success. These activities will typically include erosion control and slope repair; fertilising of struggling rehabilitated areas; monitoring of groundwater quality; monitoring of vegetation composition and diversity; control and eradication of alien plants; and monitoring air quality (i.e., dust fallout).

An eight-year post-closure period for maintenance and aftercare has been provisionally allowed for. It is currently anticipated that most of the maintenance and aftercare activities will be undertaken in the first three years following closure (the active maintenance period), and thereafter the frequency of activities is expected to stop (in areas where vegetation is considered self-sustaining) and/or decline (passive maintenance period). The passive maintenance period is anticipated to be a further five years of maintenance and monitoring at a reduced frequency.

The Otjikoto Mine updates on an annual basis the estimate of its environmental reclamation and closure liabilities. The Otjikoto Mine's environmental liabilities as of December 31, 2018 are estimated at approximately US$24.8 million.

20.7 Social and Community Considerations

The Otjikoto Mine operations and activities associated with the mine have socioeconomic impacts on the surrounding communities.

- Economic: Major positive direct and indirect impacts due to procurement of goods and services, the creation of jobs and attendant training and skills-building of employees. Procurement and human resource activities prioritize local people as well as historically disadvantaged people in accordance with Namibian regulation. The potential negative economic impacts of mine closure will be managed by the mine closure plan;
- Neighbouring farms: There have been minimal impacts on neighbouring farms as the B2Gold and contractor workforce lives in established nearby communities and strict environmental management plans are in place. B2Gold maintains regular engagement to share environmental monitoring data and address any issues that arise;
- In-migration and resulting health, safety and security issues in nearby towns: B2Gold encourages workers to settle in nearby towns, which have established

social infrastructure and are large enough to adapt to in-migration. Regular engagement is conducted with nearby towns to identify social issues which can be addressed through community investment activities. B2Gold also conducts ongoing training and wellness programs for its workforce to reduce the potential social risks due to in-migration.

A Social Investment Strategy has been developed with the input from key local, regional and national stakeholders to enhance the positive impacts and minimize negative impacts of the mine. A Social Investment Board has been created composed of a majority of external stakeholders, which oversees the development and implementation of annual social investment plans and budgets. Social investment focuses on four key areas: livelihood, education, conservation and health.

The first priority for implementation of community development initiatives and projects are the nearby communities (e.g., Otjiwarongo and Otavi) and within the Otjozondjupa region, however, the Otjikoto mine also supports community development projects throughout Namibia.

Examples of measures implemented to minimize social and economic impacts include:

- Regional small and medium enterprise projects;
- Funding of school projects in Otavi and Otjiwarongo;
- Support of regional activities (e.g. science fair, Otavi Expo, Otjiwarongo showgrounds);
- Early childhood education projects.

The Stakeholder Engagement Plan is developed that identifies stakeholders impacted by or interested in B2Gold's activities and relevant engagement activities. The Otjikoto Mine regularly engages stakeholders (e.g., surrounding communities, neighboring landowners/farmers, regulatory authorities) to provide them with information regarding the environmental and social performance of the mine, and to address any issues that are raised.

Activities include:

- Consultations and engagements with the communities; neighbouring farmers, Otjiwarongo and Otavi town councils and the public;
- Consultations with key government stakeholders on environmental issues; reporting, permit applications, amendments etc. and general consultations;
- Site visits by MET, Ministry of Health and social and other services;

- Non-governmental organizations (NGOs) including the University of Namibia students and Namibia University of Science and Technology, for educational and research purposes;
- Business partners, investors and interested parties on business opportunities, concerns, and improvements.

A Community Grievance Mechanism is in place to address any complaints from external stakeholders. B2Gold investigates all grievances and provides a formal response to the complainant. In general, relations with external stakeholders are good and stakeholder grievances have been limited.

21.0 CAPITAL AND OPERATING COSTS

21.1 Introduction

Cost estimates are based on the Otjikoto 2018 LOMP, which is based on mining and processing existing Mineral Reserves and approximately 5.5 Mt from the indicated Mineral Resource low-grade stockpile when higher grade feed is not available. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

The life of mine plan assumes Owner-operated mining with mining and processing extending through 2026 (eight years including 2019).

As Otjikoto is an operating project, the costs are primarily based on actual operating and capital costs.

21.2 Capital Cost Estimates

21.2.1 Basis of Estimate

As the Otjikoto Mine is a steady state operation, capital costs largely comprise mobile equipment costs (replace and rebuild). An allowance for miscellaneous tools and equipment, small projects, and other minor capital costs has been included for mining, processing, and site general. All capital costs are assumed to be sustaining capital, as the current life of mine plan assumes no expansions to processing or mining capacity.

21.2.2 Labour Assumptions

External labour costs are assumed to be included in the purchase price for plant and equipment. Owner labour to support rebuilds is included in operating costs, and is excluded from capital costs.

21.2.3 Contingency

As the capital costs are based on actual recent prices, an allowance for contingency has not been included.

21.2.4 Mine Capital Costs

Mining capital costs are based on continuing with Owner-operator mining. These costs are based on recent actual costs and current maintenance practices for scheduling of rebuilds and equipment replacements. Prestripping costs are not included in mining capital costs as they are included in the operating cost calculation.

Additional trucks are scheduled to be added to the fleet in 2020 and 2021 to maintain production levels as the increase in pit depths results in longer haulage cycle times.

21.2.5 Process Capital Costs

Process capital costs have been estimated to average $300,000 per year, for a total of $2.4 million over the remaining life of mine.

21.2.6 General and Administrative Capital Costs

Site G&A capital costs have been estimated to average $360,000 per year, for a total of $2.9 million over the remaining life of mine.

21.2.7 Infrastructure Capital Costs

The site power plant requires rebuild and replacement costs totalling $13.1 M over the remaining life of mine.

21.2.8 Capital Cost Summary

The overall capital cost estimate is summarized in Table 21-1.

21.3 Operating Cost Estimates

21.3.1 Basis of Estimate

Operating costs are based on recent actual costs, projected through the current Mineral Reserve based life of mine plan and supported by recent actual costs including 2018 labour rates and fuel prices.

21.3.2 Mine Operating Costs

Table 21-2 contains a summary of the mine operating costs by area based on mining up to 39 Mt/a and processing 3.5 Mt/a. Stockpile and re-handle costs are not included since these are associated with processing.

21.3.3 Process Operating Costs

Table 21-3 contains a summary of the process operating costs by area based on processing 3.5 Mt/a. Stockpile and re-handle costs are included since these are not included in mining operating costs.

21.3.4 Infrastructure Operating Costs

Infrastructure and other distributable costs (power, light vehicles, equipment maintenance) are included in the mining and processing operating costs.

Table 21-1: Capital Cost Estimate

Area	LOM (US$ million)
Site general and infrastructure	15.9
Mining and processing	90.3
Closure and rehabilitation	20.3
Total	***126.5***

Note: Totals may not sum due to rounding.

Table 21-2: Mining Operating Costs

Cost Centre	Rock Mined (US$/t)	Ore Processed (US$/t)	Gold Produced US$/oz Au
Drilling & blasting	0.48	3.96	105.01
Loading & hauling	0.78	6.40	169.73
Dewatering & pumping	0.08	0.65	17.36
WSF & haul roads	0.05	0.40	10.57
Mine general	0.21	1.69	44.89
Mine technical service	0.12	1.00	26.57
Mine maintenance	0.18	1.45	38.60
Grade control	0.12	0.97	25.69
Total	***2.01***	***16.52***	***438.42***

Note: Totals may not sum due to rounding.

Table 21-3: Process Operating Costs

Cost Centre	Ore Processed (US$/t)	Gold Produced US$/oz Au
Feed crusher/rehandle	0.38	10.03
Crushing and grinding	3.66	97.24
Gravity circuit	0.50	13.29
Leach and CIP	2.31	61.36
Elution/gold room	0.85	22.53
Tails handling	0.20	5.32
Water and reagent systems	0.59	15.74
Laboratory	0.70	18.65
Process general	2.54	67.32
Total	***11.74***	***311.48***

Note: Totals may not sum due to rounding.

21.3.5 General and Administrative Operating Costs

General and Administrative operating costs are budgeted at $3.31/t in 2019, and average $3.04/t for the remaining life of mine (excluding 2019).

21.3.6 Operating Cost Summary

The projected LOMP operating costs are summarized in Table 21-4.

21.4 Comments on Section 21

The capital and operating costs for the Project are based on recent actual costs and the Mineral Reserve-based LOMP. The costs indicate operating and total costs below the Mineral Reserve and Mineral Resource cost bases ($1,250/oz Au and $1,400/oz Au, respectively). Cost reduction strategies including mining bulk waste with a mining contractor are being considered.

LOMP capital cost estimates total $126.5 million.

LOMP operating cost estimates total $831.57/oz Au produced, or $31.30/t processed.

There is Project upside potential if economics can support a mining contractor to mine a portion of the bulk waste or underground mining is proven to be more cost effective than open pit mining in phase four of the Wolfshag open pit.

Table 21-4: Operating Cost Summary

Cost Centre	Ore Processed (US$/t)	Gold Produced US$/oz Au
Mining	16.52	438.42
Processing	11.74	311.48
General and administrative	3.04	81.67
Total	***31.30***	***831.57***

Note: Totals may not sum due to rounding.

22.0 ECONOMIC ANALYSIS

22.1 Economic Analysis

B2Gold is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration is supported by a positive cash flow.

22.2 Comments on Section 22

An economic analysis was performed in support of estimation of the Mineral Reserves; this indicated a positive cash flow using the assumptions detailed in this Report.

23.0 ADJACENT PROPERTIES

This section is not relevant to this Report.

24.0 OTHER RELEVANT DATA AND INFORMATION

This section is not relevant to this Report.

25.0 INTERPRETATION AND CONCLUSIONS

25.1 Introduction

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

25.2 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

Information obtained from B2Gold experts supports that the support that the mineral tenure held is valid, and the granted mining lease is sufficient to support a declaration of Mineral Resources and Mineral Reserves.

Surface rights, in the form of five B2Gold-owned farms, is sufficient to allow mining operations.

Where exploration activities are conducted on ground where the surface rights are held by third parties, B2Gold typically enters into compensation agreements for any land disturbance with the surface rights owner.

Water rights are granted, and sufficient to support mining operations. The current permit, which expires in 2020, can be renewed providing all conditions are met.

The Namibian Minerals Act levies a royalty of 3% on the net sales of gold and silver. There is a 1% export levy on gross gold revenue.

The Otjikoto Project is not subject to any other back-in rights payments, agreements or encumbrances.

To the extent known, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Project that have not been discussed in this Report.

25.3 Geology and Mineralization

The Otjikoto and Wolfshag deposits are interpreted to be examples of orogenic gold deposits.

The geological understanding of the settings, lithologies, and structural and alteration controls on mineralization in the different zones is sufficient to support estimation of Mineral Resources and Mineral Reserves. The geological knowledge of the area is also considered sufficiently acceptable to reliably inform mine planning.

The mineralization style and setting are well understood and can support declaration of Mineral Resources and Mineral Reserves.

Exploration at Otjikoto remains focused on testing targets proximal to the current mine operations. The highest-priority targets are the continued testing of the down plunge continuation of the Otjikoto and Wolfshag shoots below the current pit limits and areas within proximity of the pits. Regional exploration work is ongoing with geophysics used as the principal tool to define targets under the extensive calcrete cover. These programs are focusing on the Okonguarri Formation, where it is situated between the Footwall Marble and Karibib Formation marble.

25.4 Exploration, Drilling and Analytical Data Collection in Support of Mineral Resource Estimation

The exploration programs completed to date are appropriate for the style of the deposits on the Project.

Sampling methods are acceptable for Mineral Resource and Mineral Reserve estimation.

Sample preparation, analysis and security are generally performed in accordance with exploration best practices and industry standards.

The quantity and quality of the lithological, geotechnical, collar and down-hole survey data collected during the exploration and delineation drilling programs are sufficient to support Mineral Resource and Mineral Reserve estimation. The collected sample data adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposits. Sampling is representative of the gold grades in the deposits, reflecting areas of higher and lower grades.

The QA/QC programs adequately address issues of precision, accuracy and contamination. Drilling programs typically included blanks, duplicates and CRM samples. QA/QC submission rates meet industry-accepted standards.

A review of sample preparation procedures over time that was completed in 2016 indicated that in some sample batches, coarse material was being left in the minus-fraction submitted for assay. As a result, in late 2016 and early 2017, a re-sampling and re-assaying program was undertaken, consisting of about 14,000 remnant half-core samples. The re-assay data replaced the original analyses in the database.

The data verification programs concluded that the data collected from the Project adequately support the geological interpretations and constitute a database of sufficient quality to support the use of the data in Mineral Resource and Mineral Reserve estimation.

25.5 Metallurgical Testwork

Metallurgical testwork and associated analytical procedures were appropriate to the mineralization type, appropriate to establish the optimal processing routes, and were performed using samples that are typical of the mineralization styles found within the Project.

Samples selected for testing were representative of the various types and styles of mineralization. Samples were selected from a range of depths within the deposits. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Recovery factors estimated are based on appropriate metallurgical testwork, and are appropriate to the mineralization types and the selected process routes. The LOM recovery forecast is 98%.

There are no deleterious elements known that would affect process activities or metallurgical recoveries

25.6 Mineral Resource Estimates

Mineral Resources are reported using the 2014 CIM Definition Standards, and assume both open pit and underground mining methods.

Factors that may affect the estimates include metal price and exchange rate assumptions; changes to the assumptions used to generate the gold grade cut-off grade; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and mineralization shape and geological and grade continuity assumptions; variations in density and domain assignments; geometallurgical and oxidation assumptions; changes to geotechnical, mining and metallurgical recovery assumptions; change to the input and design parameter assumptions that pertain to the conceptual pit and stope designs constraining the estimates; and assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate.

There is upside potential for the estimates if mineralization that is currently classified as Inferred can be upgraded to higher-confidence Mineral Resource categories.

25.7 Mineral Reserve Estimates

Mineral Reserves are reported using the 2014 CIM Definition Standards and are based on open pit mining methods.

Factors that may affect the estimate include changes to the following assumptions: metal prices; pit slope and geotechnical; unforeseen dilution; hydrogeological and pit dewatering; assumptions used when evaluating the potential economics of Phases 3 and 4 of each of the pits; the amount and grade of stockpile material required to maintain operations during the wet season; capital and operating cost inputs; and modifying factors, in particular social, permitting and environmental considerations.

There is upside potential for the estimates if mineralization that is currently classified as Mineral Resources potentially amenable to underground mining methods can be converted to Mineral Reserves following appropriate technical studies.

25.8 Mine Plan

The mining operations use conventional open pit mining methods and equipment.

Mining is based on a phased approach with stockpiling to bring high-grade forward and provide operational flexibility.

Four pit phases are planned for each of the Otjikoto and Wolfshag pits. Phase 1 of each pit is complete.

Mine and mill production are scheduled for eight years with the mining rate dropping the last two years with material from the low-grade stockpiles supplementing the process feed.

25.9 Recovery Plan

The process methods are conventional to the industry. The comminution and recovery processes are widely used in the industry with no significant elements of technological innovation.

The process plant flowsheet design was based on testwork results, previous study designs and industry standard practices.

The process facilities in use are appropriate to the mineralization styles.

The plant will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

25.10 Infrastructure

All key infrastructure is built for the Otjikoto operations, and mill feed is sourced from two open pits.

Mine access is from the B1 national highway directly to the administration area via a dedicated, private mine access road. All roads near and connecting the administration, processing and mine facilities are appropriately sized for two-way traffic.

The tailings storage facility was constructed using upstream construction techniques, and is conventional for the industry. There is sufficient storage capacity for the planned LOM.

Hydraulic designs and water management plans focus on isolating the storm water from the process water and minimizing water use. All water falling directly on the industrial areas (contacted water) or otherwise contacted (fissure water from the mine pit, return and storm water from the tailings facility) is stored and used in the mining and processing facilities.

The power plant was constructed with 24 MW of installed generating capacity. In 2018 a 7 MW solar plant was installed. The on-site generation system can produce sufficient power to meet LOMP requirements.

Low-level earthquake activity has been recorded regionally. The highest intensity event recorded in the Project vicinity is a magnitude 4.8 event in 1980, centred about 25–30 km to the north of the mining operation.

25.11 Environmental, Permitting and Social Considerations

B2Gold conducts ongoing monitoring and annual reporting under the terms of its permits and approvals.

The EMP is currently being updated for submittal and approval by the MET. This 2018 EMP will reflect the current status (i.e., include changes to the Project and updates to its environmental mitigation and management measures) of the Project and will be submitted to the MET upon completion.

The Otjikoto Mine updates on an annual basis the estimate of its environmental reclamation and closure liabilities. The Otjikoto Mine's environmental liabilities as of December 31, 2018 are estimated at approximately US$24.8 million.

B2Gold holds all permits required for compliant operations. Permits that are not granted for the life of operations are renewed as required.

A Social Investment Strategy has been developed with the input from key local, regional and national stakeholders. A Social Investment Board has been created composed of a majority of external stakeholders. A Stakeholder Engagement Plan is developed that identifies stakeholders impacted by or interested in B2Gold's activities and relevant engagement activities. A Community Grievance Mechanism is in place to address any complaints from external stakeholders.

25.12 Markets and Contracts

Doré from the mine is readily marketable, and contracts are in place for doré sales.

Commodity prices used in Mineral Resource and Mineral Reserve estimates are set by B2Gold corporately. The current gold price provided for Mineral Reserve estimation is $1,250/oz, and $1,400/oz for Mineral Resource estimation.

Major contracts include fuel supply, blasting explosives and accessories, and grade control drilling. Contracts are negotiated and renewed as needed. Contract terms are typical of similar contracts in Namibia.

25.13 Capital Cost Estimates

As the Otjikoto is a steady state operation capital costs are largely comprised of mobile equipment costs (replace and rebuild). An allowance for miscellaneous tools and equipment, small projects, and other minor capital costs has been included for mining, processing, and site general. All capital costs are assumed to be sustaining capital, as the current life of mine plan assumes no expansions to processing or mining capacity.

Capital cost estimates are acceptable to support declaration of Mineral Reserves. The LOMP estimated total capital cost is $126.5 million.

25.14 Operating Cost Estimates

Operating costs are based on recent actual costs, projected through the current Mineral Reserve based life of mine plan and supported by recent actual costs including 2018 labour rates and fuel prices.

Operating cost estimates are acceptable to support declaration of Mineral Reserves.

LOMP operating cost estimates total $831.57/oz Au produced, or $31.30/t processed.

25.15 Economic Analysis Supporting Mineral Reserve Declaration

B2Gold is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material expansion of current production is planned.

An economic analysis to support presentation of Mineral Reserves was conducted. Under the assumptions presented in this Report, the operations show a positive cash flow, and can support Mineral Reserve estimation.

26.0 RECOMMENDATIONS

26.1 Introduction

The work programs recommended focus on evaluation of the potential for underground operations, and on mine design improvements (phase 1) and additional drilling around a possible future underground mining (phase 2) that is contingent completion of, and positive results from, the first phase of work.

The first phase of work consists of drilling and mine improvement studies, and is budgeted at about $2.6 million. The second phase, if undertaken, is estimated at about $4–$6 million.

26.2 Phase 1

26.2.1 Exploration Drilling

Drilling will initially focus on the down plunge extension of Otjikoto and Wolfshag deposits with a budgetary cost of approximately $2.5 million. This cost is inclusive of drilling, mobilization, assay and labour.

26.2.2 Mine Design

Mining cost optimisation should be conducted to identify cost savings measures to reduce the LOM operating and sustaining capital costs. This analysis should consider a trade-off study between owner and contractor mining, based on the current LOM plan. This step is estimated at about $10,000 to $20,000. The planned work programs would be performed internally by B2Gold personnel.

Due to the high strip ratio at Wolfshag Phase 4, a scoping-level mining method trade-off study should be conducted to determine which mining method is more cost effective, open pit or underground. This study should also evaluate Owner and contract mining options for underground. The study is estimated to cost about $20,000–$25,000. The planned work programs would be performed internally by B2Gold personnel.

The LOM design should be reviewed and revised as-needed based on the findings of the on-going geotechnical evaluation of the pit slopes. No budget allocation is included for this recommendation, as the expectation is that the work would be performed as part of B2Gold’s normal planning cycle.

The overall cost estimate for the mine design improvements recommendations is $30,000 to $45,000.

26.3 Phase 2

Depending on the outcome of the trade-off study to evaluate mining the area of Wolfshag Phase 4 pit from underground or open pit, additional infill drilling may be completed. The additional drilling could include exploration, metallurgical, hydrogeological, and geotechnical drill holes.

A trade-off study to determine whether such drilling should be conducted from surface or a decline will also be considered.

Completion of this second work phase is dependent on the results of the down-plunge extension drilling, and the underground/open pit mining evaluation. The additional drilling may cost in the order of \$4–\$6 million, using the same all-in drilling costs as noted for the phase 1 drill program.

27.0 REFERENCES

B2Gold, 2014: Environment and Biodiversity Standards.

B2Gold, 2017: Otjikoto Gold Mine, Environmental Report 2014 – 2016, HFO Power Plant and Landfill Site, Environmental Clearance Certificate (ECC) Renewal

Catuneanu, O., Wopfner, H., Eriksson, P.G., Cairncross, B., Rubidge, B.S., Smith, R.M.H., and Hancox, P.J., 2005: The Karoo Basins of South-Central Africa: Journal of African Earth Sciences vol. 43 pp. 211–253.

Curtis, C., 2006: Stable Isotope Evidence for the Origin of the Otjikoto Gold Deposit: BSc (Hons) thesis, University of Cape Town.

Food and Agriculture Administration of the United Nations, 2002: Map of Namibia: http://www.fao.org/fi/oldsite/FCP/en/NAM/body.htm

Global Resource Engineering, Ltd.,2016: Otjikoto Gold Project Namibia Long-Term Mine Plan: Project number 11-1030, September 6, 2016.

Global Resource Engineering, Ltd., 2018: Otjikoto Gold Project Q3 2018 Whittle Analysis: Project number 18-1170, October 12, 2018.

Government of the Republic of Namibia, 2017: Environmental Management Act no 7 of 2017.

Government of the Republic of Namibia, 1991: Minerals and Prospecting Act no 33 of 1991.

Gray, D.R., Foster, D.A., Meert, J.G., Goscombe, B.D., Armstrong, R., Trouw, R.A.J., and Passchier, C.W., 2008: A Damara Orogen Perspective on the Assembly of Southwestern Gondwana: Precambrian Research, 294, pp. 257–278.

Jelsma, H.A., McCourt, S., Perritt, S.H., and Armstrong, A., 2018: The Geology and Evolution of the Angolan Shield, Congo Craton: *in* S. Siegesmund, M.A.S. Basei, P. Oyhantcabal, and S. Oriolo, eds., Geology of Southwest Gondwana, Springer International, 2018.

Kleinhanns, I.C., Fullgraf, T., Wilsky, F., Nolte, N., Fliegel, D., Klemd, R., and Hansen, B.T., 2013: Palaeoproterozoic Crustal Evolution Along the Southern Congo Craton of the Kamanjab Inlier (NW Namibia): Constraints On U–Pb Zircon Ages and Isotope Geochemical Signatures: Geological Society, London, Special Publications Online First, 22 August, 2013.

KPMG Global Mining Institute 2014: Namibia Country Mining Guide: https://assets.kpmg.com/content/dam/kpmg/pdf/2014/09/namibia-mining-guide.pdf.

Mine Technics, 2018: Wolfshaag Pit Phase 4 Prefeasibility Geotechnical Slope Design: report prepared for B2Gold, 15 January 2018, 122 p.

Ministry of Mines and Energy 2018: Mineral Rights & Resources Development: http://www.mme.gov.na/mines/mrrd/.

Namibia Chamber of Mines, 2018: Mining Charter: http://www.chamberofmines.org.na/files/5014/6979/6192/MiningCharterFINAL19September2014.pdf.

Namibia Chamber of Mines, 2018: Minerals Policy: http://www.chamberofmines.org.na/files/1414/7005/8876/Minerals_Policy_Final.pdf.

Namibia Chamber of Mines, 2018: Minerals Act, 1992: http://www.chamberofmines.org.na/files/4614/7005/8882/Minerals_Act_1992.pdf.

Namibia Chamber of Mines, 2010: Namibian Mine Closure Framework.

Namibia Chamber of Mines, 2018: Minerals Development Fund of Namibia Act, 1996: http://www.chamberofmines.org.na/files/8614/7006/1280/Minerals_Development_Fund.pdf.

Negonga, L., 2018: Geochemistry, Stable Isotopes and Fluid Inclusion Studies of the Otjikoto Gold Deposit, Central Namibia: MSc thesis, University of Cape Town.

Negonga, L.A., Greyling, L.N., and Harris, C., 2016: The Origin and Formation of the Albitite Marker, Otjikoto Gold Mine, Central Namibia: American Geosciences Institute, paper no. 5250.

Pickford, M., 1995: Karoo Supergroup Palaeontology of Namibia and Brief Description of a Thecodont from Omingonde: Palaeontologia Africana, Volume 32, pp. 51–66.

Rankin, W., 2015: Cross-Border Correlation of the Damara Belt in Namibia and Equivalent Lithologies in Northwestern Botswana from Potential Field and Magnetotelluric Interpretations: MSc thesis, University of Witwatersrand.

Sanz, A. L-G., 2005: Pre- and Post-Katangan Granitoids of the Greater Lufilian Arc – Geology, Geochemistry, Geochronology and Metallogenic Significance: PhD thesis, University of the Witwatersrand.

SLR, 2018: Otjikoto Gold Mine, Rehabilitation and Closure Plan: report prepared by SLR Group for B2Gold, April 2018, 135 p.

SLR 2014: B2Gold Otjikoto Gold Mine, Environmental Management Plan (EMP): report prepared by SLR Group for B2Gold, April 2018.

SLR Consulting (Namibia) (Pty) Ltd. 2013a: B2Gold - Otjikoto Gold Mine: Scoping Report (Including Impact Assessment) for the Proposed Changes to the Otjikoto Gold Mine Project - Landfill Site and Power Plant: report prepared for B2Gold.

SLR Consulting (Africa) (Pty) Ltd. 2013b: Otjikoto Gold Project Phase 2: Development of ARD Block Model and Management Plan: report prepared for B2Gold.

SLR Consulting (Namibia) (Pty) Ltd. 2014: Otjikoto Gold Mine: Mine Closure Framework: report prepared for B2Gold.