OCEANAGOLD

SUMMARY OF TABLE 1 - 2012 JORC: Waihi Gold Mine

The Waihi operation is located 142 km Southeast of Auckland in the Township of Waihi in the Hauraki district of New Zealand. The Waihi township is known as a gold mining town and has a notable history of gold production. Open pit mining commenced at the site in 1988 with the first ore processed in that year and underground mining commenced in 2004 with the extraction of ore commencing in late 2006. The Waihi operation holds the necessary permits, consents, certificates, licences and agreements required to operate the Martha open pit, the Martha underground and Correnso underground mine.

Resources

The Waihi resource estimates, as at 31 December 2019, are presented in Table 1, Table 2, and Table 3, and are classified in accordance with CIM and JORC 2012.

The resource estimate is sub-divided into an open-cut and underground resource for reporting purposes. The open-cut resource includes material within the limits of the Martha Phase 4 pit and the Gladstone pit. The underground resources include the Correnso Extended Permit Area, the Wharekirauponga (WKP) project and the Martha Underground project. The Mineral Resources are depleted for historic mining as at 31 December 2019.

Table 1: Open Cut Resource Estimate

Class	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Au (Moz)	Ag (Moz)
Measured	0.16	3.05	30.5	0.02	0.15
Indicated	2.07	2.38	12.4	0.16	0.83
Measured & Indicated	**2.23**	**2.43**	**13.7**	**0.17**	**0.98**
Inferred	0.30	1.3	2.0	0.01	0.02

Table 2: Underground Resource Estimate

Class	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Au (Moz)	Ag (Moz)
Measured	0.07	7.35	14.8	0.015	0.03
Indicated	5.95	6.55	20.1	1.25	3.84
Measured & Indicated	**6.01**	**6.57**	**20.1**	**1.27**	**3.86**
Inferred	6.00	6.9	18.1	1.30	3.50

Table 3: Combined Resource Estimate

Class	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Au (Moz)	Ag (Moz)
Measured	0.22	4.31	25.9	0.02	0.18
Indicated	8.03	5.47	18.1	1.41	4.67
Measured & Indicated	**8.45**	**5.45**	**18.3**	**1.44**	**4.84**
Inferred	6.30	6.6	17.4	1.30	3.50

Notes to Accompany Mineral Resource Table:

1. There are no Ore Reserves associated with the Martha underground project or the WKP project at this time, however normal practice for the company would be to report Mineral Resources inclusive of Ore Reserves where appropriate;
2. Mineral Resources are reported on a 100% basis;

3. Mineral Resources are reported to a gold price of NZD$2,083/oz;
4. Martha Underground Mineral Resource is reported below the consented Martha Phase 4 open pit design. This Resource is constrained within a conceptual underground design based upon the incremental cut-off grade.
5. The WKP Resource is constrained within a conceptual underground design - based upon the incremental cut-off grade;
6. No dilution is included in the reported figures and no allowances have been made to allow for mining recoveries. Tonnages include no allowances for losses resulting from mining methods. Tonnages are rounded to the nearest 1,000 tonnes;
7. Ounces are estimates of metal contained in the Mineral Resource and do not include allowances for processing losses. Ounces are rounded to the nearest thousand ounces;
8. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content;
9. Tonnage and grade measurements are in metric units. Gold ounces are reported as troy ounces.

The Waihi Projects comprise several areas of mineralization, which are at different stages of development. The major components are the Martha Underground Project, the Correnso underground mining operation and the Wharekirauponga (WKP) project.

The Martha underground was successfully consented in February 2019 and relates directly to the mineralisation contained within the Martha vein system centred beneath the open pit mine within the Waihi Township.

WKP is located 10 km north of the township of Waihi. It is a high grade, low sulphidation epithermal vein gold-silver deposit hosted within a Miocene rhyolite dome complex.

The Correnso project is in the final production phase. This underground mine is comprised of the main Correnso vein and the Daybreak veins referred to collectively as the Correnso project.

Additional minor components include:

- The Martha pit is in the planning phase for the recommencement of operations to complete a remedial cut to the north wall, termed Martha Phase 4 and;
- The Gladstone pit is based on a conceptual open pit centred around the Gladstone hill and Winner hill area. The resource model describes the mineralisation within Gladstone and Winner Hills and includes part of the Moonlight orebody, depleted for underground mining.

Exploration activity has continued in proximity to the Martha project. Over the course of the next 2 years, OceanaGold will continue to drill from the two exploration drives beneath the Martha open pit for resource conversion with upwards of 60km of additional drilling likely to be required to test the full extent of the mineralised system. The resource is associated with numerous veins that form part of the Martha Vein system, the largest of which include the Martha, Edward, Empire, Royal and Rex veins. Exploration is also planned to continue throughout the coming year on the WKP project with a further 6km of diamond drilling planned in 2020.

The major gold - silver deposits of the Waihi District are classical low sulphidation adularia-sericite epithermal quartz vein systems associated with north to northeast trending faults. Larger veins have characteristically developed in dilational sites in the steepened upper profile of extensional faults with narrower splay veins developed in the hanging wall of major vein structures. Figure 1 shows a plan of the Waihi area illustrating the major vein locations and recent drill hole collars. The Waihi epithermal gold-silver mineralised veins are hosted in Miocene andesite lavas beneath the Waihi township area.

Low sulphidation epithermal quartz veins at WKP are hosted in a rhyolite flow dome complex with overlying and interfingering lithic lapilli tuffs which are in turn partially overlain by post-mineral andesites (Figure 2). The rhyolites have undergone pervasive hydrothermal alteration, often with complete replacement of primary mineralogy by quartz and adularia with minor illite and/or smectite clay alteration. The vein system lies within a NNE trend with a low magnetic response and likely represents a combination of weakly magnetic primary lithology and magnetite-depleted hydrothermally altered lithologies. This magnetic low trend contains well-defined edges suggesting a NE trending district-scale graben boundary.

Approximately 553 500m of diamond drilling has been done on the Waihi projects since 1980. Approximately 43 123m of diamond drilling within 67 drillholes has been undertaken on the WKP project. All drill core, since 1990, was routinely oriented below the base of the post-mineral stratigraphy, either by plasticine imprint or using the Ezimark or Reflex core orientation tool.

Gold mostly occurs as electrum in the Waihi epithermal vein deposits and has a particle size less than 10µm. The main ore minerals are electrum and silver sulphides with ubiquitous pyrite and variable, though usually minor, sphalerite, galena and chalcopyrite in a gangue consisting of quartz, locally with calcite, chlorite, rhodochrosite and adularia. Base metal sulphides increase with depth.

In general, there are very few sulphides other than pyrite in the WKP veins. Major structures strike NNE and dip steeply to the west with extensional linking vein sets striking in a more northerly direction. Vein textures and geopetal indicators logged in drill core suggest south eastward tilting since vein formation.

Domaining is performed based on geological observation from logging of diamond drill core and mapping of exposure in both the open pit and underground. Mineralised geologic domains are typically narrow, subvertical epithermal veins within which gold is modelled via ordinary kriging or inverse distance methods dependent on data density. Dry bulk densities ranging between 1.8 and 2.5 t/m^3 are assigned by rock type.

Estimation is completed using either ordinary kriging (OK) or inverse distance weighting to the second or third power (ID2/ID3), as deemed suitable by the density of data in each domain.

The quantity and quality of the lithological, geotechnical, collar and down hole survey data collected in the exploration, delineation, underground, and grade control drill programs are sufficient enough to support the Mineral Resource and Ore Reserve estimation.

To classify the Mineral Resource, appropriate account was taken of geology, drill hole spacing, search criteria, location and geometry of historic mining voids, reliability of input data, and the Competent Person's confidence in the continuity of geology and metal values.

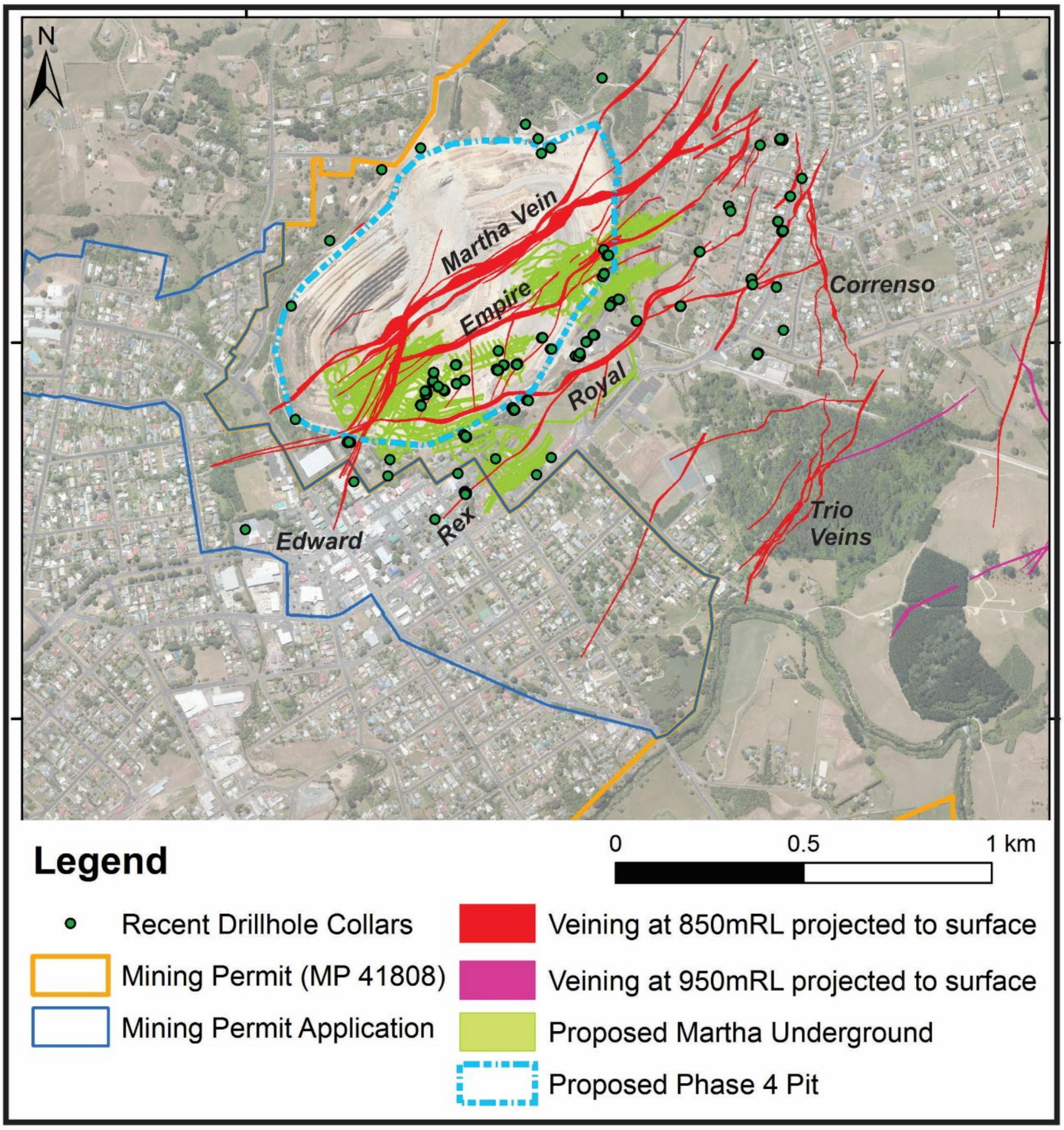


Figure 1: **Project Geology Plan (drill collars 2017 to Dec 2019)**

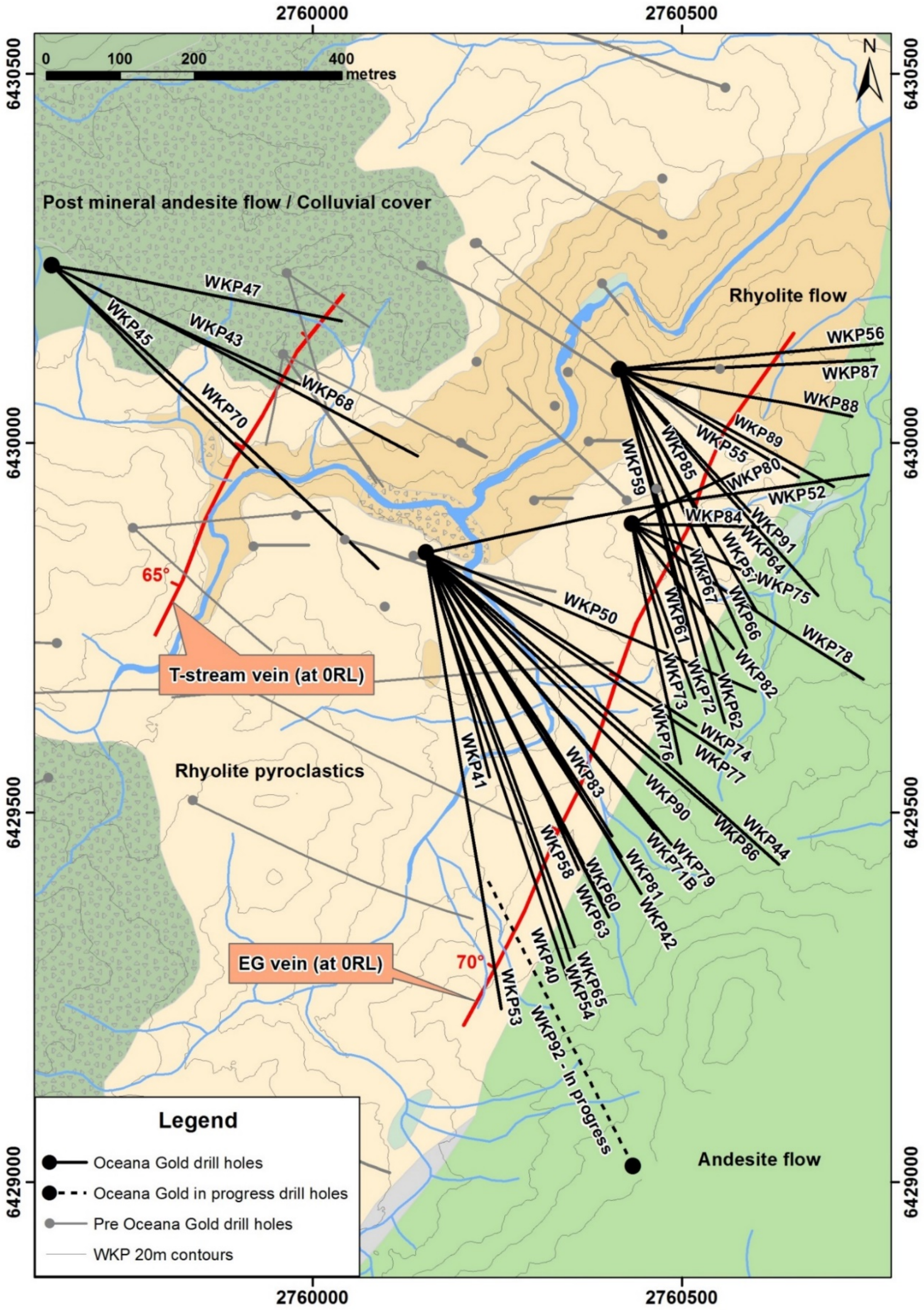


Figure 2: Map showing WKP Location and Drilling

Reserves

The Ore Reserve estimate for the Waihi operation as at 31 December 2019 is shown in Table 4:

Table 4: Waihi Ore Reserve Estimate

Reserve Area	Class	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Au (Moz)	Ag (Moz)
Open Pit	Proven	0.156	3.05	30.5	0.015	0.152
	Probable	0.656	2.91	29.1	0.061	0.614
Underground	Proven	0.064	7.36	14.8	0.015	0.031
	Probable	0.044	6.15	8.8	0.009	0.013
Total Proven		0.220	4.30	25.8	0.030	0.182
Total Probable		0.700	3.11	27.8	0.070	0.626
Total		**0.92**	**3.4**	**27.**	**0.10**	**0.81**

Notes to Accompany Ore Reserve Table:

1. Ore Reserves are reported on a 100% basis;
2. Ore Reserves are reported to a gold price of NZD$1,806/oz;
3. Tonnages include allowances for losses and dilution resulting from mining methods. Tonnages are rounded to the nearest 1,000 tonnes;
4. Ounces are estimates of metal contained in the Ore Reserves and do not include allowances for processing losses. Ounces are rounded to the nearest thousand ounces;
5. Rounding of tonnes as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content;
6. Tonnage and grade measurements are in metric units. Gold ounces are reported as troy ounces.

The change in Ore Reserves reported at December 30, 2019 compared with those previously reported at December 31, 2018 is reported in Table 5.

Table 5: December 2018 Ore Reserve Estimate vs. December 2019 Ore Reserve Estimate

Reserve Area	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Au (Moz)	Ag (Moz)
December 31, 2018 Reserve					
Open Pit	0.812	2.94	29.40	0.077	0.766
Underground	0.598	5.31	10.61	0.102	0.204
Total (Dec 31, 2017)	1.410	3.93	21.40	0.178	0.970
Changes to Reserve, December 2018 vs. December 2019					
Open Pit	0.000	0.00	0.00	0.000	0.000
Underground	-0.490	4.96	-1.01	-0.078	-0.161
Total	-0.490	4.96	-1.01	-0.078	-0.161
December 31, 2019 Reserve					
Open Pit	0.812	2.94	8.11	0.077	0.766
Underground	0.108	6.87	0.20	0.024	0.043
Total (Dec 31, 2018)					

Changes between the December 31, 2018 Ore Reserve and the December 31, 2019 Ore Reserve estimate primarily reflect depletion of ore from the underground.

Inputs to the calculation of cut-off grades for the Martha open pit and Correnso underground mine include mining costs, metallurgical recoveries, treatment and refining costs, general and administration costs, royalties, and commodity prices.

Open pit mining was undertaken by a contractor from 1997 to 2015 under a schedule of rates, and production rates and mining costs are therefore well understood.

Long hole bench stoping with rock backfill is the current mining method for extraction of underground Ore Reserves. Stope dilution has been estimated based on expected geotechnical conditions, stope spans and site reconciliation. Recovery of ore requires the use of remote loaders, and allowances have been made for loss of Ore Reserves and for dilution from back fill.

Recovery of gold at Waihi uses a conventional CIP plant and a conventional SABC grinding circuit. The plant has an established skilled workforce and management team in place. Recent cost estimates and processing recoveries support the reporting of the stated Ore Reserves.

The technical and economic viability of the reported Ore Reserves is supported by studies which meet the definition of a Feasibility Study. All permits and consents are in place for the extraction of the Ore Reserve.

Competent Persons

Information relating to Exploration Results and Mineral Resources in this document was prepared by or under the supervision of Mr Peter Church, information relating to underground Ore Reserves was prepared by or under the supervision of Mr David Townsend, and open pit Ore Reserves are prepared under the supervision of Mr Trevor Maton. Messrs Church, Maton and Townsend are members and Chartered Professionals of the Australasian Institute of Mining and Metallurgy. Mr Church is the Principal Resource Geologist and is a full-time employee of OceanaGold (New Zealand) Limited, whilst Mr Townsend is the Underground Technical Services Superintendent and is also a full-time employee of OceanaGold (New Zealand) Limited, whilst Mr Maton is the Studies Manager and is also a full-time employee of OceanaGold (New Zealand) Limited. Messrs Church, Maton and Townsend have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Messrs Church, Maton and Townsend consent to the inclusion in the report of the matters based on the information in the form and context in which it appears.

Section 1 Sampling Techniques and Data

<table>
<tr><th>Criteria</th><th>Commentary</th></tr>
<tr><td>Sampling techniques</td><td>

The Mineral Resource estimates of individual projects in Waihi use a combination of sampling techniques including:

Martha Underground (MUG): Diamond Drilling (DD) core, Reverse Circulation (RC) chips from exploration drilling, RC chips from open pit grade control drilling, and grade control channel samples,
Gladstone Project: DD core, RC chips from exploration drilling,
Correnso Project: DD core and underground grade control channel samples.
WKP Project: DD core.

DD and RC drilling sampling techniques are discussed further in ‘drilling techniques’ criteria.
Pit channel sampling: Channel sampling was undertaken on a regular basis prior to 2006 and occasionally since then as a method of grade control sampling in the Martha open pit. The sample material was chipped from scraped channels on the bench floor using a pneumatic hammer along 1m sample intervals and collected in a pre-labelled calico bag. Three QAQC samples were assigned per channel including a blank sample, a crush duplicate and a standard. Prior to 2006, this was common practice, however after 2006 RC drilling was used as the preferred method of pit grade control until mining ceased in 2016.
Underground Face Sampling: The Correnso resource estimate includes data collected by underground face sampling (channels). The sample intervals were determined by the ore control geologist based on changes in lithology, vein texture and/or alteration observed in the face. Where possible, a discrete vein has a sample start point along the left-hand contact and a sample end point along the right-hand contact of the structure. Minimum sample interval widths of 0.3m and maximum widths of 2.0m were allocated along each face. The sample material was chipped off the rock face using a hammer and collected in a pre-labelled calico bag. Three QAQC samples were assigned per face including a blank sample, a crush duplicate and a standard.
Checks used to verify sample representivity include the collection and analysis of field and pulp duplicates and analysis of a selection of samples through third party laboratories.
All exploration at WKP is by diamond core drilling from surface. Drilling conditions are well understood. Triple tube coring is routinely used to ensure that core recovery is acceptable.
Diamond drilling sample intervals are guided by logged geological boundaries and vary in length between 0.3 and 1.3m in length. Where possible, a discrete vein will have a sample start point along the up hole contact and sample end point along the downhole contact of the structure.
Core samples are processed using industry standard practices of drying, crushing, splitting and pulverisation at the SGS Waihi or SGS Westport Laboratory. SGS are an internationally accredited global analytical services provider with strong internal governance standards and a reputation to uphold.
</td></tr>
<tr><td>Drilling techniques</td><td>
<u>Diamond Drilling:</u>

The Martha Underground Resource Estimation uses 232,730m of diamond drill (DD) core in 960 holes. The increase in holes utilised in modelling is a function of both additional drilling in 2019 and an increase in modelling extent in the direction of the Correnso orebody.
All diamond drilling is triple tube wireline diamond core drilling from surface or underground.
All drill core is routinely oriented either by plasticine imprint or using Ezimark, Reflex or TruCore core orientation tools.
</td></tr>
</table>

Criteria	Commentary
	• DD core diameter is PQ (85mm diameter), HQ3 (61mm diameter), NQ3 (45mm diameter) or BQ (36.4 mm diameter). Surface holes are collared using large-diameter PQ core, both as a means of improving core recovery and to provide greater opportunity to case off and reduce diameter when drilling through broken ground and historic stopes. Underground holes are collared using HQ3 core diameter. PQ, HQ, NQ and BQ core diameters are used in the Mineral Resource estimate with HQ3 being the dominant core diameter used in the resource estimations. **RC Drilling:** • RC drill chips were collected predominantly as part of the grade control process during the Martha Open Pit operation but also on a minor scale for exploration purposes (approximately 4309m used in MUG estimate). 88,000m have been drilled in 4,445 reverse circulation (RC) grade control holes in the open pit between May 2007 and May 2015, using a 114mm hole diameter and rig-mounted cyclone sampler. This grade control RC drilling is used to inform the estimate for the Martha Underground project in proximity to the open pit. • Grade control RC collars were designed on a 10x5m horizontal grid, with exception of areas in proximity to highwalls or known historical voids and the holes angled at a -50° dip. • Samples were collected in a bag attached to the cyclone at 1.5m intervals from which a nominal 3.6kg sample was split using a cone splitter.
Drill sample recovery	• In diamond drill core recovery is estimated by measuring the recovered core length against the drilled length which is uploaded to an AcQuire Database as a percentage. • Recovery data has been captured for all sample intervals for all diamond drill holes • Core from the Martha project is monitored for recovery daily to rationalize actual core loss against the intersection of historic mining voids with re-drilling actioned if necessary. • There is no observed relationship between core recovery and grade. • Core recovery within veined material (>40% vein in sample interval) varies between projects and is summarized as follows: o 92.5% within the Martha Underground project, o > 95% for the extended Correnso project, o 89-90% for the Gladstone project, 96.2% for the WKP project. • RC drill sample recoveries were assessed by weight for representivity by the sampling technician and dispatching geologist. Samples were discarded where the recovered sample weight did not correlate well with the drilled interval.
Logging	• DD core and RC chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation. Logging includes geotechnical parameters, lithology, weathering, alteration, structure and veining. • Geological logging is based on both qualitative identification of geological characteristics, and semi-quantitative estimates of mineral abundance. Geotechnical logging uses standard semi-quantitative definitions for estimating rock strength and fracture density. • Logging intervals are based on geological boundaries or assigned a nominal length of one metre. • Some logging processes have varied over time. Since June 2015 core has been logged using an excel spreadsheet and uploaded to an AcQuire database. Between 2009 and 2015 logging was entered using Newmont proprietary Visual Logger software and uploaded onto a web-based database.

Criteria	Commentary
	• Logging of recent drilling (2009 onwards) has been validated using inbuilt validation tables and checked for consistency. • A complete digital photographic record is maintained for all drill core. • Unsampled drill core forming part of a resource is stored in a core shed for a minimum of 2 years, but usually until the area has been mined. Core in storage is divested after a review process after which it is either thrown away or retained in government core storage facilities. • All geological logging data is stored in an acQuire database.
Sub-sampling techniques and sample preparation	• Once the core is logged, photographed and sample intervals allocated, it is cut in half length ways. If a vein is present, the cut line is preferentially aligned to intercept the downhole apex of the structure. Within each sample interval, one half of the core is bagged for sampling and the other is kept in storage. Whole core has been sampled on occasion where there was significant core loss coupled with visible electrum and for all BQ core due to reduced sample volumes. • Labelled calico bags containing the core samples were either transported to the local Waihi SGS Laboratory or the Westport SGS laboratory for crushing and sample preparation. • Sample size for resource DD holes drilled from surface is optimised through initial collection of large-diameter diamond drill core samples, generally PQ3 or HQ3. Current drilling from underground utilises an HQ3 or NQ3 diameter core size for advanced exploration and resource conversion drilling. The core is then split using a core saw to produce an initial sample size of 3.5-4kg (HQ3) or 1.7-2kg (NQ3). Drilling for the purposes of grade control utilises an HQ3 or NQ3 diameter core size which is whole core sampled to produce an initial sample size of 7-8kg or 3.5-4kg respectively. • Sample preparation (drying, crushing, splitting and pulverising) is carried out by SGS using industry standard protocols. The sample preparation flow sheet is illustrated in Figure 1.1. • Since mid-2006, sample preparation has been carried out at the SGS laboratory in Waihi. Current standardised sample preparation procedures are summarised in the flow sheet below. Prior to mid-2006, the sample preparation facility was located at the Martha mine site and operated by Waihi Gold personnel. SGS has continued to use the same methods and protocols that were established by the Martha Mine geologists. • Standardised sample preparation procedures are based on nomograms that were developed using Gy's Estimation of the Fundamental Sampling Error. Gold particle liberation size for the Waihi gold deposits is based on petrographic studies, which indicate that gold mostly occurs as electrum in the Waihi epithermal vein deposits and has a particle size between <5 to 10µm. • Representivity of samples is checked by duplication at the crush stage, one in every 17-20 samples.

Criteria | **Commentary**

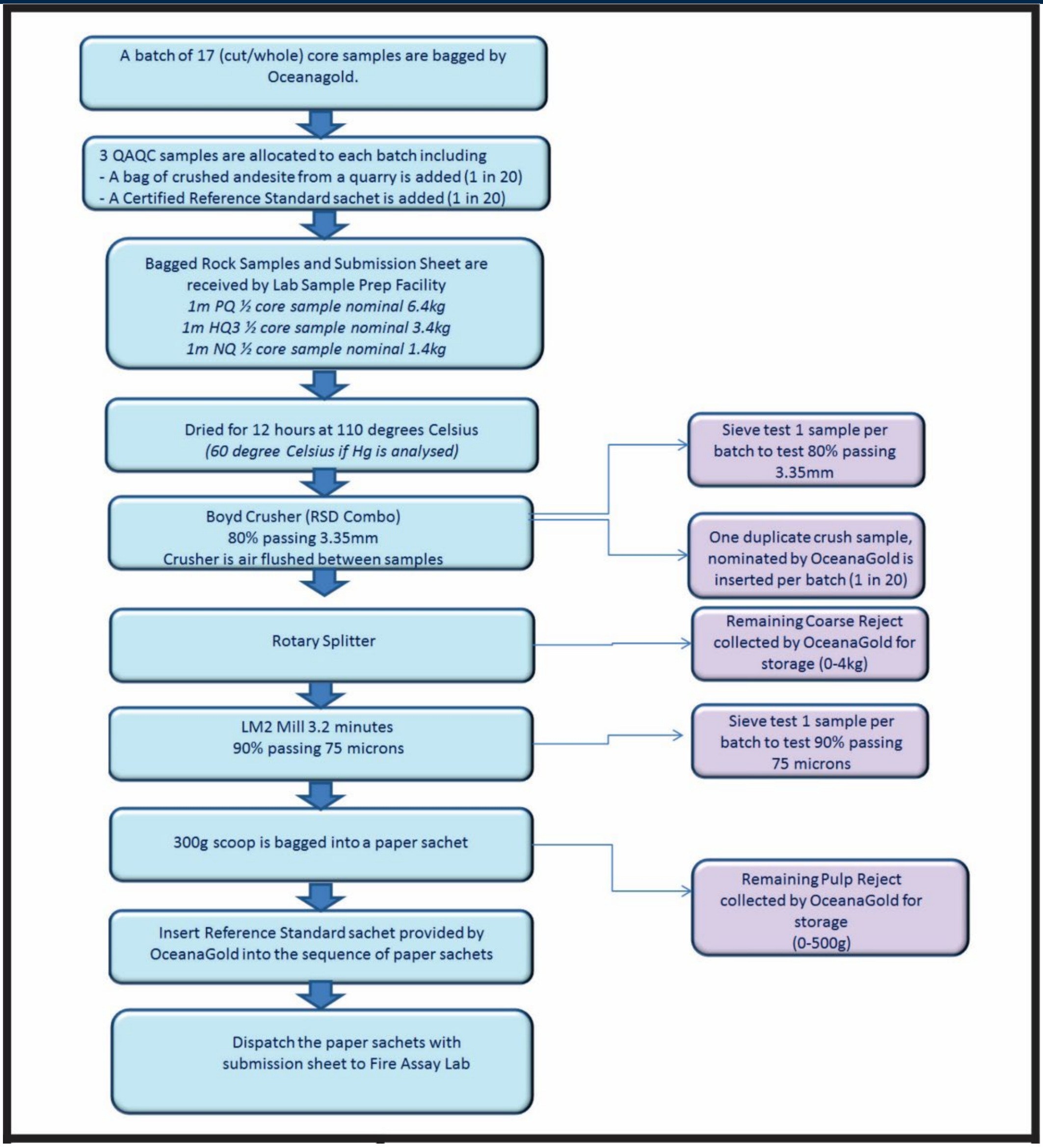


Figure 1.1 Sample Preparation Flow Sheet, SGS, Waihi

Quality of assay data & laboratory tests

- All exploration samples are assayed for gold by 30g Fire Assay with AAS finish
- Multi-element ICP data is obtained routinely from the Waihi SGS Laboratory for all exploration assay samples for the elements silver, copper, arsenic, lead, zinc and antimony, which are potential pathfinders for epithermal mineralisation. For samples with over-range silver and lead, these elements are found to be extracted more efficiently by using a more dilute Aqua Regia digest (1-gram sample weight rather than the standard 10-gram per 50 ml).
- Quality of exploration assay results has been monitored in the following areas:
  - Sample preparation at the SGS Waihi and Westport labs through sieving of jaw crush and pulp products,
  - Monitoring of assay precision through routine generation of duplicate samples from a second split of the jaw crush and calculation of the fundamental error.
  - Monitoring of accuracy of the primary SGS assay and ALS results through insertion

Criteria	Commentary
	Certified Reference Materials (CRM's) and blanks into sample batches. • Analyses of drill sample pulps from WKP were undertaken at the ALS laboratory in Brisbane, the ALS laboratory in Townsville and SGS laboratory in Waihi. • Blank, duplicate and CRM results are reviewed prior to uploading results in the AcQuire database and again on a weekly basis. The Waihi protocol requires CRMs to be reported to within 2 standard deviations of the certified value. The criterion for preparation duplicates is that they have a relative difference (R-R1/mean RR1) of no greater than 10%. Blanks should not exceed more than 4 times the lower detection method of the assay method. Failure in any of these thresholds triggers an investigation and re-assay.
Verification of sampling and assaying	• CRMs performance is regularly scrutinised and the database QAQC function thresholds are reviewed bi-annually. CRMs are currently assigned to batches on a rotational roster in a "pigeon pair" system. • Monthly QAQC reporting and review is undertaken on all assay results from SGS. • In addition to routine quality control procedures, umpire assay has been carried out on 248 samples (Correnso Project) at Ultratrace Laboratories in Perth. Results for gold were consistent with original SGS assay results and showed no effective bias, apart from 3 umpire samples that returned significantly higher gold values than the original assays. Those three samples were repeat assayed by SGS, the re-assay producing results consistent with the Ultratrace umpire assays; the second set of SGS assays have therefore replaced the initial assays in the database. • Multi-element data is obtained routinely from the Waihi SGS Laboratory for all exploration assay samples for the elements silver, copper, arsenic, lead, zinc and antimony, which are potential pathfinders for epithermal mineralisation. Comparison of the Ultratrace data with routine multi-element data produced by SGS Laboratory in Waihi showed good correlation between the parent (SGS) and umpire (Ultratrace) data sets for silver, lead, zinc and arsenic, which gives confidence in the accuracy of SGS data for these elements. For samples with over-range silver and lead, these elements are found to be extracted more efficiently by using a more dilute Aqua Regia digest (1-gram sample weight rather than the standard 10 grams per 50 ml). Antimony is not efficiently extracted by the current Aqua Digest method at SGS and consideration should be given to using the Peroxide Fusion extraction if more accurate antimony results are required. • For every batch of results received, SGS release its internal QAQC data to OceanaGold for review. The performance of SGS internal standards appears satisfactory. • No data from geophysical tools, spectrometers or handheld XRF instruments have been used for the estimation of Mineral Resources. • Underground Face samples contain one blank, one crush duplicate and one standard per channel. Results are required to pass QAQC validation prior to being imported to a Microsoft Access database. • Open pit RC samples contained one blank, one crush duplicate and one standard every 20 samples. Results were required to pass QAQC validation prior to being imported to an AcQuire database. • All laboratory results are uploaded directly into an AcQuire database. Below level detection limit assay results are stored in the database as (negative) half the detection limit. No other modification of the assay results is undertaken. • All intercepts are reviewed during the construction of the geological wire frames prior to grade estimation, this review involves visual comparison of core photography, assay and logging data and spatial relationships to adjacent data. Significant intercepts are reported internally on a weekly basis for peer review purposes. • Check assay programs have been undertaken for some projects in Waihi in the past as a part of advancing milestones such as feasibility level studies.

Criteria	Commentary
	• At WKP there are some visual indicators for high grade mineralisation observed in drill core. Therefore, significant grade intersections are visually validated against drill core. Some holes have been subject to umpire analysis by an alternate laboratory. To date no WKP drill holes have been twinned.
Location of data points	• All historic underground mine data in Waihi was recorded in terms of Mt Eden Old Cadastral grid (MEO). This is the grid utilised for all underground and exploration activity within 3km of the Waihi Mine beyond which New Zealand Map Grid is utilised. • The MEO grid is offset from New Zealand Transverse Mercator (NZTM Grid) by 5215389.166 (shift mN) and 1456198.997 (shift mE). • Relative level (RL) is calculated as Sea Level + 1000m. • Drill collars are surveyed using a total station or differential GPS by a registered professional land surveyor. At the start of the hole the drillers line up the mast in the correct azimuth using a Gyrocompass Azimuth Aligner. • The positions of underground Face Sampling channel samples are located by the geologist using digital Leica Disto Meter from known survey stations within headings underground. • The positions of Open Pit channel samples were surveyed using a total station by a registered professional land surveyor. • For the underground mine, a transformation is used to convert all data to NZGD2000 as per the regulations for the purpose of all statutory underground plans. Checks show that all underground coordinates are within the allowed 1:5000. • Down hole surveys are recorded at 30m intervals by using a Reflex digital downhole survey camera tool. • New Zealand Map Grid (NZMG) is used at WKP, which is in the NZGD1949 projection. False northing 6,023,150m north; False easting 2,510,000m east. • All the drill collars from WKP40 onwards and all OGL drill sites to date have been by accurately located by survey methods. The initial survey control for each site has been established using a Leica GNSS GPS (hired from Global Survey) using Fast Static method and post processed by Global Survey. Each drill site has then been surveyed using a Leica TCRA1205 Total Station. The Total Station has been setup/ orientated using resection method utilising 3 of the 4 previously established Static GPS survey control marks with the 4th one used as a check. The drill collars have then been identified and surveyed. The Total Station has then been moved and setup again using the same resection method and a second round of observations observed on each of the new survey control points. • WKP topographic control is from high resolution aerial photography and LiDAR providing 0.5m contour data
Data spacing and distribution	• The Correnso ore body uses a 30m drill spacing to support classification of Indicated Mineral Resources, instead of 40m previously used for the Favona and Trio deposits. • The Gladstone deposit has a nominal drill hole spacing of 30m on the major mineralised veins. A tighter spacing of 22.5m has been implemented in the more complicated zones exhibiting strong brecciation and/or stockwork veining. • The Martha UG project uses an average spacing to three drill holes of 60m for inferred and 40m for indicated. The extensive mining history of Martha (>135 years+) has developed significant experience in assessing the continuity of mineralisation and mining the Martha vein system and the adjacent deposits. The vein style mineralisation has a strong visual control, is well understood and has demonstrated continuity over significant ranges. An estimation run utilizing a maximum of three drill holes with a single sample per drill hole was undertaken storing the average distance to the three drill holes used to estimate the block. This formed the basis for the resource classification.

Criteria	Commentary
	• For Martha Phase 4 pit, the sample composite length was based on the nominal sample interval of 1.5m for DD and RC drill data and 1m for grade control channel data. Compositing was by fixed-length, honouring the domain boundaries. • The East Graben Vein zone of the WKP project has been intersected in drilling over a strike length of ~1km, this structure is larger than those typically encountered in the Waihi project area and on this basis the average drill hole spacing required for classification as an inferred resource has been increased by 15% to 80m average distance to the three closest drill holes. All other mineralisation has been classified using a distance threshold of 70m to the three closest drill holes for classification as inferred. • Diamond Drill samples are not composited prior to being sent to the laboratory.
Orientation of data in relation to geological structure	• Drill holes are designed to intersect known mineralised features in a nominally perpendicular orientation as much as practicable given the availability of drilling platforms. Sample intervals are selected based upon observed geological features. • All drill core is oriented downhole. Structural orientation measurements recorded during logging are used to inform vein modelling for resource estimation and true width interpretation for reporting of significant intercepts. • Sample intervals are selected based upon observed geological features. • Photogrammetry captured during underground grade control sampling is used to update the vein model for the reserve estimation.
Sample security	• Drill core is stored within secure facilities where access is controlled. Site employees transport samples to the analytical lab. The laboratory compound is secured.
Audits or reviews	• The SGS laboratory in Waihi has been audited on a quarterly basis by OceanaGold geologists and the Competent Person when possible. No sampling risks have been recorded during these visits. • Sampling techniques and data handling processes are reviewed annually during internal OceanaGold technical service reviews. External reviews of sampling techniques and data have been undertaken during third-party technical assessments

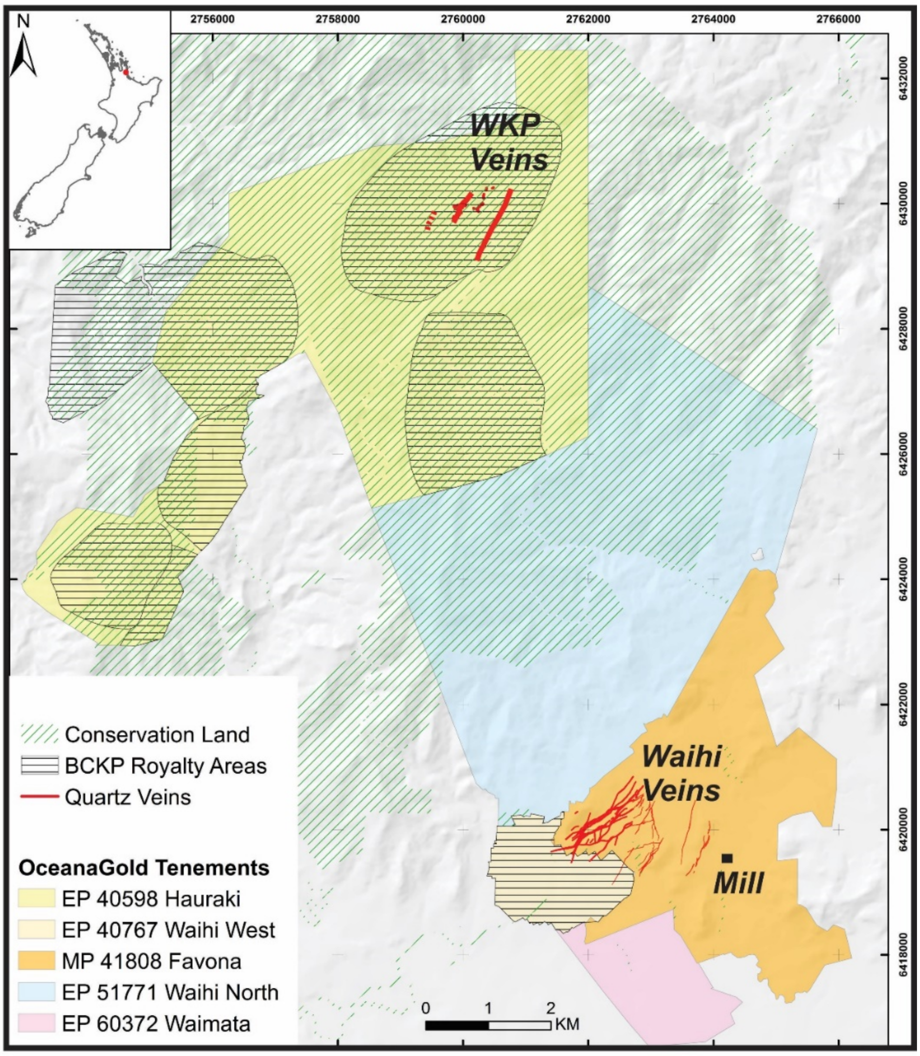
Section 2 Reporting of Exploration Results

Criteria	Commentary
Mineral tenement and land tenure status	• Rights to prospect, explore or mine for minerals owned by the Crown are granted by permits issued under the Crown Minerals Act 1991 (CMA). Crown-owned minerals include all naturally occurring gold and silver. A map showing the location of the permits held by OceanaGold near Waihi is shown in Figure 2.1. Mining permit MP41808 in Waihi was granted in March 2004 for a duration of 25 years, under the provisions of the Crown Minerals Act 1991. The current mining permit covers an area of 1485.38 hectares and encompasses the Correnso underground mine (nearing completion) and Martha Phase 4 project, the majority of the Martha Underground Project and the Gladstone Project. • For the Martha Underground project the majority of mineralisation within the resource occurs on a granted mining permit MP41808 with a small portion within an area of EP40767 which is currently under an application for an extension to the current Mining Permit (MP41808). • On MP41808 the higher of a 1.0% royalty on net sales revenue from gold and silver or 5% accounting profits is payable to the Crown. The area under an application to extend MP41808 is subject to an additional 2% royalty payable to BCKP Ltd (acquired from Geoinformatics). • An updated Land Use Consent (202.2018.00000857) was granted by Hauraki District Council (HDC) on the 1st of February 2019 and commenced on the 27th July 2019. This Land Use Consent allows for mining of the Martha Underground resource and the remainder of the Phase 4 Martha Pit. In addition to the authorisations required by HDC, a suite of consents were obtained from Waikato Regional Council (WRC) covering matters such as vegetation removal, water takes, diversions and discharges of water, discharges to air, and construction of the tailing's storage facilities. Both HDC and WRC have conditions in place relating to mine closure, bonds and a post closure trust. Consent has not been sought for mining the Gladstone Project. • The Correnso, Gladstone and the Martha Underground Projects are situated below land owned by various landowners including government agencies, private land owners and OceanaGold. Office blocks, the processing plant, the underground portal and the tailings facilities are on land owned by OceanaGold. A significant portion of the area covered by the Martha open pit is owned by the Crown and administered by Land Information New Zealand (LINZ). OceanaGold holds a current access agreement for work in this area. • The WKP project is located within exploration permit EP40598, covering an area of 3762.94 hectares (Figure 2.1). The current term of the permit expires in May 2021 and confers rights to exchange the exploration permit within that time for a mining permit upon meeting certain criteria specified in the CMA, which are as follows. o Provided the permit remains in good standing (principally requiring the payment of annual fees and completion of work programme commitments), and assuming OceanaGold's exploration activities delineate the resource to the satisfaction of the Minister for Energy and Resources (ordinarily, for this purpose, an Indicated Mineral Resource will be required), OceanaGold has a statutory right (section 32(3) of the Crown Minerals Act 1991), in priority and to the exclusion of all other parties, prior to the expiry of the EP, to surrender the permit in exchange for a mining permit. On the 6th May 2019 OceanaGold lodged a Mining Permit Application (MPA) 60541 over an area of 5124.77 ha that covers the extent of mineralisation at WKP and a corridor down to and connecting with the Company's Favona Mining Permit 41808. The application is being processed by New Zealand Petroleum and Minerals with an anticipated grant date in Q1 2020. Once a mining permit is obtained, OceanaGold will be authorised to commercially extract the gold resource, subject to the conditions attending to the mining

Criteria	Commentary
	permit, gaining any surface rights required by agreement with the landowners and gaining the requisite resource consents under the Resource Management Act. • OceanaGold holds 100% of the WKP permit interest. Third party rights to receive an interest in the project are confined to a Crown royalty of 1% of the turn over or 5% of the accounting profits whichever is higher and a 2% royalty payable to BCKP Ltd (acquired from Geoinformatics) with respect to certain "target" areas. In both cases the royalties are fixed and quantifiable for the purposes of inclusion in the business plan. • The WKP prospect is situated on state-owned land administered by the NZ government through the Department of Conservation and generally open to public use for amenity purposes. OceanaGold has received an Access Arrangement (AA) granted under the CMA, for the term of EP40598, giving surface rights to conduct exploration drilling within a defined footprint of 428.44 hectares and under conditions that protect the conservation (biodiversity and amenity) values of the land. The Company has applied for a variation to the AA to provide for the continuation of exploration drilling upon granting of the Mining Permit. • The company has received resource consents granted by local authorities under the Resource Management Act 1991 (RMA), under which environmental effects of exploration drilling are authorised and managed within the framework of that Act in keeping with the high environmental values of the permit location. Any development of the prospect for the purposes of advancing beyond exploration would require applications at that time under the RMA and (for surface impacts only) the CMA. The RMA applies land use designations (zoning) that allow underground mining on a discretionary basis and surface impacts in limited circumstances dependent on meeting a range of objectives and policies including protecting and enhancing the biological diversity and outstanding landscape character values of the permit area and minimising ground surface disturbance. Consent has not been sought for mining the WKP Project. • Changes to NZ government policy restricting access to mine on conservation land have been proposed, subject to a statutory consultation process that has not yet commenced. The precise nature of any proposal is not currently known.
Exploration by other parties	• Waihi Gold Company held exploration and mining licences and permits over the Open Pit portion of the Martha deposit and the current underground mine since the early 1980's. The Waihi East area covering the Correnso deposit and easterly extensions of the Martha system was historically held and explored by Amoco Minerals, Cyprus Minerals and a Coeur Gold-Viking Mining joint venture from whom Waihi Gold Company purchased the tenement area, EP40428, in 1998. These companies drilled approximately 18km in 60 holes in the Waihi East area and identified some remnant resources on the eastern end of the Martha vein system on which they undertook scoping studies. OceanaGold purchased the Waihi Gold Company in 2015. • Previous exploration by Amoco and BP Minerals at WKP in the 1980s and 1990s was focused on sheeted stockwork veins exposed in stream channels through the prospect. Newmont as the operator of a WKP joint venture with Glass Earth in 2009-2013 identified and drilled several larger structures, encountering significant results in some holes. The Newmont/Glass Earth interest was subsequently purchased by OceanaGold.
Geology	• The Au-Ag deposits of the Waihi District are classical low-sulphidation adularia-sericite epithermal quartz vein systems associated with north to northeast trending faults. Larger veins have characteristically developed in dilational sites in the steepened upper profile of extensional faults often with narrower splay veins developed in the hanging wall of, or between more than one major vein structure. Gold occurs exclusively within quartz vein structures, usually as electrum. Free gold is only rarely observed. **Martha Underground**

Criteria	Commentary
	• This project is focused on the large Martha Vein System, a complex vein network largely comprising a dominant southeast-dipping Martha vein (up to 30m thick in places) and several NW-dipping hanging wall splays including the Empire, Welcome, Royal and Rex veins. • Two additional steeply dipping, NNE-trending and well mineralised vein structures known as the Edward and Albert veins also form an important part of the overall Martha Vein System. • The host rocks are andesitic flows, intrusives and volcaniclastics which have undergone pervasive hydrothermal alteration. Much of the Waihi area, including the Martha open pit is overlain by post-mineral volcanics (Figure 2.2). **<u>Correnso</u>** • The veining associated with the Correnso ore body is a steeply-dipping, NNW-trending array situated between the Martha Vein System in the NW and the Trio ore body in the south. • The veining is characterized by a more intermediate-sulphidation style of mineralization compared to the other veins in Waihi, with abundant green-coloured, mixed chlorite-smectite clays (corrensite) and higher concentrations of base metal and Mn-bearing minerals within the multiphase veining. • Gold-silver minerals are often developed in localized bands within the quartz-clay veins. There is an association of sphalerite, galena and chalcopyrite with gold-silver mineralisation throughout the deposit. The lower part of the deposit is base metal rich with galena (up to +3% Pb) and sphalerite (up to +1% Zn). • The host rocks are andesitic flows and volcaniclastics which have undergone pervasive hydrothermal alteration. **<u>Gladstone</u>** • The Gladstone deposit forms the southwestern extent of the mined Favona and Moonlight deposits. • Mineralisation at Gladstone is characterized by shallow-level, hydrothermal breccias and associated banded quartz veins between 1000mRL and 1150mRL. The breccias are rooted in the tops of mineralised quartz veins, flaring upwards into hydrothermal explosion breccias. The dominant veining at Gladstone trends ENE to NNE between 035° and 080° and dips steeply to the SE. **<u>WKP</u>** • Low sulphidation epithermal quartz veins at WKP are hosted in a rhyolite flow dome complex with overlying and interfingering lithic lapilli tuffs which are in turn partially overlain by post-mineral andesites. The rhyolites have undergone pervasive hydrothermal alteration, often with complete replacement of primary mineralogy by quartz and adularia with minor illite and/or smectite clay alteration. • Gold mineralization occurs in quartz veining developed along two types of structurally-controlled vein arrays. The principal veins occupy laterally continuous, NE trending (025-047°), moderately dipping (60-65°) district-scale graben step faults, reaching up to 10m in width. Subsidiary, extensional veins (1-100cm wide) are developed between or adjacent to the principle fault hosted veins. These veins often form significant arrays and are moderate to steeply dipping with a more northerly to NNE strike and appear to lack lateral and vertical continuity compared to the fault hosted veins. The primary structure targeted by much of drilling at WKP is the Eastern Graben Vein (EG-Vein), compared to the more westerly T-Stream and Western Veins (Figure 2.3). In general, there are very few sulphides other than pyrite in the WKP veins.

Criteria	Commentary
Drill hole Information	• See Table 2 in the announcement, which lists for each hole with a significant intercept, the hole ID, intersection depth, downhole length and estimated true width of the intersect where possible to determine.
Data aggregation methods	• Compositing of data for grade estimation is within distinct geological boundaries, typically within modelled veins. • The grades are compiled using length weighting. • Grades are not cut in the database; however appropriate statistically derived top-cuts are assigned by domain in the estimation process.
Relationship between mineralisation widths and intercept lengths	• Drill intercepts are typically reported in true width where reliable orientation data is available or able to be inferred from angle to core axis, alternately down hole lengths are reported when orientation data is not available. Holes are designed to intersect veins at more than 60 degrees to the vein as much as practicable.

Diagrams	 **Figure 2.1 Waihi-WKP Map showing tenements, areas of Conservation Land and BCKP Royalties**

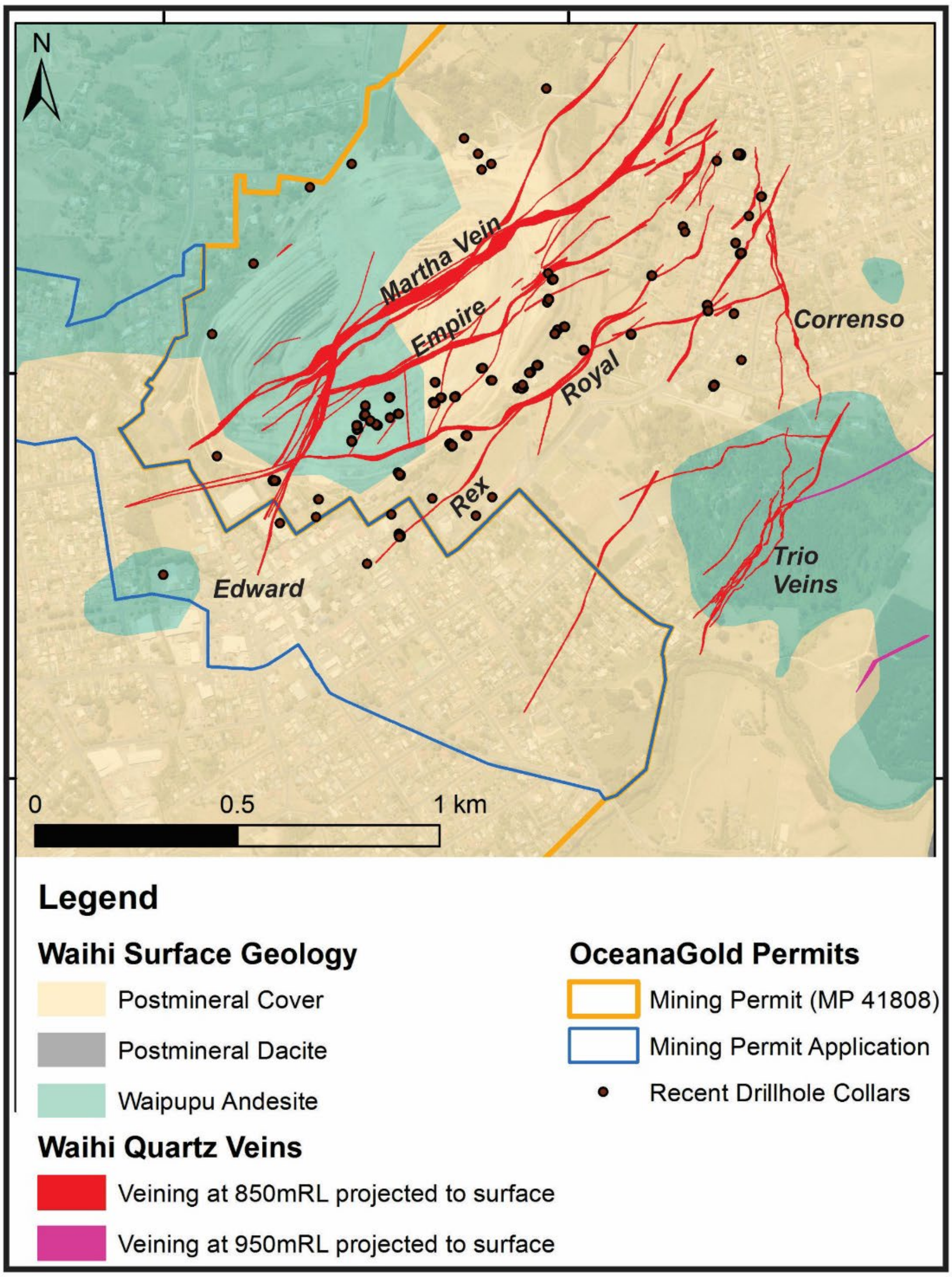


Figure 2.2: Simplified Geology of the Waihi Area showing drill collars drilled between 2017 and December 2019

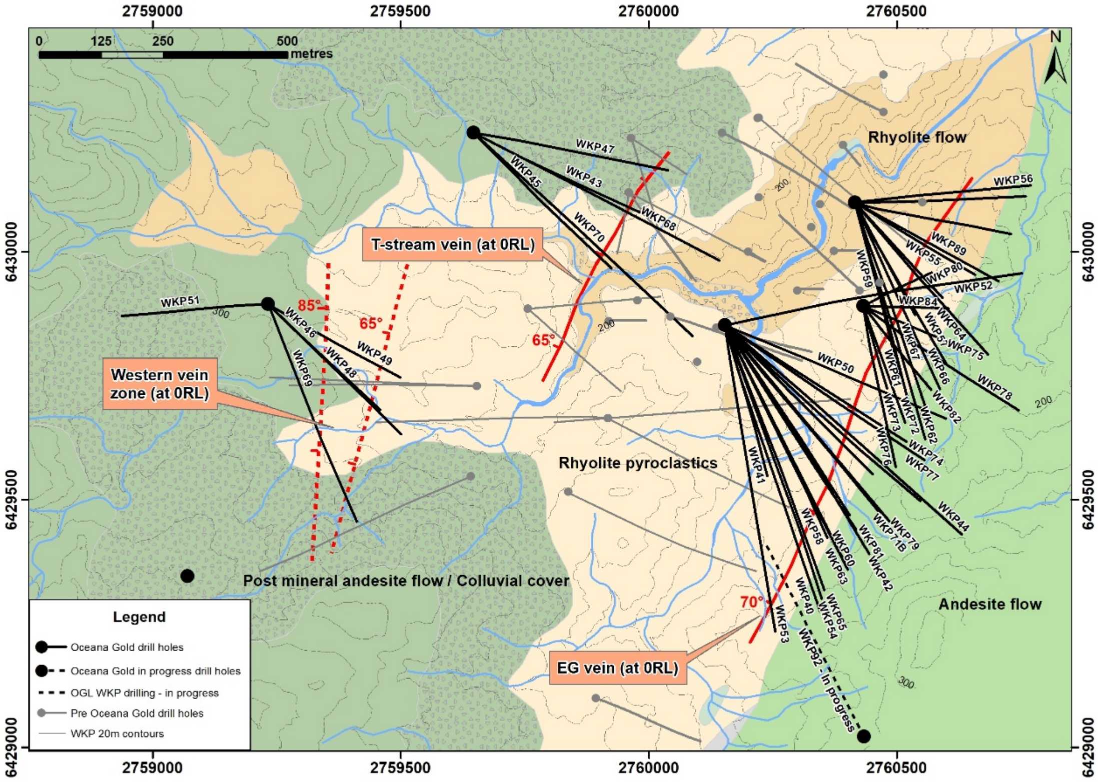


Figure 2.3: Simplified map showing surface geology, drilling and main vein zones at the WKP project

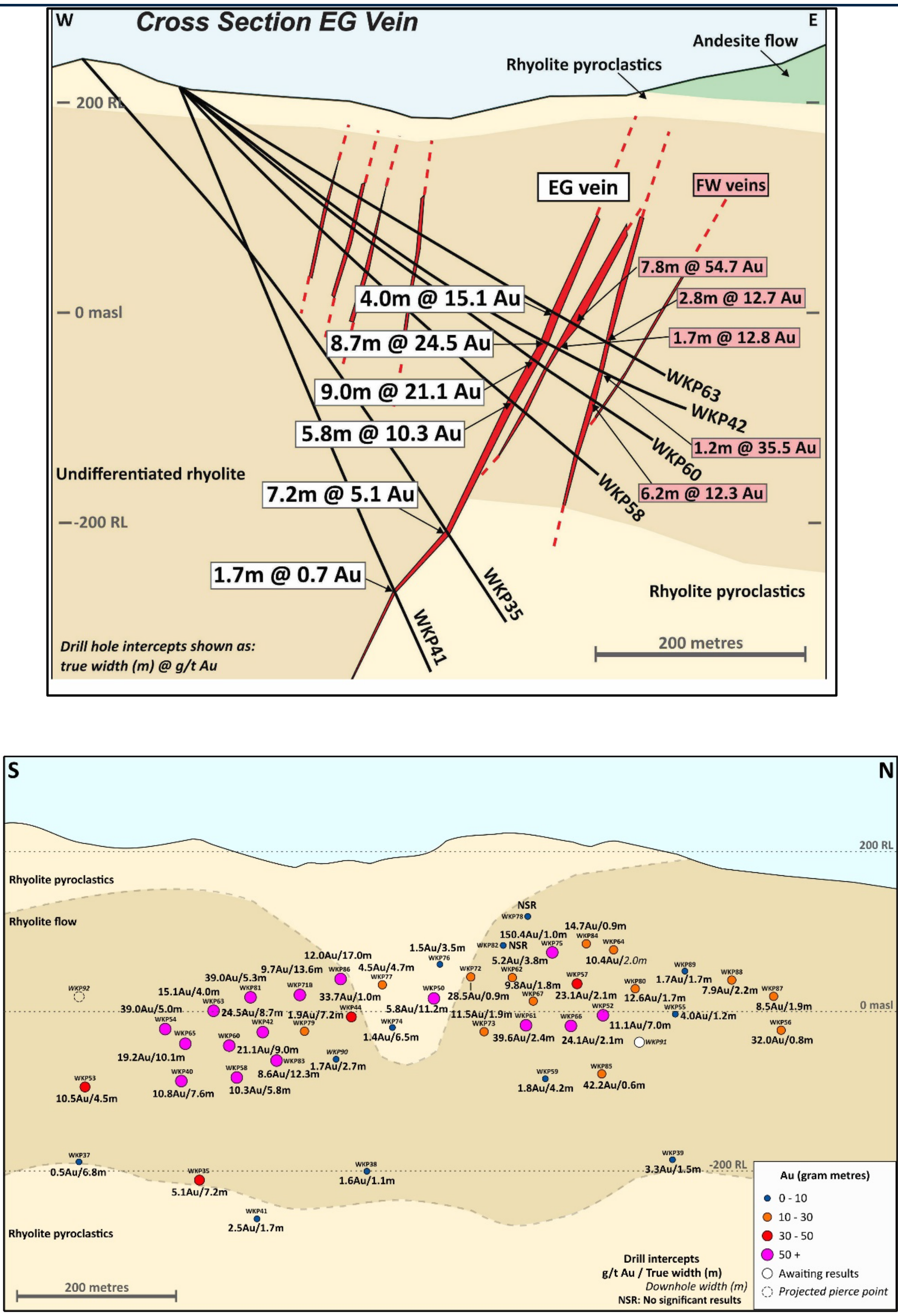
	

Figure 2.4: Simplified Cross and Long Sections of the EG vein at WKP

Balanced reporting	• Recent Waihi drill hole information is available from www.oceanagold.com.
Other substantive exploration data	• OceanaGold is continuing with exploration programs within the district on permits EP 51771, EP40598, EP40813, EP51041, EP51630, EP52804, EP60148 and EP60149. • Exploration drilling is continuing to test the resource potential at WKP. Two drill rigs have completed 11,216m in 31 drill holes during the 2019 exploration period.

	• Metallurgical test work has been completed on WKP ore samples in three rounds of test work. Test work has been carried out at ALS Laboratories in Perth. Crush material derived from drill core samples have been composited with each sample composite containing approximately 30kg of sample material. • The first round of test work was conducted on two sample composites from the 'East Graben vein' with the composite samples sent away for Gravity Leach and Direct Leach test work. • The second round of test work was conducted in two parts. Part one included sample composites from the 'East Graben' vein and other geologically distinct domains, including the 'East Graben Hanging Wall' veins and the 'East Graben Footwall' veins. One sample composite was tested from each geological 'domain'. These samples were tested for Batch Flotation, Gravity Leach and Direct Leach test work. Part two of the second round tested five composite samples from the 'East Graben vein' over a wider spatial spread and tested more variable ore types with regards to Au grade and distribution of other elements. These samples were tested for Batch Flotation, Flotation Concentrate Leach, Flotation Tails Leach, Gravity Leach and Direct Leach test work. • The third round of test work was conducted on four composite samples from the 'East Graben' Vein and two composites samples from the 'East Graben Footwall' veins. The samples were tested for Batch Flotation, Flotation Concentrate Leach and Flotation Tails Leach. These tests were conducted at a variety of grind sizes, including at 106um, 90um and 75um respectively. Direct Leach test work was also carried out at a grind size of 53um and 38um. • A programme of Comminution Testwork has also been completed by JKTech on six selected WKP vein sample composites. The samples were subject to the following comminution tests: SMC Test; JK Bond Ball, Bond Abrasion Index; and a Bond Rod Mill Work Index. The samples were determined to be moderately hard to hard in terms of resistance to impact breakage and hard to very hard in terms of resistance to grinding.
Further work	• OceanaGold continues to drill in the Waihi area, with 3.3km of drilling planned for resource infill and 21.8km planned for reserve conversion for the Martha Underground project and an additional 6km planned to advance the WKP project in 2020.

Section 3. Estimation and Reporting of Mineral Resources

Criteria	Commentary
Database integrity	• Drill hole data is initially captured in an Access Database used for drill hole planning and management. That data is validated by several inbuilt data-entry checks. • The data is imported from Access into the main AcQuire database interface which includes validation protocols. • Personnel are well trained and routinely check source versus input data during the entry process. • The Martha underground model r0120_mug_subblocked_fnl.bmf incorporates all available data, exploration diamond drilling, in-pit channel grade control data and in-pit RC grade control data have all been utilised in both the building of the geologic model and in the grade estimate. • In the construction of the MUG model it was recognised that there is significant historic cross cut data from the historic level development (circa 1880 to 1930) that could be utilised to aid in estimating grade particularly in the poorly drilled portions of the deposit. This legacy cross cut data is of unknown quality, grade historically was recorded as an economic value and a gold equivalent value was back calculated for this data set previously. The legacy cross cut data is utilised in the construction of vein wireframes. This data is excluded from the grade estimation for material reported under this report. • The cross-cut data was reviewed spatially and only data that spanned the full width of the vein was selected for utilisation in the vein wireframe construction. This data was further limited to only the second pass grade estimation pass which is utilised on an on-site basis purely as an aid to drill planning. • Each dataset was extracted independently from the parent Waihi AcQuire database for EDA purposes. Local Vulcan isis databases are created with the extracted data. These local databases are then flagged with domain codes and utilised for all subsequent processes
Site visits	• Peter Church has been employed at the operating mine since 2011. He is employed in the role of Principal Resource Geologist with responsibility for resource estimation. • The wider resource development team is site-based and familiar with mine geology and exploration protocol. Validation of interpretation is regularly performed during mine development. • In the preparation of the Martha Underground model, OceanaGold Group Geologist Tim O'Sullivan was consulted with regards to some technical considerations in the construction of the models for the Martha and WKP deposits. Past Group Geologist Mike Stewart has also been widely consulted in the construction of various other models that contribute to the combined Martha, Gladstone and Wharekirauponga (WKP) Resource. • Martha Underground resource estimation protocols were independently reviewed and deemed fit for purpose in 2018 by Entech Pty Ltd during project study work
Geological interpretation	<u>**Martha Resources**</u> • Open pit and underground mining since 1988 have provided a large database of mapping and grade control sampling, which has confirmed the geological interpretation to date. • The geologic interpretation processes utilised in construction of all Waihi Models utilizes log data, assay data, underground face and backs mapping – where available, digital core photos and oriented core measurements, all of which are systematically collected and validated. The dip and dip direction of significant veins, faults, bedding and geological contacts are estimated from oriented core measurements. • Gold mineralisation is confined to quartz veins and is not disseminated in wall rock; therefore, the main vein boundaries are usually coincident with assay intervals, which attempt to honour the geology. There are a small number of instances where high grade

Criteria	Commentary
	assay results located immediately outside the main vein boundary have been included within the vein wireframe; such as where the grade is interpreted as belonging to small-scale, localized, parallel or sub-parallel veins / stringers rather than being attributed to contamination or a cross-cutting structure. • Geological modelling of the Martha Underground project was performed in Leapfrog Geo 5.0.1 using the interval selection and vein systems tools. The project was linked directly to the ADMWAIHIEXP AcQuire database using the AcQuire API. • Key geological features are interpreted from a combination of spatially referenced logging, assay and mapping data. Domain-specific grade and geological continuity characteristics were created to create representative wireframes of vein structures. The following data sources contribute to final wireframe shapes: o Exploration drilling data – Diamond and rare RC o Open Pit Grade Control channel samples and RC samples o Historic Quartz Vein Mapping o Historic mining triangulations o Surface mapping o Full width historic x-cuts o Core Photography and Logs • Diamond drilling intersects were assigned to structures from a merged assay and geology table. Discrete colourmaps were used to ensure that only distinguishing features were selectable. Criteria commonly used to determine inclusion within a vein include; o Au and Ag values o Vein quartz percentage o Composition of the interval, commonly quartz or quartz-calcite o Lithology type, including void intercepts (for example stope fill, open stope, cavity) o Brecciation type and intensity • Filters were commonly applied to identify primary structures within dense data. These were modified on a vein-by-vein basis and compared to core photography to establish geological consistency between veins. • A structural database was constructed using the structural modelling functions in Leapfrog Geo. Oriented discs were used to inform intercept relationships, with structure type, thickness and measurement confidence commonly used as filters. • The digital core photographic record is used extensively during the modelling process. Identifiable characteristics of veins can be recognised, such as mineralogical and textural characteristics, the nature of contacts, and the existence and relative timing of mineral phases within the vein zones. The mineralized veins have a distinctive appearance, and common textures and mineralogy - consisting of chlorite-smectite clays and base-metal sulphides, along with quartz, and which are commonly complex due to internal multi-phase syn- and post-mineralisation deformation, quite different to barren veins such as the 5995 (calcite-quartz lode). Another reference used to guide the geological interpretation is the mapped geometry of veins that have been mined previously. Waihi veins are characterised by sinuous deflections that tend to be continuous over a considerable vertical extent. Where the orientation data varies along the length of a given vein, or down dip, it is considered in context of the overall geometry of the deflections. • Geological models are integrated with regional geology and with detailed surface topographic models, which are routinely updated by mine surveyors. Geological models and geological concepts have been routinely reviewed by internal and external reviewers.

Criteria	Commentary
	Wharekirauponga (WKP) • The geologic interpretation processes utilised in construction of the WKP model utilizes log data, assay data, underground face and backs mapping – where available, digital core photos and oriented core measurements, all of which are systematically collected and validated. The dip and dip direction of significant veins, faults, bedding and geological contacts are estimated from oriented core measurements. • Gold mineralisation is confined to quartz veins and is not disseminated in wall rock; therefore, the main vein boundaries are usually coincident with assay intervals, which attempt to honour the geology. • Geological modelling is performed in Leapfrog Geo 4.2.1 using the interval selection and vein systems tools. The project was linked directly to the ADMWAIHIEXP AcQuire database using the AcQuire API. • Key geological features are interpreted from a combination of spatially referenced logging, assay and mapping data. Domain-specific grade and geological continuity characteristics were created to create representative wireframes of vein structures. The following data sources contribute to final wireframe shapes: o Exploration drilling data – Diamond and rare RC o Surface mapping o Core Photography and Logs • Diamond drilling intersects were assigned to structures from a merged assay and geology table. Discrete colourmaps were used to ensure that only distinguishing features were selectable. Criteria commonly used to determine inclusion within a vein include; o Au and Ag values o Vein quartz percentage o Composition of the interval, commonly quartz or quartz-calcite o Lithology type, including void intercepts (for example stope fill, open stope, cavity) o Brecciation type and intensity • Filters were commonly applied to identify primary structures within dense data. These were modified on a vein-by-vein basis and compared to core photography to establish geological consistency between veins. • A structural database was constructed using the structural modelling functions in Leapfrog Geo. Oriented discs were used to inform intercept relationships, with structure type, thickness and measurement confidence commonly used as filters. • The digital core photographic record is used extensively during the modelling process. Identifiable characteristics of veins can be recognised, such as mineralogical and textural characteristics, the nature of contacts, and the existence and relative timing of mineral phases within the vein zones. • Geological models are integrated with regional geology and with detailed surface topographic models, which are routinely updated by mine surveyors. Geological models and geological concepts have been routinely reviewed by internal and external reviewers.
Dimensions	**Martha underground Resources** **Martha Underground** – r0120_MUG_subblocked_ fnl.bdf block model was constructed in Mt Eden old grid. o Origin: X 395150; Y 642330; Z 500 (Mine Grid) o Rotation: Bearing 065; Plunge 0; Dip 0

Criteria	Commentary
	◦ Parent cell size 5.0m X, 5.0m Y, and 5.0m Z ◦ Sub blocking cell size 1.25m X, 1.25m Y, and 1.25m Z ◦ Offset in X direction 1700m ◦ Offset in Y direction 950m ◦ Offset in Z direction 700m **Martha Phase 4 Pit –** 07m15.v0; project control file 515m10.dat Minesight generated model • The block model was oriented relative to mine grid. ◦ Parent cell size 10.0m X, 3.0m Y, and 2.5m Z ◦ Offset in X direction 55m ◦ Offset in Y direction 200m ◦ Offset in Z direction 120m ◦ Origin: X 1700; Y 1200; Z 870 ◦ Rotation: Bearing 090; Plunge 0; Dip 0 **Gladstone Project** - Block definition for the Gladstone deposit ◦ r0218_GLOP_small_reg.bdf ◦ Regularised block model – cell size. 2.5 m ◦ Offset in X direction 400m ◦ Offset in Y direction 800m ◦ Offset in Z direction 300m ◦ Origin: X 396600: Y 642200: Z 900.0 ◦ Rotation: Bearing 135; Plunge 0; Dip 0 **WKP** • Block Model Dimensions – WKP0120.bmf

Variable	X	Y	Z
Origin	2759700	6429325	-345
Extents (m)	900	1000	620
Block Size (Parent)	10	10	10
No. of Blocks (Parent)	280	164	62
Sub Block Size	0.5	0.5	0.5
Orientation	+100 degrees	X axis around Z	

Criteria	Commentary
Estimation and modelling techniques	**Martha Resources** • Vulcan® software has been used to construct the Martha underground model. The estimation techniques discussed below are considered to be appropriate. Grade Capping • Reconciliation history for the Waihi project has demonstrated that some level of high-grade restriction is necessary to limit the influence of outliers on grade estimates for the epithermal veins that have been mined during the operations history. • Statistical assessment of the input data is undertaken by domain, typical top-cut selection is based on the assessment of the population distribution characteristics and for inverse distance estimates cutting at the 98th percentile on the log probability distribution has been a long-standing methodology that has produced acceptable results. Estimates using an ordinary kriged estimation scheme utilise a 99th percentile threshold.

Criteria	Commentary

- The use of this method in determining top cuts has resulted in good reconciliation historically. Typically, different data types are assessed independently in the capping analysis process.
- The Martha Underground estimate is based on an Ordinary Kriged Estimation plan and based on comparative assessment of the Ordinary Kriged outputs a top-cut % of 99 has been adopted for kriged estimates.
- The metal removed analysis includes tabulation of the following:
    - Number of samples above the cap
    - Percentage of samples above the cap
    - Minimum, maximum, mean, and variance of samples above the cap
    - Mean and variance of uncapped data
    - Mean and variance of capped data
    - Capped % difference:

$$\frac{(\text{uncapped mean} - \text{capped mean})}{\text{uncapped mean}} \times 100\%$$

    - Contribution of the samples above the cap to the uncapped variance:

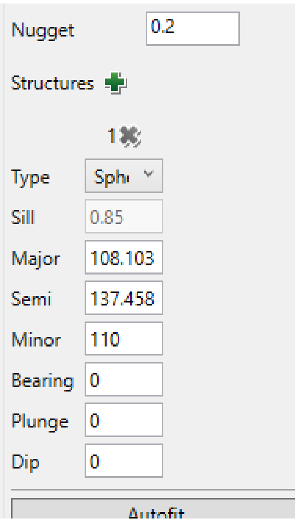
$$(\text{mean above the cap} - \text{uncapped mean})^2 \times \frac{\text{\% of data above the cap}}{\text{uncapped variance}}$$

    - Contribution of the samples above the cap to the total metal:

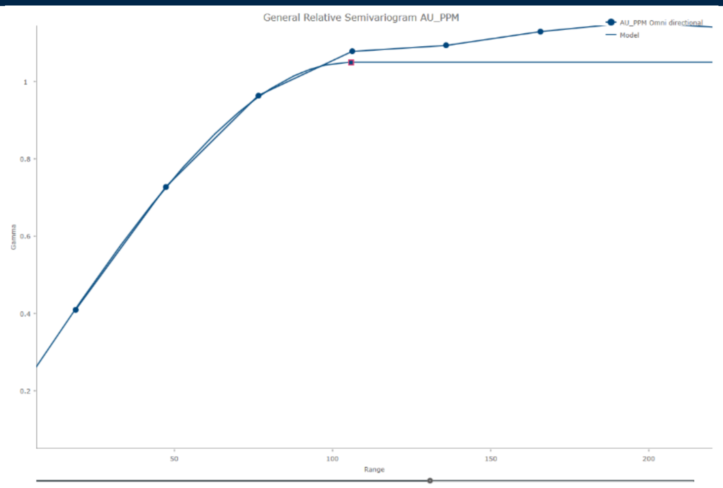
$$(\text{\% of data above the cap}) \times \frac{\text{mean of data above cap}}{\text{uncapped mean}}$$

<u>Variography</u>

- Down hole and directional variography are typically run using Snowden Supervisor v7 software or Vulcan Version 11.0. Variograms are run to test spatial continuity within the selected geological domains.
- The process of domaining in the Waihi deposits removes the majority of the variance and consequently compromises the variogram modelling process. The best variography is therefore obtained for the Martha deposit when un-domained data is utilised. Variogram orientation is defined for each domain based on the strike and dip of the veins as modelled. Both downhole and omni-direction variograms have been defined that fitting of a variogram model. The variogram structure is defined using a standardised spherical single structure model with parameters as follows:



Criteria	Commentary



Estimation / Interpolation Methods

- Veins for the Martha underground model were interpreted using Leapfrog software. Vein and geology wireframes were then utilised to construct a block model within Vulcan. Compositing of data for grade estimation is within distinct geological boundaries. For this model the vein domains were estimated using Ordinary kriging and tetra unfolding was employed to deal with complex vein geometries and to aid in resolution of the grade distribution and sample selection for the estimation.
- The Martha Underground block model is rotated in bearing to align with the dominant strike of the veins and they are run using Vulcan® software. Sub-blocking is used to define narrow veins and to maintain volume integrity with the geology solids. The grade estimation for all models is strictly controlled by the geology, with both sample selection and estimation of blocks limited to domains defined by the geological interpretation solids. Gold is estimated using one of the following methods; either - a single pass with a combined channel and drilling dataset; OR - two-pass estimation using a combined dataset with short search range first, then followed by a second pass using drill hole data only with longer search ranges to estimate blocks not estimated in the first pass.

WKP

Grade Capping

- Reconciliation history for the Waihi project has demonstrated that some level of high-grade restriction is necessary to limit the influence of outliers on grade estimates for the epithermal veins that have been mined during the operations history.
- Statistical assessment of the input data is undertaken by domain, typical top-cut selection is based on the assessment of the population distribution characteristics and for inverse distance estimates cutting at the 98th percentile on the log probability distribution has been a long-standing methodology that has produced acceptable results. Estimates using an ordinary kriged estimation scheme utilise a 99th percentile threshold.
- The use of this method in determining top cuts has resulted in good reconciliation historically. Typically, different data types are assessed independently in the capping analysis process.

Variography

- The process of domaining in the WKP deposits removes the majority of the variance and consequently compromises the variogram modelling process. The best variography is therefore obtained for the deposit when un-domained data is utilised. Variogram orientation is defined for each domain based on the strike and dip of the veins as modelled. Both downhole and omni-direction variograms have been defined that fitting of

Criteria	Commentary
	a variogram model. The variogram structure is defined using a standardised spherical single structure model. Estimation / Interpolation Methods • Veins for the WKP underground model were interpreted using Leapfrog software. Vein and geology wireframes were then utilised to construct a block model within Vulcan. Compositing of data for grade estimation is within distinct geological boundaries. For this model the vein domains were estimated using Inverse distance estimation techniques. • The WKP block model is rotated in bearing to align with the dominant strike of the veins. Sub-blocking is used to define narrow veins and to maintain volume integrity with the geology solids. • The grade estimation for all models is strictly controlled by the geology, with both sample selection and estimation of blocks limited to domains defined by the geological interpretation solids. Gold is estimated using a single estimation pass.
Moisture	• Estimates of tonnage are prepared on a dry basis.
Cut-off parameters	All Mineral Resource cut-off grades are based on gold price of USD 1500/oz, silver price of USD20/oz and 0.72 NZD / USD exchange rate. Martha Underground • A cut-off grade of 2.15g/t has been used for the Martha underground Mineral Resource. Cut off grades based on processing costs of NZD 30/tonne, general and administration costs of NZD 20/tonne and underground mining costs of NZD85/tonne. Martha Open Pit • A cut-off of 0.5 g/t has been estimated for Martha open pit. There are no Inferred Resources in the Martha open pit. Gladstone Open Pit • Cut-off grades are calculated based on different rock types. The equivalent gold price was estimated at NZD 68.05/gm, the cost of processing at NZD 34/t and process recoveries developed from regression analysis of testwork. Cut- off grades for weathered and un-weathered resources are as shown in Table 3.1: *Table 3-1: Gladstone Pit Cut-offs Used* Area: Cut-off grade Weathered mineral resources: 0.6 g/t Un-weathered resources: 1.1 g/t Hydrothermal breccias: 0.7 g/t WKP Project • A cut-off grade of 2.5g/t has been used to estimate the WKP Mineral Resource. Parameters used to calculate the cut-off grade were derived from the nearby Waihi operation with additional costs allowed for surface and underground haulage of the Mineral Resource to the Waihi process plant. Cut off grades are based on processing costs of NZD 30/tonne, general and administration costs of NZD 20/tonne and underground mining costs of NZD92/tonne.
Mining factors or assumptions	**Correnso and Associated Veins** • Mining options available for Correnso and associated veins are limited because of the consent conditions, specifically relating to blasting vibration limits and backfill constraints. Long-hole bench mining (Avoca) with waste rock backfill was selected as the preferred

Criteria	Commentary
	mining method for extraction of Correnso with overhand cut and fill in areas particularly sensitive to vibration. Other supplementary methods involve floor benching. • Correnso has been designed with a 15m to 18m level spacing, floor to floor, primarily to limit blast vibration but this also assists hanging wall and footwall stability. Conventional cross cut accesses are designed for Avoca stoping levels. More detail can be found in Section 4 of this table. <u>Hydrogeology</u> • GWS Limited Consulting (GWS) have modelled the groundwater system in Waihi since the late 1980's. Regular monitoring is compared to the modelled predictions and is discussed in the annual settlement and dewatering monitoring report submitted to the Regulators. • GWS report that a shallow groundwater system associated with volcanic ash, alluvium and completely weathered rhyolite tephra is present at shallow depth. Monitoring data shows that it is unaffected by mine dewatering except immediately adjacent to the Martha Pit. Shallow groundwater levels are controlled principally by rainfall infiltration, low surface soil permeability and natural and assisted drainage to surface water systems. • GWS report that the higher volumes of water in the deeper aquifer are contained primarily in the quartz vein, the historic underground workings and infiltrated through the open pit which is more permeable than the surrounding andesite country rock. Water levels are maintained at the lowest underground mine level (730mRL) by the current underground pumping system. Further drawdown of the water table is required at a rate of 10,000 to 12,000m^3/d to extract the Correnso Mineral Resource. • Correnso is currently dewatered to 705mRL and no further dewatering is required for the Correnso Mineral Resource. <u>Geotechnical</u> • Geotechnical studies were completed by various external consultants (Engineering Geology Ltd, Entech, SRK, Laurie Richards and Beck Engineering) during the Waihi Correnso study. • The extensions of the Correnso vein above 915mRL are for the most part hosted within the Lower Andesite unit with the upper extents of the mineralization persisting through the transition to the upper andesite. Host rock conditions are mostly favourable although the rock mass appears to become slightly less competent than at greater depth. Visual estimates suggest Fair to Good rock quality classifications. • Lower Correnso ground conditions appear to be simply an extension to those already exposed by developments along the Correnso Vein on 795 and 810 levels. The vein zone as exposed on 795 and 810 is heavily structured with sugary quartz /calcite veins but overall ground conditions are classed as Good. • Overall both the host rock and vein zone of the Daybreak vein appears relatively competent. Daybreak is now intersected on most levels with no apparent adverse impact on ground conditions and no additional ground support was necessary. <u>Mining Recovery and Dilution</u> • Stopes are designed with nominally 0.5m dilution applied on both the footwall and the hanging wall. This is based on experience gained when stoping Correnso, Trio, and Favona orebodies. • Tonnage recovery factors shown in Table 3.2 for stoping include in-situ ore, plus dilution material. Metal recovery factors consider the difficulties associated with recovering all ore from a stope, particularly under remote control operations. Additionally, it allows for the potential loss of metal due to excess dilution burying ore and not recovering all the ore.

Criteria	Commentary
	• No over-break is assumed for operating lateral ore development as the over-break tonnes are generally ore which are included in the stope tonnes. Assuming zero over-break in the ore drives removes the risk of either double counting or under calling ore tonnes and metal.

Table 3-2: Tonnage Recovery Factors

Activity	Tonnage recovered	Metal recovered
Lateral Development — Operating resource	100%	100%
15m high Long Hole Stope (includes 5% fill dilution at zero grade)	110%	95%

- Underground resource is trucked to the ROM pad and underground waste will generally be directly hauled to stope fill or to the surface waste dump as required and subsequently returned to the underground as backfill.

Martha Underground Project

Hydrogeology

- GWS Limited Consulting (GWS) have modelled the groundwater system in Waihi since the late 1980's.
- GWS report that a shallow groundwater system associated with volcanic ash, alluvium and completely weathered rhyolite tephra is present at shallow depth. Monitoring data shows that it is unaffected by mine dewatering except immediately adjacent to the Martha Pit. Shallow groundwater levels are controlled principally by rainfall infiltration, low surface soil permeability and natural and assisted drainage to surface water systems.
- GWS report that the higher volumes of water in the deeper aquifer are contained primarily in the quartz vein, the historic underground workings and infiltrated through the open pit which is more permeable than the surrounding andesite country rock. Water levels are maintained at the lowest underground mine level (705mRL) by the current underground pumping system.
- Further drawdown of the water table is required to extract the Martha Underground resource. Permits are in place for the drawdown of the water table to 500mRL. Boreholes are being installed for further dewatering as part of the Martha underground. A slurry pump system has been installed on 790mRL capable of handling the high level of entrained solids for the permanent pump stations.
- GWS estimate the average daily pumping rates to dewater to 500mRL range from 14,000m^3/day to 16,700m^3/day.

Historic Stope Modelling

Stope Fill

- Accurate definition and appropriate treatment of risk associated with historic stopes is important for the Martha underground project.
- Wireframes of the historic workings contain development levels, open stopes and filled stopes, shafts, passes and the Milking Cow caved zone. Adjustments to development levels and stopes have been made based on interaction with current underground mining activity, additional historic plans made available through the Auckland War Memorial Museum and the current Martha diamond drilling campaign.
- Current mining interactions have provided a source of more accurate information to base adjustments to the immediate area intersected. In some areas sufficient evidence has been determined to enable further adjustment to surrounding and wider areas. These are

Criteria	Commentary
	achieved either through directly mining into/ through old workings, targeted probe holes and scanning of the old voids.

- Logging of diamond drill holes identified voids and stope fill within the drill core and provided an interpretation of voids as open stopes or levels, filled stopes or collapsed stope zones.

Methodology

- As the latest information either physical or on paper becomes available the current data for the old level/s are reviewed and updated accordingly.
- Stope shapes are digitised using stope widths annotated on the historic long-section plans, and stope orientation was determined by wireframes and/or drill hole intercepts.
- The individual stope files that are situated entirely within the open pit shell and the Milking cow collapsed zone are archived and not included in the stope model.

Modelling of voids

- Historical stope voids and backfill is captured in the model via the *mined* variable. No back filled material is included in the reported Mineral Resource, this material is regarded as an exploration target and will be de-risked through further exploration work.

Table 3-3 ***Historical Stoping Modelling Variables***

Mined Variable value	Material Type	Modifying factors
0	In-situ	As estimated
1	Back filled stopes	Density and grade modified
2	Subsidence	Density and grade modified
5	Open stope	Density set to zero, grade removed
6	Open development	Density set to zero, grade removed

<u>Geotechnical</u>

- Ground conditions within the Martha underground project will be impacted due to proximity to historic mining voids. Mechanisms for mitigating the associated risks will be considered as part of the project feasibility study to be undertaken in the coming year.
- Pells Sullivan Meynink (PSM) engineering consultants reported on the effect of the Martha Underground Project on the Martha Pit wall stability and concluded that the Martha underground will run in parallel with the Martha Pit and this will have several benefits:
    - A proportion of the existing unfilled historical stopes will be stabilised by filling with rockfill immediately below the Martha Pit.
    - A proportion of the total planned mining is re-mining of historical stopes, it will be mining from the top down, a very large proportion of these lie immediately below the Martha Pit; and cemented aggregate fill will be used extensively in this mining.
    - These two factors will result in a significant improvement in overall rock mass conditions
- AMC, engineering consultants, investigated the stability of the underground workings and reported that based on the current understanding of ground conditions, the planned ongoing investigation of conditions as suitable drilling positions become available, and the proposed cautious approach to development using close ground control techniques

Criteria	Commentary

where required. AMC is confident that the proposed Martha underground mine can be developed and brought into production without any compromise to underground or surface stability.

- AMC reported that the ground conditions influence the mining method, the means of access, and the design of stopes and access tunnels. A critical aspect of the Martha Underground Project is to undertake investigations to understand those conditions so that a safe and efficient mining method and well-informed approach to developing the mine is used.

Mining Method

- Mining method selection work for the Martha underground project was undertaken by SRK in 2011, 2016 and 2017 and confirmed by Entech Pty Ltd in 2018. The Mineral Resource estimate has applied the same recommended mining methods recommended by SRK and Entech.
- Much of the deposit will be extracted using Avoca which has been the predominant mining method at Waihi since 2004.
- A proportion of the Mineral Resource inventory will involve the extraction of remnant ore skins in the footwall or hanging wall of previously mined stopes, or the extraction of both remnant ore skins and historical backfill. The proposed mining method is illustrated in Figure 3.1, this mining method will utilise remote drilling and loading methods combined with remote LHD equipment for ore extraction.
- SRK and Entech conclude that once established, the mining method is expected to achieve acceptable ore recovery, productivity with few safety issues anticipated.

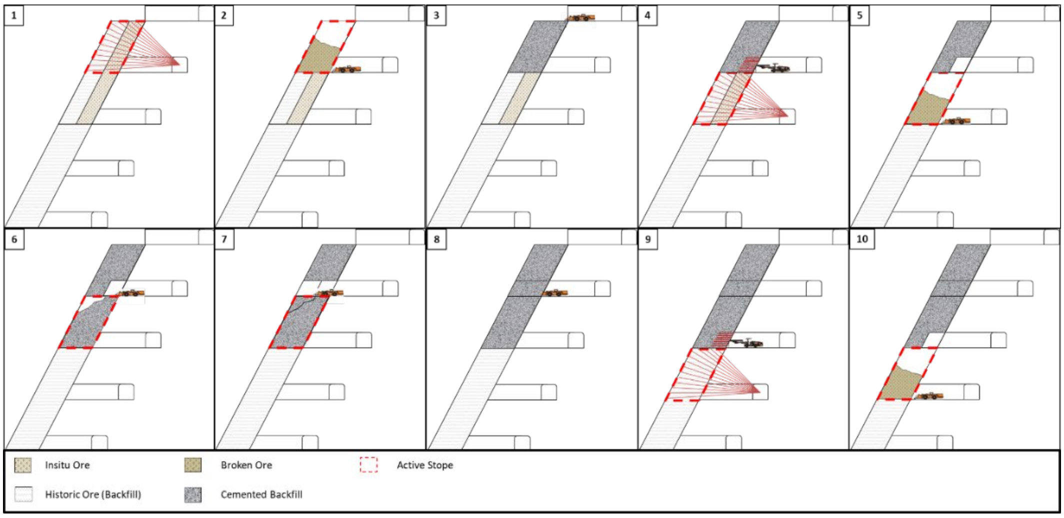


Figure 3.1: Side Ring Mining Method

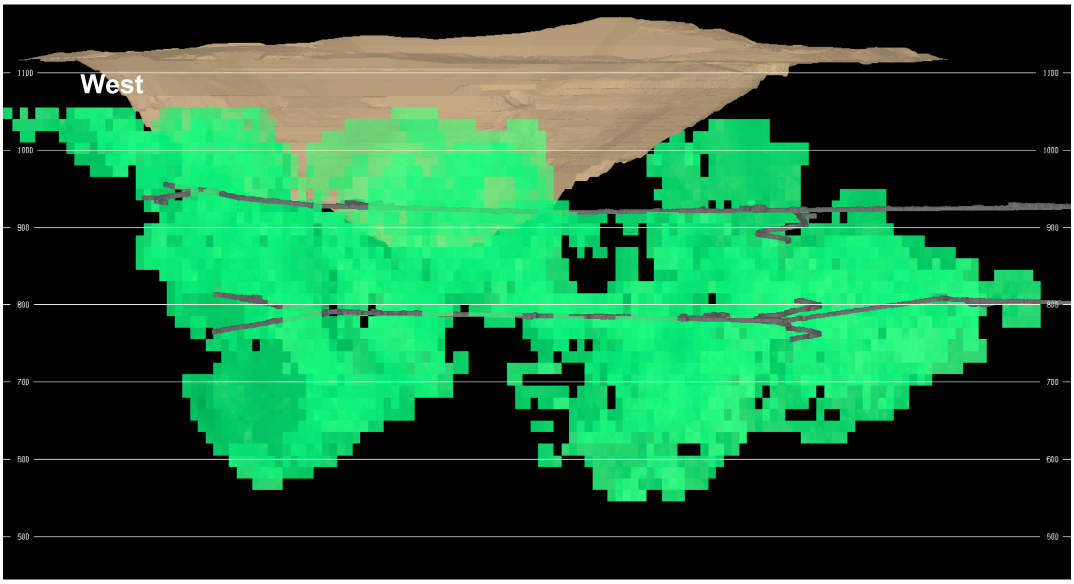
Mining Recovery and Dilution

- No mining recovery or dilution were applied to the Mineral Resource estimate.

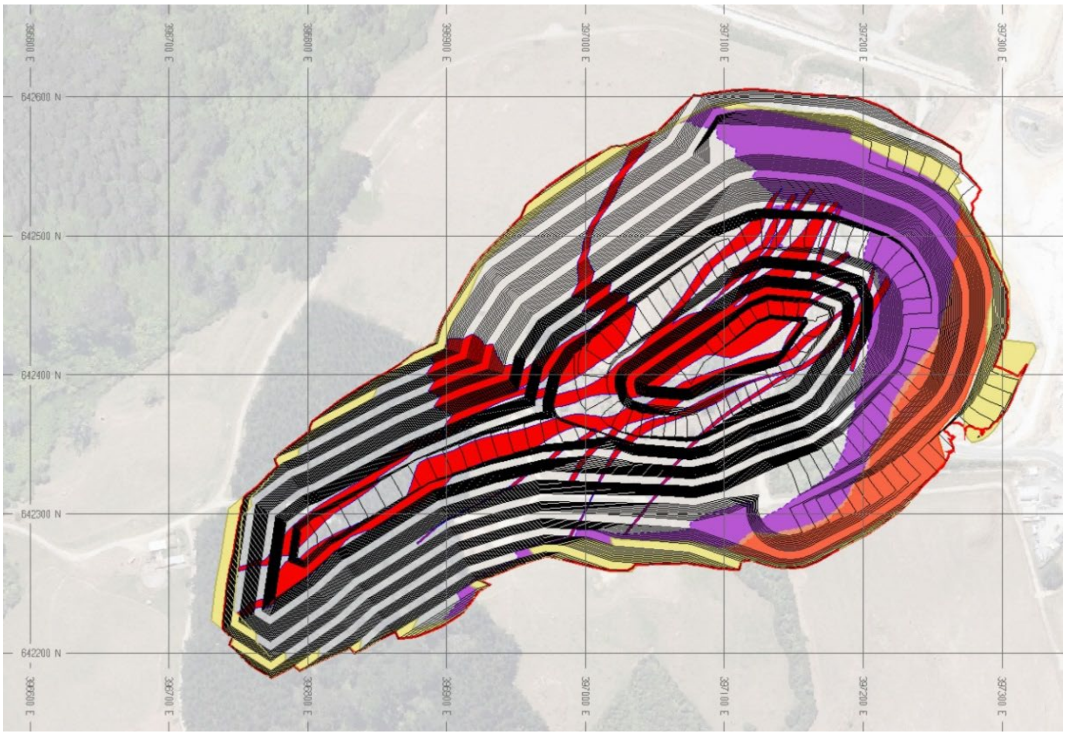
Mineral Resource Estimate

- OceanaGold has estimated the Mineral Resource using the Deswik Stope Optimiser (SO).
- The Mineral Resource is reported within the SO shapes above the 2.15 g/t cut-off grade. No unclassified material contained within the SO shapes is reported.
- Nominal stope dimensions of 15m high by 10m in length were selected for the design.

Criteria	Commentary

	• Stope widths vary, depending on the thickness of the mineralisation. A minimum stope width of 0.5 m was used and 0.5m of dilution was applied to both the footwall and hanging wall resulting in a minimum stope width of 1.5m.
	• A maximum stope width of 15m was used with a minimum pillar width between stopes of 8m. A maximum percentage of historical stoping of 10% was allowed in each SO shape.
	• The method of specifying the strike and dip angles for the initial stope-seed-shapes in SO was to apply a stope control surface wireframe over the full extent of the orebody where stope shapes are to be generated.
	• The following stope shapes were manually excluded from the Mineral Resource estimate:
	  ○ Isolated stope shapes either showing lack of continuity or distant from the main concentrations of shapes.
	  ○ Stopes closer than 50m from the surface.
	  ○ Within a solid created as an exclusion solid around the historical “Milking Cow” zone by projecting the cave zone outwards by 20 m.
	  ○ All stopes intersecting the base of the Martha Reserve pit.
	• Figure 3.2 presents the SO shapes after exclusion based on geotechnical and economic assessment.
	
	
	Figure 3.2: Martha Underground Mineral Resource Long Section
	Martha Open Pit
	• There are no Inferred Resources in the Martha Open Pit.
	Gladstone Open Pit
	• The Gladstone Resource is reported within a conceptual pit shell defined using a USD 1500 gold price, this resource is largely indicated however approximately 10% of the contained metal within the Resource reporting pit shell is classified as inferred.
	• The method for estimating the Mineral Resource involved a 2018 pit optimisation study using the “Whittle” Lerch-Grossman algorithm to determine the economic limits.
	• Operating costs were estimated based on contract rates for the Martha open pit conventional drill, blast, load and haul with standard mid-sized mining equipment. The selected mining method and design is appropriate for the Gladstone open pit.

Criteria	Commentary

	• Allowances in the costs estimates were made for separating waste into hard and soft material and further categorised into potentially acid forming or non-acid forming rock and placing in engineered structures.
	• Capital costs allowed for relocating the underground portal and installation of a crushing facility.
	• The conceptual pit design in shown in Figure 3.3.
	Figure 3.3: Gladstone Open Pit Conceptual Design
	
	
	• Ore is planned to be trucked 0.25 km to the process plant and placed in a 40,000t stockpile. A surge (Polishing Pond) stockpile (up to 1.2MT) is available close to the water treatment plant for excess ore. Waste is planned to be trucked direct to the Waste Development site and used for construction of the Tailings Dams or placed in an engineered rock stack.
	Hydrogeology
	• Two aquifers are interpreted across the site, an upper aquifer within the surficial materials and young volcanics, and a lower aquifer within the andesite with the two aquifers partially separated by the lower permeability, weathered and hydrothermally altered cap at the top of the andesite sequence.
	• The model at Gladstone comprises:
	  o An upper perched groundwater system within the surficial materials of moderate to low hydraulic conductivity, with pore pressures below hydrostatic and a standing water level at ~1096mRL with seasonal fluctuation;
	  o A lower groundwater system in the Andesite with a standing water level of approximately ~1075mRL.
	Geotechnical

Criteria	Commentary
	• Geotechnical studies during 2017 on preliminary design concepts including geotechnical drilling, rock / soil testing and detailed core logging showed that the slopes in the Winner Hill pit and the northern slopes in Gladstone Hill were generally satisfactory under fully saturated or partially drained conditions. However, the southern and eastern upper slopes were shown to be marginally stable under fully or partially saturated conditions particularly where there was a significant depth of the surficial deposits. • The geological model shows the north-western wall will comprise andesite, overlain by a thin band of hydrothermal breccia and a relatively thin sheet of rhyolitic tuff/ignimbrite thickening to the south. The south-eastern wall has a thicker band of rhyolitic tuff/ignimbrite and hydrothermal breccia overlying andesite; and the east wall has the greatest thicknesses of dacite and volcaniclastics. • Design pit slopes were modified based on a detailed geotechnical study completed by PSM in early 2018 including three additional geotechnical holes and geotechnical modelling. Geotechnical domains were re-defined based on the recent analysis. The design criteria used to support calculation of Mineral Resources are reported in Table 3-4 below.

Table 3-4: Gladstone Pit Slopes

Pit Design Parameter	Bench Height m	Face Slope degrees	Berm Width m
Gladstone Pit			
• 1040 to 1100	15	60	5
• 1100 to 1140	10	40	5
• Breccias / Dacites	10	40	5
• Surface to 6m depth		35	
Haul Road Width	• 20m wide @1 in 10, surface to 1070, • 12m wide @ 1 in 9 to 1040		
Winner Pit			
• 1060 to 1085	15	60	5
• 1085 to 1100	15	55	5
• 1100 to 1130	10	55	5
• Surface to 8m depth		30	
Haul Road Width		18m wide 1 in 10	

Mining Recovery and Dilution

- The minimum mining width has been set at 2.5 metres wide. The selective mining unit developed for the geological block model is a bench height of 2.5metres, and east west dimension of 2.5 metres and north south dimension of 2.5 metres with orientation reflecting the main trend of the mineralised veins in an east westerly direction.
- The Mineral Resource zones are broad on each mining bench, and the overall dilution edge effects are minimal, with the result that there is expected to be little difference between the overall in situ and diluted tonnes and grade. The Mineral Resource block model has a block dimension which is larger than the optimum selective mining unit (SMU) for the equipment currently operating at Waihi.
- No mining losses were applied. It is considered that the resource estimation technique applied to the broad mineral resource zones provides an adequate estimate of the Mineral Resource tonnes and grades. Reconciliation data from mining the Martha open pit also supports this approach.

Criteria	Commentary

WKP

Hydrogeology

- GWS report that the catchment area for the Wharekirauponga Stream is approximately 15 km^2 and with 2.17 m/year rainfall, the average daily rainfall volume reporting to the catchment is in the order of 89,178 m^3/d, with most rainfall in winter although sub-tropical storms can produce heavy events in summer.
- GWS state that there are insufficient piezometers constructed within the WKP area to enable the development of a potentiometric surface and given the difficulties with site access may remain the case going forward. The potentiometric surface is, however, expected to mimic that of the surrounding topography.
- To date, two sets of piezometers, each having a shallow and deep well setting, have been constructed at the site. These piezometers indicate a vertically downward hydraulic gradient in the range of 0.55 to 0.59 m/m.
- Further work is still required to understand how groundwater interacts with surface waters around WKP and with the stream channels.

Geotechnical

- SRK have assessed the geotechnical data to establish the geotechnical characteristics and conceptual design elements for the underground mine. The assessment entailed:
    - Understanding the geological setting of the gold deposit;
    - Creation and population of an interpretable geotechnical property database based on the limited geotechnical core logging available;
    - Collection and recording of suitable core samples for rock property testing in a laboratory, supported by field estimates (point loads) of rock strengths;
    - Graphical representation, interpretation and reporting of recorded data, culminating that describes the geotechnical environment, and
    - Transformation of data into Barton's Q' value.
- SRK recommended that the hydraulic radii shown in Table 3-5 be used for initial stope sizing by area and depth.

Table 3-5: Preliminary Geotechnical Parameters for WKP Stope Sizing

	Eastern Graben EG Rhyolite		Central Area Lapilli Tuff		Western T stream Rhyolite	
	HR min	HR max	HR min	HR max	HR min	HR max
80-160m	5.5	5.5	5.1	5.1	6.8	6.8
160-240m	4.8	5.5	4.5	5.1	6.8	6.8
260-320m	4.2	5.5	4.0	5.1	6.7	6.8

Mining Method

- Mining method selection work for the WKP Project was undertaken by SRK in 2019,
- SRK state both pillar and artificially supported methods are suitable for the WKP deposit. The deposit will not be able to be supplied an engineered fill such as paste or cemented hydraulic fill because the location of the processing plant is 10 km distance from the mine. Backfill for the mine could be either cemented rock fill or rock fill.

Criteria	Commentary

- The use of in-situ pillars was not considered by SRK due to the high grade of the Mineral Resource, as such if pillars are required these could be cemented fill rather than in-situ pillars.
- The existing OceanaGold operation Waihi use the Avoca mining method and SRK considers that Avoca mining method is also suitable for WKP.
- SRK recommended a sub-level height of 20m and stope strike length of 15m be adopted for stope optimisation which is within the preliminary geotechnical parameters with a HR of 4.3.

Mineral Resource Estimate

- OceanaGold has estimated the Mineral Resource using the Deswik® Stope Optimiser (SO).
- The Mineral Resource is reported within the SO shapes above the 2.5 g/t cut-off grade. No unclassified material contained within the SO shapes is reported.
- Nominal stope dimensions of 15m high by 15m in length were selected for the SO.
- Stope widths vary, depending on the thickness of the mineralisation. A minimum mining width of 0.5 m was used and 0.5m of dilution was applied to both the footwall and hangingwall resulting in a minimum stope width of 1.5m.
- A maximum stope width of 15m was used with a minimum pillar width between stopes of 8m.
- The method of specifying the strike and dip angles for the initial stope-seed-shapes in SO was to apply a stope control surface wireframe over the full extent of the orebody where stope shapes are to be generated.
- All shapes within 50m of the surface topography were excluded from the estimate. Figure 3.4 and Figure 3.5 present the SO shapes.

Figure 3.4: WKP Mineral Resource Long Section

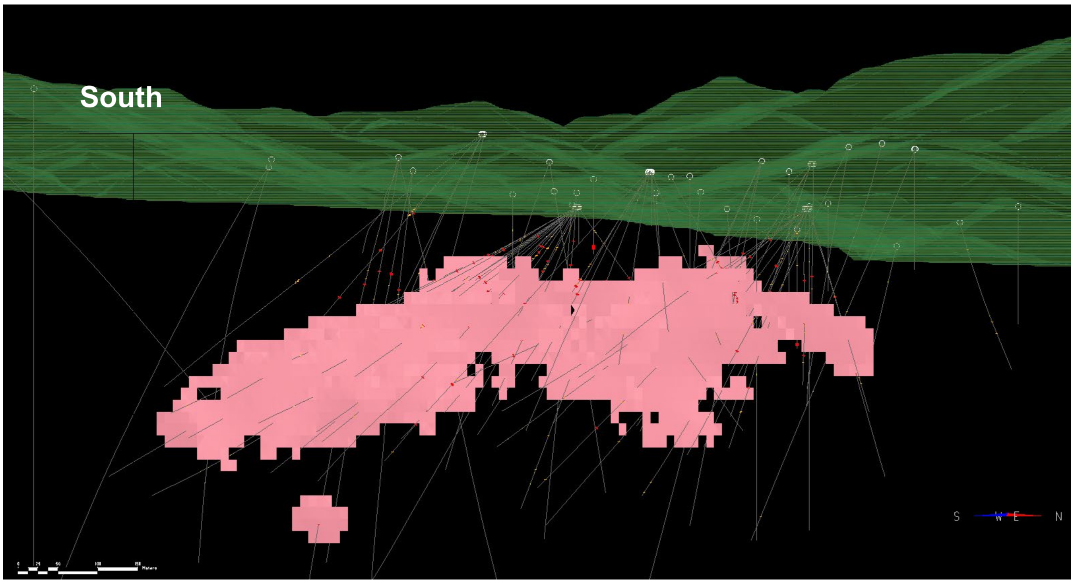
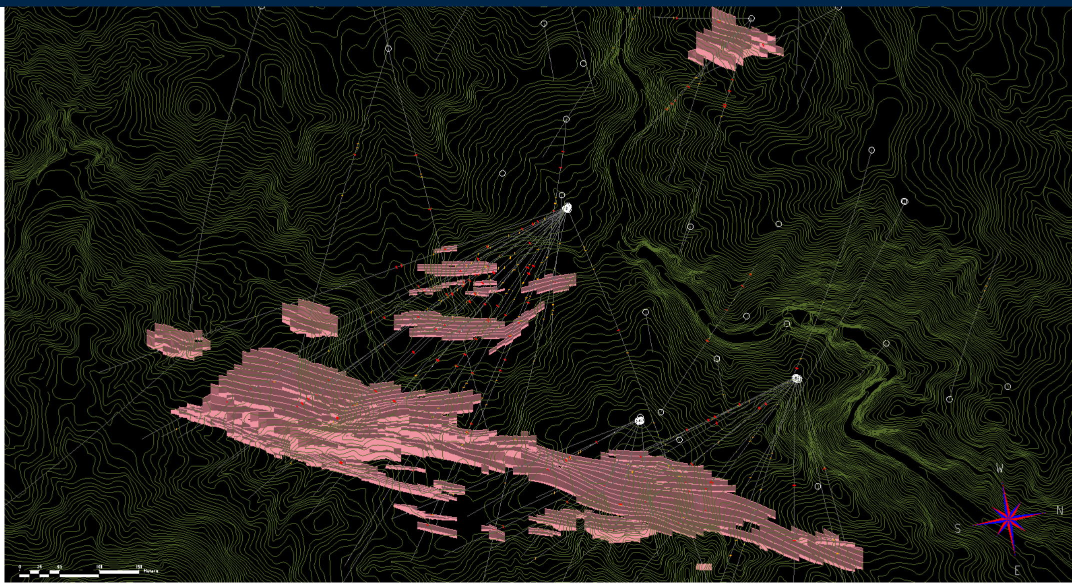
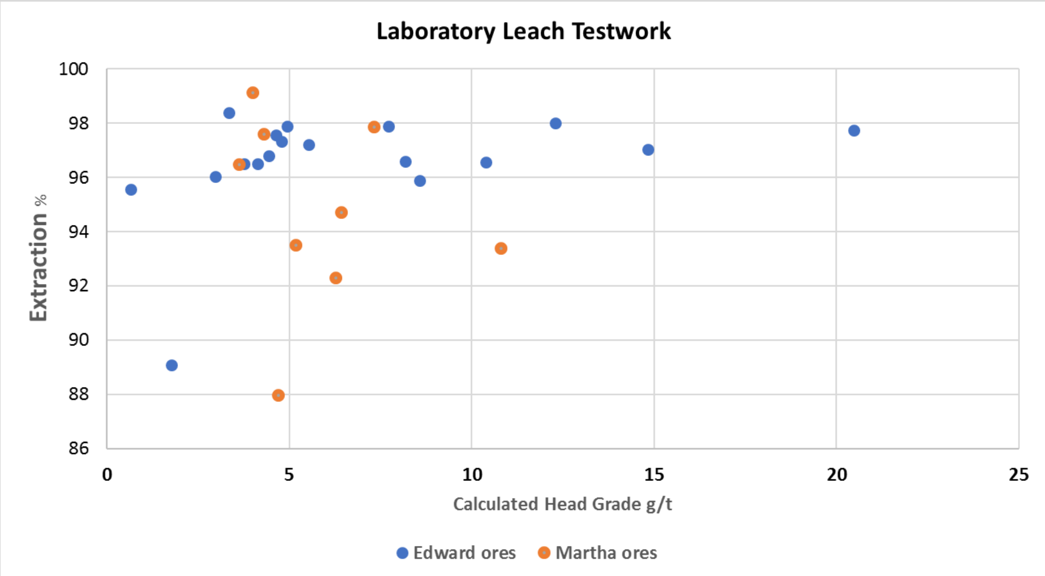


Figure 3.5: WKP Mineral Resource Plan View

Criteria	Commentary
	 Mining Recovery and Dilution • No mining recovery or dilution were applied to the Mineral Resource estimate.
Metallurgical factors or assumptions	**Correnso and Associated Veins** • Laboratory scale test work has been conducted on drill hole samples obtained between 2010 and 2012 for the Correnso upper and lower extensions and Empire. The key focus of the metallurgical work has been to derive gold recovery, throughput rates, reagent consumption and to confirm the suitability of current Plant configuration. This test work has shown the Correnso mineral resources to be amenable for processing via the existing Waihi treatment plant flow-sheet. • A grind size P_{80} of 53 microns has been selected for the estimated throughput rates, as plant operating experience has shown that an equivalent laboratory gold recovery at a P_{80} of 38 microns is achieved. This relationship is due to the laboratory grind test work being in open circuit, whereas in the plant the grinding circuit is in closed circuit. This results in the higher density sulphides being preferentially ground finer and hence liberating more gold particles that are disseminated within the sulphides. • It is determined that a grind size P_{80} of 53 microns is the optimum that maximizes value for the Correnso resource. • Recovery is estimated from test work. Recovery at 88tph throughput is estimated at: *Recovery % = [Au Head grade – (0.09*Au Head grade + 0.25+0.02)] / Au Head grade * 100%.* • This relationship predicts an average recovery for the Correnso Extensions of 87.4% based on the average project head grade of 7.47g/t Au. • Both gold and arsenic have been identified as the statistically significant predictors for estimating residue grade for the Correnso Extensions resource. **Martha Underground Project** • Metallurgical test work has been completed on 30 composite samples of mineral resource intercepts from Edward (18), Martha (9), Welcome (1) and Empire East (2). Twenty-three samples were submitted to the Newmont Inverness testing facility. Six samples representing the Edward vein were submitted to Ammtec Laboratory in Perth, Western Australia. Samples were mostly submitted both as quarter core and as jaw crush reject material (95% <7mm), if both were available.

Criteria	Commentary
	• Leach tests showed a range of recoveries from 89% to 98% for the Edward mineral resources and 87% to 99% for Martha mineral resources, as shown in Figure 3.6 below where calculated head grade is plotted against recovery or extraction. • It was found that the recoveries of the Martha resources achieved a minimum of 90% leach extraction at a P80 of 53 µm across the 30 samples. This high base recovery indicates there may be less refractory gold in Martha mineral resources than Correnso. • Project work and metallurgical testing have shown Martha underground mineral resources to be amenable for processing via the existing Waihi treatment plant flow-sheet and achieve practicable throughput rates, reagent and consumable consumption and process recovery. • A metallurgical recovery of 92% been used for the Mineral Resource calculation.

Figure 3.6: Laboratory Leach Testwork Chart



Gladstone Open Pit

- Laboratory scale test work has been conducted on the drill hole samples obtained for the Gladstone Mineral Resource. The key focus of the metallurgical work has been to derive gold recovery, throughput rates, reagent consumption and to confirm the suitability of current Plant configuration. This test work has shown the Gladstone mineral resource to be amenable for processing via the existing Waihi treatment plant flow-sheet. Recovery is shown to vary with the weathering extent of the Gladstone resource.
- The weathered domain achieves higher recoveries than the primary un-weathered domain. Separate recovery relationships have been determined for the weathered and un-weathered domains. A small separate metallurgical domain characterised by the hydrothermal breccia host rock was also identified.
- A grind size of P_{80} of 90 microns has been selected, as plant operating experience has shown that this is equivalent to a laboratory gold recovery at a P_{80} of 75 microns. The gold and arsenic relationship identified in Correnso resource is not observed in the Gladstone Resource. The statistically significant drivers of recovery within the Gladstone resource are weathering and gold head grade.
- The recovery estimate from the test work is calculated at a P_{80} of 75 microns
  - Weathered: Recovery % = 100 * (0.902 – (0.049 / Head Grade Au))
  - Un-weathered: Recovery % = 100 * (0.85 – (0.452 / Head Grade Au))

Criteria	Commentary

- Hydrothermal Breccia: Recovery % = 74%

- This relationship predicts an average recovery for the Gladstone Resource of 77.8% based on the average Mineral Resource grade of 1.99 g/t Au.

WKP

- A series of ten composite samples were generated from drill core obtained from the WKP EG vein across the long section and at varying depths in several test programs.
- Eight of these composites represent material in the main EG vein with the other two testing the adjacent footwall and hanging wall structures.
- The composite samples were subjected to a standard suite of tests to characterise the recovery of gold from the samples via conventional mineral processing flowsheets similar to that employed at the Waihi process plant.
- Testing on the composites was completed by ALS Metallurgy in Perth, Australia and included:
  - Head assay and screen fire assay,
  - Gravity gold recovery at 106 pm grind size,
  - Cyanide leach of both gravity concentrate and gravity tails, and
  - Sulphide flotation and leaching of flotation products.
- The average gold recovery from leaching on the main EG vein samples averages 87.9% and suggests the majority of the EG vein material can be classified as free milling. The lower recovery experienced in composites 4 and 6 may be attributable to the higher sulphur feed grade and likely partially refractory locked in sulphides. Table 2 presents the testwork recoveries for each composite tested

Table 3-6: Metallurgical Testwork Samples and Recoveries

Composite No	Zone	Head Grade (Au g/t)	Grind Size P80 (pm)	Total recovery (%)
1	EG Vein	7.96	106	95.5
2	EG Vein	28.70	53	89.5
3	EG Vein	9.78	53	89.3
4	EG FW Vein	5.08	53	66.4
5	EG FW Vein	4.46	53	80.9
6	EG Vein	3.78	106	68.8
7	EG Vein	5.35	106	91.2
8	EG Vein	6.65	106	95.8
9	EG Vein	5.72	106	84.3
10	EG Vein	7.58	106	89.1

- Preliminary flotation testing at a P80 of 106 pm was completed on eight of the composite samples. The recoveries were not an improvement on the direct leach results and insufficient gold was recovered to the flotation concentrate to consider the flotation tailings a discard stream.
- The test work completed to date supports the adoption of a direct leach flowsheet for gold recovery at a primary grind size of 106 pm or finer and an expected recovery of 90% or higher is a reasonable assumption given that optimisation work has not yet been completed.

Criteria	Commentary
	• 90% recovery has been adopted for the cut-off grade calculation.
Environmental factors or assumptions	• The Waihi operation holds the necessary permits, consents, certificates, licences and agreements required to conduct its current operations, and to construct and operate the Correnso underground, the Martha open pit and the Martha underground. **Correnso and Associated Veins** • Environmental assessment studies were conducted by independent consultants as part of the Correnso underground consenting. The environment assessment reports are all independently reviewed by consultants employed by the Council regulators. • Studies have included air quality, water quality and ecology, noise, blast vibration effects, traffic, potential for subsidence, ground settlement in response to dewatering, property values, de-watering, and geochemistry of tailings, waste and groundwater. • All waste produced from the underground mines is classified as potentially acid forming (PAF) and is returned underground as stope backfill. The Correnso consent requires material to be classified according to acid forming potential, and PAF material requires lime dosing. • Vibration modelling has been completed for the Correnso by John Heilig and Partners. Modelling of the likely scale of blasting has been based upon vibration relationships developed from the underground blasting at Waihi over the last six years. Vibration modelling shows that the Correnso underground, can comply with the consent conditions. **Martha Underground** • During 2017 and 2018, environmental studies were conducted by independent consultants to support resource consenting. Studies have included air quality, water quality and ecology, noise, blast vibration effects, traffic, potential for subsidence, ground settlement in response to dewatering, property values, de-watering, and geochemistry of tailings, waste and groundwater. • The Hauraki District Council and Waikato Regional Councils have issued resource consents for Project Martha. The conditions impose restrictions on blasting magnitudes and firing times, mine design, geotechnical monitoring, dewatering and surface stability. **Martha Open Pit** • All consents are in place for the Martha open pit. Consent conditions impose strict limitations on working hours, noise and blast vibration. **Gladstone Open Pit** • Gladstone project environmental studies have commenced, environmental factors are assumed to be in line with those previously experienced on site. • Studies have assumed that the rehabilitation of the Gladstone pit will require backfilling to the original topography with rock sourced from the Martha pit. **WKP** • Baseline monitoring and surveys are currently underway by experienced and qualified third-parties. The assessment will include terrestrial and aquatic biodiversity.
Bulk density	• Oxidation and rock hardness wireframe surfaces / solids based on sectional interpretation of diamond drilling data, with modification based on the current geology model, are used as the basis for assigning density. • Dry bulk densities for all deposits have been estimated using a water displacement method modified from NZS 4402: 1986, which is considered appropriate for competent half-core (Lipton, 2001). The method involves weighing the sample before and after a

Criteria	Commentary
	series of steps, which include oven-drying a drill core sample, filling surface pores with modelling clay, coating the entire sample with wax and immersing it in water. Ore intercepts were relogged and assigned to several identified geological classes based on the physical properties that are considered most likely to affect density, including porosity, clay content, oxidation, sulphide content, vein percent and vein texture. Analysis of the data shows a relatively uniform range of density values within each geological class. Porosity, clay content and oxidation contribute to lower density values, while sulphide content contributes to higher density values. Dry bulk densities were determined for 247 samples of Correnso drill core, including representative vein and wall rock material from mineralized intercepts over a downhole depth range of 182.2m to 519.35m, corresponding to approximately 1000mRL to 750mRL. Geological classes were identified based on logged physical characteristics and each main geological class is represented by SG measurements from at least 30 drill core samples. An overall mean value of 2.52g/cm^3 was obtained for all 247 density values. There is a slight increase in density with depth which corresponds to increasing base metal sulphide content. There is no relationship between the density and the Au grade.

- The default density used for the Correnso Resource model is 2.5 g/cm^3.
- Gladstone densities range from 2.0 to 2.5 g/cm3, densities are assigned based on geologic unit.

Martha Underground Resources

- Martha Underground density (sg) assignment is based on a density assessment completed in 2018. Density samples are routinely collected during logging of diamond drill core. Specific Gravity is automatically calculated using the following formula:

$$\frac{\text{Weight in Air}}{(\text{Weight in Air} - \text{Weight in water})} = SG$$

Domain	Sample Count	Mean SG	Standard Deviation
Quartz Andesite	1,361	2.52	0.15
Quartz Vein	634	2.53	0.09
High Base Metal content logged	426	2.56	0.08
Global Average	2,156	2.50	0.16

- The specific gravity of the Quartz Andesite and vein structures in the Martha Underground are influenced by several different factors. The Quartz Andesite is affected by reduced level when it is exposed to the surface weathering profile mainly seen in UW surface drill holes. At depth the rocks density can be affected by the degree of hydrothermal alteration, exposure to higher alteration often results in lower rock density, the unit has a clear upper limit of less than 2.8 grams per cubic/cm. Quartz veining density is influenced less by surface weathering in the Martha Underground but by weathering due to historic workings. Other influencing factors are base metal mineralization, clay content, calcite content and overprinting.
- In assigning density within the Mineral Resource estimate, historic stope fill is assigned a density of 1.8. Collapse zones associated with the Milking Cow subsidence zone has been assigned a density of 1.9.
- WKP density measurements are routinely collected during logging of diamond drill core. A field in the AcQuire database is setup to automatically calculate the specific gravity (SG) from these density measurements using the formula: SG= W(air) /(W(air)-W(water)), where W(air) =weight of sample in air and W(water) =weight of sample in water.

	Sample Count	Mean SG
Waste Rock	156	2.45
Vein	79	2.54

Criteria	Commentary
	Global Average 235 2.50
Classification	**Martha Resources** (see below)

Martha Resources

- The resource classification is based on an assessment of average drilling density.
- Confidence category is defined by average drill hole spacing, the ranges employed in classification of the Martha underground Mineral Resource are consistent with the ranges used in classification of other vein zones currently being mined within the larger Waihi operation.
- There is significant experience in mining and assessing the continuity of mineralisation with the veins for Martha and the adjacent deposits, the vein style mineralisation has a strong visual control and is well understood and has demonstrated continuity over significant ranges.
- An estimation run utilizing a maximum of three drill holes with a single sample per drill hole was undertaken storing the average distance to the three drill holes used to estimate the block. This forms the basis for the drill hole spacing and therefore the confidence categorisation.

Table 3-7: Average Drill hole spacing required for resource classification

Confidence category	Vein Zones Average distance to 3 closest holes	Stope backfill
Measured	N/A	N/A
Indicated	0 to 40 m	N/A
Inferred	40 to 60 m	N/A

- Mine fill within the historic stopes is not classified as Mineral Resource.
- The resource estimate outlined in this document appropriately reflects the Competent Person's view of the deposit.

WKP

- The Mineral Resource classification is based on average drill hole spacing. The ranges employed in classification of the WKP scoping resource model are slightly greater than ranges used in classification of other vein zones currently being mined within the larger Waihi operation, based on the demonstrated continuity of the EG vein over approximately 1,000 metres along strike.
- Indicated Resource is defined using an average distance to the three closest drill holes of 50 metres. Only the EG vein has been considered for classification as Indicated Resource. The Mineral Resource classification is shown in Table 3-8.

Table 3-8: Average Drill hole spacing required for resource classification

Confidence Category	EG Vein Average distance to 3 closest holes	All Other Veins Average distance to 3 closest holes
Measured	N/A	N/A
Indicated	0 to 50 m	N/A
Inferred	50 to 70 m	0 to 60 m

- There is significant local experience in mining and assessing the continuity of epithermal mineralisation with the nearby veining in Waihi. The vein style mineralisation present at WKP is similar to Waihi, it also has a strong visual control and a demonstrated continuity over significant ranges.
- An estimation calculated using a maximum of three drill holes with a single sample per drill hole was undertaken storing the average distance to the three drill holes used to

Criteria	Commentary
	estimate the block. This forms the basis for the drill hole spacing and therefore the resource classification. • Polygons are developed based on the results of this estimation pass for coding into the block model for the higher confidence category zones to overcome spotty distribution of classification criteria. The resource estimate outlined in this document appropriately reflects the Competent Person's view of the deposit.

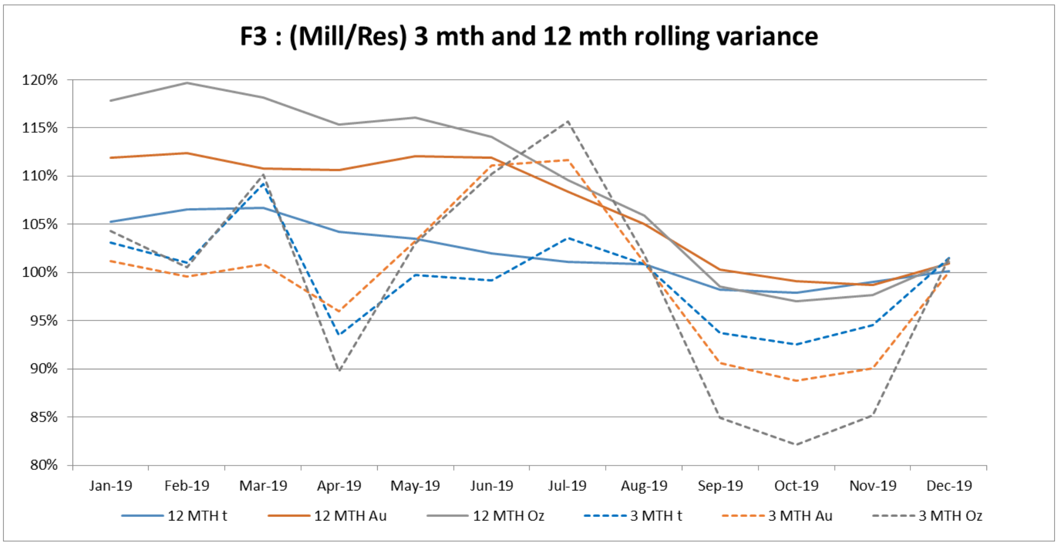
Audits or reviews	• The models are regularly cross checked by OceanaGold employees that are familiar with the resource estimation practices employed on site.
	• OceanaGold Group Geologist - Tim O'Sullivan has undertaken a site review for the Martha Underground Model.
	• Entech Pty Ltd has also undertaken an independent review of the Martha Underground resource model.
	• SRK was engaged to undertake an independent assessment of an earlier WKP resource estimate and concluded that:
	  ○ The conceptual geological model appears sound and consistent with the experience of nearby mineralisation and existing resources.
	  ○ SRK found no issues with the integrity of the database.
	  ○ SRK has no concerns with the QAQC.
	  ○ Lode boundaries are based on a specifically defined combination of structure mineralisation and grade and the model appears to adhere well to this set of rules
	  ○ SRK considers that the top-cuts employed in the estimate may be inconsistent and that the estimate may be conservative in grade (and ultimately gold metal content).
	  ○ Grade estimation appears to be in the sub-blocks rather than the parent blocks, this is not good practice as support volumes are not consistent, however SRK does not consider this to be a material concern in the context of the current use of the model.
	  ○ Resource classifications of Indicated and Inferred areas are considered appropriate.
	  ○ The Resource model and drilling are at a relatively early stage and have been modelled, estimated and classified appropriately for the purpose of mining study.
	• The minor issues identified by SRK in the previous model have generally been rectified in the latest iteration of the model.
	• OceanaGold Group Geologist - Tim O'Sullivan has undertaken a peer review of the latest WKP Resource Model.

Discussion of relative accuracy/ confidence	<u>**Correnso**</u> • Model performance is formally reviewed monthly. Investigation of variance between Ore control vs. Resource model (F1), Received at mill vs. Claimed delivered to mill (F2) and Mill vs. Resource (F3) is undertaken at monthly, 3 month rolling and 12 month rolling resolutions. Mitigating actions are identified to minimise sources of variance where practicable. • Figure 3.7 shows 12-month and 3-month reconciliation between the mill and the ore resource model. A low ounce reconciliation during Q3 2019, corrected by the end of Q4. The decline in mass, grade and metal towards 100% reflects mining of the last remaining areas within Correnso at lower grades and lower data density.

Criteria	Commentary

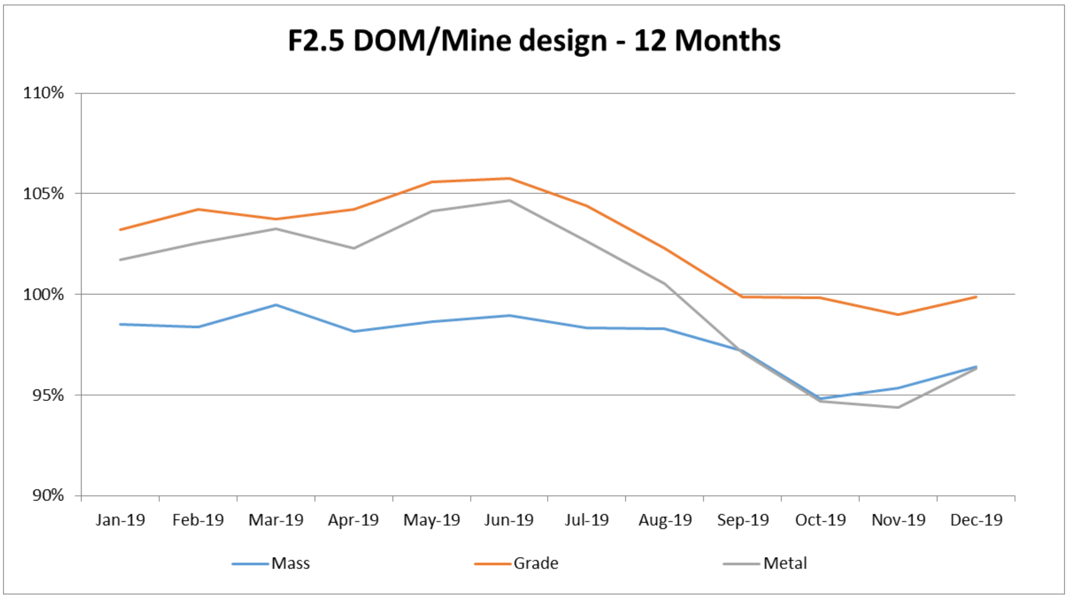
- Resource data in the F3 comparison includes the indicated and inferred resource declared. The resource component of the F3 factor is calculated by evaluating the portion of resource that matches the reconciled stope mining during a given month. There is a slight variation on a monthly basis as this is compared with the total tonnes through the mill during the month including reconciled and un-reconciled stopes.

Figure 3.7: Mine / Mill Reconciliation



- Figure 3.8 shows the 12-month reconciliation between the mill and the grade control model with mining dilution and recovery factors included (110% mass, 95% metal). Stope underbreak and ore loss during Q3 and Q4 has contributed to lower mass and metal figures.

Figure 3.8: Mine / Mill Reconciliation



Criteria	Commentary

	<u>WKP</u>
	• In reviewing the nature of the WKP deposit it is considered appropriate to employ the same modelling and estimation work flows used for the Waihi deposits to estimate the insitu resource for this deposit. This opinion is formed based on the geologic knowledge and the detailed statistical evaluation of the data obtained through drilling.
	• Numerous methods have been used to validate the integrity of the WKP0219_USC resource model. The validation has included:
	  o validation of the new data,
	  o a review of the interpretation, including classification shapes,
	  o a review of the methodology,
	  o a review of the exploratory data analysis (EDA), including variography and search neighbourhoods,
	  o global grade and tonnage comparisons with the previous model
	  o a visual sectional validation of the block model with interpretation and drilling, and
	  o Swath plots are generated using the Vulcan drift analysis tools.
	<u>Martha Underground Resource.</u>
	• Mining operations have not commenced on the Martha Underground resource at this time so there is no reconciliation history on this deposit with which to validate the model. Notwithstanding though the grade estimate and modelling techniques in preparing this estimate are consistent with the techniques utilised in estimates for the Correnso project and other narrow vein epithermal vein systems in the Waihi district, many of which have been extensively mined and have reconciled well with production records at the time of mining

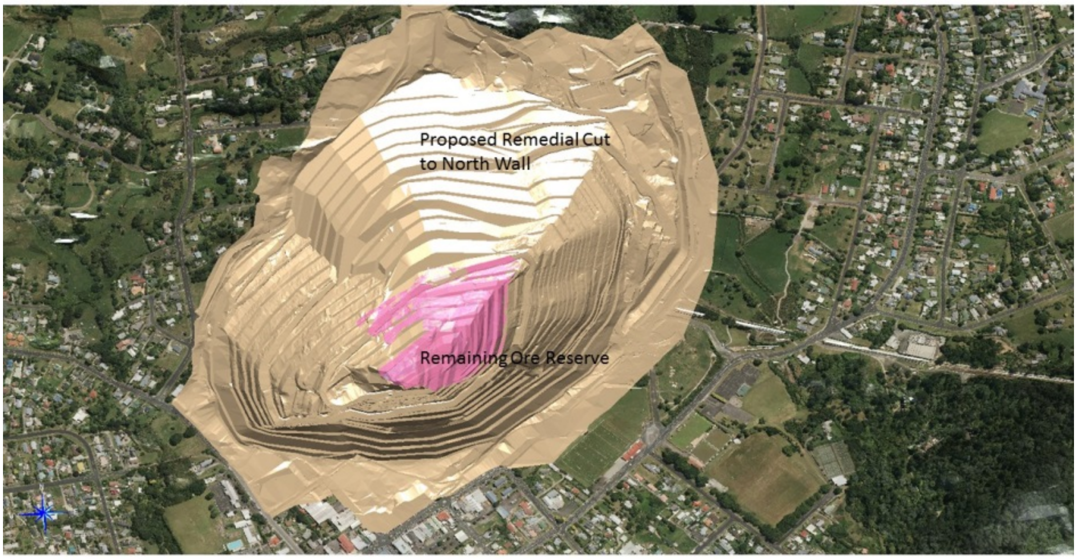
Section 4. Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• The Mineral Resource estimate used as a basis for conversion to an Ore Reserves is described in Section 3 of this Table 1. • Mineral Resources are reported inclusive of the Ore Reserves.
Site Visits	• The Competent Person for Underground Ore Reserves is David Townsend who has been employed at Waihi from 2006. He has been involved in the design and development of the underground mine since 2006 and oversees all technical aspects of the underground mine. • The Competent Person for Open Pit Ore Reserves is Trevor Maton who has been employed at Waihi from 2003 and has been involved in the design and development of the open pit mine since 2003.

Study status	• Open pit mining and ore processing at Waihi has been in continuous operation since 1988. A failure of the north wall that undercut the main access ramp suspended open pit mining operations in April 2015. A mining study has been completed to recover the remaining Ore Reserve. The small cutback is referred to as Martha Phase 4 (MP4). PSM has reviewed the MP4 design for geotechnical stability and have concluded that:
	  ○ MP4 is a remedial cutback of a failure undertaken in order to re-establish the mine, which is a normal part of conventional mining activities and there is nothing unique or special in the planned cutback.
	  ○ Monitoring has now been in place for up to two decades and does not show large scale pit wall instability movements. Consequently, in engineering terms there has been a mine scale validation of the ultimate material properties used for the design of the pit walls.
	  ○ The MP4 pit is much flatter overall than the north wall of the East Layback and this is necessitated by the operational need to incorporate additional haul roads and wide benches.
	  ○ The stability has been checked and overall there are high Factors of Safety for the MP4. The lower slope is potentially affected by underground stopes and disturbed rock mass.
	• All permits have been granted to enable mining of MP4 to recover the Martha pit Ore Reserve.
	• Underground mining and ore processing at Waihi has been in continuous operation since 2004.
	• The study work undertaken for Correnso underground mine meets Feasibility Study level standard. Mining studies have been conducted for mine design, mine planning, ventilation, cut-off grade, detailed cost estimation and economic evaluation. The site has had a 12year operating experience with mineral resource reconciliation and metallurgical recovery performance of the underground resources. Actual costs for underground mining, ore processing, G&A and selling costs are known.
	• A mine plan has been developed which is technically achievable and economically viable. All Modifying Factors have been considered.
	• Consents are in place for all underground mining covered by this Section of the report and all planned mining methods are in accordance with the license, permit and consent conditions, principally related to placement of backfill, blast vibration limits, method of working and hydrogeological controls.

Cut-off parameters	• Cut –off grade is based on Ore Reserve metal prices of NZ$1,806 per ounce. A silver price of NZ$26 per ounce for silver is applied as a by-product credit to the operating costs.

Criteria	Commentary
	• Inputs to the calculation of cut-off grades for Waihi open pit and underground include mining costs, metallurgical recoveries, treatment and refining costs, general and administrative costs, royalties and metal prices. **Martha Open Pit** • The cut-off grade used to determine Ore Reserves for the Open Pit is 0.5 g/t Au. **Correnso Underground** • Cut –off grade is based on Ore Reserve metal prices of NZ$1,806 per ounce. A silver price of NZ$26 per ounce for silver is applied as a by-product credit to the operating costs. • The following cut-off grades have been used to determine the Underground Ore Reserve: o Ore development and stoping beyond designed limits 3.2g/t Au, o Ore development beyond stope limits 3.1g/t Au, o Incremental stopes (ore development in place) 2.9g/t Au, o Incremental ore development 2.8g/t Au.
Mining factors or assumptions	**Martha Open Pit** • The method for conversion of Mineral Resource to Ore Reserve involved a 2010 pit optimisation study using the "Whittle" optimiser to determine the economic limits of the Ore Reserve. Mining of this layback commenced in 2010. A localised failure of the north wall occurred in April 2015 which undercut the main access ramp and operations were suspended. Studies have been completed to regain access to the bottom of the pit. The small cutback is referred to as Martha Phase 4 (MP4) and is shown in the Figure below: ***Figure 4.1: Martha Pit Phase 4 cutback***  • Martha open pit utilises conventional drill, blast, load and haul with standard mid-sized mining equipment. A mining contractor was employed for open pit operations under a schedule of rates, which was in place from May 2014 until its termination in June 2015. • The selected mining method and design is appropriate for the Martha open pit. The open pit pre-strip has been completed and access for materials handling has been operating effectively since 2010.

Criteria	Commentary

- A detailed geotechnical study was completed for Waihi by PSM for the recovery of the remaining Ore Reserve in 2017 / 2018 including the drilling of dedicated geotechnical boreholes, laboratory test work, numerical modelling and structural pit mapping.
- PSM concluded that overall there are high Factors of Safety for the MP4. The lower slope is potentially affected by underground stopes and disturbed rock mass.
- MP4 comprises a north wall cut back with all other walls remaining as currently built. The design slopes for the north wall are shown in Table 4-1.

Table 4-1: Slope Design Criteria to Support Calculation of Ore Reserves

Bench		Face Slope	Face Height	Inter-Ramp
	>1135	35	15	35
1135	1120	45	15	
1120	1104	45	15	
1104	1090	50	15	
1090	1070	60	20	
1070	1050	60	20	33
1050	1030	60	20	
1030	1010	60	20	
1010	990	60	20	
990	970	70	20	
970	950	70	20	55
950	930	70	20	
930	910	70	20	
910	875	70	20	

- Geotechnical robotic monitoring has continued following the localised failure of the north wall that undercut the main access ramp and suspended operations in April 2015. This monitoring shows that the pit wall has stabilised.
- Reverse Circulation grade control drilling has been used since 2006 and is drilled to an approximate 10m x 5m pattern with 1.5m down hole sample lengths. Drill holes are inclined to the north.
- The ore zones are broad on each mining bench, and the overall dilution edge effects are minimal, with the result that there is little difference between the overall in situ and diluted tonnes and grade. The Mineral Resource block model has a block dimension which is larger than the optimum selective mining unit (SMU) for the equipment size operating at Waihi. When estimating open pit Ore Reserves there is no requirement for additional mining dilution after the geological modelling stage. OceanaGold will continue to monitor dilution assumptions during on-going operations.
- No mining losses were applied. It is considered that the resource estimation technique applied to the broad ore zones provides an adequate estimate of the run of mine (ROM) tonnes and grades. Reconciliation data from mining the Martha open pit supports this approach.
- There are no Inferred Mineral Resources included in the open pit economic evaluation.
- All fixed infrastructure required for the chosen mining method to extract the open pit Ore Reserve is in place.

Correnso Underground

Mining Methods

- Correnso underground is in the final stages of mining with activity focussed on the veins that make up the upper Correnso and Louis mining areas.
- Mining options available for these areas are limited because of the consent conditions which include blasting and backfill constraints. Modified Avoca long hole bench mining with waste rock backfill was selected as the preferred mining method for extraction of Correnso, whilst Louis will also use overhand cut and fill.
- Access to underground workings is via a decline from previously mined areas, which also serves as a fresh air intake. The primary ventilation is exhausted through a raise bored shaft to surface and a return air drive breakthrough into the Martha pit. An escapeway rise that has been raise bored to surface and equipped also serves as a fresh air intake. The portal is located close to the processing plant.
- In general mining areas are designed with either a 15m or 12m level spacing, floor to floor. This is primarily to limit blast vibration, but this also assists hanging wall and footwall stability. This is in line with previously mined areas and has proven to be successful and efficient.

Hydrogeology

- GWS Limited Consulting (GWS) have modelled the groundwater system in Waihi since the late 1980's. Regular monitoring is compared to the modelled predictions and is discussed in the annual settlement and dewatering monitoring report submitted to the Regulators.
- GWS report that a shallow groundwater system associated with volcanic ash, alluvium and completely weathered rhyolite tephra is present at shallow depth. Monitoring data shows that it is unaffected by mine dewatering except immediately adjacent to the Martha Pit. Shallow groundwater levels are controlled principally by rainfall infiltration, low surface soil permeability and natural and assisted drainage to surface water systems.
- GWS report that the higher volumes of water in the deeper aquifer are contained primarily in the quartz vein, the historic underground workings and infiltrated through the open pit which is more permeable than the surrounding andesite country rock. This system has been drained from the mine dewatering system within the underground mine. Currently the water level is at approximately 705mRL.
- No further dewatering is required to extract the Correnso Ore Reserve.

Geotechnical Model

- The geotechnical model for stoping assessments was based on empirical modelling using Q ratings for the rock mass quality and applying the Mathews method to determine stable spans. Geotechnical modelling is impacted by mine design where level spacing was set by blast vibration limits and modelling had to ensure stable pillars were left.
- Geotechnical assessments indicate that rock mass conditions within the ore zones and immediately adjacent to the ore zones are generally of good to very good quality. In general, the ground conditions do not require any special remediation other than standard first pass ground support.
- It has been proven that stable stope strike spans of up to 20m can routinely be mined.
- Numerical modelling was undertaken to assess the global effects of mining including global mine stability, risk due to chimney failure of individual stopes, and the effects on ground surface subsidence. The numerical modelling concluded that the likely effects on ground surface stability due to mining would be negligible.

Mining Recovery and Dilution

<table>
<tr><th>Criteria</th><th>Commentary</th></tr>
<tr><td></td><td>

Stopes are designed with dilution on both the footwall and the hanging wall based on geotechnical assessment for the immediate mining area, which when applied with the stope recovery factors reconciles with performance of stopes in active mining areas.
Tonnage recovery factors shown in the table below for stoping include in-situ ore plus dilution material. Metal recovery factors consider the difficulties associated with recovering all ore from a stope, particularly under remote control operations. Additionally, it allows for the potential loss of metal due to excess dilution burying ore and limiting recovering of all the ore.

Table 4-2: Tonnage Recovery Factors
<table>
<tr><th>Activity</th><th>Tonnage recovered</th><th>Metal recovered</th></tr>
<tr><td>Lateral Development — Operating Ore</td><td>100%</td><td>100%</td></tr>
<tr><td>15m high Longhole Stope (includes 5% fill dilution at zero grade)</td><td>108%</td><td>95%</td></tr>
</table>

No Inferred Mineral Resource metal has been included in the Ore Reserve.
All the infrastructure required for the chosen mining method to extract the underground Ore Reserve is already in place. Additional detail is provided under the heading Infrastructure later in this table.

</td></tr>
<tr><td>Metallurgical factors or assumptions</td><td>

The metallurgical process at Waihi is well-tested and proven technology, having been in operation for 29 continuous years.
Ore processing consists of five stages: comminution, leaching/adsorption, elution, electro-winning and smelting. Underground stockpile ore is reclaimed at between 40 to 100 tonnes per hour by front end loader and fed onto a static grizzly with an aperture of 200 mm. Martha open pit ore is fed at the rate of 155 tonnes per hour.
The processing plant has the capacity to treat up to 1.25 million tonnes of Martha ore or 800,000 tonnes of Correnso ore per annum.
Martha pit Ore Reserve metallurgical recovery of gold is estimated at 90% and silver recovery is estimated at 60% based on the process plant performance and reconciliations over the last 28 years of operation extracting similar veins.
Both gold (Au) and arsenic (As) have been identified as the statistically significant predictors for estimating residue (tailings) grade for the Correnso resource. Gold recovery regression models were developed from laboratory bench scale test work and plant actual results for the Correnso Ore Reserves, as shown below:

Head grade >7g/t: Predicted Au residue grade = 0.028 x Au head grade (g/t) + 0.0012 x As head grade (ppm) + 0.264.
Head Grade $<$ 7g/t: Predicted Au residue grade = 0.051 x Au head grade (g/t) + 0.0011 x As head grade (ppm) + 0.151.

</td></tr>
<tr><td>Environmental</td><td>

The Waihi operation holds the necessary permits, consents, certificates, licences and agreements required to operate the Correnso underground mine and the Martha open pit.
Environmental data has been collected over the last 29 years of Waihi operations and baseline data was collected prior to the start of operations and reported in the original mining license application. Data is routinely collected for noise levels, blast vibration, air quality, and discharge water quality from various sources, ground settlement and ground water levels. Data collected in relation to hydrogeology, open pit and tailings storage facility, geotechnical engineering, geochemistry, closure and rehabilitation is peer reviewed on an annual basis by

</td></tr>
</table>

Criteria	Commentary
	independent reviewers engaged by the Regional Council, District Council and central Government • Environmental studies conducted by independent consultants and company staff as part of the Correnso underground project are more extensive than would normally be required but was required to provide sufficient information to support a consent application for Waihi Correnso. The environmental effects-based reports were all independently reviewed by consultants employed by the regulators (consent issuers) and were also subject to an extensive hearing process where the issues were thoroughly assessed by independent commissioners. • The 29-year operational history since attainment of commercial production in 1988 has provided a good understanding of performance of the waste rock dumps and tailings storage facility. • All waste produced from the underground mine is classified as potentially acid forming and is returned underground as stope backfill. The Correnso consent requires material to be classified according to acid forming potential, and PAF material requires lime dosing. • Waste from the open pit is crushed and conveyed 2.0km from the open pit to the waste development load-out site where it is transported a further 1km to the Waste Development Area or stockpiled for future use. At the Waste Development Area, the waste is selectively placed in accordance with a quality control and geochemical control program to form a dam for the tailing's impoundment. All waste is compacted in accordance with strict design specifications • Vibration modelling has been completed for Correnso by Heilig and Partners to ensure mining methods can meet the consent conditions.
Infrastructure	• The Waihi operation has been in commercial production since 1988 and all mine site infrastructure has been completed to support the open pit and underground operations including; tailings storage facility, workshops, water treatment plant and ore processing facilities. • The Company has sufficient consented tailings storage capacity to accommodate all of the Ore Reserve.

Costs	**<u>Martha Open Pit</u>**
	• Only minor capital expenditure is required for the open pit Ore Reserve. The north-east layback is largely included under operating expenditure. Capital expenditure is related to relocation of a minor public road.
	<u>Correnso Underground</u>
	• No capital costs are required for the remaining ore Reserves in the Correnso and Louis mine areas.
	• A detailed cost model provides the basis for the estimate of underground operating costs. The cost model was developed using first principles derived from supplier quotations and current cost data. The model develops cash flows based on:
	    ○ mining schedules, processing stockpiles and mine feed to process plant,
	    ○ application of driver and non-driver costs to mining, processing and G&A,
	    ○ application of capital costs, closure costs, exploration and employee severance costs, and
	    ○ calculation of cash flows including provision of royalties, working capital and depreciation and taxation
	• Correnso falls within the Favona Mining Permit 41 808 (MP 41 808) area which is governed by the 1996 Minerals Program for Crown royalty purposes. The Favona Mining Permit

Criteria	Commentary
	provides for the higher of one per cent royalty on net sales revenue from gold and silver, or five per cent royalty on accounting profits.
Revenue factors	• Detailed mine designs were undertaken for both the open pit and underground Ore Reserves. Diluted and recovered grades were calculated for all material being mined, which were in turn assessed against the relevant cut-off grades for determination of inclusion within the Ore Reserve estimate. Head grades for material sent to the process plant directly correspond to mined grades calculated. • Silver credits are not included in the revenue factors but as a by-product cost offset. • All costs at the Waihi operation are based in New Zealand Dollars. Costs have been converted using the following exchange rate which is the long-term OceanaGold benchmark rate: o USD 0.72: NZD 1.00 • Charges for transportation, treatment and refining charges are based on operational history and in part based on existing contracts that are periodically reviewed and renewed. • Metal prices used for the economic evaluation were US$1,300 per ounce for gold and US$18 per ounce for silver, fixed for the life of the mine.
Market assessment	• Long-term market assessments are provided by a number of independent companies. There are no hedge contracts in respect of production from the Waihi operation. • The market for gold doré is well-established.
Economic	• Open pit mining costs, underground mining costs, processing costs and general and administrative costs at Waihi are well understood, with 28 years of continuous operation. • Correnso underground and Martha pit show a positive free cash flow.
Social	• The Correnso underground project has an established grouping of stakeholders and project affected people whom have been engaged via the various stakeholder engagement structures such as Iwi, Resident Groups, Community based organizations and local government. • Prescribed Peer Review meetings held between OceanaGold, Hauraki District Council, Waikato Regional Council and the Ministry of Business and Innovation. • The operation has already established complaints and grievance systems / procedures for the ongoing management of all project grievances. This procedure will be a key process by which any associated complaints and grievances that arise from the operations will be addressed. • The Correnso consent is prescriptive in terms of stakeholder engagement with the Community. In addition to stakeholder engagement, the consent requires OceanaGold to maintain a Property Policy to support property values in the area. This requires the Company to provide funds to purchase properties above stopes and pay ex-gratia payments to property owners above mine development as well as maintaining a property purchase fund and funding for community projects. The consent caps the funding available for the property purchase fund.
Other	• The Waihi operation is in a high rainfall area, and heavy rain events are not unexpected. Procedures and costing are in place to deal with such events for the open pit operation and will not impact on the viability of extracting the Ore Reserve. • The Waihi operation holds the permits, consents, certificates, licences and agreements required to conduct its current operations. • New Zealand has an established framework that is well regulated and monitored by a range of regulatory bodies. OceanaGold has dedicated programs and personnel involved in monitoring consent compliance and works closely with authorities to promptly address additional requests for information. Risks associated with review and renewal of operating

Criteria	Commentary
	consents is, upon that basis, regarded as manageable within the ordinary course of business. • Contracts are in place covering underground mining, transportation and refining of bullion, and the purchase and delivery of fuel, electricity supply, explosives and other commodities. These agreements conform to industry norms. • OceanaGold maintains a number of operating permits for the importation of reagents into New Zealand. New Zealand has an established framework that is well regulated and monitored by a range of regulatory bodies. Risk associated with renewal of importation permits, is upon that basis regarded as manageable. • There is no material, unresolved matters dependent upon a third party on which extraction of the open pit or underground Ore Reserve is contingent.
Classification	• The Proved Ore Reserve is a sub-set of Measured Mineral Resources, and the Probable Ore Reserve is derived from Indicated Mineral Resources. Inferred Mineral Resource material has been included as dilution only, with no Inferred Resource metal included in the Ore Reserve estimate. • No Probable Ore Reserves have been derived from Measured Mineral Resources. • It is the opinion of the Competent Person for Ore Reserve estimation that the Mineral Resource classification adequately represents the degree of confidence in the orebody.

Audits or reviews	• In 2017, OceanaGold conducted an internal technical review for the Waihi operation. The guiding principles for the review included quality of data, supporting information, methodologies employed, conformance to acceptance industry practice and professional standards, and site coverage and capability. The review concluded:
	    o Historically the models at Waihi have reconciled well against production, providing confidence in the Ore Reserve estimates and the ability to deliver them.
	    o The reconciliation process is well understood and well documented. Stopes are routinely closed out, with an analysis of mining performance, dilution and ore-loss.
	    o The underground mine geology team is stable and is appropriately resourced for the level of geological complexity and production rate.
	    o The Martha Phase 4 pit has been technically reviewed through the assessment of environmental effects and associated specialist technical reports.

Discussion of relative accuracy/ confidence	• Reconciliation of actual production to the Mineral Resource model since the commencement of operations indicates that the estimate is representative of the deposit (see resource model versus mine versus mill reconciliation in "discussion of relative accuracy/ confidence" in Section 3).