

UPDATED NI 43-101 TECHNICAL REPORT

FOSTERVILLE GOLD MINE

In the State of Victoria, Australia

Prepared for

KIRKLAND LAKE GOLD LTD.

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KIRKLAND LAKE GOLD

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1 EXECUTIVE SUMMARY

This technical report has been prepared for Kirkland Lake Gold Ltd. (Kirkland Lake Gold), the beneficial owner of the Fosterville Gold Mine. Kirkland Lake Gold is listed on the Toronto and New York Stock Exchanges under the ticker symbol “KL” and the Australian Securities Exchange under the ticker symbol “KLA”. On November 30, 2016, Newmarket Gold Inc. (“Newmarket”) merged with Kirkland Lake Gold Inc. and the company was renamed Kirkland Lake Gold Ltd.

This document provides the Mineral Resource and Mineral Reserve estimates for the Fosterville Gold Mine (Fosterville or FGM) as a result of ongoing exploration and resource definition drilling, and mine design and evaluation during the period December 31, 2017 to December 31, 2018.

1.1 LOCATION

The Fosterville Gold Mine is located approximately 20km east of the city of Bendigo and 130km north of the city of Melbourne in the State of Victoria, Australia.

The mine and all associated infrastructure including the tailings dam and waste dumps are located on Mining License 5404, which is 100% owned by Kirkland Lake Gold.

Kirkland Lake Gold also holds titles, through its wholly owned subsidiary; Fosterville Gold Mine Pty Ltd of seven surrounding Exploration Licenses totaling 1851.4km². These Exploration Licenses encompass the entire strike extent of the Fosterville Goldfield.

1.2 HISTORY AND OWNERSHIP

Gold was first discovered in the Fosterville area in 1894 with mining activity continuing until 1903 for a total of 28koz of production. Mining in this era was confined to the near-surface oxide material. Aside from a minor tailings retreatment in the 1930’s, activity resumed in 1988 with a further tailings retreatment program conducted by Bendigo Gold Associates, which ceased in 1989. Mining recommenced in 1991 when Brunswick Mining NL and then Perseverance Corporation Ltd. (from 1992) commenced heap-leaching operations from shallow oxide open pits. Between 1988, and the cessation of oxide mining in 2001, a total of 240koz of gold were produced (Roberts et al, 2003).

A feasibility study into a sulfide mining operation was completed by Perseverance in 2003, and open pit mining commenced in early 2004. Commercial production began in April 2005 and in March 2006 underground development had commenced. By December 2006, FGM had produced 136,882oz gold. In October 2007, Perseverance announced that it had entered into an agreement with Northgate Minerals Corporation to acquire the company with full control passing to Northgate in February 2008.

The 500,000th ounce of sulfide gold production was achieved in April 2011.

In August 2011, Northgate entered into a merger agreement with AuRico Gold Inc. who assumed control of Northgate in October 2011. In March 2012, AuRico and Crocodile Gold Corporation jointly announced that Crocodile Gold would acquire the Fosterville and Stawell gold mines. Crocodile Gold's ownership of Fosterville was achieved on May 4, 2012. In July 2015, Newmarket Gold merged with Crocodile Gold to form Newmarket Gold Inc.

In January 2016 a significant milestone in Fosterville Gold Mine's history was reached when the one millionth ounce of gold was poured.

On November 30, 2016, Kirkland Lake Gold Inc. merged with Newmarket to form a new mid-tier gold company which was renamed Kirkland Lake Gold Ltd. Kirkland Lake Gold has since rapidly increased the output of the Fosterville operation based on its exploration success, in particular, the development of the high grade Eagle and Swan mineralized zones. Gold production has grown year on year facilitated by increasing grade profiles at depth, with annual mine output expanding from 151,755oz at 7.55g/t Au in 2016 to 356,230oz at 24.93g/t Au in 2018.

By early May 2018, Fosterville Gold Mine had produced its 1.5 millionth ounce and as of December 31st, 2018 it has achieved a total production of 1,772,670 ounces since the construction of the sulfide plant in April 2005.

1.3 GEOLOGY AND MINERALIZATION

The Fosterville Goldfield is located within the Bendigo Zone of the Lachlan Orogen in south-eastern Australia. The deposit is hosted by an interbedded turbidite sequence of sandstones, siltstones and shales. This sequence has been weakly metamorphosed to sub-greenschist facies and folded into a set of upright, north-northwest trending and shallowly south plunging open to closed folds. The folding resulted in the formation of a series of bedding parallel laminated quartz (LQ) veins and bedding parallel thrust faults.

Gold and associated sulfide mineralization at Fosterville is controlled by late brittle faulting and fracturing. These brittle faults are generally steeply west-dipping, reverse faults with a series of moderately west-dipping, reverse splay faults formed in the footwall of the main faults. There are also less abundant, moderately southeast and southwest-dipping faults which govern high grade visible gold mineralization along the Eagle and Swan zones. Two main styles of gold mineralization occur at Fosterville; a sediment-hosted sub-micron refractory style where gold is locked in disseminated arsenopyrite and pyrite crystals which form selvages to quartz-carbonate vein stockworks throughout the 9km long fault system, and a gold-in-vein mineralization style where visible gold is hosted in quartz-carbonate veins that show laminated and stylonitic vein textures as well as brecciation. Gold mineralization is structurally controlled with high-grade zones localized by the geometric relationship between bedding-parallel and oblique faults. Mineralized shoots are typically 4-15m thick and show down-dip and down-plunge dimensions of 50-150m and 300 -2,000m+ respectively.

Antimony mineralization, mainly in the form of stibnite, occurs with quartz and varies from replacement and infill of earlier quartz-carbonate stockwork veins, to massive stibnite-only veins up to 0.5m in width. The late stibnite-quartz mineralization occurs in favorable structural locations, such as the Phoenix, Eagle

and Swan vein and fault structures and therefore shows a spatial association with visible gold. The occurrence of visible gold has become increasingly significant at Fosterville and is observed more frequently at greater depth within the Lower Phoenix System. Throughout 2016 to 2018, visible gold ($\leq 3\text{mm}$ in size) was also observed with notably increased frequency, in deeper parts of the Harrier System and also within the nearby Robbin's Hill exploration target.

Fosterville Gold Mine engaged Quantitative Geoscience (QG) in November 2014, in response to the noted increased frequency of visible gold occurrences at depth, to provide external advice and coarse-gold expertise regarding the implications to resource estimation and mine geology practices. Throughout 2015 and 2016 QG continued to assist FGM through review of current practices and provided technical theory and background to sampling, assaying and resource modeling in coarse (and nuggetty) gold environments. In May 2017, Fosterville Gold Mine engaged SRK Consulting (Australasia) Pty. Ltd. (SRK) to provide an external independent review of laboratory sampling, sample preparation, assay procedures and estimation methodology. Whilst no sub-sampling and assay bias were identified during the review, recommendations were made to test and/or improve the laboratory processes in order to minimize the potential for sub-sampling and assay bias. In regard to modeling methodology, SRK made recommendations related to sub-domaining, de-clustering, top cutting and validation which have been implemented in the December 2018 Mineral Resource estimate.

1.4 CURRENT STATUS

Since the commencement of commercial gold production in April 2005, the sulfide plant at Fosterville Gold Mine has produced 1,772,670oz of gold to the end of December 2018. This production was initially sourced solely from open cut mining with underground mining starting to contribute from late 2006. The Harrier open cut was completed in December 2007 and since that time the underground mine has been the primary source of ore. Ore sourced from a series of pit expansions on the previously mined Harrier, John's and O'Dwyer's South pits between Q1 2011 and Q4 2012 has provided supplementary feed to underground ore sources. Since the beginning of 2013 underground operations has been the sole provider of mill feed at Fosterville. Current mining activities are focused on the Central, Phoenix and Harrier underground areas and current gold production guidance for 2019 is 550-610koz.

Kirkland Lake Gold's 2019 budget for FGM exploration and resource development activities is estimated at A\$56.3m. It includes 176km of exploration and resource definition diamond drilling, 28km of RC/RAB drilling, soil sampling, geophysical surveys and mining development of dedicated underground drill platforms (537m).

1.5 MINERAL RESOURCES AND MINERAL RESERVES

The Mineral Resources reported are contained within the mining license MIN5404 and exploration license EL3539. Mineral Reserves reported are fully contained within the mining license MIN5404 (Section 4). The Mineral Resource Areas of Central, Southern, Harrier and Robbin's Hill are historically defined resource areas, which were established at different times in the evolution of the project. The Central Area contains

multiple Mineral Resource models, primarily for reasons of data handling. Details on Mineral Resource block model extents can be seen in Figure 14-1.

Mineral Resources are reported exclusive of Mineral Reserves (Table 1-1).

All Mineral Reserves are contained within the Central and Harrier Mineral Resource Areas. Mineral Reserves contained within the Central Mineral Resource Area have been subdivided into Central and Phoenix Mineral Reserves Table 15-1.

CIL Residue Mineral Reserves are distinguished from in situ Mineral Reserves in Table 1-2 on the basis of differing recovery assumptions.

TABLE I-1 SUMMARIZED MINERAL RESOURCES (EXCLUSIVE OF MINERAL RESERVE) FOR FGM AS AT DECEMBER 31, 2018

Summarized Mineral Resources (Exclusive of Mineral Reserve) for Fosterville as of December 31, 2018			
Classification	Tonnes (000's)	Gold Grade (g/t Au)	Insitu Gold Ounces (000's)
Oxide and Sulfide Materials			
Measured	1,900	2.9	177
Indicated	12,900	4.7	1,930
Total (Measured and Indicated)	14,800	4.4	2,110
Inferred	10,300	5.5	1,830

Notes:

1. CIM definitions (2014) were followed in the estimation of Mineral Resources.
2. For the Mineral Resource estimate, the Qualified Person is Troy Fuller.
3. The Mineral Resources reported are exclusive of the Mineral Reserves.
4. See notes provided for Table 14-1 for more detail on oxide and sulfide resources.
5. Tonnes and Ounces reported to three significant figures. Grades reported to one decimal place. Minor discrepancies in summation may occur due to rounding.
6. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
7. The Mineral Resource estimate used a gold price of US\$1,230 per ounce (A\$1,710 per ounce).
8. Cut-off grades applied are 0.7 g/t Au for oxide, 1.0 g/t Au for near-surface sulfide (above 5050mRL) and 3.0 g/t Au for underground sulfide mineralization (below 5050mRL).
9. Dry Bulk Density of mineralized material applied are 2.40t/m³ for oxide, 2.56t/m³ for transitional material, 2.64t/m³ for fresh material between 5000 and 5050mRL, 2.72t/m³ for fresh material between 4500 and 5000mRL, and 2.78t/m³ for fresh material below 4500mRL.

TABLE I-2 SUMMARIZED MINERAL RESERVES FOR FGM AS AT DECEMBER 31, 2018

Summarized Mineral Reserves for Fosterville as of December 31, 2018			
Classification	Tonnes (000's)	Gold Grade (g/t Au)	Insitu Gold Ounces (000's)
Proven	178	16.7	96
Probable	2,550	32.0	2,620
Total (Proven and Probable)	2,720	31.0	2,720
CIL Residues			
Proven	683	7.6	168

Notes:

1. CIM definitions (2014) were followed in the estimation of Mineral Reserves.
2. For the Mineral Reserves estimate, the Qualified Person is Ion Hann.
3. The Mineral Reserve estimate used a gold price of US\$1,230 per ounce (A\$1,710 per ounce).
4. The cut-off grades applied ranged from 2.0 to 5.4 g/t Au for underground sulfide ore depending upon width, mining method and ground conditions.
5. Dilution ranging from 5 to 50% and mining recovery ranging from 50 to 95% were applied to stopes within the Mineral Reserves estimate.
6. Tonnes and Ounces reported to three significant figures. Grades reported to one decimal place. Minor discrepancies in summation may occur due to rounding.
7. CIL residue is stated as contained ounces – 25% recovery is expected. Recoveries are based on operating performances.

1.6 CONCLUSIONS AND RECOMMENDATIONS

The Authors have made the following interpretations and conclusions:

- The understanding of the fundamental geological controls on mineralization at Fosterville is high. Primary mineralization is structurally controlled with high-grade zones localized by the geometric relationship between bedding and faults. This predictive model has led to considerable exploration success in following the down-plunge extensions of high-grade mineralization.
 - The Lower Phoenix (Benu) Fault is a major west-dipping structure in the active mine development area and is defined by reverse faulting on a shale package where anticline thrust displacement of ~80m occurs. The fault dips 35-55° to the west and mineralization can be traced along an approximate dip extent of 190m and strike extent of 1.9km. The dominant mineralization style surrounding this structure is gold-bearing disseminated sulfide; however, occurrences of visible gold in quartz veins at depth have become increasingly more common and concentrated where footwall structures intersect one another. The Lower Phoenix System currently remains open to the north and south so maximum plunge extent has not yet been defined;
- Throughout the period from 2016 to 2018, development mapping and continued drilling confirmed the existence of multiple mineralized structures, of various size and continuity in the footwall of the

main west-dipping Lower Phoenix (Benu) Fault, which present significant resource growth. Improved geological understanding of the Lower Phoenix System has highlighted the significance of these favorable settings for mineralization, including;

- East-dipping mineralized structures, namely the Eagle Fault and East Dipping Faults, which commonly contain quartz–stibnite vein assemblages and substantial concentrations of visible gold which are typically enveloped by haloes of disseminated sulfide. The Eagle Fault is discordant to bedding and variably dips between 10 and 60° to the east and transforms further to the south to strike in an ENE direction, dipping ~45° to the SSE. Mineralization on the Eagle Zone extends over a ~1km strike extent and is untested and open at depth below the 3805mRL and south of 6125mN. East Dipping Faults are typically bedding parallel to sub parallel with dips of ~70° east to sub-vertical. East Dipping structures are expansive along the strike extent of the Lower Phoenix system with highest intensity mineralization observed proximal to anticlinal hinge zones; and
 - Low-angled Lower Phoenix Footwall west-dipping structures typically consist of large laminated quartz veins with up to several meters width, indicating a series of multiple mineralizing events, including a later stage quartz-stibnite phase with visible gold. The faults are interpreted to only have a small amount of offset. Where these structures form linkages between the Lower Phoenix and East Dipping Faults, extremely high-gold grades occur.
- During 2016, drilling extending footwall to the Lower Phoenix (Benu) Fault discovered the southwest-dipping Swan (previously reported as Lower Phoenix Footwall) mineralization, which occupies a reverse fault structure exhibiting rotational displacement. The southwest-dipping Swan Fault exists as an oblique structure cross-cutting the eastern limb of the anticline and is bounded by the Eagle Fault down-dip and the Kestrel Syncline at its upper margin. The structure is characterized by a one to three meter thick quartz vein, which exhibits various textural features. Textures include, unique spotted stibnite and visible gold within quartz, zones of brecciation, country rock and stibnite laminations (particularly concentrated on vein margins), stylonitic textures with concentrated trends of visible gold, vugs containing euhedral crystalline quartz, +/- sulfides and visible gold, sugary crypto crystalline quartz textures and massive quartz zones containing specs and slugs of visible gold. On its periphery there is a lower-grade wall-rock selvage of sulfide dominated gold mineralization which can be up to 2m in true width. The Swan structure has returned some of the highest grade intercepts on the Fosterville License.
 - Subsequent drilling during 2017 and 2018 reaffirmed the high-grade continuity of mineralization and increased the known extent of the this highly mineralized structure, which has now been defined over approximately 600m in strike length and 400m in vertical extent. During 2018, level developments and production stoping commenced on the Swan, increasing confidence in the extraordinary high grade nature of the ore shoot. Swan is the highest grade mineralized zone defined at Fosterville to date and contributes 2,340,000oz at an average grade of 49.6g/t Au (1,470,000 tonnes) to the updated December 31, 2018 Mineral Reserve estimate making up 86% of the total in situ Mineral Reserves. Extremely high grades in Swan are coincident with the intersection of the Eagle and Swan Splay Faults.

Continued drilling from the hangingwall drill platforms during 2019 will advance the understanding of the size and scale of this resource growth target.

- Continued drill definition of these structures over 2018, in combination with ore development and production exposure and reconciliation performance has reaffirmed the significance of footwall structures to the Lower Phoenix (Benu) Fault. The defined continuity, proximity to existing Mineral Resources and high-grade tenor of these structures enhances the December 2018 Mineral Resource and Reserve position. Furthermore, mineralization on these structures is open down-plunge, providing encouraging future Mineral Resource and Mineral Reserve growth potential for the Fosterville operation;
- Drilling into the Harrier System over 2016 identified high-grade mineralization containing occurrences of visible gold at depth, primarily associated with the Harrier Base structure. Resource drilling throughout 2017 and 2018 continued to support 2016 results and resource confidence has further increased in this zone. In addition, step out drilling identified significant mineralization approximately 100m to the south of the June 2017 Harrier Base Mineral Resource and up dip on the Osprey structure beneath the Daley's Hill Pit indicating the potential for resource growth in this zone. The Harrier Base structure exhibits reverse thrust movement of approximately 60m. Visible gold is hosted within a laminated quartz-carbonate vein assemblage, which may contain minor amounts of stibnite. In the strongest mineralized zones, a broad halo of sulfide mineralization surrounds quartz structures bearing visible gold. The high-grade visible gold mineralization was first recognized at approximately the 4480mRL, a comparable elevation to where visible gold occurrences in the Lower Phoenix System became more prominent. The Harrier Base mineralization is open down dip and down plunge to the south. The down dip target is considered particularly prospective where the Harrier Base Fault intersects and offsets an anticline hinge;
- There is an observed change in the nature of some of the Fosterville mineralization at depth with a number of high-grade, quartz-carbonate +/- stibnite vein hosted, visible gold drill intercepts recorded for the Swan, Eagle, Lower Phoenix, Lower Phoenix Footwall, East Dipping and Harrier Zones. In addition, visible gold occurrences have been observed at depth in the Robbin's Hill system in the north-east of the mining lease on a separate line of mineralization. Disseminated sulfide mineralization continues to persist at all depths and is relatively uniform in character. It is currently inferred that the quartz-carbonate +/-stibnite-visible gold assemblages have formed at a later stage compared to disseminated sulfide mineralization;
- Extensive 3D modelling and geological interpretation has led to the development of a robust geological understanding, which underpins the resource model and the associated Mineral Resource, and Mineral Reserve estimates. The relationship between mineralization and the controlling structural/stratigraphic architecture means that quality geological interpretation is critical to producing quality resource/reserve estimates;
- FGM has completed industry standard resource definition programs to delineate mineralization to support the current Mineral Resource estimation. This work has been accompanied by industry best practice QA/QC programs;

- Regional exploration drilling programs have been successful in increasing the strike length of known mineralized systems from ~11km to ~15km (including Goornong, Mill's, Fosterville, Robbin's Hill and O'Dwyer's). In addition, programs have confirmed the presence of gold bearing sulfide mineralization at May Reef and Lyell and identified two previously undiscovered lines of mineralization to the east of Goornong and to the west of Russell's Reef;
- Geotechnical assessments of the orebody geometry and ground conditions and operational experience has determined that long-hole open stoping is an appropriate mining method. Extraction sequencing allows optimization of ore recovery while maintaining ground stability with stopes planned to be back filled with cemented rock fill or paste fill. The stability of the design has been checked with stress strain models that confirm that stopes and developments are predicted to remain stable during active mining;
- The modifying factors used to convert the Mineral Resources to Mineral Reserves have been refined with the operating experience gained since underground production commenced in September 2006. In particular, the robustness of the mining recovery and dilution estimates has improved relative to the pre-mining assessments. Productivities were generated from first principles and operational experience;
- In 2018, a second Knelson concentrator was commissioned in the SAG recirculating load to increase capacity at the front end of the circuit to recover gravity gold. The first Knelson concentrator was commissioned in April 2016 recovering gold from the recirculating load of the re-grind mill. The SAG and regrind mill gravity concentrates are separately tabled, calcined and poured for accounting purposes. Project plans are in place for 2019 to upgrade the refinery to accommodate increased gold production. No other major works are required and the processing facility has sufficient capacity to accommodate expansion without modification. There is no planned change to the existing plant recovery method. The QP's opinion is that all deleterious elements are effectively managed and there are no identified processing factors that have a significant impact on economic extraction.
- Required site infrastructure to support exploitation of Mineral Reserves is within industry norms. Planned capital infrastructure projects include Mine Water Treatment Plant construction, Ventilation Upgrades, Paste Fill Plant construction, Refinery Upgrade, Transformer Upgrade, Thiocyanate Removal Plant, Surface Chiller Plant construction and Drill Drive Development.
- There is a significant amount of existing environmental baseline data available for the project. This data continues to be collected and reported to the regulators as part of operational controls. FGM will continue to work closely with all key stakeholders to ensure that permitting of the mine growth projects meets all regulatory requirements.
- Fosterville Gold Mine has a demonstrated solid production history over a 13 year plus period since the beginning of commercial sulfide gold production in April 2005, and it is the Authors' view that the risk of not achieving projected economic outcomes is low given the operational experience gained over this time period. A foreseeable risk and uncertainty facing the operation is the changing character of mineralization at depth with an increase in the occurrence of visible gold. Reconciliation results in the past have provided confidence in the sample collection procedures, the quality of assays and the

Mineral Resource estimation method, but these processes will need to be continually adapted / refined in consideration of the changing mineralization character at depth. Kirkland Lake Gold needs to continue research to better understand the potential implications on future geological, mining and metallurgical processes and will continue to seek external advice during 2019 in relation to sampling, assaying and Mineral Resource estimation of visible gold mineralization. Based on recommendations from previous external reviews, projects plans have been developed and implemented.

- In the QP's opinion, there are no reasonably foreseen impacts from risks and uncertainties identified in the Technical Report that could affect the projects continued economic viability. In the current gold environment the operation is expected to continue to generate significant cash flows that will benefit the Company's shareholders.

The following recommendations are made:

- Further growth exploration activities within the mine license should be pursued. Given the strong understanding of geological controls on mineralization, this has high potential to yield additional resources and reserves. Particular areas that are recommended to focus upon are the down-plunge extensions of the Lower Phoenix system (southwards down-plunge from 6100mN), down plunge and down dip extensions of the Harrier system and the Robbin's Hill system which is positioned approximately 2.5km to the north-east of current mine workings;
- Exploration of the Lower Phoenix system southwards of 6100mN is technically challenging from surface due to target depths and as such, Kirkland Lake Gold has established a dedicated underground drill platform (Harrier Exploration Drill Drive) to undertake this drilling. At the end of 2018 this development had progressed in a northerly direction to the extent that unexplored extensions of the Phoenix and Lower Phoenix Mineral Resources can now be targeted from this platform. The Harrier Drill Drive development will continue over 2019 to form a connection with the Lower Phoenix capital infrastructure. The long-term benefits of this development link are substantial beyond just, providing a hangingwall drill platform to explore the Lower Phoenix and Phoenix extensions over a 1.5km strike extent, but also in supporting production, as it will provide an alternative ore haulage route. Drilling targeting extensions of the Lower Phoenix and Phoenix systems from this platform in 2019 is estimated to cost A\$5.1M;
- Given the potential of Near Mine exploration targets within the Mining License, it is recommended that growth drill programs are implemented in pursuit of defining potential Mineral Resources independent from current mining centers. Growth drill programs planned to be undertaken within the mining lease during 2019 include the Cygnet Drilling program, which will explore for gold mineralization located in the footwall of the Swan Fault, Fosterville Trend Step-Out Surface Drilling which will explore for new Mineral Resources along the overall north-northwest striking Fosterville Line trend up to 1.4km north of current Mineral Resources, and Robbin's Hill Programs which will continue to build an understanding of the underground Mineral Reserve potential beneath the Robbin's Hill pits. A total cost of A\$12M is budgeted in 2019 to execute these programs;
- Subsequent to the effective date of this report, FGM have been granted mining licence extensions to the north and south of the MIN5404 licence. These extensions increase the total area of the mining

licence to 28.5km² and encompass potential resource extensions of the Harrier and Robbin's Hill Gold systems. It is recommended to drill these potential resource extensions. In particular, the extent and scale of the Harrier system should be defined and resources developed in a timely manner. With an increasing grade profile identified at depth and the establishment of high-grade Mineral Reserves at lower levels, it is strongly recommended that both the down-plunge and down dip extensions of the Harrier system are further explored. Growth projects step out drilling in Harrier for 2019 is estimated to cost A\$2.6M;

- Subsequent to the effective date of this report, EL3539 (which encloses the current mining licence MIN5404) expired on February 26, 2019. The tenement was unable to be renewed under current state legislation and has been placed in moratorium (currently exempt from licence application). It is recommended to submit an exploration licence application once the moratorium has been lifted. The tenement area holds substantial exploration potential along multiple identified lines of mineralization. Fosterville has proven exploration, mining and processing capabilities and is in a good position to maximize the potential of any mineral resources identified in the exploration licence area. With exemplar status in areas of environment and community engagement, Fosterville is well positioned to retain exploration rights to this prospective ground.
- With numerous prospective targets generated from exploration works undertaken to date within the surrounding exploration leases it is recommended to advance the pipeline of regional targets. The regional exploration project termed Large Ore Deposit Exploration (LODE) aims to integrate and interpret all available geoscientific data, rapidly cover the current exploration holdings with reconnaissance exploration techniques such as soil sampling, airborne electromagnetic, gravity and seismic surveys and advance development of prospective targets with various drilling techniques. A total of A\$15.5M has been estimated to undertake Fosterville LODE work during 2019;
- Growth Expensed diamond drilling is proposed for targeting extensions of known mineralized trends outside of Mineral Resources. The proposed drilling will target the extensions of Inferred Mineral Resources in both the Lower Phoenix and Harrier systems with the aim to deliver additional and sustaining Mineral Resource inventory and provide definition along Mineral Resource boundaries. Total cost for this program is estimated at A\$5.7M; and
- Growth Capital diamond drilling for a total cost of approximately A\$5.0M is proposed for the systematic expansion of Indicated Mineral Resources in the Lower Phoenix mineralized system. The proposed drilling will target Inferred Mineral Resources, with the objective to increase resource confidence to an Indicated Mineral Resource classification to allow for Mineral Reserve Evaluation. The drilling will not only provide increased confidence in Mineral Resources which could lead to expansion of Mineral Reserves, but additional geological and geotechnical information ahead of mining, essential for optimizing the placement of supporting infrastructure and the effective extraction of the resource;
- With this additional drilling data and further ongoing operational experience, it is recommended that mining recovery and dilution factors are reviewed and refined on an ongoing basis;

- FGM should continue to undertake test-work programs and seek external advice in relation to sampling, assaying and Mineral Resource estimation of visible gold mineralization;
- Mine reconciliation processes should be continually refined in pursuit of improved model and operational forecast accuracy. A review of reconciliation processes, including material management and reporting systems, the integration of additional instrumentation / measure points and new technologies should be investigated and implemented; and
- The Company will embark on a co-ordinated research program to advance understanding the detailed geological circumstances required to form high-grade orogenic gold deposits, and apply knowledge gained to discovery and extraction both at Fosterville and further afield. In addition, the Company will continue to advance its investigation and assessment of numerical exploration technologies with the objective to improve the quality, timing or ease of obtaining data, which will benefit the confidence, reliability or costs related to decisions Fosterville uses the geological data for.

2 INTRODUCTION

2.1 TERMS OF REFERENCE

This technical report on Fosterville Gold Mine is to support public disclosure of Mineral Resource and Mineral Reserve estimates effective at Fosterville as at December 31, 2018. This report has been prepared in accordance with disclosure and reporting requirements set forth in the National Instrument 43-101 (NI 43-101) 'Standards of Disclosure for Mineral Projects' and Form 43-101F1, dated June 2011.

This report has been prepared for Kirkland Lake Gold, the beneficial owner of Fosterville. Kirkland Lake Gold (KL) is listed on the Toronto Stock Exchange, New York Stock Exchange and the Australian Securities Exchange. Kirkland Lake Gold is a Canadian-domiciled growing gold mining and exploration company with operating mines in Canada and Australia.

The report provides an update of the Mineral Resource and Mineral Reserve (MRMR) position as of December 31, 2018. The MRMR estimate for Fosterville is a summation of a number of individual estimates for various mineralized zones or various geographically constrained areas. All of these estimates are contained within the Mining License MIN5404 (Fosterville Mining License) and EL3539 (Fosterville Exploration License). Details of the locations and geographical constraints of the various mineralized zones as of December 31, 2018 are given in Section 14.

The report includes an overview of Fosterville Gold Mine, which has been compiled from Company technical reports, published geological papers and internal Mineral Resource and Mineral Reserve documents completed by members of the FGM mine geological and engineering teams. The overview includes a description of the geology, project history, exploration activities and results, methodology, quality assurance, interpretations, metallurgy, land issues and environmental information. It also provides recommendations on additional exploration drilling which has the potential to upgrade resource classifications and to augment the resource base.

Mr. Troy Fuller of Fosterville is a Qualified Person as defined by NI 43-101 and accepts overall responsibility for the preparation of sections 1-14, 17, 18.1, 19 – 27, 28.1 and 28.3 of this report.

Mr. Ion Hann of Fosterville is a Qualified Person as defined by NI 43-101 and accepts overall responsibility for the preparation of sections 15-16, 18.2, 28.1 and 28.2 of this report.

2.2 FIELD INVOLVEMENT OF QUALIFIED PERSONS

Ion Hann is the General Manager for FGM. He has over 27 years of experience in the mining industry. In this time, 14 years of relevant experience in gold mining operations has been gained at Fosterville.

Troy Fuller is the Geology Manager for FGM. He has over 23 years mining experience and has 19 years of gold operations experience in the Northern Territory, Western Australia and Victoria. Troy Fuller has managed all aspects of the geological operations for Fosterville since May 2010.

All of the Qualified Persons are based at Fosterville and through routine personal inspection have a comprehensive understanding of the property conditions, geology and mineralization, work completed and works planned /recommended.

2.3 DEFINITIONS

TABLE 2-1 DEFINITION OF TERMS

Term	Description
AAS	Atomic Absorption Spectroscopy
ABS	Australian Bureau of Statistics
AC	Air core
acQuire	acQuire - Geoscientific Information Management System database software
AEM	Airborne Electromagnetic (survey)
Ag	Silver
AHD	Australian Height Datum (mean sea level)
AHV	Articulated Hydrostatic Vehicle
ALS	Australian Laboratory Services
Aminya	Aminya Laboratory Services
AMDEL	Amdel Analytical Laboratories
AMPRD	Absolute Mean Paired Relative Difference
As	Arsenic
Au	Gold
A\$	Australian Dollar
AuRico	AuRico Gold Corporation
BAppSc	Bachelor of Applied Science
Bendigo Gold Associates	Bendigo Gold Associates Ltd., owner of the FGM prior to Brunswick
BBus	Bachelor of Business
BETS-SHTS	Bendigo to Shepparton power line
BHP	Broken Hill Proprietary, now BHP Billiton
Bi	Bismuth
Biomin	Biomin South Africa Pty Limited
BIOX®	Proprietary bacterial oxidation technology licensed from Goldfields Ltd.
BSc	Bachelor of Science
Brunswick	Brunswick Mining N.L., owner of the FGM prior to Perseverance
BVM	Bureau Veritas Laboratory services
C\$	Canadian Dollar (CAD)
BOM	Australian Bureau of Meteorology
Ca	Calcium
CCD	Counter Current Decantation
CIL	Carbon in Leach
CIL Residue	Carbon in Leach Residue. The term is equivalent to CIL Tailings.
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
cm	Centimeter
COG	Cut-off Grade
CPA	Certified Practising Accountant
Crocodile Gold	Crocodile Gold Corporation
CRF	Cemented Rock Fill
Cu	Copper
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DTM	Digital Terrain Model
E	Easting, East

Term	Description
EES	Environmental Effects Statement
EL	Exploration License
EMS	Electronic Multi-shot Survey
ELQ	East-dipping Laminated Quartz Vein
EPA	Environment Protection Authority
FA	Fire Assay
FAusIMM	Fellow of the Australasian Institute of Mining and Metallurgy
Fe	Iron
FGM	Fosterville Gold Mine Pty Ltd or Fosterville Gold Mine
Fosterville	Fosterville Gold Mine Pty Ltd or Fosterville Gold Mine
ft	Foot (Imperial unit of measurement)
FVTS	Fosterville Terminal Station
FW	Footwall
FX	foreign exchange currency trading market
GAL	Gekko Assay Laboratory
GDA94	Geocentric Datum of Australia, 1994
GC	Grade Control
GradDipEnvMan	Graduate Diploma of Environmental Management
GSV	Geoscience Victoria (formerly the Geological Survey of Victoria)
Gyro	Gyroscopic downhole directional survey tool
g/t	Grams per (metric) tonne
HCl	Hydrogen Chloride
HDPE	High Density Polyethylene
HF	Hydrogen Fluoride
HG	High-grade
HiSeis	HiSeis Pty Ltd
Historic Resource	A qualified person has not done sufficient work to classify historical estimates as current Mineral Resources or Mineral Reserves described within the report. Kirkland Lake Gold is not treating any historical estimates as current Mineral Resources or Mineral Reserves.
HL	Heated Leach
HNO ₃	Nitric Acid
HQ	63.5 mm diameter diamond drill core
HRM	Harrier Resource Model
HVAS	High Volume Air Sampler
HW	Hangingwall
Hz	Hertz
ICP-AES	Inductively Coupled Plasma – Atomic Emission Spectrometry
Inc.	Incorporated
IP	Induced Polarization – geophysical imaging technique
ISO	International Organization for Standardization
K	Potassium
k	Thousand
Kirkland Lake Gold	Kirkland Lake Gold Limited
KL	New York Stock Exchange ticker symbol for Kirkland Lake Gold Limited
KLA	Australian Securities Exchange ticker symbol for Kirkland Lake Gold Limited
km	Kilometer
km ²	Square kilometer (area)
koz	Kilo ounce
kt	Kilo tonne
K/Th	Potassium/Thorium ratio - relating to a 2008 airborne radiometric survey
kV	Kilovolt
kVA	Kilovolt-ampere
kW	Kilowatt

Term	Description
lb	Pound
LG	Low-grade
LODE	Large Ore Deposit Exploration
LOM	Life of Mine
Ltd	Limited
LQ	Laminated Quartz
LW	Leachwell accelerated cyanide leach assay method
M	Mega/Million (SI prefix; Factor 10 ⁶)
m	Meter
μ	Micro (SI prefix; factor 10 ⁻⁶)
Ma	Million years
MAI	Managed Aquifer Injection
MAIG	Member of the Australian Institute of Geoscientists
MAusIMM	Member of the Australasian Institute of Mining and Metallurgy
MCC	Motor Control Center
mE	Meters East
mg/m ³	Milligram per cubic meter (metric unit of concentration)
MGA	Map Grid of Australia
MIN	Mining License
Mira Geoscience	Mira Geoscience Ltd
ML	Megalitre
ML	Mining license Prefix (old system)
mm	Millimeter
MMI	Mobile metal ion
Mn	Manganese
mN	Meters North
Mo	Molybdenum
MRMR	Mineral Resources and Mineral Reserves
mRL	Meters Reduced Level (Elevation)
MRSD Act	Mineral Resources (Sustainable Development) Act 1990 – Victoria, Australia
Mtpa	Mega-tonne (metric) per annum
MVA	Megavolt-ampere
N	Northing, North
NATA	National Association of Testing Authorities
NCC	Non-carbonate carbon (<i>concentration of</i>)
New Holland	New Holland Mining Ltd., now Nu Energy Capital Limited
Newmarket	Newmarket Gold Inc.
NI43-101	National Instrument 43-101
NL	No Liability
NNE	North North-East
NNW	North North-West
NPRM	Northern Phoenix Resource Model
Northgate	Northgate Minerals Corporation Ltd
NRM	Northern Resource Model
NQ	47.6 mm diameter diamond drill core
NQ2	50.6 mm diameter diamond drill core
NW	North West
ODW	O'Dwyer's (drill hole code)
ONAF	Oil Natural Air Forced – Transformer cooling without pumps and fans for air
ONAN	Oil Natural Air Natural - Transformer cooling without pumps and fans
OSLS	On Site Laboratory Services
oz	Troy Ounce (31.1034768 grams)
P	Phosphorous

Term	Description
PAF	Potentially Acid Forming
Pb	Lead
PF	Paste Fill
ppb	Parts per billion
PQ	85.0 mm diameter diamond drill core
PSV	Perseverance Corporation Ltd., listed parent prior to Jan 18 th 2008
Q1 / Q2 / Q3/ Q4	Quarter 1 / Quarter 2/ Quarter 3 / Quarter 4TSF
QAQC	Quality Assurance – Quality Control
QG	Quantitative Geoscience (Geostatistical Consultants, now Aranz Geo)
QP	Qualified Person
R ²	R squared – coefficient of determination
RAB	Rotary Air Blast (drill method)
RC	Reverse Circulation (drill method)
RH	Robbin's Hill
Riffle splitter	A device comprising tiers of 'riffles' for equi-probable splitting of dry particulate matter (e.g. drill chips), each tier yields a 50:50 split.
RL	Reduced Level (elevation)
RO	Reverse Osmosis
ROM	Run of Mine
RQD	Rock Quality Designation
S	Sulfur
S	South
SAG	Semi-Autogenous Grinding
Sb	Antimony – present at Fosterville in the mineral stibnite
SD	(Statistical) Standard Deviation
SkyTEM	SkyTEM Australia Pty Ltd
SMS Operations	Swick Mining Services Operations Pty Ltd
SMU	Selective Mining Unit
SP Ausnet	SP Ausnet – Electricity Distributor
Spear Sampling	Using a tube ('spear') to collect a sample for assay from a sample bag of RC or RAB drill chips (this method is not equi-probable as it is susceptible to density segregation in the sample bag)
SPRM	Southern Phoenix Resource Model
SQL	Structured Query Language
SRK	SRK (Australasia) Consulting Pty Ltd
t	(Metric) tonne (2204.6 lb. or 1.1023 short tons)
Tailings	Ground rock and process effluents generated during processing of ore
TGC	Total Graphitic Carbon
t/m ³	Tonne per cubic meter (unit of density)
TOEC	Total Organic and Elemental Carbon
tpa	Tonnes Per Annum
TSF	Tailings Storage Facility
UG	Underground
US\$	United States dollar
Vic	Victoria
VG	Visible Gold
W	West
WA	Western Australia
XRF	X-ray fluorescence analytical technique
YTD	Year to Date

3 RELIANCE ON OTHER EXPERTS

The Qualified Persons have prepared this report from a range of sources including their personal work, contributions from other FGM personnel and reports from a range of external consultants. Where input has been received from these sources, the Qualified Persons have reviewed and verified the contained assumptions and conclusions. The Qualified Persons do not disclaim responsibility for this information.

For some aspects of this Technical Report, the Qualified Persons relied on the following persons:

Felicia Binks (Environmental Superintendent – Fosterville Gold Mine) BAppSc, GradDipEnvMan, MAusIMM has made contributions to Section 20 of this report.

Craig Reid (Commercial Manager - Fosterville Gold Mine), BBus, CPA has made contributions to Sections 19 and 21 of this report.

4 PROPERTY DESCRIPTION AND LOCATION

The FGM is located about 20km east of Bendigo and 130km north of Melbourne in the State of Victoria, Australia (Figure 4-1).

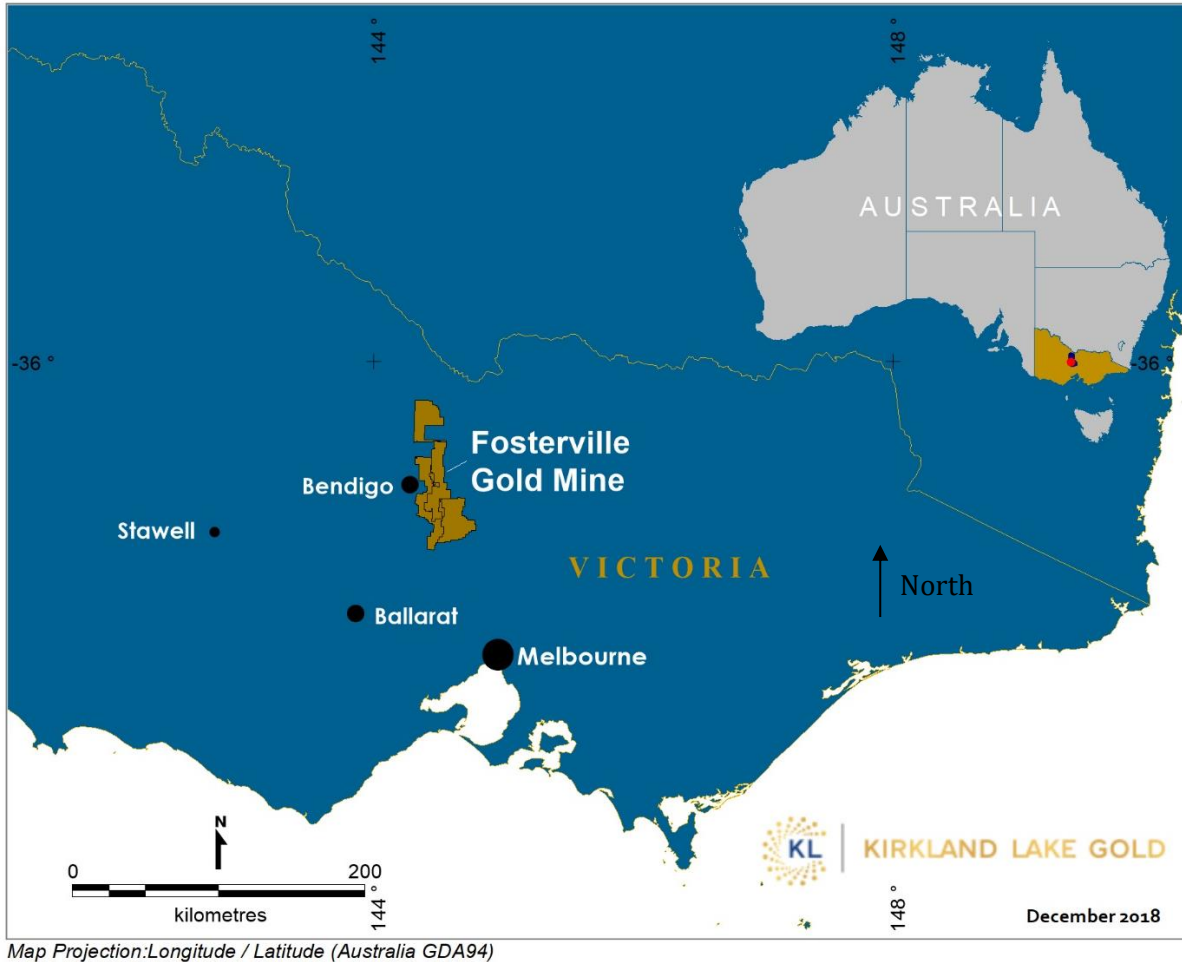


FIGURE 4-1 FOSTERVILLE PROJECT LOCATION MAP

The FGM and all associated infrastructure including the tailings dam and waste dumps are located on Mining License 5404 (MIN5404; Figure 4-2), which is 100% owned by Kirkland Lake Gold Ltd. MIN5404 was initially granted as ML1868 on August 24, 1990. The license later merged with adjoining license MIN4877, resulting in MIN5404.

In December 2012, another Mining License (MIN5565) was granted to FGM, and this license was also merged into MIN5404. The present MIN5404 has a total area of 17.16km², and is granted until August 24, 2035. Table 4-1 summarizes all of the tenement licenses currently granted.

TABLE 4-1 LICENSE DETAILS

Tenement Number	Prospect	Grant Date	Expiry Date	Area (km ²)	Rent (AUD)	Annual Commitment (AUD)
EL3539	Goornong	3/06/1994	26/02/2019	579	\$ 5,988	\$ 188,700
EL4937	Yankee Creek	14/03/2007	13/03/2022	19	\$ 206	\$ 34,000
EL006502	FGM North	23/10/2017	22/10/2022	389	\$ 4,026	\$ 73,650
EL006503	FGM West	23/10/2017	22/10/2022	617	\$ 6,401	\$ 107,550
EL006504	Heathcote	19/03/2018	18/03/2023	509	\$ 5,265	\$ 91,350
EL006694	Drummartin	24/08/2018	23/08/2023	18	\$ 219	\$ 17,700
EL006695	Accotts North	27/08/2018	26/08/2023	1	\$ 110	\$ 15,150
MIN5404	Fosterville	24/08/1990	24/08/2035	17.157	\$ 36,590	\$ 1,544,148
MIN4456	Pumping Lease	26/02/1992	24/08/2020	0.088	\$ 213	\$ 20,000

MIN5404 is located at centroid coordinates 276,599.72mE and 5,935,134.9mN using Map Grid of Australia (MGA) Zone 55 (GDA94) coordinate projection.

The FGM grid is an affine plane grid and can be referenced to MGA using the two reference points contained in Table 4-2 and -5000mRL (AHD). Fosterville Mine grid north is 13°20' west from true north and 21° west from magnetic north.

TABLE 4-2 GRID CONVERSION REFERENCE POINTS

Point 1: MIN5404 Mining License peg SE of Daley's Hill		
Coordinate System	North (m)	East (m)
GDA94 Zone 55	5,930,837.663	278,011.932
Fosterville Mine Grid	4,786.030	2,177.630
Point 2: MIN5404 Mining License peg at NE corner		
Coordinate System	North (m)	East (m)
GDA94 Zone 55	5,939,047.136	278,407.302
Fosterville Mine Grid	12,713.150	4,343.140

Note that all Eastings, Northings, elevations (Reduced Levels (RL)) and azimuths in the text reference the local FGM mine grid.

The boundaries of land covered by MIN5404 have been accurately surveyed in accordance with the Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2013.

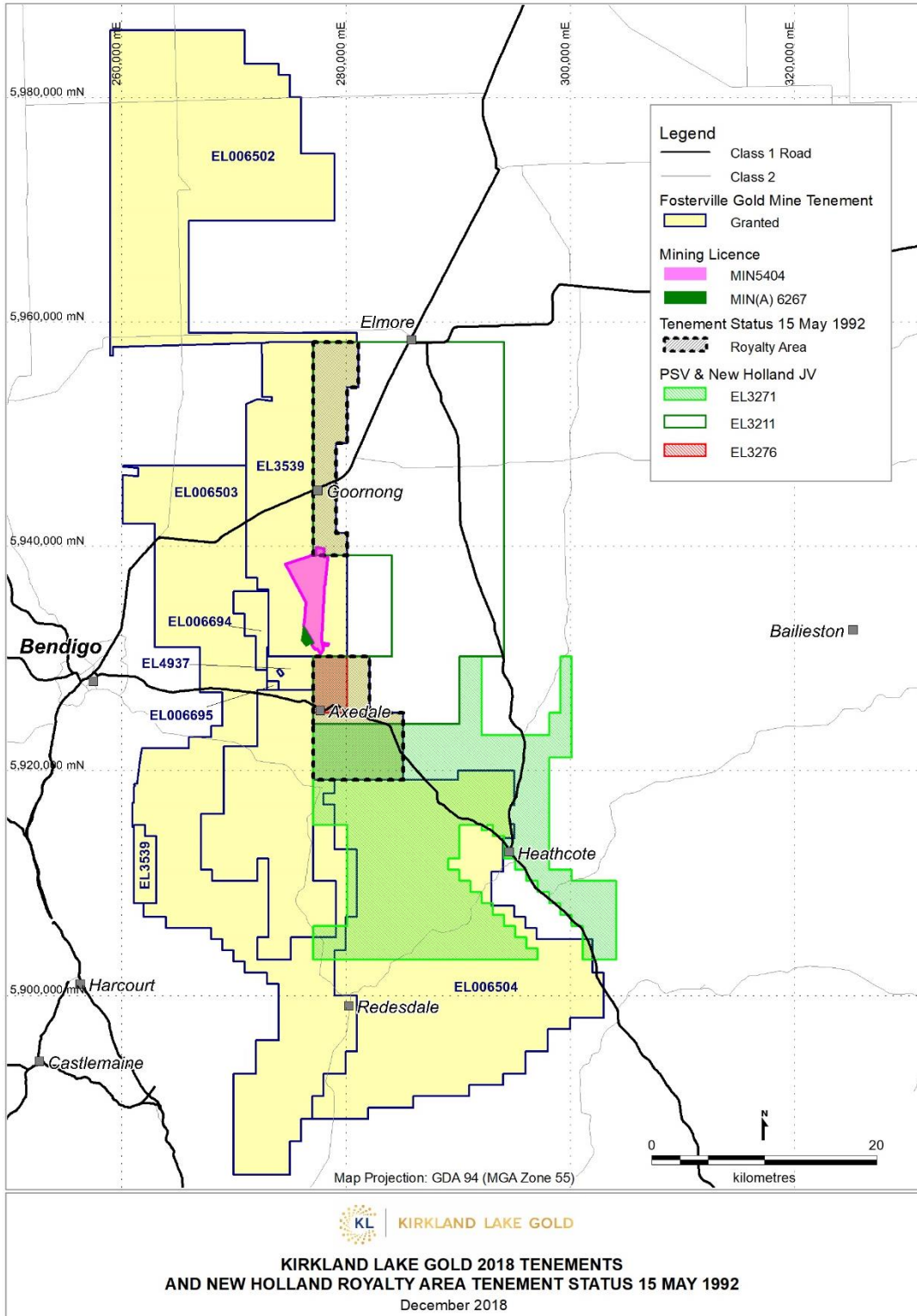


FIGURE 4-2 FOSTERVILLE MINING LEASE PLAN WITH EXPLORATION LICENCES AND ROYALTY AREAS

Within MIN5404, there is a 2.5% gold royalty payable to New Holland Mining Ltd, now Nu Energy Capital Limited for the area outlined by an historical mining lease MIN4877 in the northeastern portion of MIN5404. Further, the royalty agreement extends north and south of MIN5404 where previously existing tenements EL3211, EL3271 and EL3276 (New Holland Mining) overlap with a portion of EL3539 (Figure 4-2).

In addition, a 2% net smelter royalty is held by AuRico Metals Australian Royalty Corporation (“AMRAC”). AMRAC was originally a wholly-owned subsidiary of AuRico Metals Inc. (“AMI”). AMI was acquired by Centerra Gold Inc. in January 2018 and AMRAC, which holds the royalty, was subsequently sold to Triple Flag Mining Finance Bermuda Ltd.

There are no state government royalties on gold production in the State of Victoria, Australia.

A rehabilitation bond is reviewed regularly with the Department of Economic Development, Jobs, Transport and Resources Victoria. In December 2017 the rehabilitation bond was reviewed and increased to A\$8.27M. Rehabilitation is undertaken progressively at FGM as per the mining license conditions and the bond may be reduced on establishment that the land has been rehabilitated in accordance with the MRSD Act. That is, the land is safe and stable, non-polluting and the revegetation cover is self-sustaining. FGM is located near areas of moderate environmental significance (Mt Sugarloaf Nature Conservation Reserve), established productive farmland and is adjacent to the locally significant Campaspe River.

FGM is operating under a Risk Based Work Plan approved in October 2017 under the Mineral Resources Sustainable Development (MRSD) Act 1990. The newly approved Work Plan consolidated the previously approved 2004 Work Plan and all subsequent Work Plan Variations into one Risk Based Work Plan. The approval, concerning MIN5404 and MIN4456, was provided Statutory Endorsement by the Department Head of Earth Resources Regulation. Work Plan Variations are submitted when significant changes from the current Risk Based Work Plan are proposed.

MIN5404 and MIN4456 were granted prior to enactment of the Commonwealth Native Title Act of 1993 and as such are not subject to any Native Title compensation claim, now or after any future renewals. MIN5404 was recently renewed and will expire in 2035.

EL3539 is also not subject to any Native Title compensation claim. EL4937 is subject to an Indigenous Land Use Activity Agreement.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Fosterville area is relatively flat to gently undulating with a range of low rolling hills, located 2km to the west of the Campaspe River. On MIN5404, natural surface elevations range from 150m to 185m above sea level (5150mRL to 5185mRL mine grid). Vegetation in the area ranges from native forest to established grazing pasture.

The FGM has ready access via two separate sealed roads and a variety of all-weather un-sealed roads linking to regional highways. The regional center of Bendigo (20km to the south-west) has a population of around 114,000 (ABS, 2018), and provides a source of skilled labor.

The climate based on 30-year temperature and humidity data (1961–1990) show FGM is located in an area that is described as having a warm to mild summers, and cold winters (BOM, 2018). Köppen classification for the same 30-year period, based on predominant native vegetation type places FGM in a temperate climate with no dry season (BOM, 2018). Median annual rainfall data over a 100-year period (1900–1999) show the major seasonal rainfall is winter dominated (wet winter and low summer rainfall; BOM, 2018). The operation is not significantly affected by climate, which allows the operation to continue all year.

Power is supplied to the site via a terminal station that was constructed by PSV in 2005. This station is connected to the 220kV transmission line that runs from Bendigo to Shepparton and traverses the southern end of MIN5404 approximately 2km south of the processing plant. There is a connection agreement in place with SP Ausnet who manages the transmission and distribution network.

A pipeline was commissioned in April 2005 that has the capacity to supply approximately 2,000ML annually, which comfortably exceeds the current plant usage of approximately 1,000ML per annum. The current arrangement for the provision of water to site is secured through a ten-year contract between FGM and Coliban Water (catchment management authority). This allows for the supply of treated waste water from the Bendigo sewerage treatment facility. This agreement follows on from a previous ten-year agreement that expired in 2016. One further ten-year contract renewal is available on expiry upon written request.

All other site infrastructure is in place and approved under a Risk Based Work Plan in October 2017 under the Mineral Resources (Sustainable Development MRSD) Act 1990.

Details of tailings storage areas are covered in sections 18.1.4 and 20.2.

The location and of the processing plant site is illustrated in Figure 18-1 and Figure 18-2. The layout of the comminution circuit allows for installation of a pebble crushing circuit, should it be required and a secondary ball mill to increase grinding circuit capacity. Space was left in the area layouts for additional tank farms and equipment to accommodate a nominal increase in plant capacity. Space exists to the east of the plant site to duplicate existing facilities to double plant throughput, if required.

Mining waste material that cannot be placed underground is brought to the surface and held within the confines of the Ellesmere Pit (Figure 18-1; Section 18.2.4). Details on the storage of historically mined waste overburden is covered in Section 20.2 and tabulated in Table 20-1.

6 HISTORY

Gold was first discovered in the Fosterville area in 1894 with mining activity continuing until 1903 for a total of 28koz of production. Mining in this era was confined to near-surface oxide material.

Aside from a minor tailings retreatment in the 1930's, the field lay dormant until 1988 when Bendigo Gold Associates recommenced gold production at Fosterville from the reprocessing of tailings. By 1989 this program had come to an end and exploration for oxide resources commenced. The leases were then acquired by Brunswick who continued exploration and in 1991 started heap leaching ore derived from shallow oxide open pits. After six months of production, Brunswick went into receivership as a result of the failure of another operation. Perseverance (PSV) bought the operation from the receivers and continued the oxide heap leach operations. PSV continued to produce between 25koz to 35koz per annum until the cessation of the oxide mining in 2001. Between 1988 and 2001, a total of 240koz of gold were poured (Roberts et al, 2003).

In 2001, PSV underwent a significant recapitalization and the focus of the company changed to developing the sulfide resource. A feasibility study investigating a combined open pit and underground mining operation feeding 0.8Mtpa of sulfide ore to a BIOX[®] processing plant was completed in 2003. Work on the plant and open pit mining commenced in early 2004. Commercial sulfide hosted gold production commenced in April 2005 and up to the end of December 2006 a total of 136,882oz of gold had been produced. Underground development commenced in March 2006 with first production recorded in September 2006. Significant open pit production had ceased at the end of 2007, however, minor production from open pits contributed in 2011 and 2012. The 500,000th ounce milestone of 'sulfide' gold production was achieved in April 2011, the one millionth ounce produced in December 2015, and by the end of December 2018 'sulfide' gold production totaled 1,772,670oz.

A breakdown of open cut and underground mined tonnes and grade since the start of 2004 is given in Table 6-1.

On October 29, 2007, Perseverance announced that it had entered into an agreement with Northgate Minerals Corporation (Northgate) to acquire the company via a Scheme of Arrangement. This agreement was ratified by Perseverance's shareholders and option holders on January 18, 2008 with full control passing to Northgate in February 2008.

In August 2011 Northgate entered into a merger agreement with AuRico, who assumed control of the Northgate assets in October 2011. In March 2012 AuRico and Crocodile Gold jointly announced that Crocodile Gold would acquire FGM and Stawell Mines. Crocodile Gold's ownership of FGM was achieved on May 4, 2012. In May 2015 Crocodile Gold and Newmarket Gold entered into a definitive arrangement agreement and completed a merger on July 10, 2015 to form Newmarket. On November 30, 2016, Kirkland Lake Gold Inc. merged with Newmarket to form a new mid-tier gold company Kirkland Lake Gold Ltd.

A detailed summary of exploration and development works on the property from previous operators can be found in Section 6.1 and Section 6.2 of this report. Two historical mineral resource estimates contained

within EL3539, Hallanan's and Goornong South Prospects, were reported by Perseverance in their 1999 Annual Report as shown in Table 6-2 and Table 6-3.

Kirkland Lake Gold is not treating these Historical Resources as current Mineral Resources as a QP has not done sufficient work to classify the Historic Resources, or comment on the reliability of the estimates.

TABLE 6-1 MINED PRODUCTION DATA FOR FOSTERVILLE FOR THE PERIOD 2004-2018

Mining Area		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Open Cut	Tonnes (kt)	52	517	1,084	43	-	-	-	45	75	-	-	-	-	-	-
	Grade (g/t Au)	3.6	5.6	3.4	2.3	-	-	-	2.8	2.6	-	-	-	-	-	-
Under-ground	Tonnes (kt)	-	-	36	376	512	780	729	734	729	827	786	704	692	538	460
	Grade (g/t Au)	-	-	4.8	4.2	4.5	4.8	5.0	5.0	4.5	4.6	4.6	6.1	7.9	16.1	24.8
Total	Tonnes (kt)	52	517	1,120	799	512	780	729	779	804	827	786	704	692	538	460
	Grade (g/t Au)	3.6	5.6	3.4	3.2	4.5	4.8	5.0	4.9	4.3	4.6	4.6	6.1	7.9	16.1	24.8

TABLE 6-2 HISTORIC RESOURCE OF THE GOORNONG SOUTH PROSPECT PERSERVERANCE (1999)

Historical Mineral Resource (PSV 1999) - Goornong South Prospect									
Classification	Measured			Indicated			Inferred		
	Tonnes (kt)	Grade (g/t Au)	Insitu Gold (Oz)	Tonnes (kt)	Grade (g/t Au)	Insitu Gold (Oz)	Tonnes (kt)	Grade (g/t Au)	Insitu Gold (Oz)
Oxide	216	1.3	9,300	535	1.3	23,100	32	1.6	1,700
Sulfide (High-Grade)	7	1.7	400	46	1.6	2,400	373	1.5	18,200
Sulfide (Low-Grade)	3	0.7	100	11	0.7	300	140	0.8	3,700
Total Sulfide	10	1.4	500	57	1.4	2,700	513	1.3	21,800
Total Oxide & Sulfide	226	1.3	9,800	592	1.4	25,800	545	1.3	23,500

Notes:

1. Historical Resource as reported in Perseverance Annual Report 1999.
2. Kirkland Lake Gold is not treating the historical estimate as a current Mineral Resource as a QP has not done sufficient work to classify the historical estimate or comment the reliability of the estimate.
3. Reporting lower cut-off gold grades used are ≥ 0.5 g/t Au for oxide, 0.5-1.0 g/t Au for sulfide low-grade and >1.0 g/t Au for sulfide high-grade.
4. Bulk Density values set to 1.8t/m^3 for clay, 2.4t/m^3 for oxide and 2.8t/m^3 for sulfide materials.
5. Resource block grades estimated by Ordinary Kriging of 50m spaced drill sections.
6. Mineral Resources have been rounded to 1,000t, 0.1 g/t Au and 100oz. Minor discrepancies in summation may occur due to rounding.
7. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

TABLE 6-3 HISTORIC RESOURCE OF THE HALLANAN'S PROSPECT PERSERVERANCE (1999)

Historical Mineral Resource (PSV 1999) - Hallanan's Prospect									
Classification	Measured			Indicated			Inferred		
	Tonnes (kt)	Grade (g/t Au)	Insitu Gold (Oz)	Tonnes (kt)	Grade (g/t Au)	Insitu Gold (Oz)	Tonnes (kt)	Grade (g/t Au)	Insitu Gold (Oz)
Oxide	281	1.4	12,900	169	1.4	7,600	41	1.2	1,600
Sulfide (High-Grade)	89	1.5	4,400	240	1.5	11,500	521	1.7	28,600
Sulfide (Low-Grade)	35	0.8	900	66	0.8	1,600	124	0.8	3,000
Total Sulfide	124	1.3	5,200	306	1.3	13,100	645	1.5	31,700
Total Oxide & Sulfide	405	1.4	18,100	475	1.4	20,700	686	1.5	33,300

Notes:

1. Historic Resource as reported in Perseverance Annual Report 1999.
2. Kirkland Lake Gold is not treating the historical estimate as a current Mineral Resource as a QP has not done sufficient work to classify the historical estimate or comment the reliability of the estimate.
3. Reporting Lower cut-off gold grades used are ≥ 0.5 g/t Au for oxide, 0.5-1.0 g/t Au for sulfide low-grade and >1.0 g/t Au for sulfide high-grade.
4. Bulk Density values of 1.8t/m^3 for clay, 2.4t/m^3 for oxide and 2.8t/m^3 for sulfide materials.
5. Resource block grades estimated by Ordinary Kriging of 25m & 50m spaced drill sections.
6. Mineral Resources have been rounded to 1,000t, 0.1 g/t Au and 100oz. Minor discrepancies in summation may occur due to rounding.
7. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

6.1 EXPLORATION HISTORY

6.1.1 PRE-1992 EXPLORATION

Exploration prior to 1983 was undertaken by numerous companies including, Noranda Australia, Pennzoil, Newmont, Lone Star Exploration and Apollo International which obtained significant results, but concluded that target potential did not meet with their high tonnage exploration criteria.

6.1.1.1 1984 – 1987 – BENDIGO GOLD ASSOCIATES PTY LTD - EL1392

Relevant and available literature of the area was collected and researched and an extensive pilot study was undertaken in the Fosterville area, investigating the relationships between gold, arsenic, mercury in soils and mineralization believed to be typical for the area. Positive correlations were found between mineralization and all three elements in the soil C-Horizon. Arsenic, due to better contrast characteristics was selected for future exploration (Van Riel, 1985). A general survey of the EL was also conducted, locating and inspecting historic workings.

A 730m long traverse of auger hole drilling soil program at 10m intervals was completed east of Mt Sugarloaf and west of the Fosterville Fault Zone with C-Horizons assayed for As. A 230ppm anomaly was returned which indicated potential mineralized lines parallel to the Fosterville Fault Zone. A reconnaissance stream sediment survey was also initiated with main streams on the EL bulk sampled. All anomalous results from the stream sediment survey were explained by nearby old workings (Van Riel, 1985).

The old mining areas of Yankee Creek, The Sugarloaf Range and the New Windsor Rush area were mapped and investigated in detail. Both the Sugarloaf and New Windsor Rush workings were chip and channel sampled. In particular, the New Windsor Rush area showed encouraging gold values over a strike length of 250m.

A semi regional geochemical sampling program was conducted over the Sugarloaf Range area. Four anomalous zones were identified from nine sample lines at 500m spacing and 25m sample intervals, the most significant aligning with a line of historic workings. Two auger lines over the 250m anomaly at New Windsor Rush did not reflect the anomaly and no further follow-up work was conducted. A total of 99 bedrock samples were taken at the Axedale Mine workings area on an 800 x 200m grid but gold values tended to be low and erratically dispersed (Swensson, 1986).

During 1985 a pilot ground magnetic survey was conducted over selected areas of the Fosterville Goldfield. A Geometrix G-816 magnetometer was used with readings taken at 10m intervals along lines. In some instances, magnetic anomalies could be related to underlying reefs (Van Riel, 1985a).

6.1.1.2 1989 – 1990 – BHP GOLDMINES LTD - EL1881

In early December 1989 BHP Goldmines entered into a joint venture with Homestake Limited to explore for possible extensions to the Fosterville and O'Dwyer's Faults north of the Fosterville goldfield into the north eastern parts of EL1881.

Soil sampling was undertaken from 22 lines using a broad star pattern defined by 400 x 200m centers with five sub samples, each 1kg collected near each center. One is taken from the center sample site and four others are taken 50m grid east, west, north and south of the center generating a representative composite sample (Benn, 1989). From this sampling, a NNW trending Au anomaly between 500 and 800m in with and strike extent of 5km.

By September 1989, a stream sediment sampling program for gold and base metals was completed. A total of 190 samples from 89 sites were taken. From each site, two samples were collected: a nominal 4kg to 5kg sample of <4mm active gravel/gravel trap sediment which was analyzed for gold using bulk cyanide leach method and an active silt sample sieved to -80 microns analyzed for Cu, Pb, Zn and As. The Au bulk cyanide leach results identified a number of moderate to strongly anomalous drainages (Cameron, 1988).

In 1990 exploration activities within the project area comprised RAB drilling and rock chip sampling to evaluate the gold potential of the northern projection of the Fosterville and O'Dwyer's Fault systems. Low gold and arsenic geochemistry across the inferred position of both structures suggested that the faults were not significantly mineralized along this section of the fault system (Rabone et al, 1990).

The tenement was relinquished in September 1990 after perception of the gold potential area was downgraded.

6.1.1.3 OTHER

The Russell's Reef area, south of the current Fosterville Mining License, has been subjected to several lines of soil sampling, and several programs of shallow RC drilling (50 holes averaging 31m depth) undertaken over a protracted period from 1976 to 1989.

Modern exploration in the Myrtle Creek area has occurred since 1974 by companies such as Noranda Australia (rock chip sampling, geological mapping, soil geochemistry (Au, Cu)), Ghana Gold (structural interpretation of aerial photography) and BHP (stream sediments and follow up soil surveys).

In the early 1990's Brunswick completed a 100m by 20m soil geochemistry grid across the Fosterville project area and as far west as the Sugarloaf Range. The soil geochemistry was very effective at defining gold mineralization except where alluvial cover exceeded about two meters. Two preliminary IP/resistivity lines were also completed with mixed results.

6.1.2 1992-2001 EXPLORATION

A 25m by 25m gradient-array IP/resistivity survey was conducted in the Robbin's Hill area by Perseverance in 1997. This survey did not conclusively define gold mineralization; however, it was successful in mapping carbonaceous shales and alluvial channels.

In the 12-month period leading up to 25 February 1998 PSV conducted hand auger bedrock geochemistry samples from Accott's Prospect, Lyell and Sedgwick South where mildly anomalous zones of mineralization were defined. Hand auger soil sampling was also run along road reserves in the Goornong North Area and in combination with RAB drilling resulted in the identification of two new prospects, May Reef and Rasmussen's adjacent to small mine scratchings. An Au-As soil geochemical survey was undertaken in the Myrtle Creek area where encouraging results were obtained where gold mineralization appears to be associated with a small granite intrusion. Reconnaissance work and rock chip sampling was also undertaken during this period on the Fosterville East and Wild Duck Prospects (Van Riel, 1998).

Throughout 1998 and 1999 PSV continued to actively undertake extensive hand auger soil sampling and rock chip sampling at multiple prospects including West of Axedale-Goornong Road, Cochrane's Prospect, Rasmussen's, Sharkey's North, Lyell South, Sugarloaf East and Sugarloaf North. Most of these surveys returned indifferent results. A further soil geochemistry and rock chip sampling at Myrtle Creek delineated sandstone hosted and granite related mineralization. An orientation soil geochemical study was undertaken to establish the parameters for exploring Goornong South type deposits buried below deep soil and gravel cover (Van Riel, 1999).

A geo-botanical survey was conducted within the Fosterville Mining Lease by Australian Geochemical Survey Ltd. It was found that an association of Au with As, Sb and also with Zn exists in this environment (i.e. tree bark was sampled). The survey results appear to point at three virtually untested anomalies: one west of Hunt's and two at Daley's Hill North (Van Riel, 1999).

After 1999 PSV regional exploration activities were limited with the company focusing on resource drilling at two of its advanced projects, Goornong South and Mills. Resources were determined for both, and Environmental Effects Statement (EES)-feasibility studies instigated.

6.1.3 2001-2017 EXPLORATION

After the EES studies for both the Goornong South and Hallanan's projects were completed, the company suspended its plans and proposals to mine the surface expressions of the deposits to focus on the sulfide project at Fosterville.

Two IP/resistivity surveys were completed by Perseverance in 2001 (Search Exploration Services) and 2005 (MIMDAS Geophysics). The 2001 survey consisted of four lines of 50m node spacing over the Central Area. This survey was designed to define gold mineralization at depths of between 50m to 250m. The data was inverted to make a model in real space. Anomalies were defined along the Fosterville Fault Zone, but the 50m node spacing meant that the survey resolution was unable to distinguish the carbonaceous shale in the hangingwall of the Fosterville Fault from mineralization in the footwall of the Fosterville Fault. In 2005

another four IP/resistivity lines were completed across the northern end of the Fosterville Goldfield, covering the Sugarloaf geochemical anomaly, the Fosterville Fault Zone and the Robbin's Hill Area. This survey defined weak geophysical anomalies over the Sugarloaf geochemical anomaly and the strike projection of the Fosterville Fault Zone north of MIN5404.

During the period June 2005 to June 2006, 1:10,000 scale color aerial photography was flown over the area surrounding the Fosterville Mining License by PSV. In addition, a Landsat image of the entire Exploration License was obtained to assist in regional interpretation (Norris, 2006).

During the period June 2006 to June 2007 PSV conducted a detailed mapping, soil-and rock chip- sampling program at the Myrtle Creek prospect. Petrography of twenty samples concluded that (altered and mineralized) granite is much more extensive than originally mapped.

It is concluded that the mineralization at Myrtle Creek is related to igneous (granitic) activity. This class of deposits is most unusual for Victoria, and never mined in the modern era, although examples are known elsewhere in the Lachlan Fold belt. A literature study was carried out which assisted in developing a suitable exploration model. A first-ever drilling program was designed for Myrtle Creek (Van Riel, 2007).

Northgate explored the Myrtle Creek area between 2008 and 2009, undertaking additional surface sampling in the northern area of historical workings, but the results were disappointing with the overall tenor of gold-in-soil much lower than observed elsewhere on the prospect.

UTS Geophysics, based in Perth WA, was commissioned in the latter half of 2008 to fly a detailed airborne magnetic, radiometric and digital terrain survey over Northgate's Fosterville Group of tenements and EL3484 Greenstones. A total of 23,172 line km were flown between October 2 and November 26, 2008 of which approximately 22,000 line km were completed over the Fosterville Group. A table of all geophysical data grids produced during the interpretive work is presented in Table 6-4. Magnetics Reduced to Pole and Total Count Radiometric results are illustrated in Figure 6-2 and Figure 6-3 respectively.

TABLE 6-4 2008 UTS GEOPHYSICAL SURVEYS OVER FOSTERVILLE GOLD MINE AND SURROUNDING AREAS

Dataset	Grid name
Magnetics	Total Magnetic Intensity
	Reduced to Pole
	First Vertical Derivative
	RTP First Vertical Derivative
Radiometrics	Total Count
	Potassium Percentage
	Thorium Percentage
	Uranium Percentage
	Potassium vs Thorium
	Ternary Image
Digital Terrain Data	Digital Terrain Map
	Digital Terrain Contours
Magnetic ZS Filters	RTP Block
	RTP Edge Zone
	RTP Tilt
	RTP Plateau

Over the period from 2009 to 2016, the Fosterville Gold Mine changed ownership multiple times with each company having different capacities and views on the development of the project. Investment in exploration was directed towards developing Near Mine resource targets around the Lower Phoenix, Lower Phoenix North, Harrier and Robbin’s Hill projects. The discovery of visible gold within the Lower Phoenix coincident with the merger between Newmarket Gold and Kirkland Lake Gold late 2016 saw a renewed interest and capacity for regional exploration within EL3539.

This interest saw the creation of a regional exploration department dedicated to the task of exploring for large ore deposits external to the mining lease with preference towards future underground opportunities. A review of current datasets suggested there was an opportunity to acquire geophysical datasets that could increase the sectional geological understanding such as seismic and airborne electromagnetic surveys to support the existing IP data.

Early 2017, Kirkland Lake Gold engaged the services of HiSeis Pty. Ltd. (a seismic geophysical services company) to conduct de-risking study to establish if the geospatial and petrophysical properties inherent within the turbidite sequence are conducive to be imaged by seismic surveys. The results of the study were positive enough to support a planned program of three lines of 2D seismic surveys across the northern, middle and southern sections of the Mining License with each line length designed at 8km.

Data acquisition commenced in August 2017 with some logistical and cultural land use issues reducing the acquired line length of the northern line (Line 3) by 2.3km, and a reduced ability to collect any data on the southern line (Line 1) (see Figure 6-1). Basic seismic parameters for lines 2 and 3 included utilizing a vibe truck (60,000lb INOVA AHV) as the energy source along a geophone array with stations set at 5m spacing. Energy input was for 14 seconds sweeping through a frequency range of between 8 - 120Hz.

The geology teams from HiSeis and Fosterville Gold Mine conducted a review of the processed data and were able to define some of the broader geological features such as alteration networks, general fold architecture and regional faults such as the Fosterville and Redesdale Faults.

Fosterville Gold Mine engaged the services of SkyTEM during 2017 to fly an Airborne Electromagnetic (AEM) survey across EL3539. The survey design was developed to fly 250m line sections east – west along the length of the lease. The total survey distance aimed to cover 1,980 line kilometers however due to the inability to fly the survey over cultural infrastructure only 1,325 line kilometers were achieved (see Figure 6-1).

The data was processed by SkyTEM and delivered to Mira Geoscience geophysical consultants for incorporation in a broader regional target generation project. This project would combine Fosterville's geophysical datasets including gravity, magnetics, AEM and IP with physical geological data including surface mapping, mine structural 3D model surfaces and drill hole measurements to develop a picture of the regional geology.

To assist with the regional geology interpretation, geophysical consultants were engaged to reprocess some of the historic geophysical data including magnetics, gravity and IP. The focus of the project was to utilize new technology, faster processing, and running new algorithms to help filter and vertically invert the data. The following datasets were updated:

- Magnetics: Filter out the cultural features and minimize the signal of the tertiary basalt flow to attempt to image the finer magnetic signature of the turbidite sequence
- Gravity: Filter out longer wavelengths to better image some of the shorter local wavelengths. Local increases in gravity signature could be due to increase of density either by alteration or by physical changes created by folding of ductile stratigraphy
- IP: Several generations of IP have been conducted through the area. Raw data was reviewed for QAQC and re-inverted to bring consistency between the different generational IP datasets.

To complement the collection and review of the geophysical datasets, Fosterville Gold Mine committed to a regional soil sample campaign throughout EL3539. Historic collection of the soil assay data demonstrates a high level of correlation between the presence of gold and arsenic anomalism. Arsenic, commonly weathered from arsenopyrite, is much more prevalent in the regolith than gold and provides a strong proxy for determining significant areas of interest when also combined with sub-surface structural analysis.

The updated soils project targets roadside verges, crown land and strategic parcels of privately owned land in a comprehensive 10,000 sample campaign. The project was designed to target 400m line section spacing with samples collected on traverses east-west at 100m intervals. The program targets geochemical trends running north – south, however, due to sediment cover in the north, the program was split between aqua regia assaying to the south and mobile metal ion (MMI) assaying in the north.

MMI analysis is used to measure the concentration of any metal ions that bind to clays and soils in the near surface soils. The ions migrate by capillary transportation through the regolith by the rising and falling of meteoric ground water. Research into the technology suggests that arsenic is an element that would be mobile in such terrain conditions. The utilization of the technology was also supported by the Victorian Governments Target 2 Initiative supporting new investigative methods to find mineralization under Murray Basin recent sedimentary cover.

The opportunity to review the geophysical and geochemical datasets to determine opportunities also allowed for the staged assessment of potential drill targets within EL3539. Between Kirkland Lake Geologists and consultants, some criteria were established to critically assess a number of regional prospects that could be developed into a mineral resource. Factors including previous work, location, community, environment and quality of data were all taken into account before the targets were ranked for initial or more drilling.

Near Mine known targets such as the O'Donnell's, Goornong, Russell's Reef, Backhaus and O'Dwyer's lines of mineralization (Figure 6-1) were all identified as having a level of work conducive to immediate diamond drilling campaigns. Areas such as Accott's, Rasmussen, Sugarloaf, Lyell, Myrtle Creek, Sedgwick and May Reef all required further review in conjunction with the new acquired geophysical, geological and geochemical data to be elevated towards a targeted drill zone (see figures Figure 6-1 to Figure 6-5).

It was also identified that the collection of the soils and AEM data may lead to the discovery of previously unidentified areas of mineralization, particularly to the north in areas covered by Murray Basin sediments. These areas will be investigated using other drill methods more suited to the unconsolidated cover, such as RC drilling or Aircore.

Ongoing geological interpretation work has made significant inroads into supporting some historic findings as well as providing new insights into the fundamental geological system hosting the Fosterville Gold Mine. The reprocessed magnetic dataset was able to increase the contrast of magnetic signature between the sand and silt units by removing the stronger signals due to tertiary basalt flows. Some lithological units could be traced throughout the lease and breaks in continuity are generally proximal to regional structures such as the Fosterville and Drummartin Faults.

In April/May 2010, Haines Surveys completed a ground-based grid and traverse gravity survey centered on the Fosterville Mining License and covering part of EL3539 and EL4572. A total of 34 survey lines and 723 stations were completed during the survey. Grid station spacing was nominally 200m in the central corridor of interest defined by the GSV Redesdale Fault model, increasing to 400m towards the edge of the grid. A number of roadside traverse lines were then completed in the southern portion of the Fosterville license group, designed to infill existing state data and potentially track the course of the Redesdale Fault towards the Harcourt Batholith.

Early interpretation of a strong gravimetric contrast from high to low responses to the east of the Fosterville gold mine has been a compelling piece of evidence for the existence of the GSV's Redesdale Fault. The existence of the Redesdale Fault was first proposed in late 2009 by the Geological Survey of Victoria and is supported by the 2006 State seismic transect (which passes north of EL3539), geological

mapping near Redesdale and interpretation of State and Northgate gravity data. The interpretation importantly defined a number of gravity highs within the Redesdale Fault corridor, corresponding with known areas of gold mineralization including the Fosterville and O'Dwyer's Fault Systems.

Further geophysical processing has focused on verifying the correlation of anomalously high gravity responses associated with the known position of mineral resources with the exploration lease. Early theories for the relationship speculated that the density increases in the zones could be due to zones of increased fluid flow introducing denser minerals into the area. Revised data has not conclusively either supported or dismissed the theory however it has also been postulated that the highs could be due to the folding of shale sequences creating the increase in density.

Anomalous increases in density, by either mechanism, has been viewed as important criteria when evaluating the prospectivity of regional drill sites in conjunction with previous soils, mapping, mining and drilling datasets. The positive correlation between these datasets and known areas of gold mineralization supported the drilling of the O'Donnell's and Goornong lines of mineralization in 2017. Diamond drilling results in both areas returned discrete structural zones hosting anomalous gold mineralization that will require further interpretation to understand how these areas fit into the broader regional geological framework.

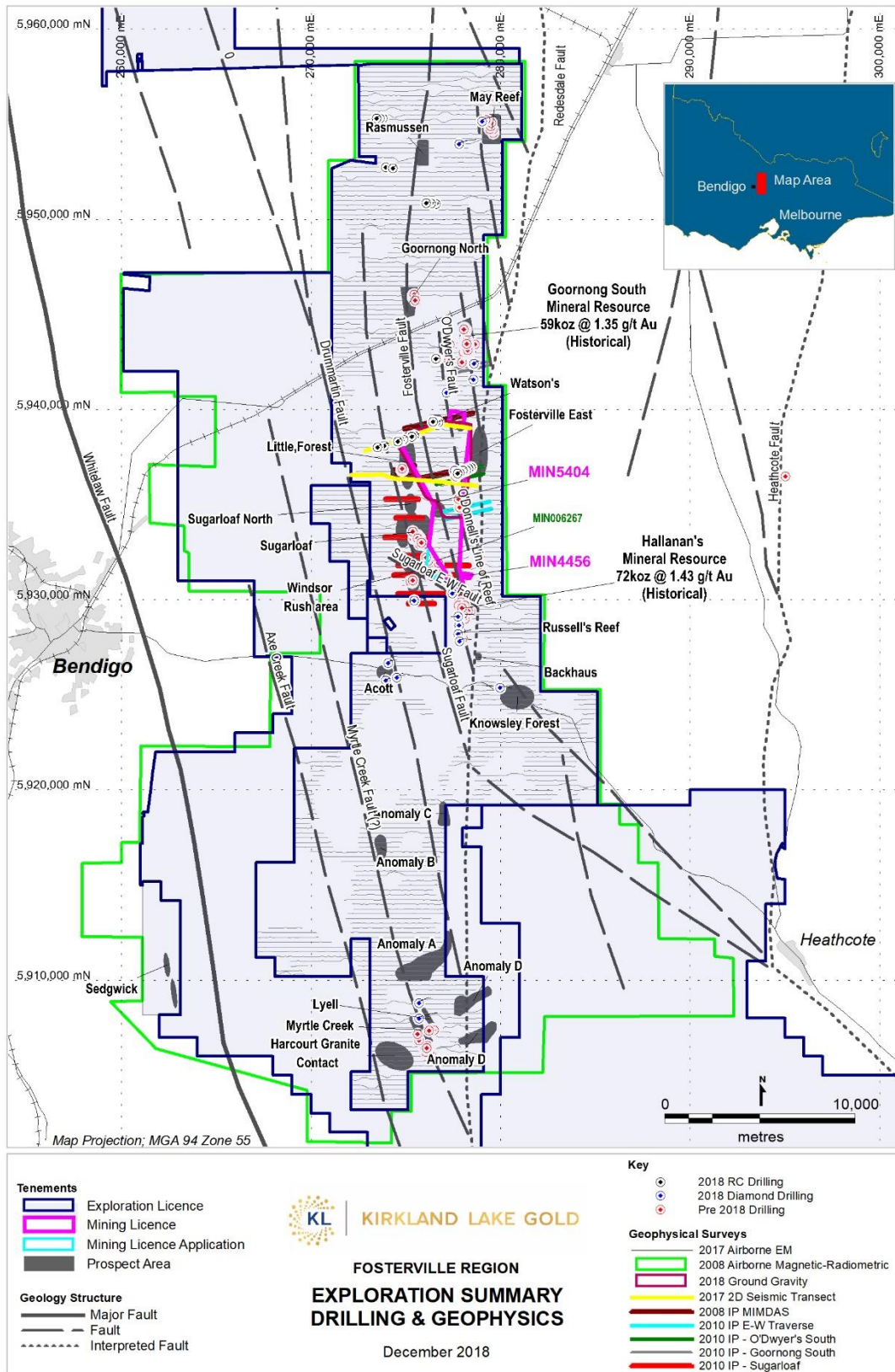


FIGURE 6-1

PLAN OF IP SURVEY AREAS AND PROSPECTS SURROUNDING FOSTERVILLE GOLD MINE

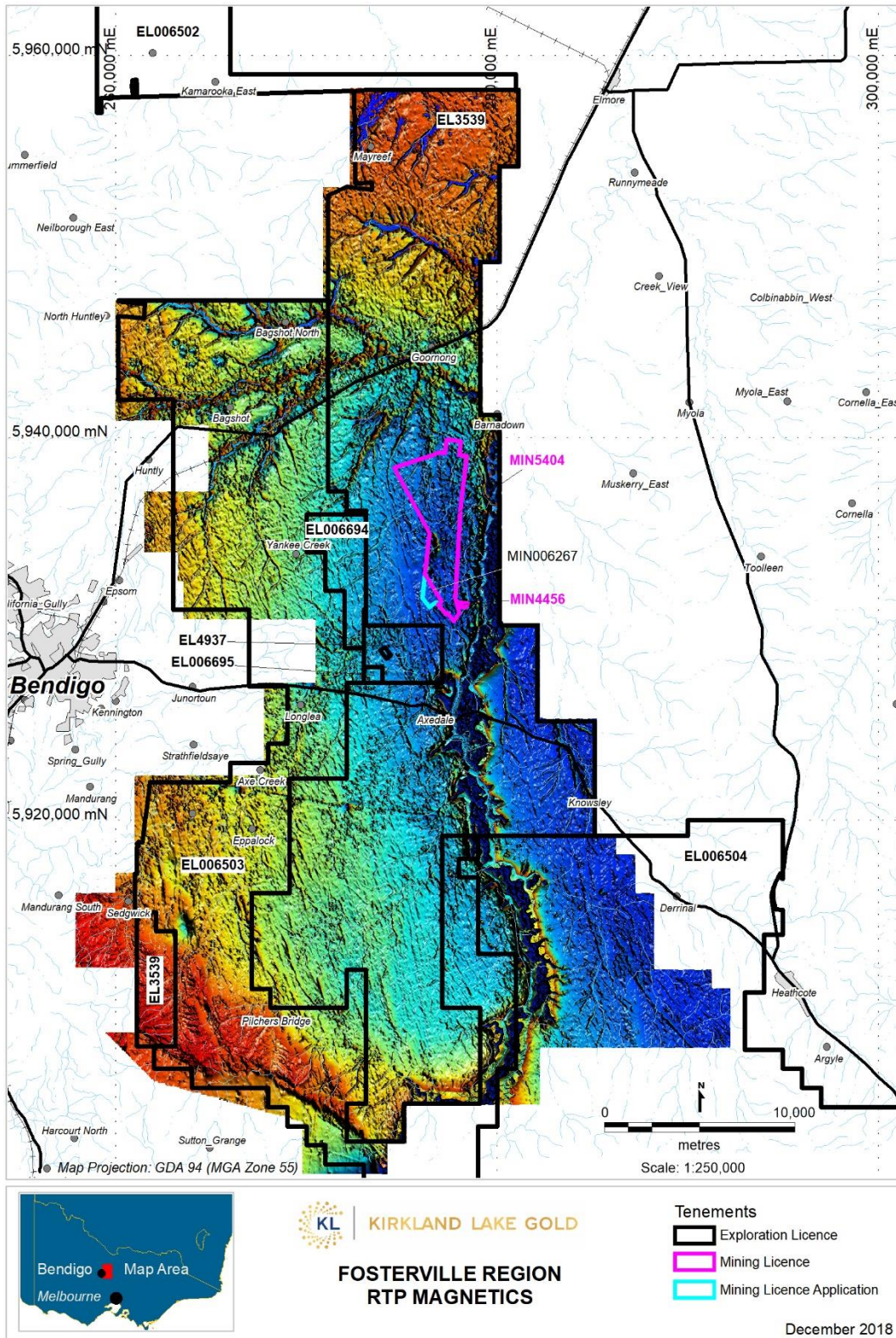


FIGURE 6-2 PLAN OF RTP MAGNETICS SURROUNDING FOSTERVILLE GOLD MINE

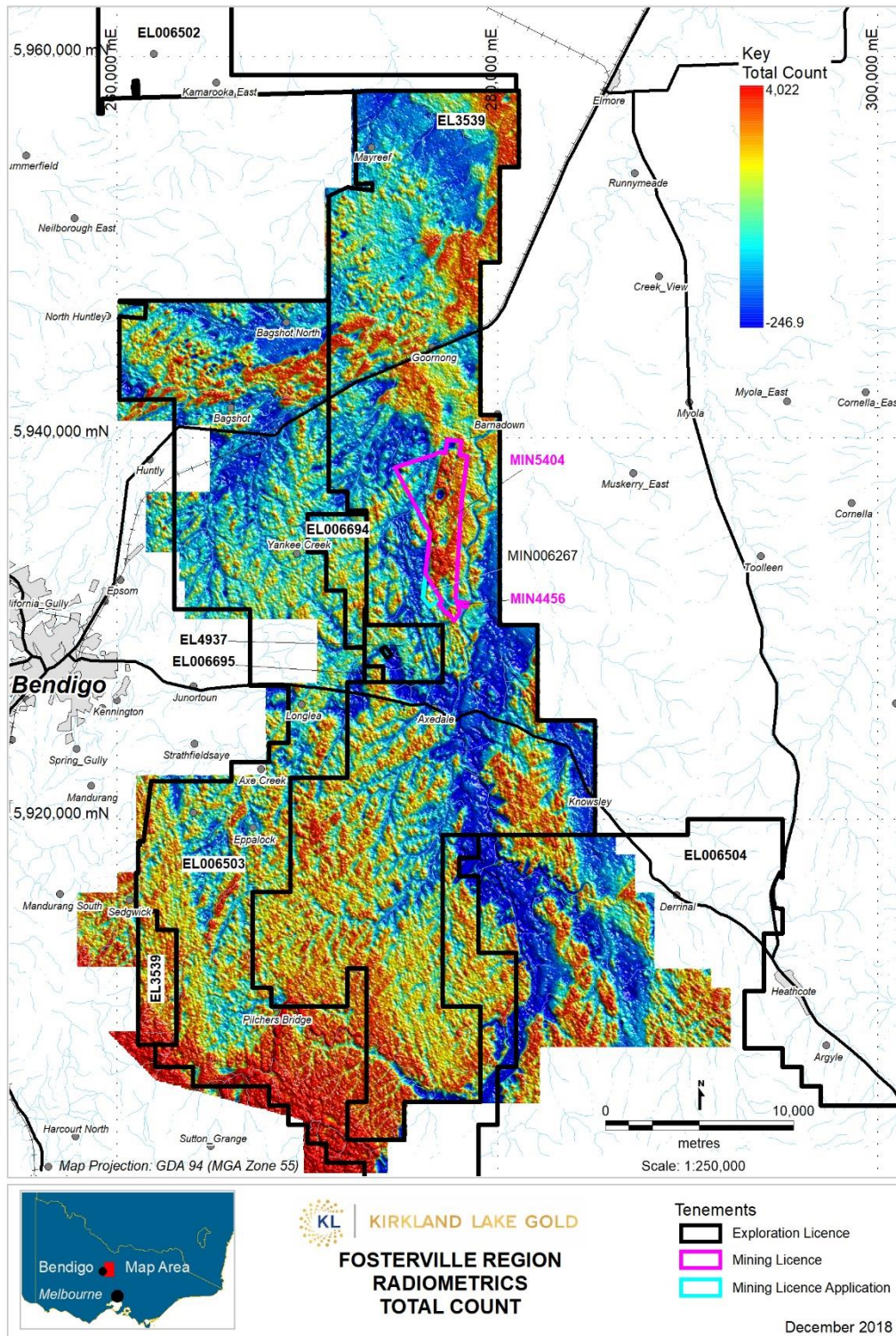


FIGURE 6-3 PLAN OF TOTAL COUNT RADIOMETRICS SURROUNDING THE FOSTERVILLE GOLD MINE

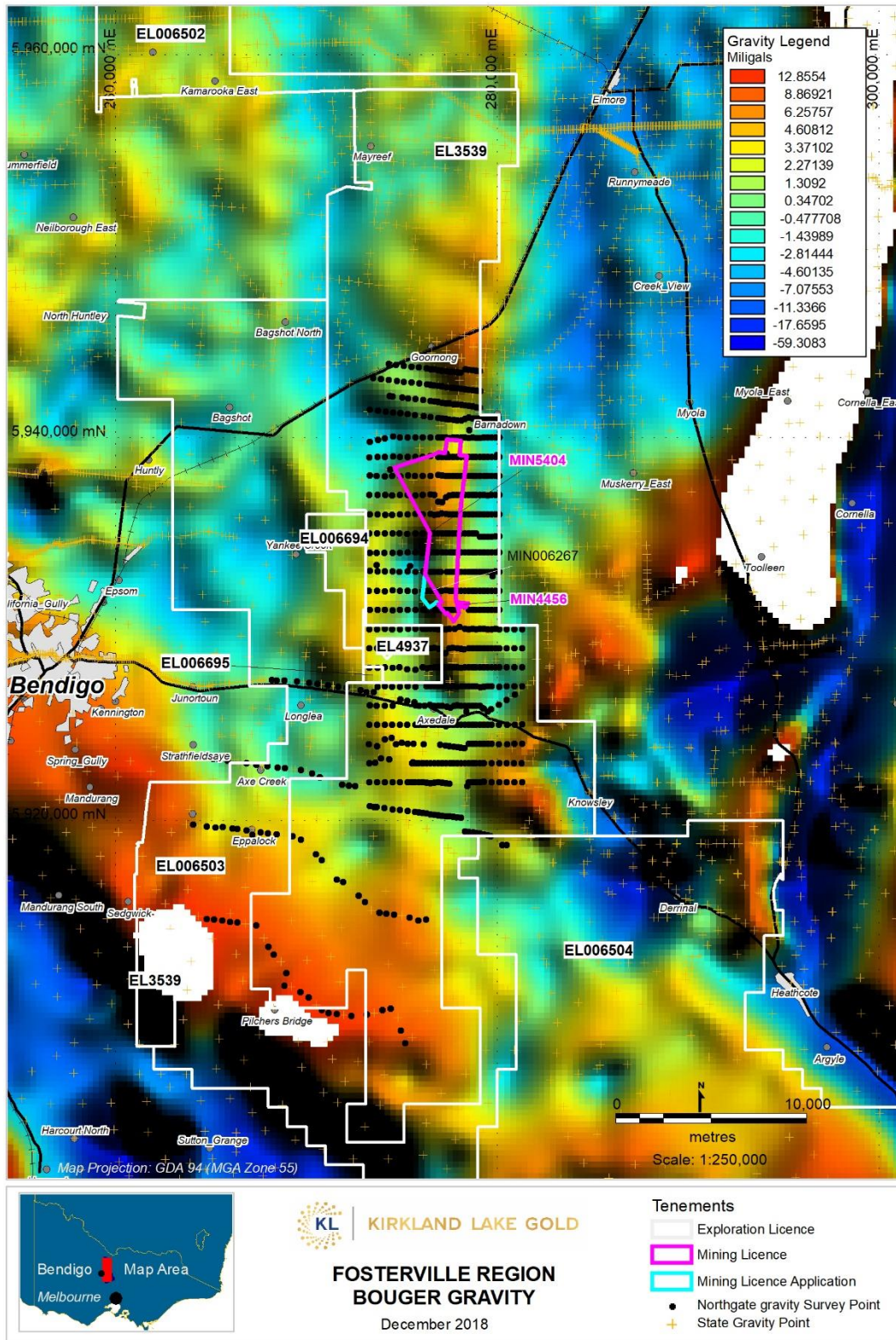


FIGURE 6-4 REGIONAL BOUGER GRAVITY

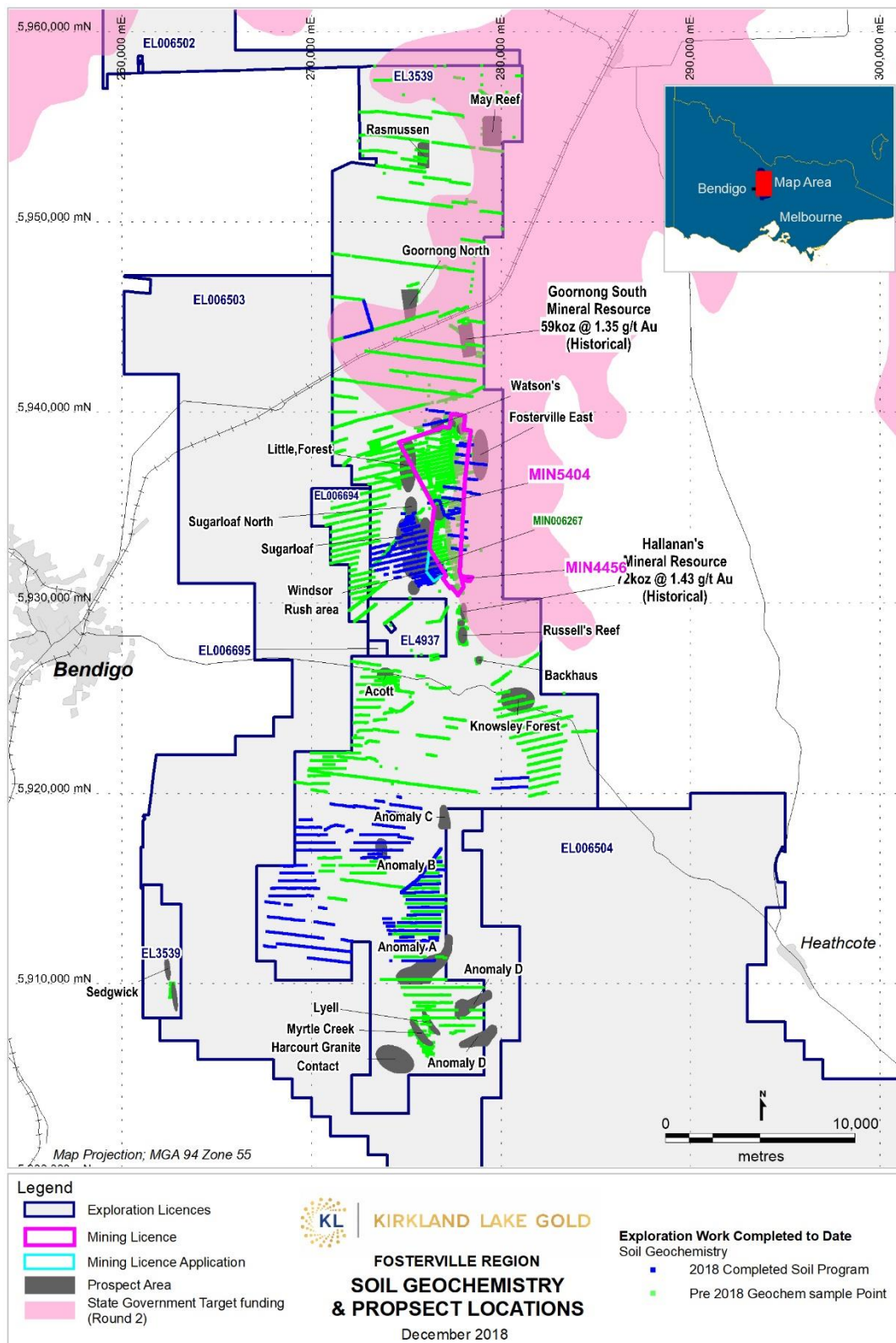


FIGURE 6-5 EL3539 SOIL GEOCHEMISTRY SAMPLE LOCATION DATA INCLUDING 2018 CAMPAIGN DATA

6.2 DRILLING HISTORY

6.2.1 PRE-1992 DRILLING

Modern exploration commenced at Fosterville during the 1970's. Apollo International Minerals NL drilled three HQ diamond holes in what is now the Hunts area. Noranda Inc. drilled three HQ diamond holes in the Daley's Hill area. None of these holes have been included in the drilling database due to uncertainty in their collar locations.

From 1987 to 1991 Bendigo Gold Associates and later Brunswick drilled 488 RC holes and six HQ diamond holes targeting oxide mineralization on the Fosterville Fault and the Robbin's Hill area. This program resulted in the development of a heap leach operation, which commenced in 1991.

6.2.2 1992-2001 DRILLING

On acquiring the Fosterville Mining License in 1992, Perseverance (through a drilling contractor) started RC drilling for further oxide resources and reserves using a combination of cross over and face sampling hammers. These holes used the CN, CEL, CEN, DH and HAR prefixes.

In late 1994, while continuing to explore for oxide mineralization, Perseverance began to drill for sulfide mineralization on the Fosterville Fault potentially amenable to open cut mining. The 1997 Feasibility Study drilling was almost entirely RC with minor diamond drilling for metallurgical and geotechnical purposes and extended from 6000mN to 10700mN. Most of the drilling was completed by 1997 with minor infill drilling continuing to 1999. Holes from this program have the SP (sulfide project), CN, CEL (D), CEN (D), GT or HAR (D) prefixes, the 'D' denoting holes with a diamond tail Table 10-3 and Table 10-4.

Section spacing was either 25m or 20m except in two small zones in the Falcon and Ellesmere Areas where 12.5m sections were drilled. This drilling program was generally restricted to within 100m of surface, extending to a vertical depth of 150m below surface in the Central North Area, reflecting the perceived limits of open cut mining. The data from this drilling program formed the basis of the 1997 Sulfide Project Feasibility Study, which was later updated in 2000 (Perseverance, 1997; 2000).

Two deep diamond holes, SPD7 and SPD8 were also drilled. SPD7 was drilled beneath the Central Ellesmere pit and intersected 53.8m at 1.97 g/t Au (drill hole abandoned in mineralization) from 382m, while SPD8 was drilled to 450m below Central North intersecting only 2.0m at 0.58 g/t Au on a splay fault some 60m to the east of the Fosterville Fault.

All the RC drill holes used face sample hammers. After 1996, if the sample was unable to be kept dry the hole was finished with an NQ2 diamond tail.

Open hole down-hole surveys were completed on all drill holes at 30m intervals except for a small number of holes, which collapsed before a survey instrument could be lowered down the hole. The vast majority

of holes were drilled from the west towards the east, generally intersecting mineralization at 50° to 80°. Most sections include at least one hole drilled towards the west as a check on the geological interpretation.

The Fosterville Mine Surveyor used a Total Station Instrument to run a complete digital survey of the topography for any areas where drilling and later resource evaluation was planned to take place. Spot heights were measured at suitable intervals where easting, northing and RL are noted. Closer spaced measurements were taken around noticeable highs and lows in the topography. These spot heights were then triangulated using Minsurv software to construct a Digital Terrain Model (DTM). This DTM was used in all resource/reserve estimates at Fosterville. The spot heights were measured to an accuracy of 1.0cm at spacing of approximately two meters. Hole collars were picked up using the Total Station Instrument.

6.2.3 2001-2017 DRILLING

The current drilling program which commenced in July 2001 is focused largely on the Fosterville Fault Zone and is ongoing.

The drilling programs at Fosterville have essentially been continuous from 2001 to present. Most of the surface drilling was conducted by Silver City Drilling Pty Ltd until November 2009 and thereafter by Macquarie Drilling (drilling contractor). Deepcore Pty Ltd and Swick Mining Services Ltd have provided underground diamond drilling services from 2009 with Deepcore also completing diamond holes from surface during this period.

The majority of drilling carried out in this period has been diamond drilling with a limited amount of RC being undertaken, as well as a few AC holes. RC has been utilized to some extent for pre-collars (with diamond tails) this was predominantly undertaken for SPD holes up until 2008. The diamond tails commenced at least 20m before the Fosterville Fault so that all mineralization was intersected by the diamond tail. The RC pre-collars were generally 150m to 200m deep and the diamond drilling was double tube wireline drilling. In addition, navi or wedge drilling was undertaken from parent holes where holes depths are great, and since 2008 many of SPD prefixed holes were drilled using diamond drilling exclusively, HQ collars with NQ2 tails.

Collar locations are surveyed using the same technique as prior to 2001 (see Section 6.2.2 above).

The direction of the RC pre-collars was controlled to some degree by the use of a stabilizer rod, the relative size of the bit compared to the rods and by the weight on the hammer. Drill holes shallower than 70° tended to lift. Drill holes steeper than 75° tended to drop. With experience, deviation in the pre-collar was restricted to less than 1° in 10m. Navigational drilling was occasionally used to keep holes on target where the RC pre-collar deviated significantly. Down-hole surveys were carried out using a single shot Eastman camera (up until 2007) and then using Reflex™ or Pathfinder™ cameras (from 2007 onwards) at 25m intervals in the pre-collars (every 50m inside the rods as the hole was drilled and the intervening 25m intervals open hole after the pre-collar was completed) and at 30m intervals in the diamond tails. As a check on the validity of the single shot surveys six holes were surveyed at 6m intervals using an EMS

(electronic multi-shot) tool. Between 2010 and 2016 holes greater than 130m have been surveyed at every 6m utilizing the EMS tool on hole completion.

The drill hole traces were calculated using the 'semi tangent' de-surveying algorithm on 10m intervals in MinePlan™ software. This method is suitable for deeper RC holes, which have more than two down-hole surveys. The 'fit-spine' algorithm was previously used because it dealt well with RC holes that have only one or two surveys near the top of the hole and also because this algorithm was used historically at Fosterville.

The NQ2 diamond core has generally been drilled using either six-meter core barrels for surface drill rigs or three-meter core barrels for underground drill rigs. A core orientation mark is attempted for each three meter run predominantly utilizing an electronic core orientation tool, such as the reflex orientation tool (spear and mechanical devices has also been utilized in the past). An Ace Core Tool is employed to take structural measurements, where the Ace Core Tool cannot be utilized, structural measurements are taken from an inferred reference plane (regional cleavage) or are un-oriented.

Sieved chips from the RC pre-collars were logged in two meter intervals for lithology, weathering, alteration, percentage quartz, color and recovery. The logging information in the past has been recorded into the database via offline logging using hand held IPAQ computers and uploaded to the database. Since 2008 geological information has been entered into laptops running acQuire™ offline logging software, which supports increased validation options prior to uploading into the SQL Fosterville geology database.

The diamond core is transported to the core shed where the core is washed, oriented, geologically logged, recovery and RQD measured, marked up for sampling, digitally photographed, sampled and dispatched. Geotechnical logging occurs on an as needs basis, but is completed for each resource definition drill hole. The remaining core is stored on site either in the core farm behind the core shed or at a storage facility at the backfilled portion of the Falcon pit. The geological logging involves direct digital recording of observations on sediment grain size, lithology, planar and linear structural observations (as alpha, beta and gamma measurements), mineralization, alteration and quartz veining and identification of sample locations. Logging is recorded in the database by utilizing online acQuire™ logging software with data validation, the usual automated error checking and a list of samples printed as a cutting sheet. True dip and dip direction values for each collected structural measurement is calculated using a stored procedure in acQuire™ software. Since 2008 logged data has been verified through viewing of the data using MinePlan™ 3D software.

The strategy for underground diamond drilling is to infill the exploration drilling intercepts (100m sections) to a notional 25m x 25m grid spacing (or tighter if required) prior to the mining of underground development. Underground diamond drill core samples used in the Phoenix and Harrier resource estimations are predominately NQ2 in diameter.

The change in drilling methods to largely oriented diamond core, intensive re-mapping of old oxide pits and a change in logging methods to collect detailed grain size data allowing sequence stratigraphic analysis allowed much more detailed and robust geological models. These geological models allowed a

better understanding of the controls on gold mineralization, which in turn resulted in the better targeting and more efficient use of drilling.

The post-2001 exploration resulted in the discovery and definition of the Phoenix, Wirrawilla and Farley's deep zones. In addition, the Falcon, Ellesmere and Harrier Zones were extended. Modest additions to resources were made at the Daley's Hill, Sharkey's and Hunts Deposits.

The 2008 surface diamond drilling program tested the characteristics and extent of resources of the Wirrawilla (renamed as Harrier UG) and Phoenix resource areas. Thirty-six holes totaling 16,253m were completed with 86% completed in Harrier UG Area and 14% in the Phoenix Area.

The program resulted in the discovery of extensions to three north striking, west-dipping areas of gold mineralization within the Harrier UG Area: The Osprey, Raptor, and Harrier Base Fault Zones. The zones are situated 1.5km south of the current Phoenix Mineralized Zone and are interpreted to be at a higher stratigraphic level, but down-plunge of the Harrier open-pit mineralized zone, which was mined in 2007.

The 2009 exploration program consisted of an additional 12,179m of drilling that served as the basis for an underground resource estimate in the Harrier Area using a 3.0 g/t Au lower cut-off.

Additional exploration drilling in 2009 consisted of 6,633m of drilling on Phoenix Extension, 1,051m on other targets in the Fosterville Mining License as well as 1,695m in ten holes on the Myrtle Creek Prospect (EL3539) located south of the FGM.

The 2010 exploration program consisted of 49,980m of drilling; the majority of which was directed towards the Harrier (47%) and Phoenix (30%) Zones, to both extend zones and reduce drill spacing to upgrade the confidence in the resources prior to reserve studies. The balance of the exploration was directed to other targets on the Mining License and a small amount of drilling was undertaken on the exploration tenements surrounding the Mining License.

The 2011 exploration program consisted of 17,032m of drilling directed towards thirteen different target areas on the Mining Lease, some of which are push backs on existing open pits and others are underground mining target areas.

Between 2012 and 2016 exploration has predominantly focused on diamond drilling in close proximity to current mining, with programs based on extending known extents of gold mineralization. This period saw approximately 155,021m of exploration drilling occur in the Robbin's Hill, Falcon North, Harrier, Phoenix, Lower Phoenix, Lower Phoenix Footwall, Fosterville Splays, Eagle and Kestrel areas.

The nominal progression of drilling is from initial surface exploration, through 100m by 50m and then 50m by 50m. Near surface mineralization is then further in-filled to 25m by 25m to allow pit design. Open pit grade control drilling consists of RC holes drilled 5m apart on 10m-12.5m sections to a maximum depth of 30m. However, for the O'Dwyer's South cutback, Harrier pit cutback and the deepening of John's pit, two 2.5m riffle split samples of 5m deep blast holes were used for grade control purposes. The open pit drilling, sampling and logging methods are the same as exploration RC drilling. Underground mineralization is in-filled to 25m by 25m or tighter if required by underground diamond holes.

Strike drives are face sampled each round (~3m) and sludge hole sampled on 6m Northings in a ring pattern with holes selected by geologists after review of current geological information. The selection criteria for sludge sampling are based on either the need for providing diamond drill data support or the need for additional sampling in data poor zones. No face sampling or sludge hole sampling is used in resource grade estimation, however, the information is considered for domain boundary placements.

Based on drilling results, geological interpretations are made in three dimensional surfaces to form a geological model. The geological model is utilized to interpret the mineralized zones, with geological solids subsequently generated from these interpretations. Further detailed discussion on this process is contained in Section 14 under each of the modeled areas.

During 2016, the Phoenix decline was re-directed to the hangingwall of the Fosterville Footwall Anticline and a new drill drive (P4190 DD) from a hangingwall location was completed. 2017 saw a second drill drive created (Harrier Exploration Drill Drive) for drilling primarily targeting the Swan and the Lower Phoenix (Benu) faults. The Audax (Eagle) was also drilled during this time from Central Decline stockpiles with secondary targeting into the Swan also occurring. The drill fleet was split between these main areas and the fleet was extended to handle the multiple east and west-dipping mineralized targets requiring drilling.

During Q1 in 2017 underground drilling at Fosterville Gold Mine was transitioned from being carried out by Deepcore Pty Ltd to a new drilling contractor, Swick Mining Services Operations Ltd. By the end of 2017, 433 holes collared from underground locations were completed for a total of 104,083 meters. In addition, there were 52 growth exploration holes collared from surface with a total of 32,899m, including 12 in the Northern Phoenix, 5 in the O'Donnell's line, 1 at O'Dwyer's South, 3 at Goornong South and 31 in the Robbin's Hill area.

During 2017, growth exploration diamond drilling from surface and underground totaled 61,267m in 108 drill holes.

Near Mine Exploration (a defined geological team) focused on targets to replace reserves by extending known ore shoots. These holes targeted areas within MIN5404 and EL3539 including the Eagle, north and south extensions of the Lower Phoenix and Lower Phoenix Footwall, Harrier Upper and Harrier South, O'Dwyer's South, O'Donnell's Line and the Robbin's Hill Areas. Regional exploration outside the MIN5404 region was focused on the developing Goornong South prospect area southwards and following up on IP targets as well extensions of historic resource corridors. Resource definition drilling was focused on infill drilling of both the Phoenix and Harrier. Significant high-grade results were returned from this drilling with several intercepts containing visible gold in the Swan, Eagle, Lower Phoenix Footwall and Harrier Base structures.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The western sub-province of the Paleozoic Lachlan Orogen in Victoria has been divided into three major fault-bounded structural zones: the Stawell, Bendigo, and Melbourne Zones (Figure 7-1; Cayley et al, 2011). These structural zones are dominated by upright chevron-folded Cambro-Ordovician to Devonian turbidite sequences and were progressively intruded by Early Silurian granite plutons in the west, through to Late Devonian granite plutons in the East close to Fosterville (Bierlein & McKnight, 2005; Phillips et al, 2012).

The Fosterville Goldfield is located within the eastern Bendigo Zone, which is bound by the Avoca Fault to the west and the Heathcote Fault Zone to the east (Figure 7-1). The Bendigo Zone contains Ordovician turbidite sequences of sub-greenschist to greenschist metamorphic grade.

Gold mineralization is associated with two main events across the western Lachlan Orogen at ~445Ma and ~380-370Ma, with a possibly another minor event at ~410-400Ma (Phillips et al, 2012). The ~445Ma event is thought to have involved crustal thickening and the circulation of metamorphic fluids through the crust (Vandenberg et al, 2000) and formed gold deposits at Bendigo, Castlemaine, Maldon and Daylesford. The ~380-370Ma event is restricted largely to the Melbourne and eastern Bendigo Zones and is believed to be responsible for some of the emplacement of late gold-in-veins at the Fosterville Gold Mine (Bierlein & Maher, 2001).

7.2 LOCAL AND PROPERTY GEOLOGY

The Fosterville Goldfield is hosted by Lower Ordovician Lancefieldian (486~488 Ma) turbidites within the Ordovician Castlemaine Group rocks (Figure 7-2 and Figure 7-3). The turbiditic sequence comprises interbedded sandstones, siltstones and shales. The sequence is metamorphosed to sub-greenschist facies. Illite crystallinity studies support this observation with results falling in the range of anchizone to lower epizone (Melling, 2008). Fluid inclusion work indicates that upper parts of the Fosterville Goldfield formed at ~270°C and at 2.6-5.7km crustal levels (Mernagh, 2001) with comparative studies for deeper vein hosted styles yet to be undertaken. The stratigraphic sequence was folded into a set of upright chevron, occasional open style folds, with fold wavelengths up to 350m. During folding, vertical axial planar (in finer sediments) and radial cleavages (sandstones) developed and are best observed in fold hinges. Within the Fosterville area the north-north-west trending Fosterville Fault is strike extensive and dips steeply west.

A fold culmination (dome) exists in the Fosterville Mining License in the Falcon pit area (Figure 7-3), about which a fold plunge reversal occurs. South of the culmination, folds plunge approximately 4° to 8° southwards (Vollgger, 2018), and a large west-dipping fold limb, containing parasitic folds and faulting has been well drilled over a 4km length to as far south as Daley's Hill. Extensive drilling focused on south plunging gold mineralization associated with late brittle west-dipping reverse faulting that offsets syncline

and anticline fold closures. However, it is relatively unknown how extensive the northern fold plunge may be or whether it simply represents a local fold plunge reversal (Vollgger, 2018).

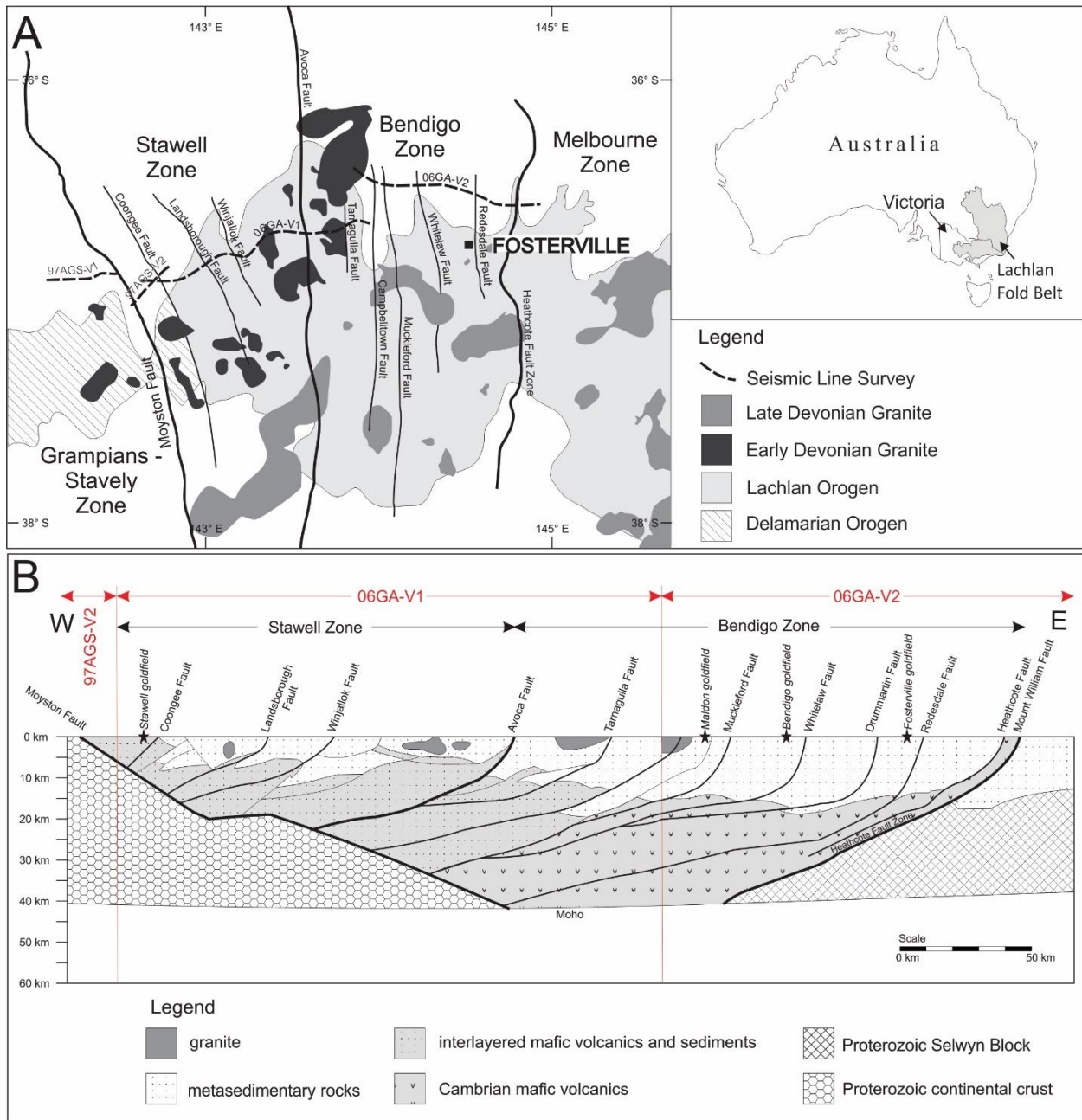


FIGURE 7-1 MAP AND CROSS-SECTION OF THE WESTERN LACHLAN FOLD BELT IN CENTRAL VICTORIA

(a) Distribution of major geologic units and major faults of the Bendigo and Stawell Zones and location of seismic lines. (b) Geological interpretation from seismic surveys. Adapted from Leader & Wilson, 2010.

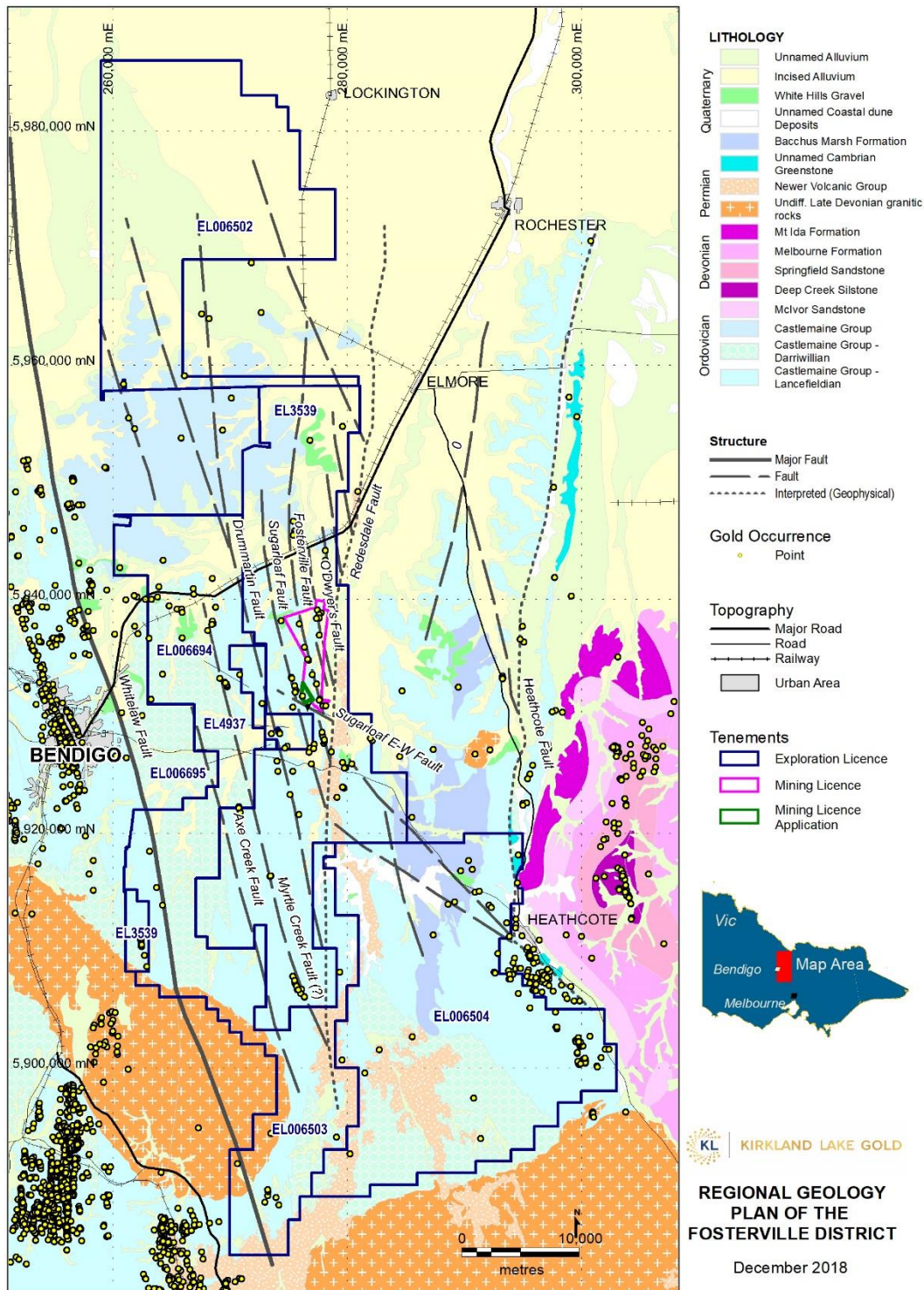


FIGURE 7-2 REGIONAL GEOLOGY PLAN OF THE FOSTERVILLE DISTRICT, SHOWING FOSTERVILLE MINING LICENSES, EXPLORATION LICENSES, OPEN PITS AND HARD ROCK GOLD OCCURRENCES

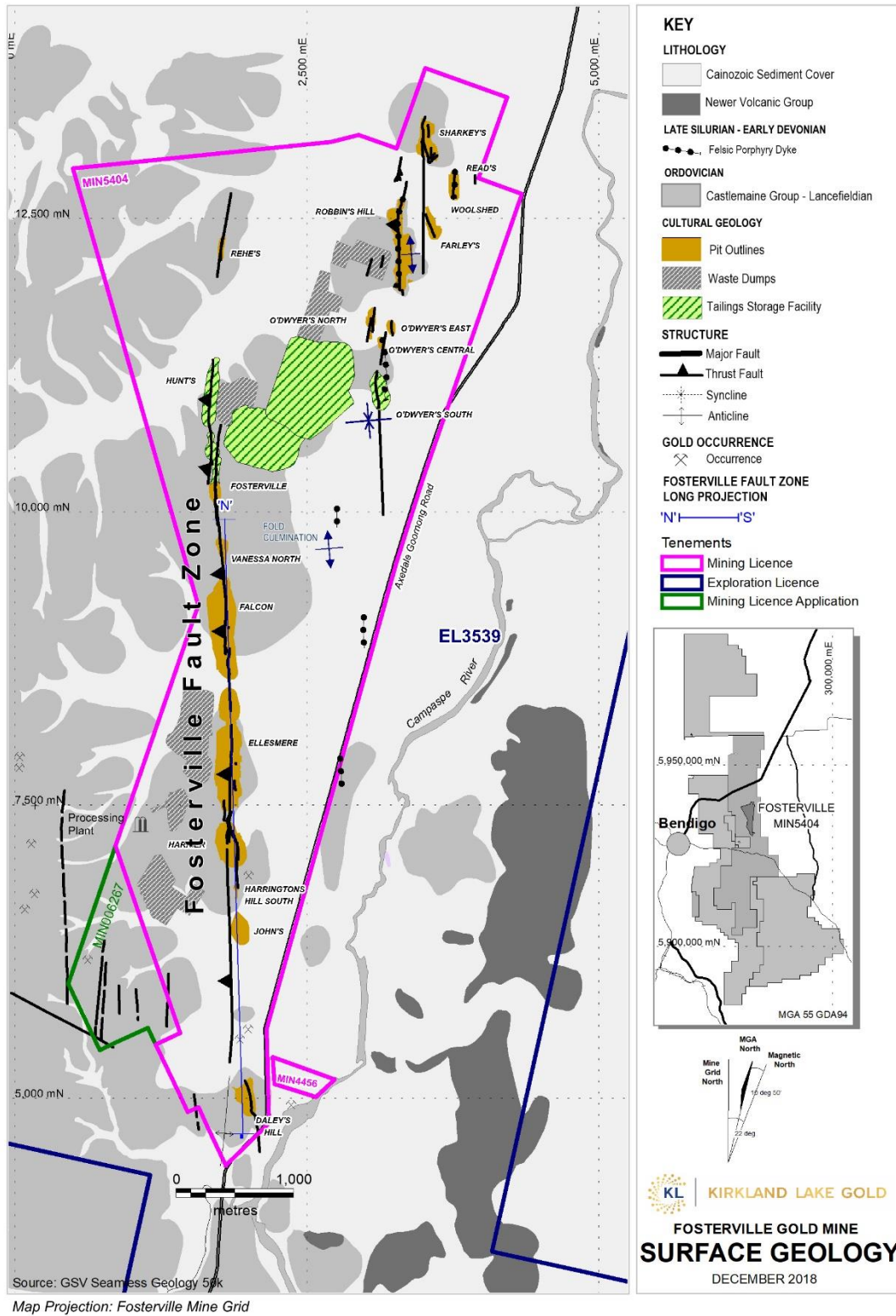


FIGURE 7-3 FOSTERVILLE SURFACE GEOLOGY PLAN SHOWING SURFACE MINING ACTIVITY

In the northern portion of the Mining License, in the Robbin's Hill and O'Dwyer's areas, a number of west-dipping faults occur and parallel the Fosterville Fault. Late Silurian to early Devonian porphyry dykes (Arne et al, 1998) also occur in this area, are up to 10m in width, intrude the stratigraphic sequence, predominantly along anticlinal axial planes (King, 2005 & Reed, 2007a) and postdate all significant faulting. The porphyry dykes are sericite altered and have associated gold mineralization that was sufficient to support several oxide and minor sulfide (O'Dwyer's South) open pits.

Lamprophyre dykes, typically less than 1m in width, intrude along the general Fosterville Fault trend and are unmineralized. These dykes were emplaced in the Middle Jurassic (157-153 Ma; Bierlein et al, 2001) and are of similar age to those that occur at Bendigo.

Erosion of the area followed by Cainozoic Murray Basin sediment valley backfill and weathering has resulted in local clay conglomerate alluvial channels and complete oxidation to about 40m below surface. Immediately below the base of complete oxidation is a 10-15m thick zone of partial oxidation of sulfide minerals. Feldspar destruction and partial carbonate dissolution extends from the base of oxidation to about 150m depths. Approximately 2km to the east of Fosterville, Miocene aged basalt flows of the Newer Volcanic Group mask the Ordovician rocks and Murray Basin Sediments and can be found to have flowed north-south along a palaeochannel of the Campaspe River (Figure 7-2 & Figure 7-3 and evident in magnetic imagery of Figure 6-2).

7.3 SCHEMATIC GEOLOGICAL CROSS SECTION

The present understanding of the faulting is shown on schematic cross sections in Figure 7-4. Pictured is the steep west-dipping Fosterville Fault, which has several en echelon arrays of footwall reverse faults that link across from a western anticline to a syncline in the east. Mineralization is predominantly hosted along faulting that causes discordant bedding-fault relationships.

Most of the lower faults (Hawk through to Kestrel) are thought to exist as bedding parallel LQ veins at depth to the west of their respective footwall anticlines. However, eastwards between footwall and hangingwall anticlines the faults can have concordant (parallel)/discordant (oblique) bedding relationships, and to the east of hangingwall anticlines, the faults shallow in dip and have discordant contacts with adjacent bedding. When certain favorable rheology or stratigraphic units are encountered across the east-dipping limb, conjugate east-dipping structures form, creating zones of greater structural complexity. Further eastwards the single stranded west-dipping faults become an unmineralized zone of distributed faults for 50-100m, before merging into a single fault, approximately 50m west of footwall synclines. East of the footwall syncline the dip of these faults steepens, matching the dip of the footwall bedding. Between footwall and hangingwall synclines, faults have discordant/concordant bedding relationships and to the east of the hangingwall syncline the faults exist as bedding parallel LQ veins, commonly with clay pug on one margin.

The schematic cross section portrays a number of fault segments where gold mineralization occurs and includes examples of areas of fault-bedding discordant relationships, changes in fault dip and localization of mineralization between hangingwall and footwall synclines, and between hangingwall and footwall

anticlines. In particular, the Phoenix Fault System is an important structure at Fosterville for gold mineralization. It has 120 to 150m of reverse offset and as underground mining has progressed to deeper levels, faulting has become more complex. Close to the surface the Phoenix Fault was a relatively narrow west-dipping reverse fault. However, down-plunge the faulting changes to also include mineralized hangingwall splay faulting and west-dipping footwall faults emanating from bedding parallel LQ veins.

Other faults at structurally higher positions have comparable fault offset and are well mineralized. These include the Harrier and Osprey Faults (exposed at Harrier Pit) that are footwall splays of the Fosterville Fault. The faults have over 200m of combined reverse movement, and are mined at the southern end of the Mining License.

Where wall rocks are faulted and brecciated, fractures are healed by quartz-carbonate veining and commonly have arsenopyrite and pyrite disseminated in the wall rock up to 50cm from the veins. The wall rock proximal to faults is also sericitized, sometimes with visually subtle alteration, and has similar spatial extents to the gross disseminated sulfide distribution. Bedded parallel faults exist as LQ veins and are thought to have formed during ductile deformation. As such they pre-date mineralizing events and are generally poorly mineralized.

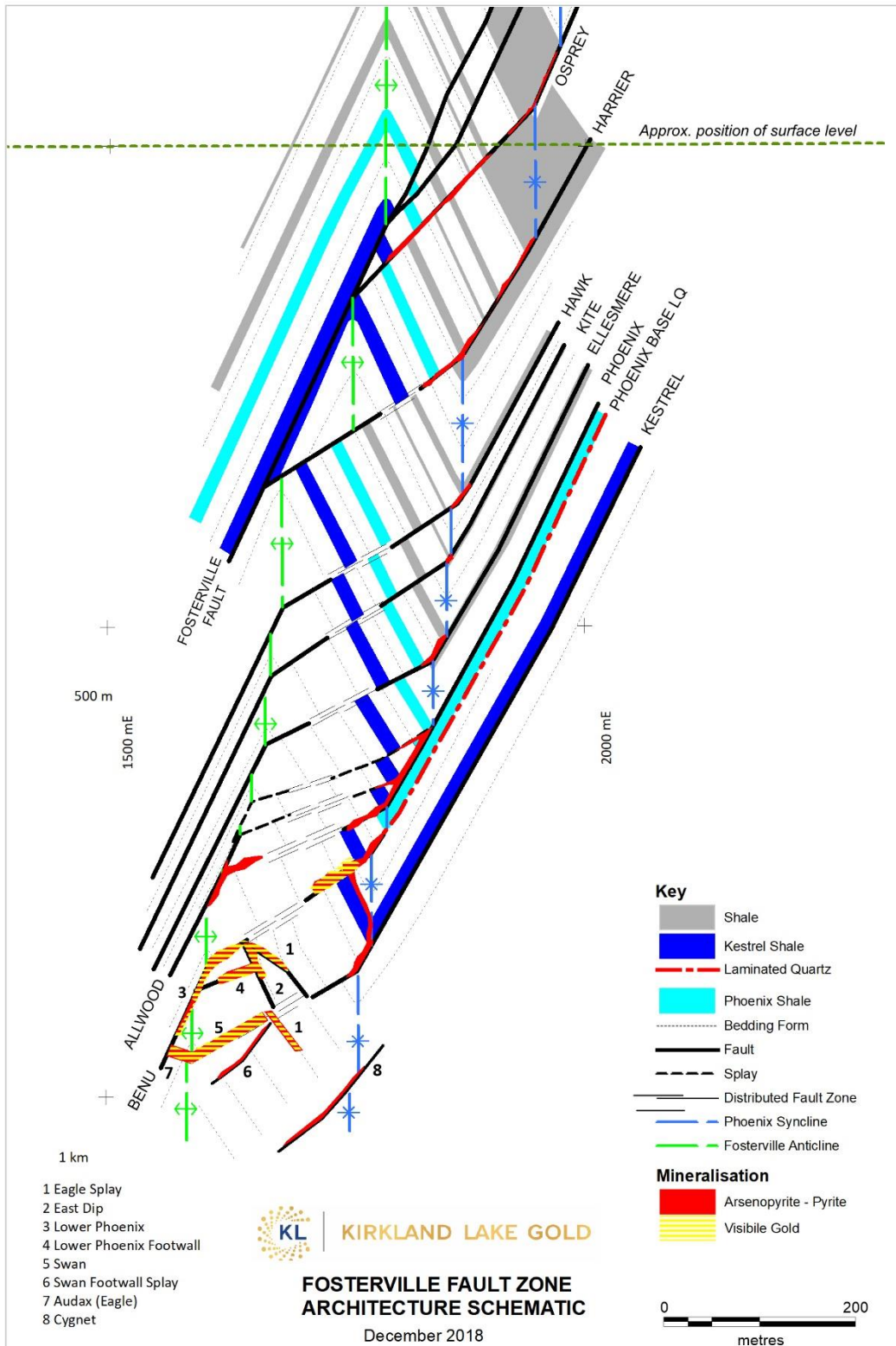


FIGURE 7-4

FOSTERVILLE FAULT ZONE SCHEMATIC CROSS SECTION LOOKING NORTH

7.4 MINERALIZATION

Mineralization at FGM occurs mainly as gold atoms trapped within the crystal lattice of disseminated arsenopyrite and pyrite (sulfides). These sulfide minerals precipitate in the wall rock sediments as selvage alteration proximal to veins that penetrate the host rock.

Arsenopyrite crystals occur as 0.05-6mm long acicular needles in random orientations. The disseminated pyrite associated with gold mineralization occurs as crystalline pyritohedrons 0.1-2mm in size. Arsenopyrite is most important for the sulfide hosted gold mineralization (Roberts et al, 2003). Sulfide mineralization up to several meters occurs as selvage alteration proximal to quartz-carbonate veining, and can be pervasive for hundreds of meters.

Visible gold has been observed in all areas of the underground workings at FGM and in some open cut pits within the MIN5404 lease.

Visible gold is observed within quartz-carbonate veins, with a noticeable increase in recent years as underground mining and diamond drilling has advanced deeper. Visible gold particles are predominantly specks (up to 3mm), however more rarely they can be > 5mm. The width of quartz-carbonate veining that contain visible gold is variable, with widths ranging from a few millimeters to several meters (true thickness). The veins usually have incomplete infill with druse quartz within those voids. Visible gold can be found as specks in narrow linear trends as well as isolated specks without a clear trend.

Alteration mineralogy associated with veins that host visible gold includes quartz - carbonate (ankerite), with minor occurrences of fibrous boulangerite ($Pb_5Sb_4S_{11}$) as inclusions in euhedral quartz or as fibrous growths within void spaces. Clear to brown colored sphalerite (ZnS_2) is also occasionally observed within veins. Selvage sulfide alteration can be present, proximal to veins hosting visible gold.

The visible gold has a spatial association with stibnite (Sb_2S_3). However, the stibnite mineralization can occur without visible gold (Henderson, 2014). The rationale for the one-way correlation is likely due to the stibnite mineralization occurring in different events, but utilizing the same structurally favorable locations. Stibnite mineralization is observed in all areas of the underground workings at FGM and has historically/previously been observed in some open cut pits within MIN5404.

7.5 CONTROLS ON GOLD MINERALIZATION

At Fosterville sulfide gold mineralization is structurally controlled and localized by the discordant relationship between bedding and faulting (Figure 7-4). Gold mineralization is more continuous and of higher grades in fault zones where east-dipping beds occur adjacent to west-dipping footwall beds across faulting, such as along the Phoenix Fault (Boucher et al, 2008a), i.e.: discordant-concordant structural setting (locally termed oblique/parallel or parallel/oblique). Mineralized shoots are typically 4-15m thick, 50m-190m up/down-dip and 300-2,000m+ down-plunge (Figure 7-5). Sulfide gold grades are relatively smoothly distributed with both extremely high values and extremely low values being uncommon.

There are four geometric bedding-fault relationships present at Fosterville, primarily created through the interaction of west-dipping faulting that links across fold closures, from an anticline in the west to a syncline

in the east. The four bedding relationships across a fault are locally referred to as parallel/parallel, parallel/oblique, oblique/oblique and oblique/parallel structural settings.

The controls on visible gold mineralization are less well tested compared with sulfide-hosted gold, however, general observations suggest that visible gold is focused along reactivated faults where sulfide hosted gold mineralization is located. Visible gold is generally found in higher concentrations on faulting proximal to anticline hinges. The Eagle Zone has a fault (Audax Fault) with an orientation that is northeast striking, and moderately southeast dipping, which is significantly different to all other mineralized faults at FGM. It would appear that this orientation has a strong control on visible gold mineralization, however, this is yet to be tested in other areas within FGM. The Swan Fault also moderately dipping (45-60°) but to the southwest at an oblique angle to the well-known Fosterville Fault Zone faults such as Lower Phoenix (Benu) and Kestrel. These noticeably different fault orientations around the Swan Zone mineralization are likely to strongly influence the degree of observed visible gold.

7.6 FOSTERVILLE FAULT ZONE

The Fosterville Fault Area represents a near-linear trend of gold mineralization within MIN5404 extending from Daley's Hill in the south to Rehe's pit in the north (Figure 7-3).

The accommodation of strain between the syncline and anticline caused by east-west transpression resulted in a complex fault network with predominant west dipping faults. East dipping faulting occurs and interacts with west dipping faulting. Most faults generally strike north-northwest, with some notable exceptions (e.g.: Audax and Swan).

Fluids utilizing these pathways were not constrained to one pathway as seen in the Phoenix and Falcon Zones, but used a diverse network including fold-hinges, sedimentary units and contacts as well as east- and west-dipping faults. There also appears to be an element of fluid pressurization injecting up-plunge, seeking lower pressure environments.

This fluid pressurization appears to be strongly coincident with the increase in quartz-stibnite-coarse gold veining at depth. These veins can be several meters thick, often show stylolitic vein textures, and can be brecciated due to an element of hydraulic fracturing, which acts as a trap. This occurs in the Eagle / Lower Phoenix interaction zone around the Fosterville Anticline.

Along the mineralized trend at approximately 8800mN (Falcon Pit area), a fold culmination (dome) occurs. The culmination causes a plunge reversal to the folding where north of the culmination, the footwall syncline and mineralization shoots plunge gently to the north. Similarly, south of the culmination, the folds plunges ~10° towards the south. Mineralized ore shoots plunge steeper than folds plunging approximately 20° southwards controlled by the intersection lineation between steeply west dipping faults and oblique linkage faults.

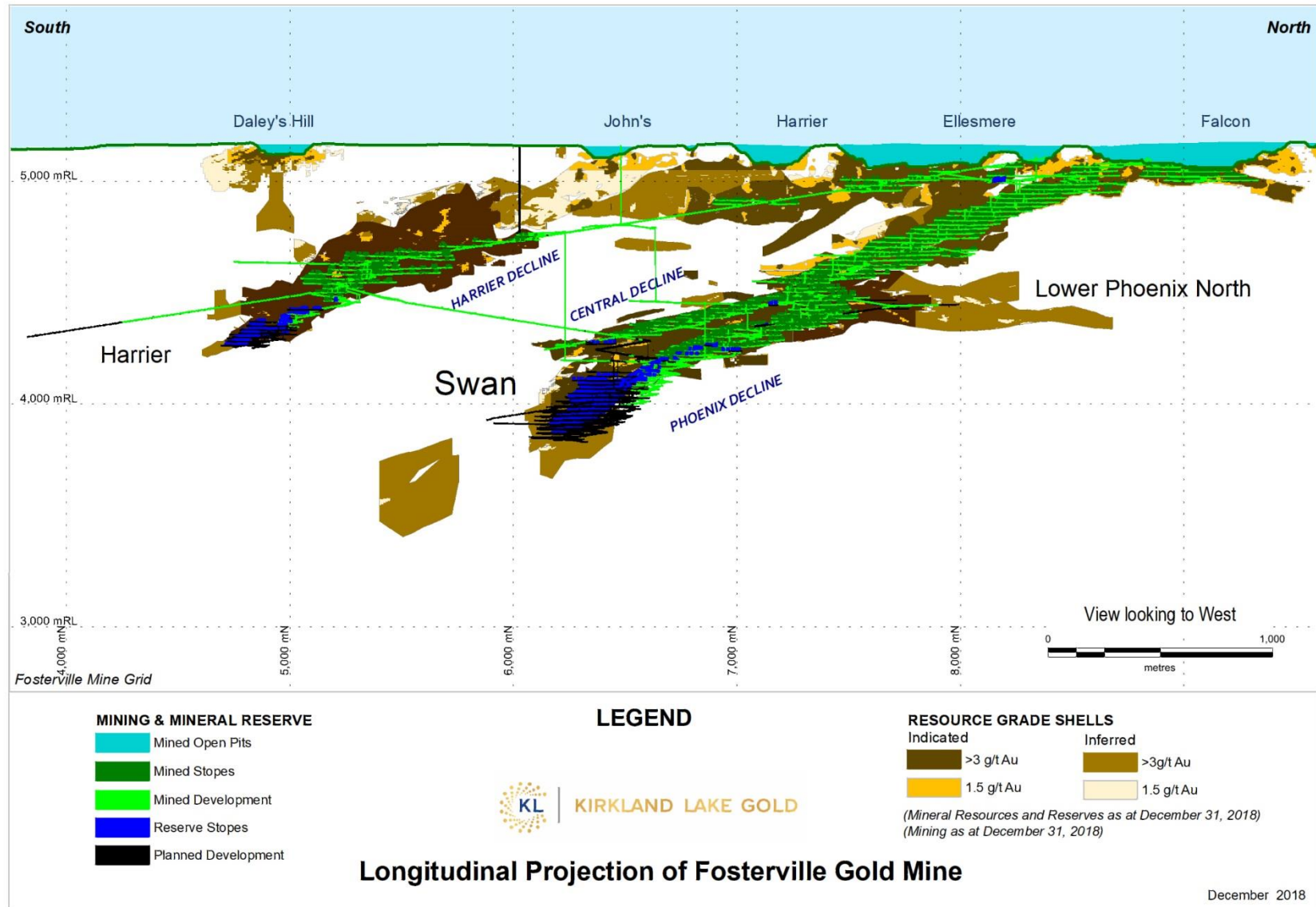


FIGURE 7-5 FOSTERVILLE FAULT ZONE LONGITUDINAL PROJECTION SHOWING RESOURCES, RESERVES, MINING AND TARGET AREAS

7.6.1 DOMAINS

Based on observed variations in geology, orientation, variography, geochemistry, statistics and spatial location within FGM mineralized zones are divided into 67 distinct domains (Table 7-1).

Domains are created due to the identification of a unique set of parameters that are coincident with economic mineralization traced through a number of drilled sections. Unique parameters may include the presence of a defining structure (Fosterville Fault, Phoenix Fault, Benu Fault, etc.), consistent orientation along strike and dip, mineralization style (disseminated sulfide, massive stibnite or visible gold), spatial location or geological setting (hinge, oblique/oblique, parallel/parallel, parallel/oblique, oblique/parallel, etc.). Surrounding all the mineralized domains is a waste domain that was used to generate the waste gold grades in the immediate vicinity of the mineralization.

TABLE 7-1 MODEL DOMAINS, CODES AND ASSIGNED MINERALIZED ZONES

Domain Classification			Total Undepleted Mineralization (Ounces above 3g/t cut-off)
Domain Name	Domain Code	Reserve Zone	
Fosterville HG	01	No reserves	117,500
Fosterville LG	02	No reserves	122,600
Phoenix HG	03	No reserves	694,100
Phoenix LG	04	No reserves	22,900
Splay HG	05	No reserves	395,800
Splay LG	06	Robin	288,100
Kite	07	No reserves	83,300
Allwood	08	No reserves	67,100
Vertical	09	No reserves	170,700
Vulture	10	Central	227,600
Harrier OP	11	Central	27,400
Phoenix Base	12	No reserves	202,100
Benu	13	Phoenix	374,400
Benu FW	14	Lower Phoenix	45,300
Kestrel	15	Lower Phoenix/Phoenix	25,800
Bedded East	16	Kestrel	175,700
Shallow East Dippers	17	Kestrel	21,600
East Dippers	18	Phoenix	152,700
Phoenix Base S	19	Central	12,700
Eagle	20	Eagle	12,700
Allwood East	21	Phoenix	125,800
Audax FW	22	Eagle	9,700
Phoenix Base FW	23	Central	38,500
Audax Sulfide	24	Eagle	25,000

Domain Classification			Total Undepleted Mineralization (Ounces above 3g/t cut-off)
Domain Name	Domain Code	Reserve Zone	
Swan Sulfide	25	Swan	238,400
Swan Upper	26	No reserve	3,000
West Dipping Splays	27	Eagle	178,600
Griffon	28	Phoenix	19,300
N Dipper	29	Swan	15,200
Osprey	30	Harrier	200,700
Osprey Base	31	No reserve	11,700
Osprey Link	32	No reserve	26,300
Wagon Wheel	33	No reserve	118,900
Harrier	34	No reserve	311,900
Osprey Splays	35	No reserve	21,900
Harrier Base	36	Harrier	150,100
Harrier Link	37	Harrier	25,200
Harrier HW	38	Harrier	85,000
Harrier Splay	39	Harrier	101,800
unnamed	40	No reserve	35,600
Rubin	41	No reserve	59,500
Dyke	42	No reserve	12,000
Syncline Fault	43	No reserve	26,900
Curie	44	No reserve	344,500
unnamed	45	No reserve	10,500
unnamed	46	No reserve	1,000
Curie HW	47	No reserve	13,200
Smith	48	No reserve	1,200
unnamed	49	No reserve	1,100
unnamed	50	No reserve	14,500
East Dipper HG	51	No reserve	7,200
Curie HW1	52	No reserve	10,300
unnamed	53	No reserve	4,600
unnamed	54	No reserve	5,700
unnamed	55	No reserve	18,200
Franklin	56	No reserve	38,100
Linker	57	No reserve	33,000
Harrier E Dipper	58	No reserve	1,600
Audax	59	Eagle	279,400
Benu W1	60	No reserve	41,700

Domain Classification			Total Undepleted Mineralization (Ounces above 3g/t cut-off)
Domain Name	Domain Code	Reserve Zone	
Swan	61	Swan	2,677,400
Main Flt	62	No reserve	N/A
Syncline	63	No reserve	N/A
West Area	64	No reserve	N/A
Campaspe	65	No reserve	N/A
Sparrowhawk	66	No reserve	4,500
Shallow North Dippers	67	No reserve	2,700

Swan & Eagle (Audax)

The Swan Mineralized Zone (Figure 7-6) is situated within the Lower Phoenix System below the 4300mRL and is genetically linked to the network of hydraulically fractured quartz veins in the Lower Phoenix. The southwest-dipping Swan Fault exists as an oblique structure cross-cutting the eastern limb of the anticline (Figure 7-4) and is bounded by the Eagle (Audax) Fault down-dip and the Kestrel Syncline at its upper margin. Unlike the significant west-dipping faults such as the Fosterville Fault that follow stratigraphic units the Swan Fault cross cuts stratigraphic units, striking approximately 150° (mine grid). This geometry sees the structure splay off the Lower Phoenix (Benu) and migrate from the Lower Phoenix Anticline in the north towards the Kestrel Syncline in the south. More significantly, the Swan Fault exhibits a possible rotational displacement which increases to the south. This suggests the Swan represents a potential short-lived late-stage accommodation structure within the Lower Phoenix System.

The Swan Fault is characterized by a massive to brecciated 1-3m thick quartz-dominant vein with clearly defined laminated margins. There are various observed vein textures within the Swan structure including, unique spotted stibnite and visible gold within quartz, zones of brecciation, country rock/stibnite laminations and stibnitic textures (particularly concentrated on vein margins) with concentrated trends of visible gold, vugs containing euhedral crystalline quartz (+/- sulfides and visible gold), sugary crypto crystalline quartz textures and massive quartz zones containing specs and slugs of visible gold. On its periphery there is a low-grade selvage of sulfide dominated gold mineralization, which can be up to 2m in width. The Swan offsets numerous bedded geological packages such as the Pelican East LQ and there appears to be a grade contrast on the Swan Fault as the units pass from the hangingwall to the footwall. This translates to the upper RL elevations of the Swan Fault being of a lower grade gold tenor than the currently defined lower elevations.

The Swan represents the highest grade visible gold hosted structure discovered to date within the Fosterville goldfield and continues to exhibit consistent, very high-gold grades.

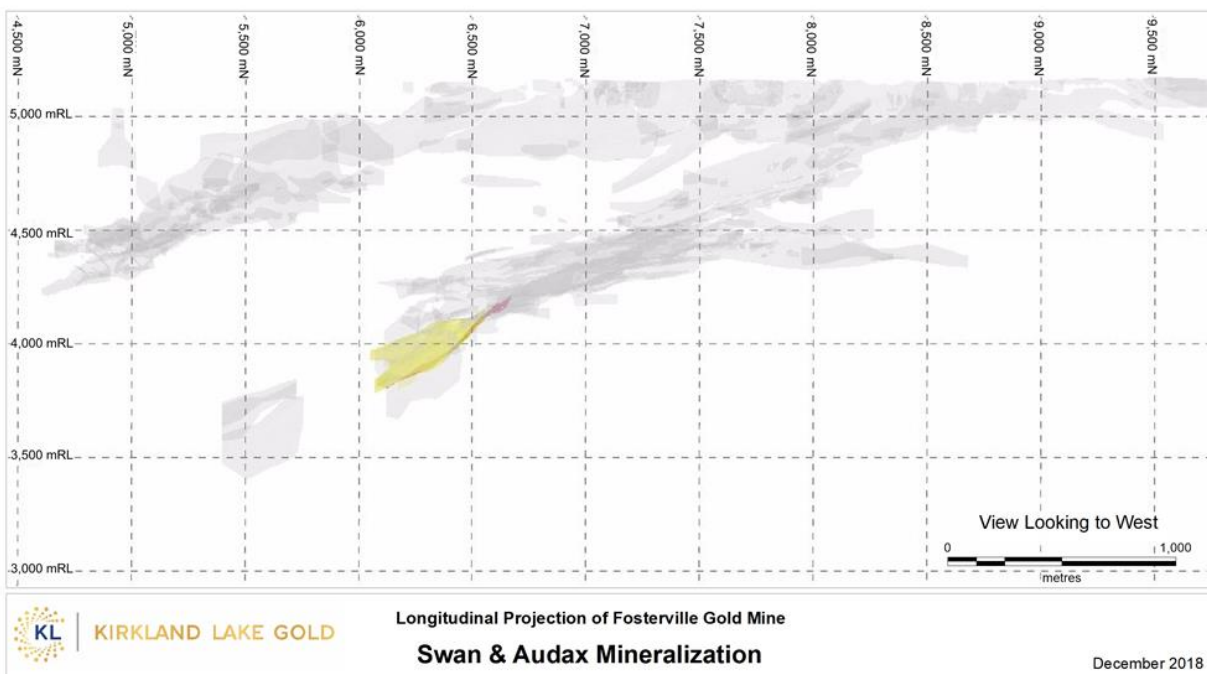


FIGURE 7-6 LONGITUDINAL PROJECTION OF THE SWAN (YELLOW) AND AUDAX (PINK) MINERALIZED ZONES. GRAY ARE ALL OTHER DOMAINS.

Harrier Base

The Harrier Base domain (Figure 7-7) is one of several domains that are located within the Harrier system.

The Harrier System is interpreted to have developed as reverse thrust faulting progressed up the Fosterville Fault reaching the anticline, refracting and developing a complex system of splay faults that link across to the eastern syncline hinge. Fault propagation continues across east-dipping interbedded sandstone and shale beds before movement conformed into the large Harrier Shale package. Movement into the Eastern Syncline and Harrier Shale package develops several minor hinge offsets along early LQ veins that create localized zones of oblique/parallel mineralization.

The Harrier Shale package proximal to the ore body has been estimated to be ~70m in thickness with several LQ veins throughout the succession. Major LQs were correlated along strike and structurally wireframed to create the Harrier Base and Harrier Upper Faults. The total displacement over the Harrier suite of faults is about 120m.

The system has an overall plunge of 25° and consists of five distinct domains including the Harrier, Harrier Base, Harrier Link, Harrier Splay and Osprey.

Mineralization within the Harrier Zone consists of primary sulfides including arsenopyrite and pyrite with the area having only localized amounts of stibnite. The sulfides are disseminated into the host sandstone and shale packages around strongly faulted and fractured areas. Localized and uncommon stibnite mineralization occurs as vein infill.

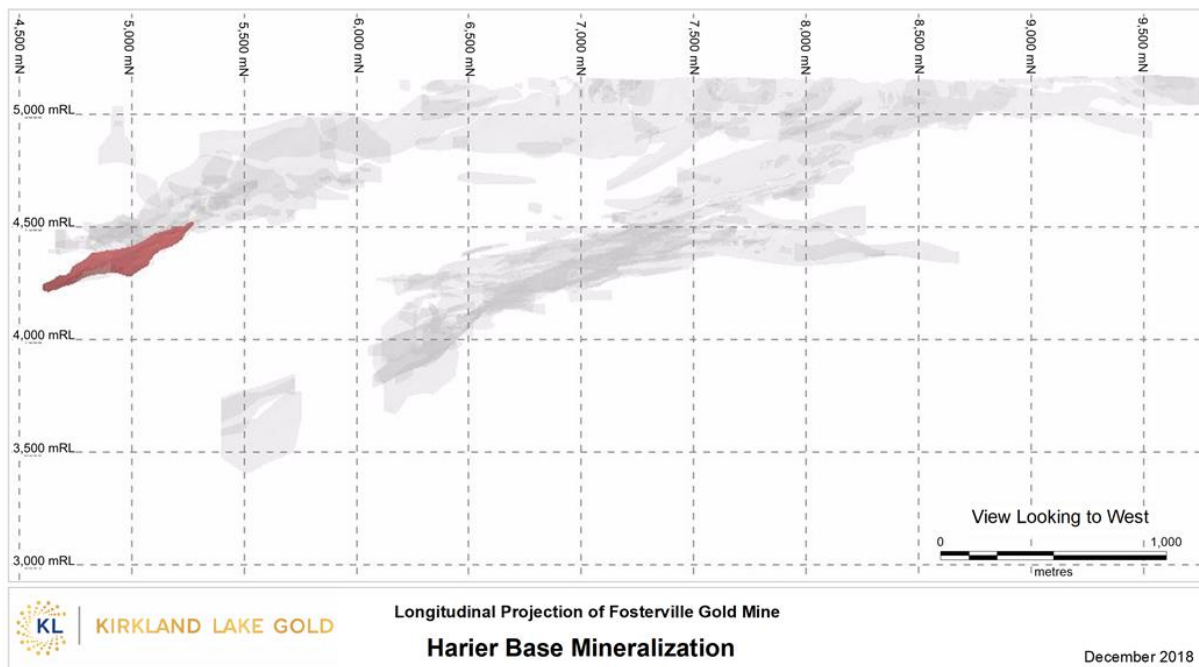


FIGURE 7-7 LONGITUDINAL PROJECTION OF THE HARRIER BASE (RED) MINERALIZED ZONES. GRAY ARE ALL OTHER DOMAINS.

7.7 ROBBIN'S HILL AREA

The O'Dwyer's Fault Zone passes through the Robbin's Hill Area (Figure 7-3), and is a trend that runs parallel with, and 1.5 km to the east of the Fosterville Fault.

7.7.1 GEOLOGICAL OVERVIEW

Robbin's Hill structural architecture is similar to the Fosterville system, consisting of folded turbidite sequences and major NNW trending structures resulting from E-W transpression (Figure 7-9). A number of major NNW-trending structures have been identified at Robbins Hill, including the recently drilled Curie and Rubin faults. These reverse faults are post-folding and are interpreted to offset fold hinges at Robbin's Hill creating ideal structural zones for gold precipitation. The extent of defined mineralization on the Curie Fault, which to date hosts the most significant mineralization at Robbins Hill is illustrated in Figure 7-8.

Major sulfide mineralization is concentrated within regions exhibiting dilatational structures (veins and faults). Sulfide mineralization is dominated by pyrite and arsenopyrite but can include trace occurrences of stibnite, galena, sphalerite and chalcopyrite. Visible gold occurs at depth with observations thus far hosted by quartz in the Curie Fault, including several specks <2mm in diameter. Veins in the Curie Fault containing visible gold are dominated by quartz with minor calcite, chlorite, albite, and epidote. Other minerals present that appear to be spatially associated with visible gold mineralization include stibnite and disseminated arsenopyrite-pyrite mineralization in the surrounding host rock. Visible gold is typically associated with laminated textures within the quartz vein.

Low-grade sulfide mineralization (~2 g/t Au) is also homogenously distributed within a felsic dyke seen in the Robbin's Hill pit, where mineralization is generally vertical and found close to the fold hinge(s). Hydrothermal alteration is abundant within mineralized zones including both sericitic and carbonaceous alteration.

Northeast trending unconsolidated Murray Basin clays, sands and gravels overly the Ordovician basement in the northwest and southeast parts of the Robbin's Hill Area.

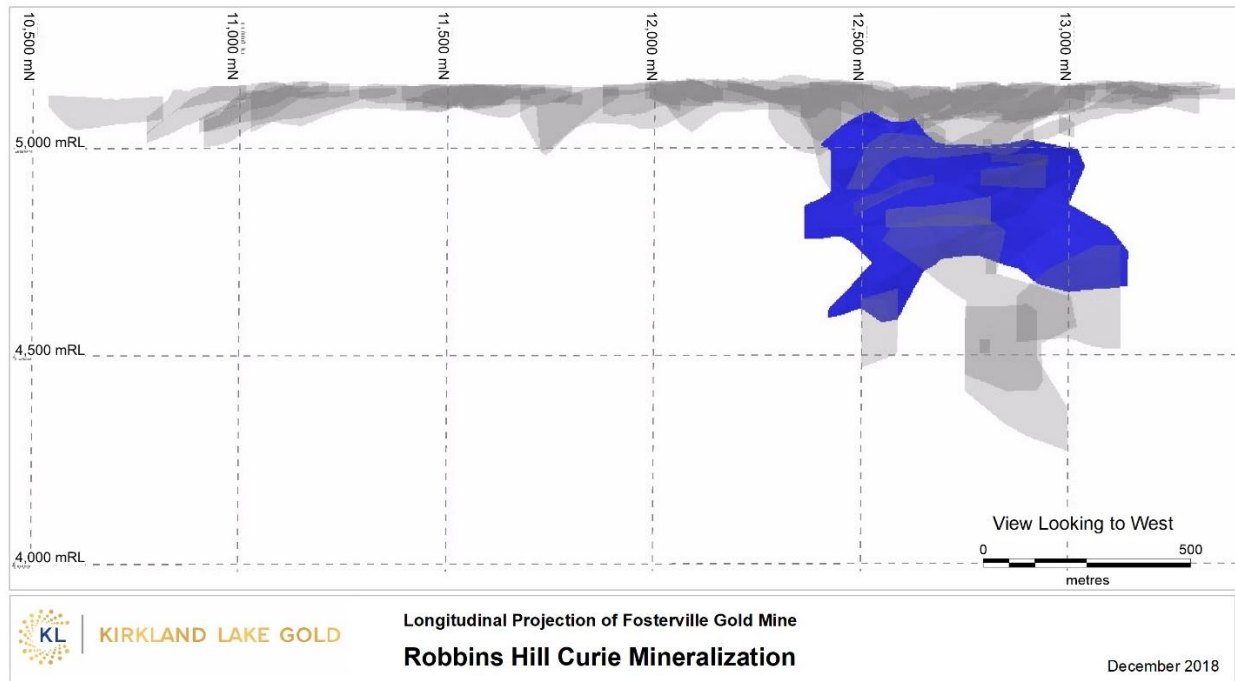


FIGURE 7-8 LONGITUDINAL PROJECTION OF THE CURIE (BLUE) MINERALIZED DOMAIN. GRAY ARE ALL OTHER DOMAINS.

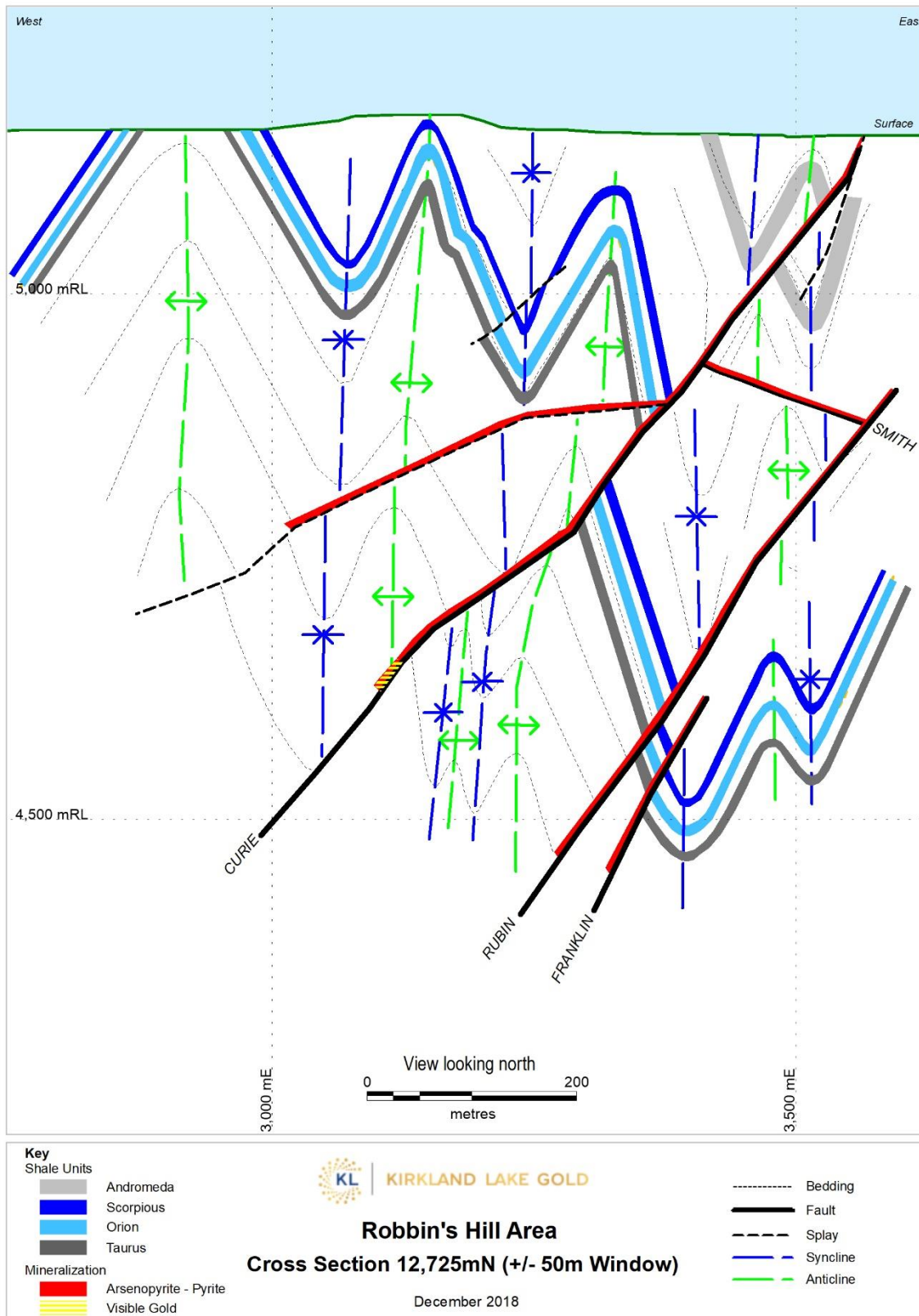


FIGURE 7-9

ROBBIN'S HILL SCHEMATIC CROSS SECTION LOOKING NORTH

8 DEPOSIT TYPES

Sulfide gold mineralization at Fosterville is relatively homogenous with orogenic gold deposits, however with minor variations in the host rock type and structural setting. Deposits similar to Fosterville form a sub-group of orogenic gold deposits that are typified by gold occurring in fine crystals of arsenopyrite and/or pyrite disseminated in country rocks as a selvage to faults or veins. These deposits and classic vein-hosted deposits are effectively end members with many orogenic gold deposits displaying features of both.

Sulfide gold mineralization at Fosterville is controlled by brittle faulting. These brittle faults are stacked, generally steeply west-dipping with reverse movement varying from a few meters to over 150m. In the upper parts the fault system a series of moderately west-dipping reverse splay faults occur in the footwall of the Fosterville Fault. Sulfide gold mineralization occurs as disseminated arsenopyrite and pyrite forming as a selvage to veins in quartz – carbonate veinlet stockwork. The mineralization is structurally controlled with high-grade zones localized by the geometric relationship and interactions between bedding and faulting. Mineralized shoots are typically 4-15m thick, 50m-190m up/down-dip and 300-2,000m+ down-plunge.

Within the oxide zone, there has typically been minor re-mobilization of gold into the immediately surrounding country rocks which has resulted in an approximately 50% increase in the width of mineralization and consequent reduction in gold grade. There is no evidence of a wide spread high-grade supergene zone immediately below the water table. There is no current focus on exploring for additional oxide resources.

Until about 2015 the varied occurrences of primary visible gold had no clear control, with limited observations made mostly in oxide pits at the time they were mined. However, FGM now has many observations of visible gold mineralization in drill core and underground face/wall mapping. From this, FGM is of the view that visible gold mineralization is spatially associated with stibnite and quartz-carbonate veining. This stibnite-quartz-carbonate mineralization occurs as a late stage overprint/replacement/reactivation of existing structures.

The broader concept that was used to explain observations of sulfide gold mineralization at FGM is primarily based on the structural framework and laminated (crack-seal) vein textures which point towards an orogenic gold system. However, the increase in visible gold as well as stibnite mineralization and the overall crosscutting nature of controlling structures and overprinting relationships between sulfide hosted gold and visible gold suggest that FGM might have been influenced by relatively young (Devonian) igneous activity which is well documented and known throughout the Bendigo Zone (e.g. Bierlein & McKnight, 2005).

9 EXPLORATION

9.1 2018 EXPLORATION

During the course of 2018, exploration activities outside of Mining License 5404 included regional soil sampling throughout EL3539, reprocessing of geophysical data and exploratory drilling utilizing diamond and reverse circulation. Details and metrics of non-drilling related exploration programs are tabulated in Table 9-1 below.

TABLE 9-1 2018 REGIONAL EXPLORATION ACTIVITIES SUMMARY

Activity	Location	License	Involved Parties	Metrics
Regional soil geochemistry	EL3539 Region	EL3539, EL4937, MIN5404	KLG, Euro (Field collection), SGS Townsville	2,014 samples (Aqua Regia)

Following initial downhole geophysical trials in diamond holes at Robbin's Hill in 2017, initiative to investigate possible methods for increasing information density while reducing the impact on core logging, downhole wireline logging was tested on a number of RC and diamond holes in 2018.

In total, 11 wireline geophysical surveys were collected on diamond holes at Robbins Hill, Russell's Reef, Lyell and various RC locations. Due to hole conditions, only 3 of these surveys logged through the targeted fault zone at Robbin's Hill. A complete suite of 'tools' were trialed including: Optical & Acoustic Televiewers, Full Waveform Sonic, Magnetic Susceptibility, Dual Induction, Induced Polarization, Spectral Gamma, Natural Gamma and Fluid-Temperature Conductivity probes.

The collected data was processed and interpreted by the sub-contractor Geosensor Wireline Pty. Ltd. Further interactive onsite interpretation sessions involving Fosterville geologists vastly improved interpretations and outcomes from the program.

TABLE 9-2 2018 HOLES LOGGED BY WIRELINE

Project	HOLE-ID	EOH	Logged Depth
RC	LRC010	300.0	300.0
RC	LRC013	300.0	200.0
RC	LRC014	300.0	50.0
Lyell	LYD004	800.0	800.0
Robbin's Hill	RHD295	701.5	519.5
Robbin's Hill	RHD295A	941.5	700.0
Robbin's Hill	RHD298	394.9	270.2
Robbin's Hill	RHD299	383.0	381.7
Robbin's Hill	RHD304	287.5	272.1
Russell's Reef	RRD019A	1175.6	500.0
Russell's Reef	RRD023	602.5	519.6

Significant observations from interpretation of the wireline surveys are:

- Structures interpreted from Televiewer logging are far superior to those made on drill core and can be obtained through zones of significant core loss in diamond and RC drill holes.
- Lithology and alteration interpretations vastly improve the quality and productivity of visual diamond core or RC chip logging.
- The sulfide hosted mineralization styles at Robbins Hill and Russell's Reef have distinct geophysical signatures that have been well defined and are significantly anomalous.
- Continuous, in-situ, high quality geotechnical data can be obtained from these data including: RQD, P&S Wave Velocities, Elastic Moduli and Present Day Stress Field Vectors.

The utilization of wireline technology is expected to give benefit in tying data from regional geophysical surveys into the rock properties of interest.

Another key campaign during 2018 included a regional soil sampling campaign throughout EL3539. 2,014 soil samples were collected around the Sugarloaf and Kimbolton reserves. The delay on completion from 2017 was due to land access needing to be authorized from the appropriate land managers. Samples were collected by Euro Exploration Services contractors under the supervision of FGM geologists. Soil sample locations were pre planned and given to the contractor via electronic media. The samples were located using GPS enabled tablets using Mappt™ software with an accuracy down to 3m. Samples were collected from 10cm-20cm of depth and sieved on site to gain 300g of sub 2mm sample through a stainless steel mesh sieve. Locations were immediately rehabilitated and georeferenced photos were taken to ensure no future issues could be related back to the project.

Once the samples were returned to site, samples were analyzed using an Olympus Vanta M portable XRF housed within a manufacturers supplied radiation shielded unit. The Vanta M gives 38 elements with limits of detection for gold, arsenic and antimony down to 5 ppm. Samples are analyzed through the commercially supplied plastic bag. The data is used for preliminary evaluations of areas of interest before samples are consigned to SGS laboratories.

SGS performs an Aqua Regia digest on a 25g subsample of the soil consignment. Of the 60 elements tested for, 49 elements are analyzed using ICP-MS with 11 elements analyzed with ICP – Optical Emission Spectrometry (OES). Gold is analyzed down to 1 ppb levels.

A significant project conducted in 2018 was to conduct a full suite of petrophysical analyses on wide range of rock types commonly found throughout the region. It was identified that there was a significant knowledge gap as to the physical properties of rocks found in and around the Fosterville deposit. Besides specific gravity measurements, which have been taken intermittently (four per hole, representative of shale and sandstone, both mineralized and unmineralized), there was insufficient rock property data to inform modelling of other geophysical datasets.

It was proposed that the rock property data could be used to inform and constrain geophysical campaigns including Seismic, Gravity, Electromagnetics, Induced Polarization and magnetics. Results were returned late in 2018 with findings summarized in the May Reef, Fosterville, O'Dwyer's South, Russell's Reef, Lyell, Meadow Valley prospects – Technical report no. 18_023 (Bourne, 2018).

10 DRILLING

10.1 2018 DRILLING

During 2018, a total of 153km of diamond drilling and 8,711m of reverse circulation drilling was completed on the Fosterville property. A fleet of 11 to 12 diamond drill rigs and one reverse circulation drill rig were utilized to undertake this drilling.

Drilling was completed from both surface drill positions and underground platforms, with the scope of works varying from close spaced underground grade control to surface regional exploratory drill programs.

Drilling programs undertaken can be broken into 3 main categories

- Mine Geology – Operating and Sustaining Capital Drill Programs
- Near Mine Exploration - Growth Capital, Growth Expensed and Growth Projects Programs
- Regional Exploration (LODE) – Programs

FGM contracts out all diamond drilling and reverse circulation drilling activities with specialised service providers generating drill samples that are transported to onsite processing facilities for logging and sampling by FGM personnel.

A fleet of 7-8 diamond drill rigs were used for underground drilling programs during 2018 with resources servicing Mine Geology and Near Mine Exploration programs. Drill programs were primarily focused on resource definition and exploration of down plunge extensions of the Lower Phoenix and Harrier mineralised systems. Other drill programs were more investigative in nature, exploring for mineralization potential below and adjacent to active mining areas.

Up to 4 diamond drill rigs were used for surface drilling programs during 2018, with programs undertaken within the Mine License and the surrounding Exploration Licenses. Surface drilling is typically undertaken within enclosed acoustic sheds to minimise the risk of community disturbance. A reverse circulation drill rig was also employed to rapidly test geochemical and geophysical anomalies throughout the property.

Drilling services contracts are managed to achieve optimum efficiency levels with minimum loss of core or sample and minimum hole deviation and in a manner consistent with safe drilling practices using modern drilling methods, equipment and skilled and experienced crews.

Underground diamond drilling programs are undertaken from various locations including purpose built drilling platforms with dedicated drill cuddies positioned hangingwall to mineralized zones and from development drives that could be either footwall, hanging wall or within the targeted mineralized zone for infill definition programs. Surface drilling programs are undertaken within the Mine and Exploration Licenses on Crown Land, FGM owned land or private land. Both underground and surface programs have detailed pre-start and decommissioning checklist procedures which consider all safety and environment related matters. FGM rehabilitate all surface drill sites upon completion.

Underground drilling hole lengths drilled vary depending on the classification of drilling with depths ranging from 20m up to 1,200m. Hole dip angles predominately range from -30° to -90° from horizontal,

with some uphole (pump down) drilling required from time to time depending on the position of the drill target in relation to the available drill platform. Surface drill hole dip angles typically range from -45° to -80° . Both hole dips and azimuths are designed to intersect targeted mineralized structures as close as possible to perpendicular to their interpreted trend, with tolerance limits set within the design processes. Underground holes are collared from a surveyed collar point marked up by survey and azimuth aligner tools are used to set the hole azimuth as detailed on instructions provided by the supervising geologist. Surface holes collar positions are set out by GPS and rigs are aligned using an azimuth aligner tool. Downhole Reflex™ single shot surveys are completed at intervals of 30m downhole as a drill hole progresses and geologists monitor the hole deviation to ensure it remains within acceptable tolerances. If holes are deviating from target, correctional actions are taken through changes in downhole configurations or navigational drilling. Once a drillhole is complete, a final downhole survey is completed at close space intervals of 3 to 6m with either a Reflex™ or Deviflex™ Gyro tool. Downhole survey instrumentation is tested / calibrated on a weekly basis.

The diamond drilling provides whole core recovery generally in NQ2 diameter. For deep hole programs HQ diameter core may be used in the upper sections of the hole to navigate through weathered or faulted ground and / or to control hole deviation. BQ diameter core is occasionally used in instances where NQ2 drill strings may be stuck and the hole is progressed to the target zone through the NQ diameter drill string or if a casing wedge is required to hit target. Deep exploration holes also typically employ directional drilling techniques, including navigational drilling and cutting and wedging of daughter holes from parent holes.

Diamond core is generally drilled using three-meter core barrels for surface and underground drill rigs. A core orientation mark is attempted for each three meter run predominantly utilizing an electronic core orientation tool, such as the Reflex™ orientation tool. A core protractor or a Kenometer are employed to take structural measurements, where these tools cannot be utilized, structural measurements are taken from an inferred reference plane (regional cleavage) or are un-oriented.

Diamond drilling contractors are advised through drill instructions from FGM Geologists of anticipated geological conditions down hole and estimated depths of faults and potential mineralization. Experienced drill crews use tailored mud mixing programs, varied head pressure and rotation rates, shorter runs or triple tube as required to maximize core recovery. Core recovery is accurately measured for each run and any core loss is reported to the FGM Geology team via a written report from the driller. The Geologist will review the interval of core loss and make an assessment on whether a hole re-drill or wedge is required. Any material core loss in mineralized zones is followed up with either, another hole from collar, or for deeper holes, a wedge daughter hole to obtain a representative sample of the mineralized zone.

Once holes are completed their collar positions are picked up by survey and the holes are fully grouted.

The diamond core is transported to the core shed where the core is washed, oriented, geologically logged, recovery and RQD measured, marked up for sampling, digitally photographed, sampled and dispatched. Geotechnical logging occurs on exploration and resource extension as well as on resource infill drill holes occurring on an as needs basis, but is completed for each drill hole. The remaining core is stored on site, either in the core farm behind the core shed or at a storage facility at the backfilled portion of the Falcon Pit. The geological logging involves direct digital recording of observations on sediment grain size,

lithology, planar and linear structural observations (as alpha, beta and gamma measurements), mineralization, alteration and quartz veining and identification of sample locations. Logging is recorded in the database by utilizing online acQuire™ logging software with data validation, the usual automated error checking and a list of samples printed as a cutting sheet. True dip and dip direction values for each collected structural measurement are calculated using a stored procedure in acQuire™ software. Logged data is been verified through viewing of the data using MinePlan™ 3D software.

Procedures are in place for the design, implementation, operation, monitoring and decommissioning of drill programs. Procedures are also established for the transport, logging, sampling and dispatch of drill cores and chips. Procedural compliance is monitored to ensure the highest standards of sample collection and recovery are maintained to provide accurate and reliable data for resource estimation work.

10.2 MINE GEOLOGY - OPERATING AND SUSTAINING CAPITAL DRILL PROGRAMS

A total of 19,143m of Operating and 5,767m of Sustaining Capital drilling was undertaken from underground drill platforms during 2018. Operating drilling is defined as resource definition infill drilling into Mineral Reserves that fall within the 12 month production plan. The drilling is required to increase confidence in both the spatial positioning, geometry and grade estimation prior to mining. Sustaining Capital drilling is defined as drilling into Mineral Reserves or Measured and Indicated Resources that fall outside the 12 month production plan, considered necessary to assist medium to long term mine planning. Sustaining Capital drilling not only importantly provides increased confidence in Mineral Resources and Mineral Reserves, but additional geological and geotechnical information ahead of mining, essential for optimising the effective extraction of the resource. Details of Mine Geology programs are tabulated in Table 10-1.

TABLE 10-1 MINE GEOLOGY – OPERATING AND SUSTAINING CAPITAL DRILL PROGRAMS

Project	Diamond Drilling (m)	Comments
Operating	19,143	Operating Drilling was primarily focused on increasing confidence within the Swan and Eagle Mineral Reserves. Drill spacing in these high grade zones was closed into ~12.5 x 12.5m prior to mining. Drilling was either undertaken from within the operating levels or from proximal hanging-wall drill drive positions.
Sustaining Capital	5,767	Sustaining Capital drilling was undertaken within the Lower Phoenix and Harrier Mineral Reserves and Measured and Indicated Mineral Resource areas. Drilling targeted areas of resource / reserve risk, increasing confidence before establishment of operating levels. Drilling was primarily undertaken from hanging wall drill drive positions.
Total	24,910	

10.3 NEAR MINE EXPLORATION – GROWTH CAPITAL, GROWTH EXPENSED AND GROWTH PROJECTS DRILL PROGRAMS

Near Mine Exploration programs focused on targeting Inferred Mineral Resources, open extensions of known Mineral Resources and areas of potential mineralization within and proximal to the Mine License. Growth Capital drilling is defined as drilling that targets Inferred Mineral Resources, with the objective to increase resource confidence to an Indicated Mineral Resource classification to allow for Mineral Reserve evaluation. Growth Expensed drilling is defined as drilling that targets the incremental growth extensions of Inferred Mineral Resources with the aim to deliver additional Mineral Resource inventory and provide definition along Mineral Resource boundaries. Growth Projects drilling is defined as drilling that targets step out extensions (> 100m) of known Mineral Resources or areas of resource potential within or proximal to the Mine License. The extent of Near Mine Exploration programs for 2018 is illustrated in Figure 10-1, Figure 10-2, Figure 10-3, Figure 10-5 and Figure 10-6. Details of Near Mine exploration programs are tabulated in Table 10-2. Executed Growth Capital programs in 2018 were pivotal in delivering a substantial increase in Mineral Reserves in December 2018, with drilling demonstrating continuity of high grade visible gold mineralization on the Swan structure down plunge of the December 2017 Mineral Reserves. Figure 10-4 illustrates the substantial widths and grades of some of the Growth Capital drill results returned in 2018 on the Swan structure.

Drilling undertaken in 2018 adds to an expansive drill data set from historical drilling conducted within the property. A summary of drilling undertaken on the Fosterville Fault corridor and Robbin's Hill Area are summarized in Table 10-3 and Table 10-4.

TABLE 10-2 NEAR MINE EXPLORATION - GROWTH CAPITAL, GROWTH EXPENSED AND GROWTH PROJECTS DRILL PROGRAMS

Project	Diamond Drilling (m)	Comments
Growth Capital	48,558	Drilling primarily focused on infill drilling the Swan and Eagle Inferred Mineral Resources from hanging wall drill platforms. Drill spacing closed into a nominal 25 x 25m spacing in these high-grade zones allowing resource conversion from Inferred to Indicated Mineral Resources. Drilling was successful in demonstrating down plunge continuity of substantial width, high-grade, visible gold mineralization, which formed the basis for the December 2018 Mineral Reserve increase. Some drilling was undertaken in the Phoenix North, which returned intercepts of sulphide mineralization of marginally lower grade and width than the existing Inferred Mineral Resource.
Growth Expensed	3,857	Growth Expensed drilling was undertaken in the Harrier, Phoenix South and Phoenix North during 2018.
Growth Projects Eastern Fan	2,593	Designed to test for gold mineralization potential to the east of current mining operations on the O'Donnell's Line. No significant zones of mineralization were intersected, and data obtained from the hole was not used in resource model updates. Geological data obtained is being reviewed, with the potential to follow up with programs targeting structures prospective for mineralization
Growth Projects Z-Program Swan, Audax 5100mN – 5900mN	2,697	Targeting gold mineralization associated with the Lower Phoenix Footwall and Swan mineralized systems, between 450m and 1,250m down-plunge from the December 2017 Inferred Mineral Resources. The 5900mN section drilling did not achieve depth due to difficult drilling conditions. The 5100mN program was successful in achieving targeted depths, intersecting sulphide mineralization did the geological architecture to allow for targeted programs scheduled for 2020 and onward.
Growth Projects Lower Phoenix 5500mN, 5650mN, 5750mN, 5850mN, 6000mN and 6150mN	16,786	Lower Phoenix programs were successful in defining Inferred Mineral Resources ahead of the current mining front to the south. These programs were drilled sequentially from the south to the north as the drill platform as the Harrier Exploration was developed. Lower Phoenix South Inferred Mineral Resources were defined as part of the December 2018 Mineral Resource update.
Growth Projects Lower Phoenix South 6025mN – 6125mN	1,505	Drilling targeted east dipping structures hosting gold mineralization between the Swan and Cygnet faults within the Lower Phoenix system.
Growth Projects Fosterville Deeps	1,329	Designed to test for gold mineralization at depth below the Lower Phoenix gold system. No significant zones of mineralization were intersected, and geological data obtained from the hole was not used in resource model updates. Data obtained is being reviewed with the potential to follow up with programs targeting structures which may contain mineralization.
Growth Projects Harrier 4550mN and 4450mN	2,526	The program commenced in late 2018 and will continue into early 2019 and is designed to define southern extensions of Harrier Base mineralization. No results from this drilling were available for inclusion in the December 2018 Mineral Resource update.
Growth Projects Southern East – West Splays	1,953	Targeted any repeats of east-west striking, steep north dipping mineralized faults within the Harrier system.
Growth Projects Harrier Anticline	2,007	Targeted the down dip projection of the intersection of the Harrier Base Fault and an Anticlinal structure; analogous to the targeted drilling which located the Lower Phoenix system in 2015.
Growth Projects Robbin's Hill Area	17,393	Drilling focused on extending the Curie Fault and Rubin Fault (previously reported as Farley's Fault and Farley's Footwall fault). The Curie Fault was extended to a strike length of 760m and dip extent of 360m, and the Rubin Fault to a strike length of 300m and dip extent of 500m. Both are prospective future targets and are open to the north and south and at depth. Visible gold occurrences have been intersected on the Curie Fault.
Growth Projects Fosterville Line	3,351	Drilling tested the open mineralization on the Hunt's system and develop geological understanding of any footwall structures. Results pending.
Total	104,555	

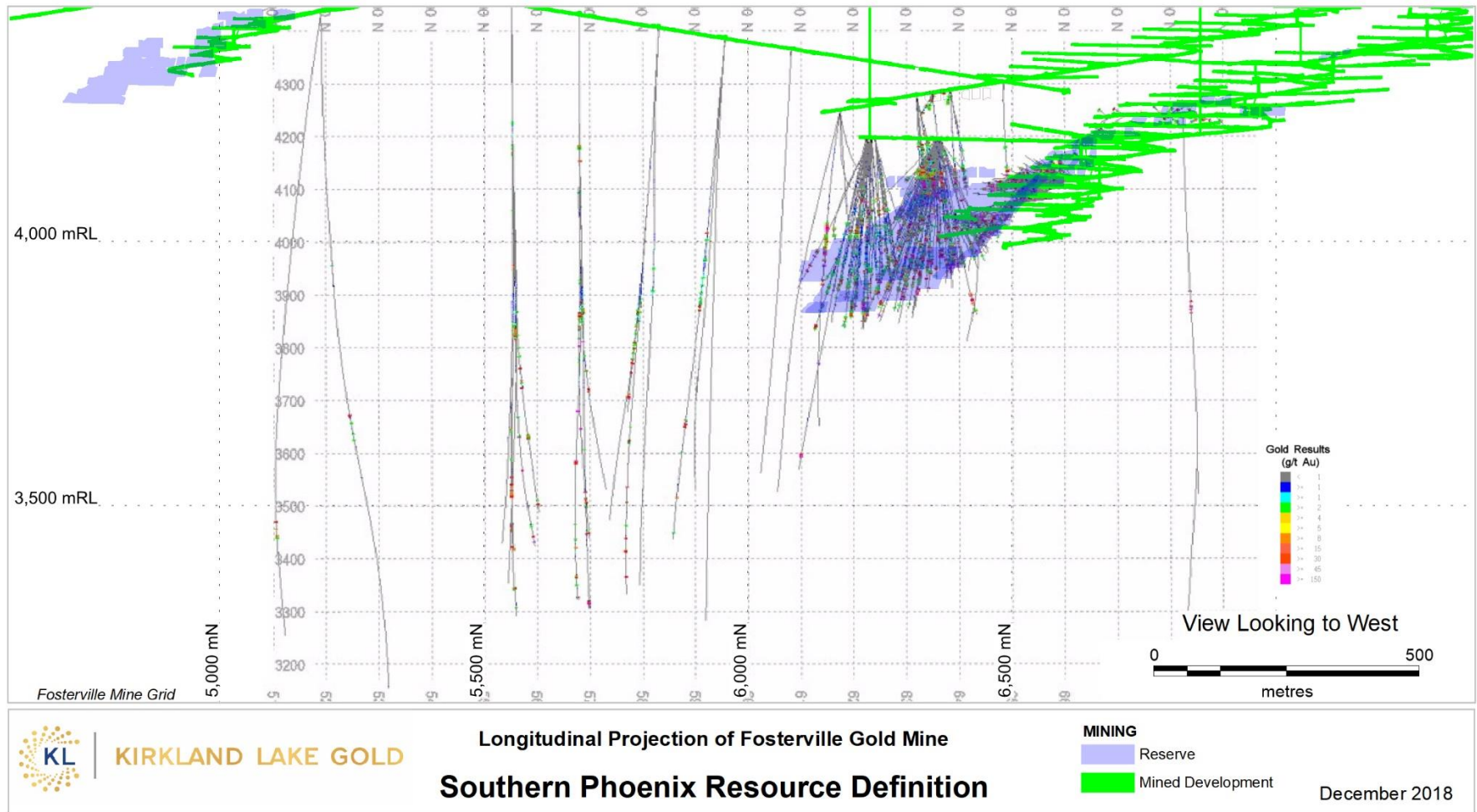


FIGURE 10-1 2018 UNDERGROUND RESOURCE DEFINITION AND NEAR MINE DIAMOND DRILLING - CENTRAL AND PHOENIX SOUTH

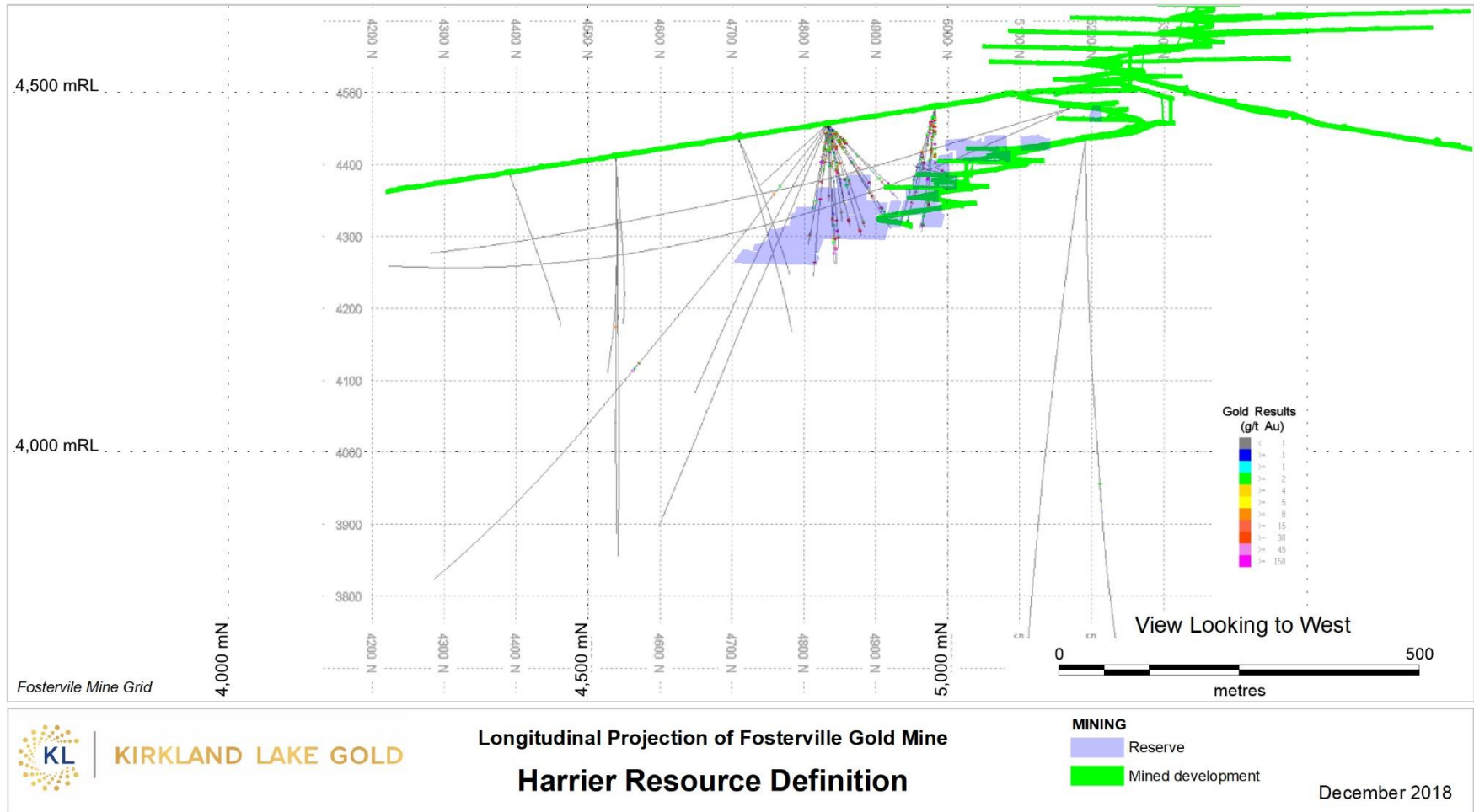


FIGURE 10-2 2018 UNDERGROUND RESOURCE DEFINITION AND NEAR MINE DIAMOND DRILLING - HARRIER

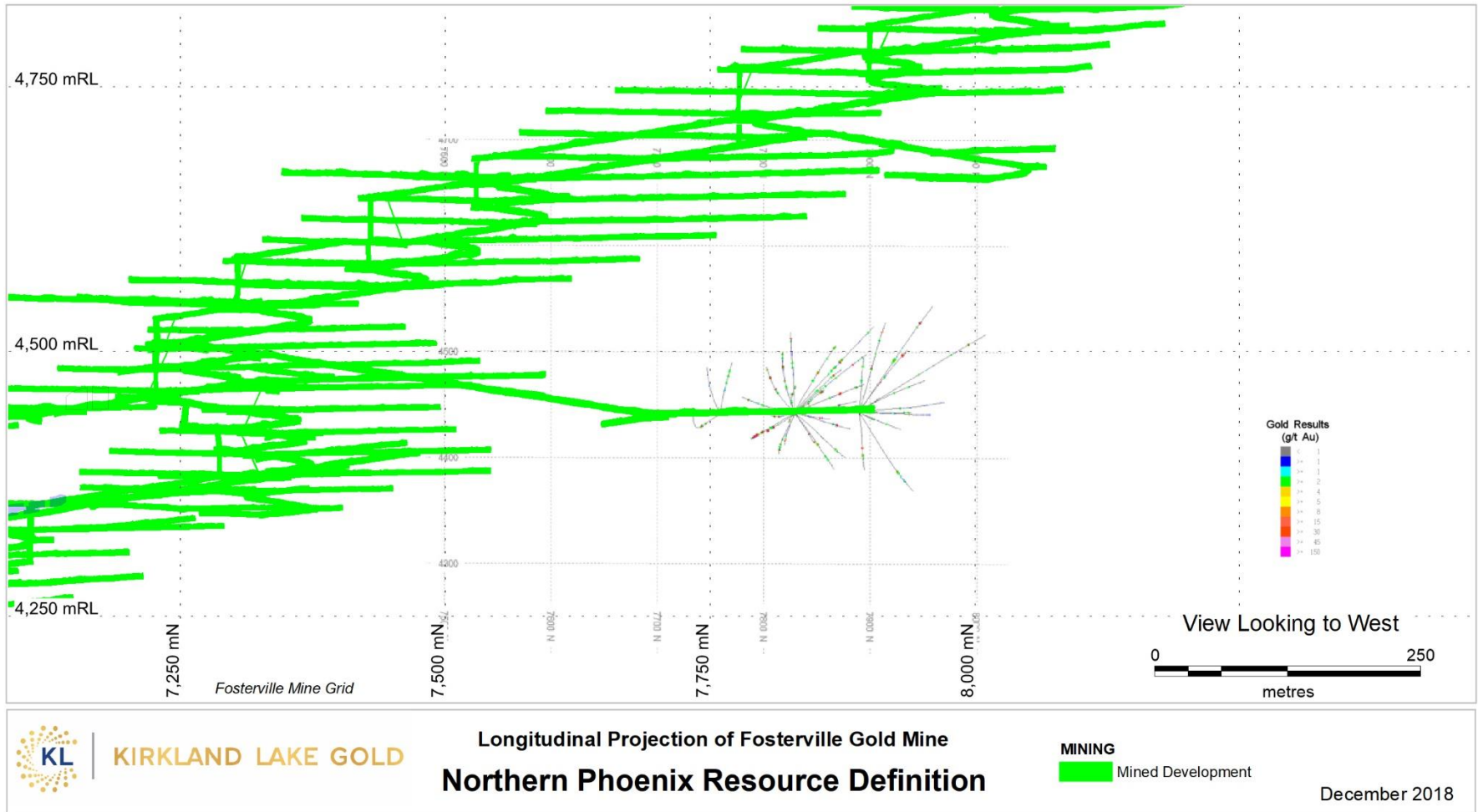


FIGURE 10-3 2018 UNDERGROUND RESOURCE DEFINITION AND NEAR MINE DIAMOND DRILLING – PHOENIX NORTH

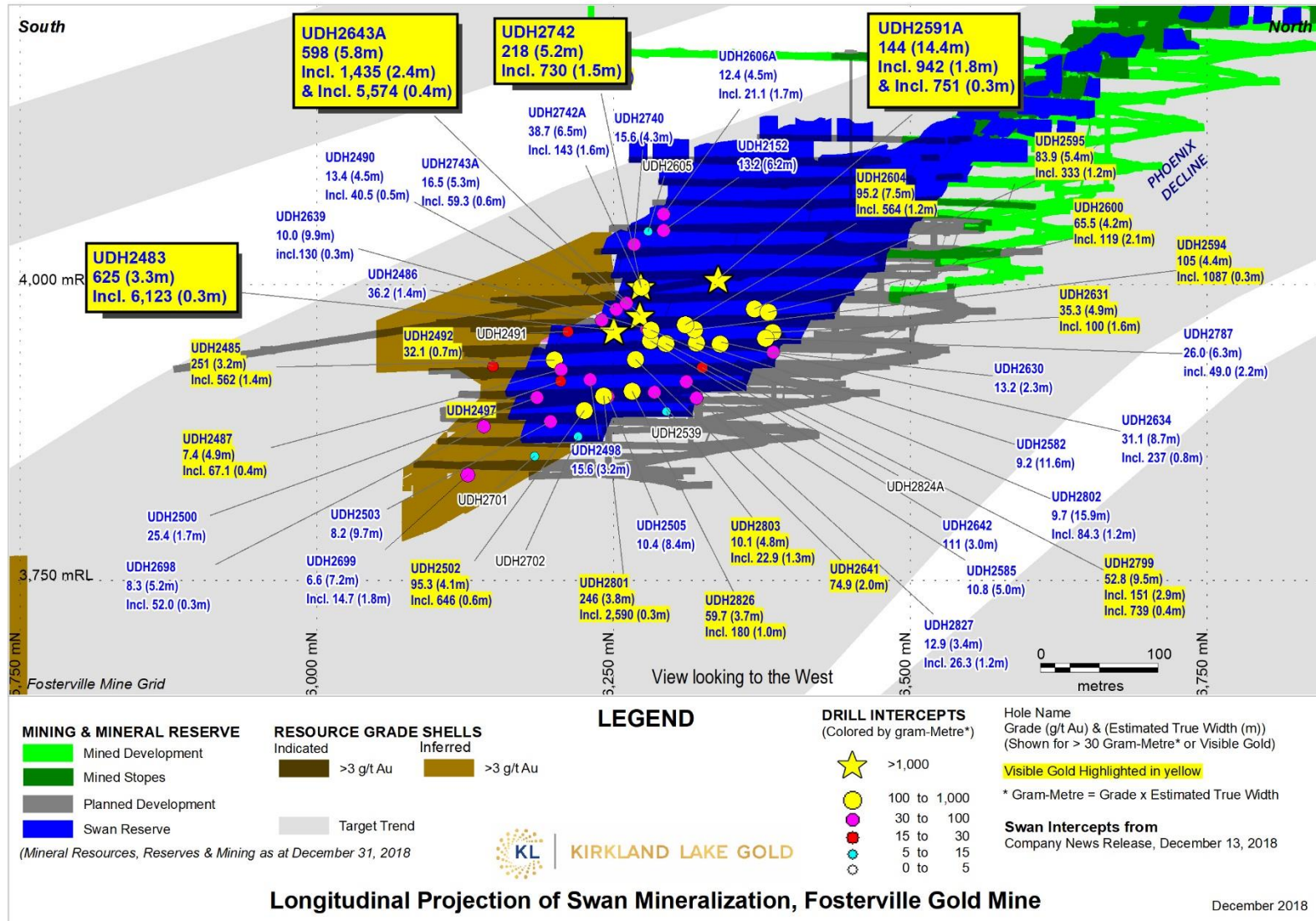


FIGURE 10-4

LONGITUDINAL PROJECTION OF SWAN MINERALIZATION DISPLAYING 2018 RESOURCE DEFINITION DRILL INTERCEPTS

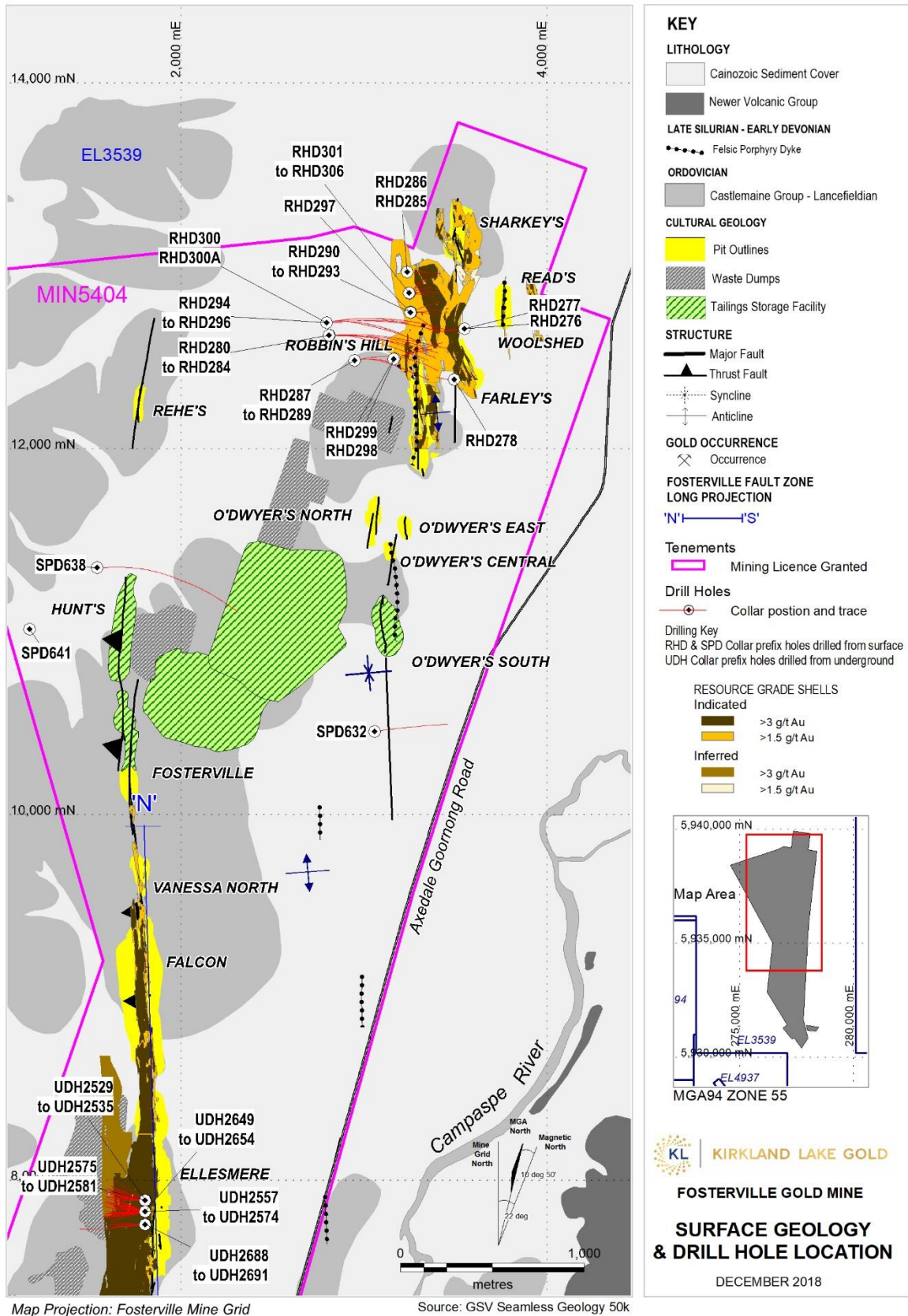


FIGURE 10-5 PLAN VIEW OF SURFACE GEOLOGY AND DRILL HOLE LOCATIONS MAP 1

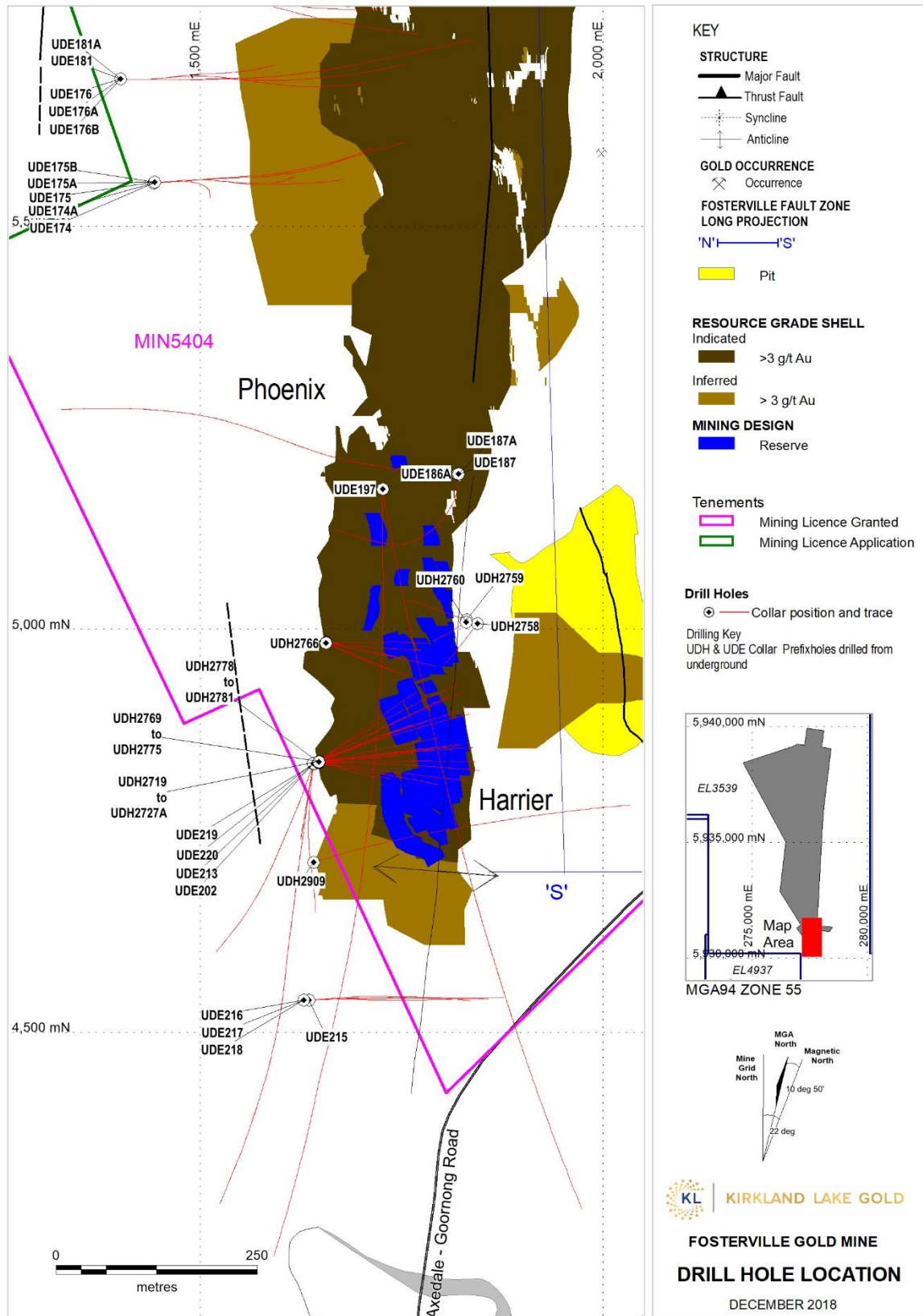


FIGURE 10-6 PLAN VIEW OF SURFACE GEOLOGY AND DRILL HOLE LOCATIONS MAP 2

TABLE 10-3 DRILL HOLE PREFIXES FOR ALL DRILLING ON THE FOSTERVILLE FAULT CORRIDOR SOUTH OF 10,000MN

Hole Series		No. of Holes	Comments
BGL001	BGL106	35	1990-2016 RC hydrological
BKD001	BKD002	2	2018 Diamond LODE Backhaus
CEL001	CEL124	96	1997 RC & AC open pit sulfide
CELD020	CELD106	26	1997-2003 Diamond tails from RC wet drilling
CELD051	CELD058	8	1996 Diamond metallurgical
CEM100	CEM105	6	1994 RC metallurgical
CEN001	CEN124	80	1997 RC for open pit sulfides
CEND019	CEND103	22	1997-8 Diamond tails of RC
CEND110	CEND112	2	1997 Diamond Exploration
CEND038	CEND113	12	1996-7 Diamond metallurgical
CN100	CN248	149	1994 RC exploration
CNM001	-	1	1995 RC metallurgical
DALD001	DALD020	21	2003-6 Daley's Hill diamond
DDH3*	DDH5*	3	1976 Daley's Hill diamond
DH001	DH238	193	1995-9 Daley's Hill RC
DHRB010	DHRB013	4	1997 Daley's Hill RC
ELRC0001	ELRC0949	912	2005-7 Ellesmere pit RC (7500mN–8425mN)
FARC0001	FARC0825	825	2005 Falcon pit RC (8615mN–8800mN)
FDD14A	FDD33	7	1990 Diamond (Brunswick)
FO002	FO379	235	1986-90 RC (Bendigo Gold Associates)
FO400	FO487	56	1992-1994 RC (Perseverance)
FOS056	FOS214	3	1998-2000 RC & AC exploration
GT001	GT071W01	78	2004-2018 Diamond geotechnical
H4805RAWPILOT	-	1	2014 Pilot hole for Harrier 4805 RAW
HAR003	HAR065	61	1997-9 Harrington's Hill RC
HARC001	HARC248	233	2006-11 RC (6350mN-7315mN)
HARD1	-	1	1996 Diamond PQ metallurgical
MB12	-	1	2009-12 RC hydrological monitoring
RRD001	RRD009	10	2006 Diamond Exploration Russell's Reef
RRD010	RRD024	15	2018 Diamond LODE Russell's Reef
SH003	SH016	14	2012 – 2015 Underground Services
SD001	SD039	43	2007-8 Diamond (7775mN-8675mN)
SP001	SP372	299	1994-6 RC drilled down to 5100mRL
SPD001	SPD009C	9	1995 Diamond exploration
SPD010	SPD641	760	2001-18 RC and diamond exploration
ST009	ST179	50	2003 RC & AC Sterilization
SVH001	SVH009	9	2010 Underground Services
UD001	UD995	934	2006–11 Underground diamond
UDE001	UDE220	233	2010-18 Underground diamond exploration
UDH0001	UDH2909	2465	2011–18 Underground diamond
Total Holes		7,914	

TABLE 10-4 DRILL HOLE PREFIXES FOR ALL DRILLING IN THE ROBBIN'S HILL - O'DWYER'S AREA

Hole Series		No. of Holes	Comments
FAC001	FAC003	3	1993-2001 Farley's AC
FAR001	FAR011	10	1997 Farley's RC (face)
FARM001	-	1	1994 Farley's metallurgy RC (x-over)
FDD019	FDD040	12	1989-90 Robbin's Hill diamond HQ
FO303	FO309	6	1998 O'Dwyer's RC (face)
GH100	GH354	254	1993-96 Sharkey's RC (x-over) & diamond HQ (1) & NQ (1) & RAB (2)
GHM001	GHM002	2	1994 Sharkey's metallurgy RC (x-over)
MBOS01	MBOS07	7	2011 O'Dwyer's South RC hydrological monitoring
ODW001-134, 150-158 & 167		128	1999, (2005 ODW167) O'Dwyer's RC (face)
ODW135-149 & 159-166		23	1999 O'Dwyer's AC
ODW168	ODW206	39	2007 O'Dwyer's South RC (face)
ODW207	ODW228	22	2011 O'Dwyer's RC (17, face) & NQ2 (5)
ODWD001	ODWD003	3	1997 O'Dwyer's diamond NQ
PBOS01	PBOS05	5	2012 O'Dwyer's South RC hydrological production
RD001	RD151	147	1994-98 Read's RC (83, face) and AC (64)
RDD146	-	1	1998 Read's diamond NQ
RH001	RH878	756	1987-96 Robbin's Hill and O'Dwyer's RC
RHD001	RHD207	204	1994, 2004-07 Robbin's Hill RC & diamond NQ2 (47) & HQ (15)
RHD208	RHD306	109	2009-18 Robbin's Hill & Farley's-Sharkey's diamond NQ2 (88), HQ (12), HQ3 (1), LTK48 (1) & RC (8)
RHM001	RHM004	4	1993 Robbin's Hill metallurgy RC (x-over)
ROB001	ROB012	11	1996 Robbin's Hill RAB
ROB013	ROB066	51	1998-99 Robbin's Hill RC (face) & AC (3)
SHA001	SHA033	25	1997 Sharkey's RC (face)
ST001	ST008	8	1993 Sterilization RC (x-over)
Total No. of Holes		1,831	

No drill holes are excluded from the database. However, drill holes that are of questionable quality (due to suspect collar coordinates, down-hole surveys or sampling/analytical QAQC) are omitted from any resource calculation process.

10.4 REGIONAL EXPLORATION (LODE) – GROWTH CAPITAL DRILL PROGRAMS

During the course of 2018, regional drilling exploration activities outside of Mining License 5404 targeted historic resource corridors and interpreted lines of mineralization identified by historic workings and /or geochemical / geophysical anomalies. Details and metrics of the programs can be seen in Table 10-5 below.

TABLE 10-5 REGIONAL EXPLORATION DRILLING PROGRAMS 2018

Activity	Location	License	Involved Parties	Metrics
Diamond Drilling	Goornong South, Russell's Reef, Accotts, Backhaus, May Reef, Lyell, O'Dwyers South, Sugarloaf, Meadow Valley	EL3539, MIN5404	KLG, Deepcore (Diamond Drilling)	39 holes 23,737m
Reverse Circulation Drilling	O'Dwyer's South, Fosterville North, Robbin's Hill North, Sugarloaf, Rasmussen	EL3539, MIN5404	KLG, Swick RC, Well Search, Geosensor (Wireline Geophysics)	32 holes 8,717m

Diamond drilling focused on developing the Goornong and Russell's Reef lines of mineralization, with 12% and 32% of the 2018 budget being focused on those areas respectively. Diamond drilling was conducted systematically throughout all zones due to the unknown quality of the rock mass by collaring with HQ sized core to 100m depth, before continuing to the end of hole with NQ size core. Hole direction is tracked by using single shot Reflex™ magnetic survey tools every 30m. Once the hole has been completed, an electronic multi shot tool is used to record orientation every six meters to improve survey validity. All holes are oriented using a Reflex™ orientation tool to ensure that structural measurements can be related back to real space.

Due to the exploratory nature of regional programs, the definition of the target is less certain than resource extension programs. This uncertain nature has defined the strategic approach undertaken by drilling sweeping holes designed to lift and cross as much stratigraphy as possible. The average diamond hole length in 2018 was 592m with the longest being 1400m.

Logging and sampling QAQC and consignment were conducted in line with Fosterville Gold Mine's logging procedures. Sampling due to the exploratory nature of investigation, meant that all zones including quartz or quartz carbonate veining were tested for gold and included lead-in and lead-out samples. Once gold assays were returned, zones of interest along with one sample every 20m downhole were re-consigned for 4 acid digest and 59 element geochemical analysis. On average, diamond core sampling rates were 0.54 samples per meter of core drilled.

Target corridors were selected using historic geological data and GSV surface mapping which may include mining (Accotts, Sugarloaf, Lyell), RC drilling (May Reef) or advanced extensions to Fosterville mineralization corridors (Russell's Reef, Goornong, O'Dwyer's South, Backhaus, Meadow Valley). It is estimated that over 2018, regional exploration drilling has increased the strike length of known systems from ~11km (including Goornong, Mill's, Fosterville, Robbin's Hill and O'Dwyer's) to ~15km, confirmed

the presence of gold bearing sulfide mineralization at May Reef and Lyell and identified 2 previously undiscovered lines of mineralization to the east of Goornong and to the west of Russell’s Reef. A summary of regional exploration diamond drilling programs is detailed in Table 10-6.

TABLE 10-6 2018 REGIONAL EXPLORATION DIAMOND DRILLING SUMMARY

Prospect	Number of Holes	Average Hole Length (m)	Hole ID	Peak Result	From
Russell's Reef	15	511.5	RRD020	7.1 g/t Au over 4.0m	84.2m
Goornong	7	438.6	GSDD090	4.98 g/t Au over 3.1m	147.3m
O'Dwyer's South	4	405	<i>Pending Assays</i>		
Lyell	3	1082	LYD004	1.67 g/t Au over 0.6m	95.05m
Acotts	3	636	ACD001	0.36 g/t Au over 0.4m	191.1m
May Reef	2	1137.9	MRD001	0.86 g/t Au over 0.45m	814.35m
Backhaus	2	850	BKD001	0.33 g/t Au over 1.0m	367.7m
Meadow Valley	2	498.2		NSI	
Sugarloaf	1	815	<i>Pending Assays</i>		

In the latter half of 2018, RC drilling was utilized to quickly test a number of anomalies that were corroborated by both geophysics and geochemistry. Fosterville Gold Mine engaged the services of Swick RC to assess the viability of the method for working in and around the community.

RC drilling had a number of challenges that needed to be overcome to demonstrate on going suitability. The cost had to be less than diamond, noise thresholds had to be within FGM operational standards, there needed to be zero water discharge from site and dust needed to be suppressed. Swick worked with FGM geologists to engineer solutions including using a water reticulation device to control water, dust suppression on the cyclone and noise dampening shrouds on the booster truck. These measures were aided by the drill design process, ensuring that the collar was at least 400m from the nearest residence and modified weekend hours of operation to curb the noise.

With all these processes in place, drilling was able to proceed and the choice was made to run a test program on site on the O’Dwyer’s line closer to the mine infrastructure. Although many of the above ground issues could be resolved, the challenge for the RC process was to be able to drill through tertiary sediment cover. Early drilling encountered significant perched water tables with unconsolidated sands and gravels that caused initial holes to be abandoned. After a number of trials, a system was devised to run a pilot hole down to establish where the sediment bedrock interface was. A steel pipe collar was inserted down to 20m and the rest of the pilot hole would be cased with PVC piping and pressure grouted to maintain hole integrity. This improved process allowed for RC to maintain dry sample returns beyond 400m.

RC holes were designed as ‘fence posts’ (overlapping tail to collar) with holes drilled as close towards the east at a dip of 60° with collars spaced at 150m apart to a depth of 300m. The number of holes along a section could differ based on the size of the anomaly, however most programs were designed with 3 collars per section giving sectional coverage across strata of about 450m in total. The rationale was to gain a fence post section across an identified geochemical / geophysical anomaly ensuring that there was sufficient coverage to understand the cause of the anomaly.

Samples were collected from the cyclone into 1m and 2m-composite samples. The samples are logged at the rig for moisture, weathering, color, grain size, texture, lithology, key sulfide mineralization intensity, other notable sulfides, quartz percentage, vein style and alteration type and intensity. Water samples are also collected when intersected to record salinity and acidity.

All 2m samples are consigned for fire assay for gold only. Once results are returned and analyzed using an Olympus Vanta M portable XRF housed within a manufacturer's supplied radiation shielded unit. The Vanta M gives 38 elements with limits of detection for gold, arsenic and antimony down to 5 ppm. Samples are analyzed through the commercially supplied paper pulp bag. The data is used for preliminary evaluations of areas of interest. Zones of interest along with one sample every 20m are selected for 59 element determination using 4 acid digest with an Inductively Coupled Plasma (ICP) – Atomic Emission Spectroscopy (AES) (16 elements) and ICP – Mass Spectrometry (MS) (43 elements). The 4 acid digestion work was selected for regional exploration work based on 2 acid / 4 acid comparison work conducted in 2018 after advice offered by geochemical experts.

The research showed that there were a number of elements that were not being liberated that are important to identify the minerals present around alteration sequences. The elements of concern included Al, K, Na, Th, Ba and Ce. Fosterville gold mineralization has commonly been associated with sericite mineralization that includes muscovite. Muscovite has the chemical composition of $KAl_2(Si_3AlO_{-10})(OH)_2$, which shows both Al and K to be important elements of association.

The spacing work of 1 sample every 20m was suggested based on work conducted by Dr Scott Halley of Mineral Mapping Pty. Ltd. (Halley, 2018) who also suggested 4-acid digest would be preferable to lesser acid digests if data was to be used for litho-geochemical analysis. His report indicated that hydrothermal pyrite exists in the same zones as ankerite. As the amount of pyrite increases, the levels of ankerite decrease and vice versa. Both ankerite and pyrite appear to replace chlorite from the background sediments around hydrothermal zones. The presence of mica appears also to change in this region with spectral analysis indicating that shorter wavelength mica species (2202 to 2206nm) are present coincident with ankerite and pyrite.

RC targeting was strongly influenced by linear features seen within the 2017 Airborne Electromagnetic survey that aligned with known structural corridors and geochemical anomalies. One of the most pervasive linear features was along the Fosterville / O'Dwyer's fault corridor. As such, RC target sites were planned along the 20km strike length to test the validity of the feature. Peak results from the RC program outside of the mining license boundaries included 0.98 g/t Au over 4m on LRC026. Within the mining license boundary, the peak results came from just south of the O'Dwyer's open pit with 1.52 g/t Au over 8m on LRC005.

Quality assurance and quality control measures included alternating between a field duplicate and a standard every 25 samples. As a test of sample homogenization and bias, 76 one-meter samples were re-consigned on LRC005. The mean of the two results for the zones tested were 0.48 g/t Au for the 2m intervals compared to 0.51 g/t Au for the re-consigned 1m samples. The comparison for the zones of interest can be seen in Table 10-7.

TABLE 10-7 LRC005 COMPARISON BETWEEN 2M AND 1M SAMPLES

Sample Type	From (m)	Gram-meters	Length (m)	Au Grade (g/t)
2m comp	80	12.2	8	1.5
1m interval	80	12.8	8	1.6
2m comp	142	8.5	6	1.4
1m interval	142	7.2	6	1.2
2m comp	162	8.0	4	2.0
1m interval	162	6.4	4	1.6
2m comp	270	8.1	6	1.4
1m interval	270	5.7	6	1.0

10.5 QAQC OF DRILL HOLE SURVEYS

Allwood (2003) details the results of down-hole surveys repeated using both an Eastman camera and an Electronic Multi-Shot (EMS) tool. The EMS down-hole surveys agreed with the single shot surveys to within 0.1° in dip and 2° in azimuth resulting in a total average variation of 0.4m per 100m down-hole. The repeated Eastman surveys have an average variation of 0.6° in azimuth and 1.6° in dip, reflecting the precision of the Eastman camera survey tool. Comparing the drill hole traces plotted using the Eastman data with the EMS data shows that the variation in drill hole location due to survey method is considerably less than the variation in hole trace caused by the use of different drill hole de-surveying algorithms. However, in 2007 the use of EMS tools as a standard in preference to Eastman cameras was adopted across the various rigs operating at Fosterville, and in 2010 it became common practice to have survey data at six meter increments or less down each hole. The increased density of down-hole survey data has permitted ability to readily identify and remove suspect azimuth measurements.

Accuracy of down-hole surveys are most effected by proximal ferrous mine infrastructure and/or proximal in-hole casing. Other factor affecting the accuracy of the position of drill hole survey data is the accuracy of the collar position. Drill holes can be affected when passing close to existing development due to steelwork (mesh, plates and cable bolts) associated with underground development; the effect is shown through elevated magnetic readings, which allow the removal affected surveys. Over time the survey instruments accuracy degrades through usage. Routine testing of all down-hole survey cameras on a test bench of known dips and azimuths checks tool accuracy degradation.

Since October 2017 a REFLEX GYRO tool has been used in conjunction with a Minnovare Azimuth Aligner tool for holes with a positive dip or a length greater than 350m. These Azimuth Aligners and gyros are checked monthly at reference sites in the underground mine. Since August of 2018, a GYRO tool has been used in conjunction with a Minnovare Azimuth Aligner down hole for every hole drilled underground.

10.6 PLANNED EXPLORATION

The planned exploration drilling activities in 2019 are focused on Near-Mine targets within MIN5404 and on prospective regional targets throughout the expansive exploration license holdings. The intent of the

exploration is to replace and increase the mineralized resource at Fosterville by extending presently known ore shoots and to locate anomalous gold mineralization for further exploration investigation, then subsequent resource evaluation.

Regional Exploration for 2019 includes 20,950m of planned diamond drilling for an estimated cost of A\$4.9M, A\$3.4M on 3D seismic surveys, A\$680k on soil geochemical surveys, and 28,400m of Reverse circulation drilling with a total expenditure of A\$4.2M. The 3D seismic survey will be the first of its kind within the state of Victoria. The aim of the project is to define the 3 dimensional geometry of the Robbin's Hill resource with the aim to better understand some of the geological controls away from the mining corridor. If successful, the program may be a vital tool in vectoring in on prospective zone of mineralization to allow for more informed targeting with conventional drilling methods.

Other regional exploration expenditure is planned for other activities including, ground and airborne gravity surveys, AEM processing, electrical geophysical surveys, and radiometric airborne surveys. Total estimated cost for 2019 regional exploration activities is A\$15.5M.

Near Mine Exploration for 2019 will utilize several geophysical techniques whilst reprocess historical data in order to improve drill hole planning and targeting. These geophysical techniques include gravity surveys throughout the southern area of MIN5404 and down hole wireline logging of Robbin's Hill drill holes.

Near mine exploration drilling activities planned for 2019 include:

Phoenix Extension UG (5600mN to 6000mN) Drilling

This program is designed to target southerly strike extension of the Phoenix mineral system within and proximal to the Fosterville Syncline. The budget estimate to complete this drilling is A\$1.2M.

Lower Phoenix Down-Dip UG (5350mN to 6050mN) Drilling

This program is designed to target down dip extensions of the Swan and Audax fault intercepts on the sections drilled in late 2017 and through 2018, between 5450mN and 6050mN. The budget estimate to complete this drilling is A\$2.1M.

Lower Phoenix (6000mN) Drilling

This program continues from 2018, targeting the southern extension of the Lower Phoenix System. The system is not constrained to the south, so the programs will test the southern continuation of the currently known gold mineralization. The 6000mN program meters proposed for the year are estimated to cost A\$1.8M.

Cygnet UG (6500mN to 6800mN) Drilling

This program targets the northern extent of the Lower Phoenix Footwall system, specifically the Cygnet, which is footwall to the Swan. The system is not constrained to the north, so the programs will test the northern continuation of the currently known gold mineralization. This program has an estimated combined cost of A\$1.5M.

Harrier South (4550mN, 4450mN & 4350mN) Drilling

This program continues from 2018, targeting mineralization associated with the Harrier and Osprey Faults south along strike of high-grade sulfide and visible gold mineralization on the 4750mN. The remaining program meters for the year are estimated to cost A\$1.1M.

Harrier South Extension UG (4250mN & 4150mN)

This program targets mineralization associated with the Harrier and Osprey Faults 500m south along strike of high-grade sulfide and visible gold mineralization. This program is estimated to cost A\$1.4M.

Robbin's Hill Extension Drilling

This program is designed to test for potential economic gold mineralization observed in recent drilling completed below Robbin's Hill Pit. This program is estimated to cost A\$3.2M.

Robbin's Hill Infill Drilling

This program is designed to infill a portion of the current Inferred Mineral Resource. This program is estimated to cost A\$3.5M.

Robbin's Hill Deeps Drilling

This program is designed to test for potential economic gold mineralization down dip from recent extension drilling completed below Robbin's Hill Pit. The budget estimate to complete this drilling is A\$1.3M.

Robbin's Hill Step-Out Drilling

This program is designed to test for potential economic gold mineralization along strike to the south of current Inferred Mineral Resource. The budget estimate to complete this drilling is A\$1.9M.

Fosterville Trend Step-Out Surface Drilling

This program is designed to follow up and test to the north, sulfide mineralization identified in 2018 associated with the Hunt's system on the Fosterville Line. The program is estimated to cost A\$0.6M.

Other Near Mine exploration projects include the development of drill platforms in the H4490 and P4040 and investment into research initiatives. Total Near Mine exploration expenditure for 2019 is A\$25.1M

10.7 REGIONAL EXPLORATION POTENTIAL

10.7.1 GOORNONG SOUTH

The Goornong South Prospect is located approximately 4km north of the Fosterville Mining License, where Fosterville style gold mineralization occurs beneath transported cover on privately owned land. The gold prospect was discovered by Perseverance during regional exploration in the mid 1990's. PSV identified a 1.3km long anomalous zone of gold mineralization and systematically drilled the anomaly between 1995

and 1999 for its open pit potential. The drilling was comprised of 71 RC holes (totaling 4,482m) and one diamond hole (69m) with a further eight Aircore holes (293m) drilled for ground water monitoring purposes.

Perseverance subsequently reported a Historic Resource in their 1999 Annual Report as shown in Table 6-2. Kirkland Lake Gold is not treating the Historical Resource as a current Mineral Resource as a QP has not done sufficient work to classify the Historic Resource, or comment on the reliability of the estimate.

In 2010 Northgate reviewed the Goornong South area for its potential to host gold mineralization amenable to underground mine extraction. The initial exploration saw completion of two lines of IP/resistivity survey (Figure 6-1) to the south of the prospect in order to identify chargeability anomalies along strike from the sulfide mineralization at Goornong South. IP chargeability anomalies were encountered on both lines and a five diamond drill hole program (totaling 1,532m) was completed.

A 2010 diamond drilling program was undertaken from the roadside and spans about a 750m north-south trend. Of the five holes drilled, three returned assay intercepts averaging greater than 2.5 g/t Au and the strike length of the prospect had been extended southwards a further 300m.

Mid 2017, the Goornong South prospect was identified as having an advanced status for potential conversion into a mineral resource corridor. To effect the classification, the continuity of the historic pit resource need to be interrogated as a potential underground project. This determined that a step out campaign would need to develop a mineralized system that could have lateral and depth extents. As such, two southward step out line utilizing roadside verges were selected at 500m and 1.3km south of Goornong to test the structural continuity.

Due to location constraints, holes targeting the Goornong South line of mineralization were drilled (late 2017 to early 2018) from the east of the line with west dipping holes. The location also allowed further exploration to test if a parallel line of mineralization existed to the east of the historic resource.

The campaign consisted of 6 diamond drill holes with a total length of 2204.9m being drilled. Significant intercepts included 4.98 g/t Au over 3.1m from 84.2m on GSDD090 and 5.45 g/t Au over 1.2m from 211.05m on GSDD090, roughly 1.6km south of the historic resource.

Drilling also identified a parallel line of mineralization 340m east of the Goornong South line with peak results including 1.28 g/t Au over 24.5m from 437m on GSDD094 (including 3.68 g/t Au over 2.4m from 442 and 6.00 g/t over 1.4m from 460.1m) and 5.89g/t Au over 0.7m from 449.9 on GSDD088.

The Goornong South line geology is interpreted to be within a steeply west dipping shear that cross cuts east dipping strata. The gold is associated with a quartz breccia and is interpreted to be hosted within the disseminated sulfides. The drilling also intersected low grade gold within a felsic porphyritic dyke that contains sulfides. The dyke exploits a regional syncline and appears similar in nature to the early gold bearing dykes found within the Robbin's Hill and Harrier regions.

10.7.2 HALLANAN'S

The Hallanan's Prospect area, located 1km south of the Fosterville Mining License, was explored for oxide gold by Perseverance between 1994 and 1998. During this period Perseverance completed 104 RC drill holes (totaling 6,245m with an average drill hole length of 60m), two diamond holes (109m) and 11 monitoring bore holes (354m). Gold mineralization was identified in drill intercepts over a 750m north-south trend and at the end of drilling a Historic Resource was estimated and reported by Perseverance in their 1999 Annual Report as shown in Table 6-3. However, Kirkland Lake Gold is not treating the Historic Resource as a current Mineral Resource as a QP has not done sufficient work to classify the Historic Resource, or comment the reliability of the estimate.

Exploration activity was conducted on the Hallanan's Prospect prior to 1999. Activity consisted of mapping, soil sampling, RC down to 60m and one section of diamond drilling. The prospect was viewed by Kirkland Lake Gold as being under explored for underground gold targets and a subsequent diamond drill campaign was executed over area to understand and interrogate the possibility of deeper mineralized systems.

A campaign of 14 diamond drill holes were drilled from 4 surface locations covering a strike length of 1.2 km. Over 2018, 7,401.6m were drilled targeting both the Mills / Hallanan's line and the Russell's Reef lines of mineralization. Peak results for the Mills / Hallanan's line of mineralization included 2.04 g/t Au over 19.95m from 571.95m and 3.25 g/t Au over 2.8m from 598.2m on RRD020.

Mineralization is interpreted to be hosted within west dipping shears that cross cut east dipping stratigraphy. The spatial relationship between the Mills / Hallanan's line to the east and the Russell's Reef line 235m to the west of the Mills / Hallanan's is not clear. The area appears to differ from the Fosterville line which is footwall to a ~500m thick west dipping stratigraphic sequence by having an almost parasitic fold arrangement with anticline / syncline axis alternating every 100m or less. Fault propagation and subsequent gold mineralization appears to favor larger shears that cross from syncline to anticline in both systems.

10.7.3 HARRIER UG FAR SOUTH

The Harrier mineralized system is located to the south of MIN5404. Gold grades are less consistent in the Harrier System and it has largely been dominated by sub-average to average sulfide mineralization. Resource definition drilling in 2016 intersected visible gold in several drill holes. The Harrier System is not constrained up-dip and to the south beyond 4750mN, drilling to the south on the 3800mN and 4200mN sections forms part of the 2019 proposed exploration target areas.

10.7.4 MAY REEF

The May Reef Prospect is located in the northeastern portion of EL3539, some 15km north of the Fosterville Mining License. Several minor historic shafts (early 1900's) occur in the area including the May Reef shaft, which is the namesake of the prospect. Shallow RAB drilling with follow up RC (eight) drilling in the area through the unconsolidated gravel and clays to Ordovician turbidite bedrock identified gold

and arsenic anomalism 100m west of the historical workings. The RC drilling in 1998 returned only one significant intersection (MR4: 1.0 g/t Au over 10m from 42m incl. 3.7 g/t Au over 2m).

The area has been viewed as prospective and will be drilled utilizing both RC and Diamond drilling methods. Geochemical surveys in the area show the strike continuity of arsenic anomalism extending both north and south of the historically drilled region. This, in conjunction with new insights given by AEM data suggests that historic RC drilling would have only superficially tested bedrock (10 – 20m of depth). Most of the holes would have been through unconsolidated sediment cover.

The AEM data also gives increased resolution as to the location of potential faults and fold horizons beneath cover. May Reef resides in a geospatial environment akin to the Fosterville system to the south, with fault offsets off the more regionally dominant Redesdale Fault being similar.

It is postulated that conducive mineralized corridors will fall within certain proximities to major regional faults. If this is true, May Reef would follow the trend of mineralized systems trending along the Redesdale Fault that include Fosterville, Robbin's Hill and Goornong South.

During 2018, regional geochemical anomalies and concepts generated from the AEM interpretation were tested with two east dipping diamond holes totaling 2,275.8m. The eastern most hole successfully encountered gold bearing sulfide mineralization with peak assays returning 0.86 g/t Au over 0.45m from 814.35m on MRD001. The hole had four distinct zones of above background mineralization associated with faults cross cutting east dipping stratigraphy. The area remains a zone of interest.

10.7.5 MYRTLE CREEK

The Myrtle Creek prospect is located in the southern part of EL3539 on private land, 24km south of the Fosterville Mining License. The prospect is 4km northeast of, the 370Ma, Harcourt Batholith where rocks on the prospect comprise 440Ma Lower Ordovician Lancefieldian sediments, dominated by sandstone and quartzite, of the Castlemaine Supergroup. The sediments are tightly folded on an axis trending NNW, similar to that of other Bendigonian sediments east of the Whitelaw Fault. The sandstone-dominated sequence has been intruded by a granitic stock that measures 250m by 200m at surface, and by several quartz porphyry dykes up to 1.5m wide, both of which may be related to the Upper Devonian Harcourt Granodiorite.

Gold was first discovered in the Myrtle Creek area in 1858 and sporadic mining for alluvial and quartz reef gold occurred up until the 1930's. Production from the goldfield is not well recorded, but James (2005) reported quartz reefs grading 1-2oz/ton Au. Modern exploration in the general Myrtle Creek area has occurred since 1974 by companies such as Noranda Australia (rock chip sampling, geological mapping, soil geochemistry (Au, Cu)), Ghana Gold (structural interpretation of aerial photography) and BHP (stream sediments and follow up soil surveys). Perseverance explored the area from the mid 1990's to 2006, completing regional stream sediment, rock chip and soil sampling, geological mapping and petrographic work on rock samples. Northgate explored the area between 2008 and 2009, undertaking additional surface sampling in the northern area of historical workings, but the results were disappointing with the overall tenor of gold-in-soil much lower than observed elsewhere on the prospect.

In 2009 Northgate drilled 10 diamond holes (totaling 1,695m) at Myrtle Creek to test a number of proposed mineralization settings including intrusion-related, fold-fault related, dyke-related and disseminated styles. Much of the drilling was centered about a 600m long by x 200m wide NW trending Au-Mo soil geochemical anomaly centered on the granite stock (Quartz Hill). The drilling, reported by Dean (2010), gained financial support of a drilling grant from the Rediscover Victoria Strategic Drilling Initiative.

Two of the holes returned significant intersections of gold mineralization are reported and interpreted to be from the NE trending New Amelia Mine Shear; Down-hole widths of 2.0 g/t Au over 10.9m from 0.9m (incl. 3.1 g/t Au over 6.0m from 4.0m) in hole MCD004 and 1.9 g/t Au over 8.0m from 84.0m (incl. 5.2 g/t Au over 2.0m from 88.0m) in hole MCD006.

Anomalous gold (7.61 g/t Au peak) and molybdenum (2,882 ppm) were encountered throughout much of the prospect, particularly in proximity to the granite. Visible gold was observed twice within sheeted quartz veins and there appears to be a strong intrusion-related Au-Mo-As correlation. A significant nugget-effect may be present given the presence of coarse gold and frequent highly anomalous As/Mo results without corresponding elevated gold.

The drilling at Myrtle Creek indicates that gold occurs in structurally controlled shears and is not disseminated widely through the wall rock. This fact caused Northgate to suspend exploration on the prospect. However, the drill intercepts on the New Amelia Shear remain untested along strike and down-dip and this prospect is to be further reviewed by Kirkland Lake Gold in the future.

10.7.6 ACCOTT'S

Accott's is a historic mining area 10km south west of the Fosterville Gold Mine operations covered by surface working and shafts with some reportedly reaching down ~150m. The prospectivity of the area has been recognized with several geochemical surveys and RC drilling campaigns testing the area.

21 historic RC holes through 2 phases of drilling have yielded a peak result of 5.42 g/t Au over 3m from 25m (ACTC4), with many not returning significant gold grades. Kirkland Lake geologists conducted a field survey of the area selecting rocks to test for gold anomalism associated with massive quartz veins similar to those seen within Fosterville's underground workings. The result returned 13.1 g/t Au, the highest reported grade of any sample recently recorded. This suggests that the Accott's prospect has elements of both sulfide and visible gold anomalism.

Recent geological studies into the Accott's area suggests that historic mining focused on tensional vein arrays associated with a local anticline. This has been further verified by interpretive work conducted on the AEM data, which established an interpreted cross section of the area attempting to map out fold closures.

The AEM data has also given insight as to the position of the Drummartin Fault, a fault that is interpreted to be a parallel line to the Fosterville Fault and a second generational fault of the regional Redesdale Fault. The mechanisms for gold emplacement are not well understood given the lack of structural drilling data in the area. It is possible that historically mined mineralization has migrated up the anticline's axial plane suggesting that the Drummartin Fault may be an active corridor for auriferous fluids.

Regional exploration drilling was conducted in the Accott's area with 3 diamond drill holes drilled totaling 1908.4m over 2018. The results of the program found that the area was generally unfavourable for gold mineralization, with a peak result of 0.36 g/t Au over 0.4m from 191.1 on ACD001 being the best result. Due to the poor results, the area is unlikely to be revisited for future exploration projects.

10.7.7 RASMUSSEN

The Rasmussen prospect is the northern strike extension of the Fosterville Fault corridor identified by gravity, electromagnetic and soils geochemistry surveys. The region is under Murray Basin sediment cover and has only minor historic workings. The target is seen as a priority owing to the strength of the electromagnetic signature and its clear relationship along strike of the multimillion-ounce Fosterville orebodies.

A series of RC holes will be conducted across the section to help identify mineralization and alteration signature in the area. Given the blind nature of the zone, holes will be campaigned along strike, dipping towards the east to maximize exposure to the interpreted west-dipping structure. Several transect lines will also be designed along strike to ensure best exposure to potentially mineralized horizons.

10.7.8 RUSSELL'S REEF

The Russell's Reef Prospect is located within EL3539, approximately 2.4km south of the Fosterville Mining License. See Figure 6-1. The prospect is based on shallow historical shafts and pits spread over about a 250m north-south extent. Recorded historical production in the area totals 417oz from the 1897-1900 period of mining.

The area has been subjected to several lines of soil sampling, and several programs of shallow RC drilling (50 holes averaging 31m depth) undertaken over a protracted period from 1976 to 1989. Perseverance subsequently drilled nine diamond holes in 2006 to test for Fosterville style sulfide hosted gold mineralization. Three of the nine diamond holes returned drill intercepts averaging above 3.0 g/t Au with the peak result including 6.1 g/t Au over 4.0m from 48.0m (incl. 9.4 g/t Au over 2.0m from 49.0m) on RRD006.

The Russell's Reef area is seen to be prospective for exploration as it is interpreted to be the southern extension of the Fosterville workings.

A campaign of 14 diamond drill holes were drilled from 4 surface locations covering a strike length of 1.2 km. Over 2018, 7,401.6m were drilled targeting both the Mills / Hallanan's line and the Russell's Reef lines of mineralization. Peak results from the drill program included 7.06 g/t Au over 4m from 147.3m on RRD020 and 3.47 g/t Au over 2.25m from 128.5m on RRD019A both on the Russell's Reef line of mineralization.

The proximity to the Hallanan's prospect has meant that exploration has been treated as a district campaign with the geological findings reported in the Hallanan's section.

10.7.9 SUGARLOAF RANGE

The Sugarloaf Prospect area encompasses the entire length of the Sugarloaf Range, a ridge of steeply dipping sandstone and quartzite located immediately west and southwest of the Fosterville Mining License. The prospect area is mostly within the Sugarloaf Nature Conservation Reserve.

A compilation and interpretation of available drilling and geochemical data in conjunction with interpretation of FGM's airborne geophysical data (acquired in 2008) and consideration of Geoscience Victoria's (GSV) Redesdale Fault Model indicates potential for Fosterville-style gold mineralization within the prospect area.

Exploration data in the area includes surface geochemistry, RC drilling, airborne magnetics and radiometrics and ground IP. However, it should be noted that historical (1989-1991) drilling of 36 RC holes (totaling 1,164m) in the area averages only 32m in depth and diamond drilling is absent.

Ground IP/resistivity data, collected in 2010, maps resistive chargeability anomalies beneath the Sugarloaf Range and between the range and the Fosterville Fault. In addition to this, an airborne radiometric K/Th ratio anomaly in the southern part of the prospect may represent a potassium alteration halo proximal to faulting. The K/Th ratio anomaly also has a coincidental and similar trend to the Sugarloaf Fault IP chargeability anomaly. The chargeability anomaly could be caused by the presence of subsurface black shale stratigraphy and/or sulfides.

Regional exploration work was conducted in the area with 2 diamond drill holes being drilled in 2018 for a total of 1087.8m. Holes were designed both east and west dipping to help investigate the regions geological structure and establish if any gold bearing systems exist. Results are still pending for this area.

10.7.10 WINDSOR RUSH

The Windsor Rush and New Windsor Rush lines of working are 1.2km west of the Fosterville line of working. Geochemical soil sampling of the area shows an arsenic anomaly that has a strike length of ~3km with 3 parallel lines spaced roughly 500m apart.

The Windsor Rush line has been historically worked with a number of diggings and shallow shafts sunk through the area. Perseverance exploration historically drilled the area prior to 2005 using RAB holes down to 40m with a numerous intersections of anomalous gold encountered. The peak result included 2.48g/t over 5m from 18m on WR013. Quality control and quality assurance are uncertain for this result.

The eastern most line of the area, historically referred to as the New Windsor Rush line, consists of a shorter, more discreet line of arsenic anomalism with a strike length of 600m. This line was never tested by RAB drilling.

In 2018, as part of the regional exploration program, a west dipping hole was designed to test for a parallel line of mineralization to the west of Russell's Reef. The hole successfully intersected sulfide mineralization 350m west of the Russell's Reef line and returned 1.07g/t Au over 11.45m from 481.35 on RRD023. The intersection has been interpreted to be part of the New Windsor Rush line of mineralization and further testing of this corridor is planned for 2019.

10.7.11 LYELL

The Lyell prospect lies 30km south-east of Bendigo and 20km south of the Fosterville Mine lease. The area is closely related with the Myrtle Creek working area which is 1.6km south of the main Lyell workings.

The initial period of production was during the 1860's within the prospect area, however, limited data is only available during operations in the early 1900's. Two main lines of quartz reef were targeted that included the Linda Reef and Horseshoe Bend Reef. Linda Reef was recorded to a strike of 150m and consisted of a wide west dipping quartz system that recovered 1,349oz Au from down to 51m. The main reef worked at the Lyell prospect is to the east, Horseshoe Bend Reef, consisting of 1.5km strike length of workings made up of 1-3 mined sub-parallel reefs.

The area is mostly undulating and forested with some clearing and surface disturbance around the prospect. There are several historic tailings piles, shafts, and prospecting ditches throughout the site. This anthropogenic disturbance may render soil anomalies potentially misleading due to cross contamination from tailings and mined float material. However, recent field reconnaissance activities identified several float samples surrounding the historic workings that contain visible gold in quartz, with the most significant results for samples returning 39.2 g/t Au in sample FRK00037 and 213.5 g/t Au in sample FRK00042.

Previous exploration conducted by WMC in the mid 1980's aimed to test for shallow gold mineralization in the form of leavings, extensions to known ore shoots, or new sub-parallel ore shoots. Perseverance's exploration in the late 1990's targeted extensions to the south of the prospect with a similar aim of shallow targets. Conclusions from the projects indicated sufficient shallow ore potential worth testing further to evaluate the reefs, with the potential of mineralization at depth remaining underexplored along the lines of reef.

Three RC drilling programs were conducted throughout exploration activities in the Lyell area. These programs closely targeted the historical workings at Lyell with the aim of testing shallow gold mineralization localized to extensions of known ore shoots or new subparallel ore shoots. The RC programs can be divided into 3 main geological focuses; testing the line of workings at the Horseshoe Bend Reef, testing the line of workings at the Linda Reef, and extensions of the Horseshoe Bend Reef south along strike.

RC drilling confirmed a short strike length of the reefs to shallow depths. The main potential of mineralization of the prospect is that occurring at depth. The drilling has shown the area to contain a favorable mineralized setting, a favorable rock package of interbedded turbidites, and quartz emplacements over a 300m strike length. However, assays show that gold grades fluctuate and based off only the shallow exploration activities conducted, is limited to the vicinity of the historic Lyell Mine workings.

Peak historic assays included 12.9g/t Au over 1m from 40m on REDP 1 in the Central Horseshoes Bend area, 3.4 g/t Au over 1m from 28m on REDC 13 in the Northern Horseshoe Bend area and 4.5g/t Au over 2m from 1m on REDC 18 in the Linda Reef area.

The area was explored in 2018 using three diamond drill holes with a total length of 3,239m from two locations. The peak result from two drill holes (one hole pending assays) was 1.67g/t Au over 0.6m from 95.05m downhole on LYD004.

Geologically, Lyell area is an even split between sandstone and shale stratigraphic package interspersed with occasional black shales. Fold wavelengths are in the 100 – 150m between syncline to anticline pairing. Faulting and quartz veining with variable levels of sericitic and chloritic alteration is common throughout the drill holes. Minor sulfidation occurs proximal to quartz breccia zones located on west-dipping faults.

Sulfides intersected include pyrite and arsenopyrite disseminated within the host sedimentary packages. Anomalous gold was returned with assays taken from around the sulfide intervals. Sulfide also exists within felsic dyke that appears similar to the felsic dykes seen within the Fosterville area.

10.7.12 BACKHAUS

The Backhaus location has had minor historical exploration activity within the area. Although the area has evidence of minor mining activity, not much is documented as to the nature and tenor of gold finds from the sunk shafts. Perseverance Group carried out six soil sampling traverses in 1997, for a total of 106 hand augured samples within a small outcrop of exposed bedrock beside the Tertiary Basalt flow. Testing for Au and As showed an anomalous trend of Au >100 ppb and As >100 ppm extending over approximately 200m in a north westerly direction

Annual reports indicate that an RC drill program was conducted consisting of four holes (200m), drilled at 50° dip in both east and west directions across an interpreted fault based on the soils anomaly. Reports indicated that the holes were drilled down to 50m testing for gold associated with the interpreted Mills/Daley's fault. The program failed to delineate any substantial gold mineralization proximal to the Backhaus prospect.

An exploration program was conducted in the area to test the southern continuity of the Fosterville system 3.5km south of the mining operations. Due to site restrictions, the hole was designed to drill back towards the west and pushed to lift to cross cut stratigraphy. A parallel line of investigation for the hole was to test the validity of the interpreted Redesdale Fault system, the proposed first order structure that the Fosterville Fault is linked into.

Two holes were planned from the site, one west and one east dipping to gain sectional information as to the structural corridors continuation. Due to some geotechnical issues with ground conditions, four holes were completed for 2,694.2m.

Geologically, the area appeared to have experienced little fault activity with minor tensional veins and the very infrequent quartz vein with chlorite. Only one structure was intersected that contained anomalous gold results with 0.19g/t Au over 0.5m from 1,084m on BKD001.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 SAMPLING METHOD AND APPROACH

During 2018, RC drilling samples were collected from a trailer mounted cyclone providing an approximate 2kg two-meter composite sample and one meter sub-samples retained for QAQC checks. Where gold mineralization intervals were identified in assays, the corresponding one meter sub-samples were dispatched for multi-element analysis to improve the resolution around the areas of interest. All reject material was disposed of in an authorized location on MIN5404. All RC holes were completely sampled.

As part of the 1997 Feasibility Study several of the FO prefixed holes (see Table 10-3) with long, high-grade intersections were twinned with RC holes drilled with a much bigger compressor and a face sample hammer resulting in dry samples. These twin holes demonstrated that there was significant down-hole contamination in the FO holes (Perseverance, 1997). As a result, the FO holes were only used for estimating oxide resources and reserves where it is assumed that dry samples were recovered and down-hole contamination was not an issue.

In the diamond drill core, all visible sulfide mineralization, quartz vein stockwork and LQ veins plus at least three meters of apparent waste either side is sampled. Samples are cut to geological boundaries and within a length range of 0.05m to 1.3m, with a preferred length of one meter. Infill diamond holes (spaced at 25m or less) can be full-core sampled; the entire core sample is broken with a hammer in the tray and moved directly into the sample bag. All other core is halved using a diamond saw and the upper half of the core dispatched for analysis and the lower half returned to the core tray in its original orientation. PQ core was sampled by cutting a sliver equivalent in volume to half NQ2 core from the top of the core. Recovery of diamond drill core is acceptable where it is determined that over 90% recovery for a run has been achieved. If recovery is proven to be less due to core loss or because of poor ground, the samples may not be used for Mineral Resource estimation.

In underground sampling, an attempt is made to sample every round (3 to 4m nominal advance) in the ore drives where safe to do so. Sample intervals are chosen based on structure, mineralization and lithology, and are a minimum of 0.1m and a maximum of 1.5m in length. Mapping data that was collected at the same time as the samples are used to validate the sample results.

Figure 11-1 includes some 576 duplicate face sample pairs were collated including face sample duplicates taken on the Phoenix 4380mRL (2014) and the Phoenix 4280mRL (2015-2016). With outliers removed, the duplicates show a moderate correlation with an R^2 of 0.6402. This study covered the underground face sampling method from late 2006 to the end of 2016. Face sampling data is used to refine resource domain boundaries. Sample grades from face sampling are not used in the resource estimation process.

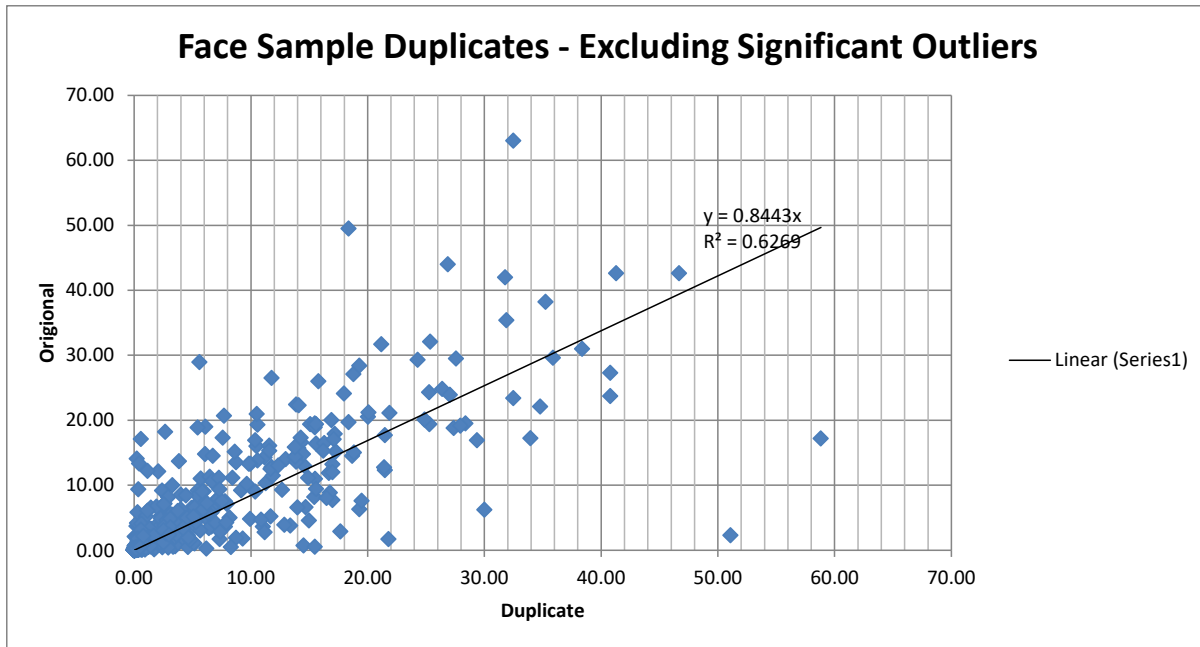


FIGURE 11-1 UNDERGROUND FACE SAMPLE DUPLICATE RESULTS

Through time, sludge holes have been bored with 54mm diameter drill bits and sampled at two-meter composite intervals, or at 1.8m intervals corresponding to rod length. Occasionally 1m samples are taken on 76mm diameter production charge holes, for a similar sample volume, nominally weighing between 2kg to 5 kg per sample. Cuttings are collected by a custom designed apparatus to maximize the catchment area to improve sample quantity/quality. Samples are inspected for quartz percentage, non-carbonate carbon content, sulfides present and lithology. Due to the poor quality of the samples, sludge samples are not used directly in resource estimations but may aid in defining domain margins.

All remaining diamond drill core is stored on site within the fenced and gated core handling facility or within the mine compound on the backfilled Falcon Pit storage area. Assay sample pulps are also returned from the laboratory and stored at the core handling facility. All exploration pulps are stored indefinitely whereas resource infill drilling are kept for a period of two years.

The RC samples collected during 2018 are stored at a FGM owned sample-handling facility. The samples stored include; 1m sample splits, chip trays with 2m composites and returned pulps. The 1m samples are within calico bags, these stored within poly-weave bags, which are then placed in a bulker bag on a pallet. The bulker bags are UV treated in order to protect from sun exposure. The chip trays and the pulps are stored undercover for long-term storage.

11.2 ELEMENTS ANALYZED

TABLE 11-1 ANALYSED ELEMENTS BY METHOD AND TIME PERIOD

Element/ Analysis	Reason for Analysis	Sample selection/Method/Timing
Au	Primary Commodity	All samples 25g Fire Assay, except: <ul style="list-style-type: none"> - fresh (non-oxide) rock until December 2004 (40g FA), - oxide samples until December 2004 (25g Aqua Regia digestion, AAS), and - production drill core sent to GAL in 2012-2016 (30g FA). Some Robbin's Hill Exploration RC and drill core sent to ALS in 2007 (40g FA), pulps sent to Bureau Veritas in 2016 (40g FA). Drill core to Bureau Veritas since 2018 (40g FA). Chrysos PhotonAssay 2018- preliminary test phase.
As	Toxic to BIOX®	Analysed since August 1995. All Exploration drill samples 1995 – 2018. Metallurgical diamond drill samples in 1997. Blast hole sampling sulfide open pits 2004 – 2007. Underground face sampling 2008 – 2009. Stope sampling 2008 – 2009. ICP-AES Select stope samples only 2016 – 2018. All by ICP-AES, except: <ul style="list-style-type: none"> - Aminya 2001 - 2006 (AR50), and - ALS Bendigo 1994 - 2002 (AAS). Production drill core samples on significant Au intercepts from late 2017.
S	Primary feed for BIOX®	All Au values over 0.5 g/t August 1995 to May 2001. All Exploration drill samples by ICP-AES 2001 to 2018. Sulfide open pit GC and blast holes by ICP 2005 – 2006. All production drilling and underground sampling by LECO or equivalent (IR detection), 2006 - 2009. Production drill core samples on significant Au intercepts from 2009 - 2018. All open pit sulfide GC RC and blast holes, 2006 - 2007. Selected blast holes 2011. All underground face samples 2006 – 2009. Selected sludge holes 2007 – 2008. Selected stope samples 2007 – 2009. Selected open pit sulfide grab samples 2011. All open pit sulfide RC samples 2012.
Sb	Toxic to BIOX®, indicator for high-grade Au	For all Au values over 0.5 g/t August 1995 to May 2001. From 2001, all Exploration core routinely. Production samples only where stibnite observed. ICP-AES except: AAS on RC drilling by ALS Bendigo 1999. 50g Aqua Regia digest with AAS finish 2002 - 2006. XRF by AMDEL 2006 – 2007. >0.6% ICP-AES derived Sb grade then OSLS modified triple acid digest with AAS finish 2013 – 2018.

Element/ Analysis	Reason for Analysis	Sample selection/Method/Timing
		Production core submitted to GAL 2015/2016 with stibnite observed, Aqua Regia/AAS (<10%) and Acid Digest/Titration (>10%). Production core submitted to BVM since 2018 with stibnite observed, minimum 25g, Peroxide Fusion, ICP-MS.
NCC/TOEC	Organic carbon is preg-robbing and competes with activated carbon in CIL recovery. Historically an effective indicator for preg-robbing potential.	IR detection, LECO or equivalent carbon/sulfur analyser. All Au values over 0.5g/t August 1995 to May 2001. Since 2001 only where high carbon content is observed. Sulfide open pit GC and blast holes only selected samples 2006 – 2007. Selected sludge samples 2006 – 2018. Selected stope samples 2007 - 2010. 2012 – 2018. Selected face samples 2007 - 2010. 2012 – 2018.
Preg-Robbing Activity	Method developed by Fosterville Metallurgy and provided to OSLS to perform at scale, where NCC is not an adequate proxy. Some ore is low NCC but high preg-robbing. Some ore is low preg-robbing despite high NCC.	Selected face samples 2014. Selected stope samples 2014 – 2018.
ICP suite: Au, Ag, As, Bi, Cu, Fe, K, Mo, S, Sb, NCC +/- (Ni, Pb, Te, Zn)	Near Mine and regional exploration suite: elements selected can provide useful information for mineralization vectoring, and can be used for preliminary screening to identify potential processing complications	2010 to present day. Ni, Pb, Te, & Zn – has been added to regional exploration suite from Q4 2017.
Multi element core scanning technologies	Utilising new technologies such as Oreplore and Minalyze for metallurgical and multielemental data.	Preliminary test phase for both technologies was undertaken in 2018.

11.3 DESCRIPTION OF ANALYTICAL TECHNIQUES

All of the gold analyses used in the sulfide resource model in the 2000 Sulfide Feasibility Study were fire assays of a 40g charge carried out by ALS at Bendigo, a commercial laboratory (non-accredited). The other elements were analyzed by a variety of techniques at a variety of laboratories. A full program of repeats, standards and inter-laboratory check sampling was conducted on the gold analyses.

For the 2001 – 2004 NQ2 SPD diamond drilling campaign, gold analyses were determined by fire assay of a 40g charge by AMDEL in Adelaide, a commercial laboratory (ISO 9001 accredited). A 30 element suite including As, S and Sb was analyzed by ICP-AES from a separate 5g charge following HNO₃/HF digestion. From November 2002 to August 2003 TGC (total graphitic carbon) was analyzed on a selective basis. A full program of repeats, standards and inter-laboratory check sampling was conducted on the gold analyses.

Since 2005, independent On Site Laboratory Services (OSLS), a commercial laboratory based in Bendigo, has been the primary provider of analytical services to the operation. The OSLS Bendigo laboratory gained

ISO 9001 accreditation in October 2008 with registration ISO9001:2008 (CERT-C33510). NATA accreditation is pending a final audit, due early 2019.

OSLS use a combined crusher and mill to pulverize the entire sample to a nominal 90% passing 75µm. A 25g sub-sample is analyzed for gold by fire assay with an AAS finish. Au results greater than 80g/t are diluted to 1:10 and tested using the AAS. A 0.5g sub-sample of the pulp is digested in a HNO₃/HCl digest and then analyzed for Ag, As, Bi, Ca, Cu, Fe, K, Sb and S by ICP-AES. A full program of repeats, standards and inter-laboratory check sampling was conducted on the gold analyses.

An audit of the OSLS facility was completed for Perseverance by an external consultant during 2007 (Stewart, 2007). This Audit found that OSLS's procedures were adequate and presented no major risk to the resource estimate.

An audit of the OSLS facility was completed by SRK in August of 2017. The key recommendations of the report have been actioned and are in the process of being completed. These recommendations include but are not limited to drying oven temperature and moisture monitoring systems and developing specific scoops for more representative sampling when transferring the pulverized sample from the LM5 into the pulp packet and from the pulp packet into the 25g charge reciprocal.

Work undertaken by employees of Fosterville is limited to core logging and the mark-up, cutting and bagging of samples. All other sample preparation and analysis was conducted off-site at the commercial laboratories.

Gekko Analytical Laboratories (GAL) were contracted to provide analytical services for diamond core and underground face samples between April 2015 and April 2016. Analytical techniques include fire assay for gold, titration and atomic absorption spectrometry for Antimony, combustion analysis and Infrared detection for both sulfur and Non-organic Carbon. Gekko Analytical Laboratories gained National Association of Testing Authorities, Australia accreditation (NATA) in October 2015 with accreditation number, 19561.

All samples are dried at approximately 105° C. GAL uses a Jaw crusher to crush the sample material to 8mm. The sample is then placed within a Boyd crusher and rotary splitter combination to enable further crushing to 3mm and optional splitting of the sample if it weighs in excess 3kg. Pulverization takes place with up to 3kg of sample to achieve 90% passing 75µm. Sizing is reported with Au assays at 1:20 frequency. Approximately 120g of pulverized sample is scooped into a wire and cardboard pulp packet. Two pulp packets are created as a laboratory duplicate at a frequency of 1:10. A 25g scoop of sample is taken from the pulp packet and smelted with 180g flux. A 10g scoop from the pulp is re-fired for comparison if the initial grade was determined at >50g/t. Antimony is analyzed by using an aqua regia digestion with an AAS finish. If the result is over 1% Sb, the sample is then analyzed by an acid digestion and titration. Total sulfur is analyzed using combustion analysis followed by Infrared detection. Non-Carbonate carbon is analyzed by weak acid digest and combustion analysis followed by Infrared detection (LECO). During this time the laboratory was audited by FGM personnel to assess the preparation and sample handling processes. No major risks were observed.

With increased sample loads in H2 of 2018 Bureau Veritas (BV), Adelaide provided analytical services of resource definition and exploration samples. Analytical techniques include fire assay for gold. This

laboratory is ISO 9001 accredited as well as National Association of Testing Authorities, Australia accreditation (NATA) with accreditation number, 1526.

At BVM all samples as received, are dried at approximately 105° C. The sample is then crushed to 3mm in a jaw crusher (with optional splitting of the sample if it weighs in excess 3kg). Pulverization takes place with up to 3kg of sample to achieve 85% passing 75µm. Approximately 200g of pulverized sample is scooped into a cardboard pulp packet. Two pulp packets (lab duplicates) are created as a laboratory duplicate at a frequency of 2:50 (or 2 per fire). A 40g sub-sample is analyzed for gold by fire assay with an AAS finish. Au results greater than 5g/t are diluted at a dilution ration of 1:10 and analyzed using the AAS.

11.4 QAQC

Fosterville uses independent assay laboratories, which provide assay data in digital form. On Site Laboratory Services (OSLS) is Fosterville's main assay laboratory used to assay drill and grab samples, and has been since July 2007. GAL received a percentage of diamond core samples and all production face samples from April 2015 through June 2016. BVM was contracted as an overflow laboratory for drill core from September 2018.

Quality Assurance and Quality Control (QAQC) are completed on samples after being imported into the database. Assays not passing the QAQC tolerances on blanks, standards, duplicates and repeats are retained in the database but are not available for viewing for resource work within MinePlan™. Where it is determined the sample itself is compromised, rather than the analysis, then the sample is demoted and its assays are not reported in MinePlan™ or other applications.

Any values falling beyond defined quality parameters are investigated according to laboratory and company procedures. Sufficient proof or suspicion of error requires re-assays on the affected portion of a job, where the original assays are rejected, and the results from the subsequent batch (provided these pass QAQC processes) are used instead.

The QAQC review process has been improved and developed over the years. The system comprises four main strands with the reliance on standards (certified reference materials), duplicates, repeats and blanks samples. Each strand is summarized below.

11.4.1 STANDARDS

Standards (also known as Certified Reference Materials) are submitted and analyzed with samples to monitor the analytical process and check accuracy of results. Statistical analysis is performed prior to release from the manufacture to quantify the content of the material of interest (e.g. Au) to within known limits of error (usually a 95% confidence interval).

Drilling programs up to the end of 2007 included the use of four gold mineralized standards provided by Gannet Holdings Pty Ltd (ST148, ST109/0285, ST73/7192 and ST43/7194) and one standard prepared from approximately 500kg of Fosterville sulfide mineralization from previous RC drilling (AA). Over time the use of gold mineralized standards from Gannet Holdings Pty Ltd has diminished, with alternative suppliers being favored.

Since 2008, a further 41 gold standards have been adopted for use at Fosterville, with 20 of these still available for use. Of these available standards, only a small selection is “active” (in use) at any one time, to ensure each provides a sufficiently large dataset month to month with which to effectively assess laboratory performance with respect to bias, variation, and any change in trend of these factors. Each standard remains in use for several consecutive months to gauge trends over the longer term, before gradually being replaced with a different standard with a similar mean. Active standards are rotated occasionally to prevent predictability of expected means and to demonstrate that standards are being accurately analyzed.

FGM purchase “fit for purpose” standards from Geostats Pty Ltd as certified reference materials. Unlike laboratory standards these standards are submitted for analysis in particular order with a laboratory consignment so as to better test the laboratory’s accuracy at different grade ranges. FGM standards are inserted at a rate of about one in forty, and have a wide range of gold grades extending from less than 0.3 g/t Au to about seven times the average ore grade expected at Fosterville.

Standards which fall outside of 3 Standard Deviations potentially indicate an issue with the job, such as contamination in fire assay, fusion issues, or AAS calibration. A fresh standard is submitted (from the same batch if possible) to be fired with repeats from the original pulp packets of the 10 surrounding samples. If the new standard performs and there is no significant bias between the original and repeat fires, it is assumed that only the standard was in error and that the primary samples were not compromised.

As recommended by QG (Quantitative Group Pty Ltd), reported populations associated with a given laboratory/method are intermittently reviewed against certified ranges. Where populations are sufficiently large (usually greater than 400 assays) the mean and standard deviation of the reported population is calculated, and these may be used to assess the standards performance, in place of the certified values, for that laboratory/method.

No recalculation was performed on standards used in 2017 or 2018. All standards presented in Table 11-2 are in reference to manufacturer certification. Populations less than 30 are not shown. The values of the expected mean column in Table 11-2 have been substituted with a broad, indicative range to keep anonymity of the approximate standard values.

TABLE 11-2 STANDARD PERFORMANCE 2018

Expected Mean Range (g/t)	Number	Z Score	Relative Difference Percent	Coefficient of Variation
0 - 1	207	-0.34	-0.03	7.3
0 - 1	280	-0.04	0	4.2
1 - 3	327	-0.37	-0.01	3.5
1 - 3	284	-0.63	-0.02	3.6
1 - 3	92	0.48	0.04	3.7
1 - 3	240	-0.23	-0.01	3.3
4 - 6	291	-0.28	-0.01	2.7
4 - 6	366	0.38	0.01	2.3
5 - 7	39	-1.57	-0.05	2.4
9 - 11	193	0	0	2.8
10 - 12	89	-0.5	-0.02	3.9
48 - 50	184	0.22	0.01	1.9
48 - 50	251	-0.2	-0.01	1.9
Totals	2,843	-0.24	-0.01	3.4

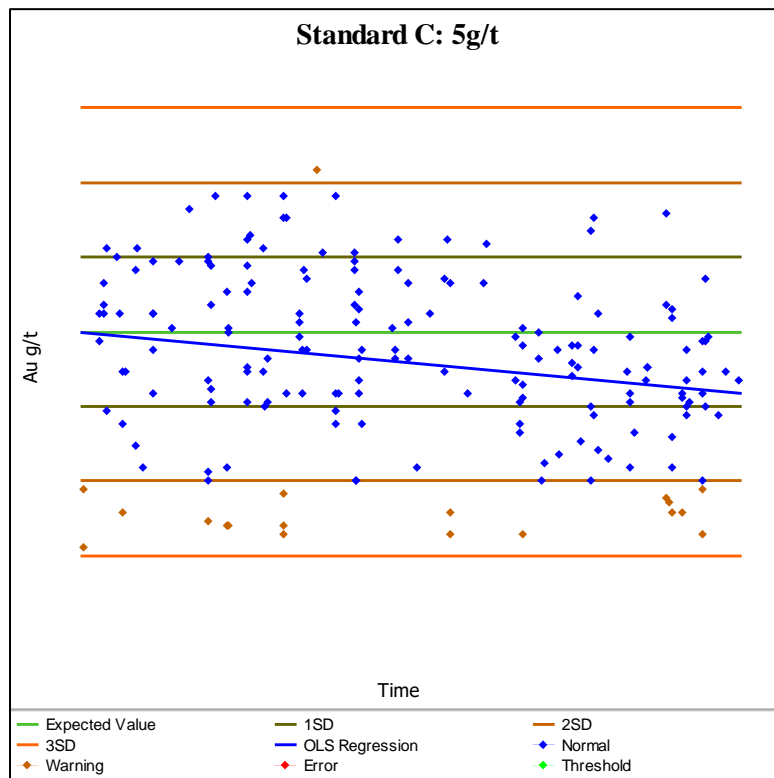


FIGURE 11-2 EXAMPLE STANDARD CONTROL CHART

Figure 11-2 is an example of a plot used to track the general trend of the lab performance over time. These reviews are completed on a monthly basis with any observed trends communicated to the laboratory.

In addition to client-supplied standards, assay laboratories will insert their own standards into assay batches to monitor accuracy and quality. OSLs have reported laboratory standards with assays since August 2012. All GAL and BVM jobs have been reported with laboratory standards.

Table 11-3 and Table 11-4 document the laboratory standards reported by OSLs and BVM in 2018, along with the nominal ranges used to validate them.

TABLE 11-3 OSLs 2018 LABORATORY STANDARDS, G/T AU

STANDARD ID	Expected Mean (g/t)	Mean – 3SD	Mean + 3SD	Bias from expected (%)
ST345	0.055	0.040	0.070	-0.91
ST588	1.60	1.45	1.75	-0.82
ST643	4.92	4.50	5.34	-1.41
ST484	7.49	6.74	8.24	-1.89
73988	14.4	13.2	15.6	1.45
34282	26.3	23.3	29.3	-0.99
ST620	46.27	40.30	52.24	-0.99

TABLE 11-4 BVM 2018 LABORATORY STANDARDS, G/T AU

STANDARD ID	Expected Mean (g/t)	Mean – 3SD	Mean + 3SD	Bias from expected (%)
ST603	0.38	0.32	0.44	-0.23
AMD2G	1.28	1.16	1.4	-0.66
AMDRD4	4.02	3.51	4.53	0.42
ST696	16.77	15.33	18.21	-0.01

11.4.2 LABORATORY DUPLICATE SAMPLES

Laboratory pulp duplicates are provided as part of internal laboratory QC as an indication of preparation/pulverization homogeneity, but may also indicate random analytical errors. Laboratory duplicates are selected at random at a rate of approximately one in ten (one in twenty at BVM) and constitute a second ~200g subsample taken from the pulverizer. From this stage of laboratory preparation, the duplicate is treated as an additional sample and undergoes the same process at the same time as the original aliquot being used to represent the submitted sample.

Fosterville only collects laboratory duplicate data on Au.

Fosterville sulfide samples (samples without logged visible gold or potential for visible gold) have historically shown to be highly repeatable as seen in Figure 11-3.

A review of OSLs laboratory Au duplicate data collected from 2012 to 2015 found a very strong correlation with an R² of 0.98. GAL laboratory Au duplicate data collected during 2015 had an R² correlation coefficient of 0.94.

In 2016, the combined dataset of OSLs and GAL 25g Fire Assay duplicates on primary sulfide Au samples totaled 915, excluding results less than 10x lower limit of detection. Bias was insignificant (-0.83%) with an R^2 of 0.997. 85.79% were within 10% AMPRD and 96.5% were within 20%.

Fire Assay laboratory duplicates on primary sulfide Au core samples in 2018 totaled 3,384, excluding results less than 10x lower detection. Bias was insignificant (0.66%) with an R^2 of 0.998. 88.83% were within 10% AMPRD and 98.67% were within 20%.

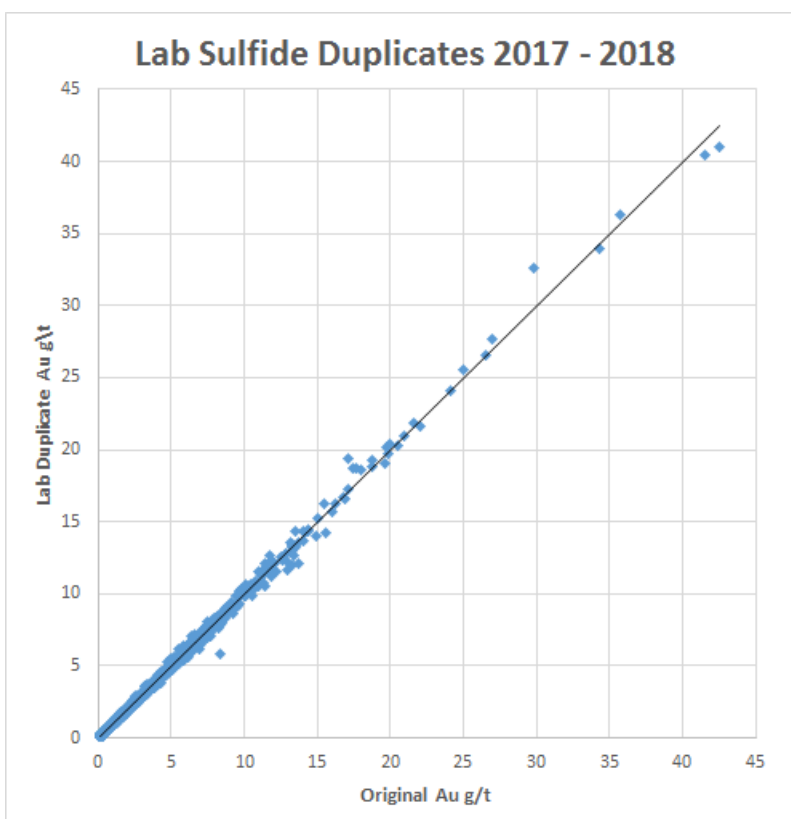


FIGURE 11-3 SULFIDE LABORATORY DUPLICATES (2017 – 2018)

In 2016, the OSLs 25g Fire Assay repeats on primary samples dispatched as Visible Gold (VG) samples totaled 121, and included values up to 2,497 g/t Au. These VG samples are core samples with any component of visible gold observed and recorded while logging. Bias was insignificant (-0.96%) with an R^2 of 0.966. A total of 72.73% were within 10% AMPRD and 84.30% within 20%. GAL did not analyze any 'VG' samples in 2016.

Au Laboratory Duplicates on 'VG samples' in 2017-18 totaled 454 and included values up to 19,766g/t Au (Figure 11-4 with values >4000ppm, n = 3, not shown for reasons of scale). Bias was insignificant (4.85%) with an R^2 of 0.996. 82.38% were within 10% AMPRD and 94.27% were within 20%.

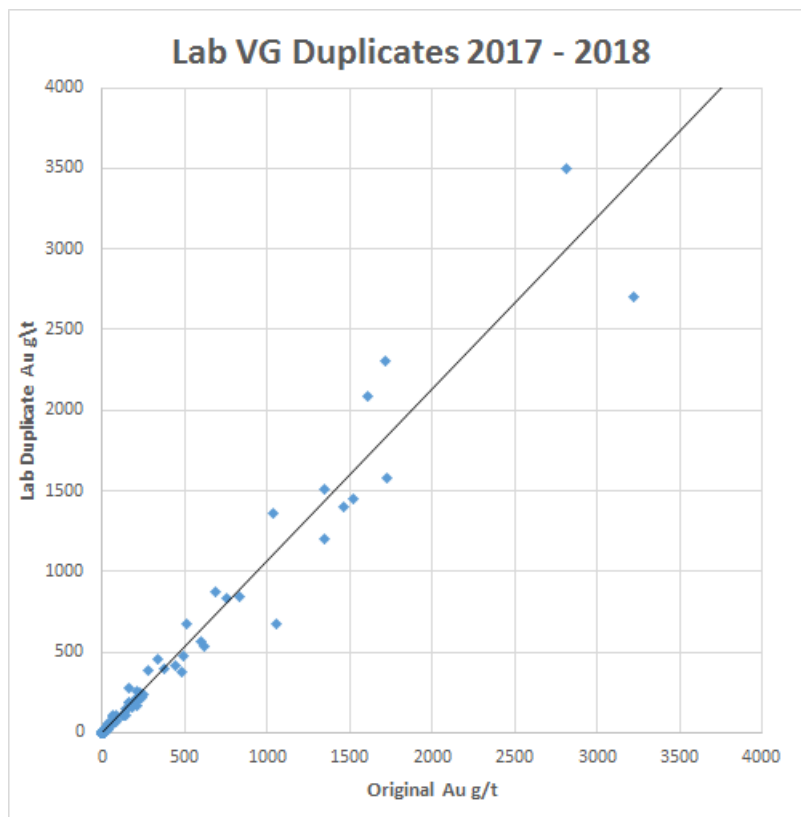


FIGURE 11-4 VISIBLE GOLD LABORATORY DUPLICATES (2017 – 2018)

11.4.3 LABORATORY REPEAT (REPLICATE) SAMPLES

Laboratory repeats are additional fires from the original pulp run in a subsequent fire. At OSLS, the laboratory repeats are specifically performed on a different day and by a different fire assay technician than those of the originals. At GAL, the fire was run on a different day, but there is no explicit requirement for a different technician to perform each fire. At BVM, the subsequent fire is done a different day with no requirement for a different technician. Repeats are required to be selected, run and reported by the laboratory before finalized results can be released to the FGM. Repeats may additionally be requested on specific samples at the client’s request and reported as an amendment, in support of the original values.

Fosterville only collects laboratory repeat data on Au.

In 2016, laboratory repeats, not flagged as Visible Gold or potential visible gold, showed insignificant bias (0.27%) and a strong correlation with an R^2 of 0.963, from 2,501 pairs. Potential visible gold refers to samples with logged geological features which suggest the presence of visible gold. This represented both the GAL and OSLS datasets combined and excluded results less than 10x lower limit of detection. 93.56% of these were within 10% AMPRD, and 99.65% within 20%. This dataset included a small handful of notable outliers above 40g/t Au, with differences such as 44.1 g/t Au vs 105.9 g/t Au (82.4% AMPRD) and 126.4 vs 73.3 g/t Au (53.2% AMPRD). It is likely that these samples were not identified at the logging stage for their potential to host coarse gold.

From 2017 to 2018, laboratory repeats on primary sulfide Au core samples totaled 12,874, excluding results less than 10x lower detection (Figure 11-5). Thirteen samples have been excluded from this dataset, believed to contain unobserved coarse gold (52.6 to 349g/t). Bias was insignificant (0.18%) and excellent correlation was shown with an R^2 of 0.993. 93.45% were within 10% AMPRD with a maximum of AMPRD of 132% (0.21 vs 1.02g/t).

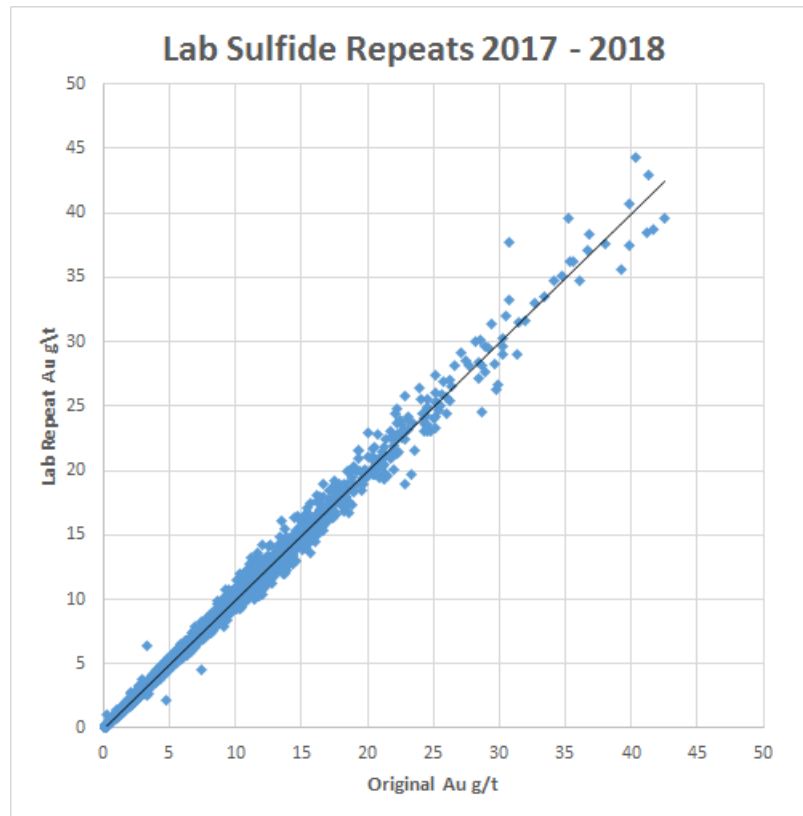


FIGURE 11-5 LABORATORY REPEAT SULFIDE SAMPLES (2017 – 2018)

Laboratory Repeats from 2016, which were flagged for Visible Gold or potential show insignificant bias (0.21%) and correlate strongly, with an R^2 of 0.981 from 425 pairs (threshold 10x detection). 95 of these pairs (or 22.34%) had an assay at 200 g/t Au or more. 61.64% of the 425 pairs were within 10% AMPRD, with 82.35% within 20%.

Laboratory repeats on primary samples with observed or potential VG from 2017 to 2018 totaled 1,495, with values up to 17,400g/t Au (Figure 11-6) not shown for reasons of scale. Correlation was strong with an R^2 of 0.972, and an insignificant bias of 2.09%. 70.77% of pairs were within 10% AMPRD and 88.63% were within 20%.

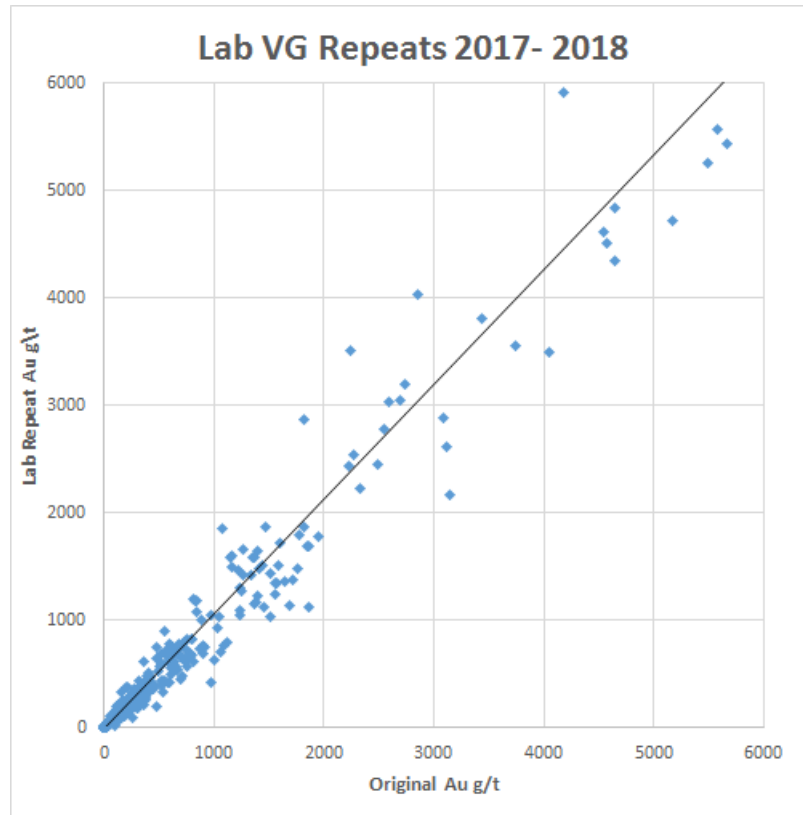


FIGURE 11-6 LABORATORY REPEAT VISIBLE GOLD SAMPLES (2017 – 2018)

11.4.4 BLANKS

Field blanks were historically not used because there is a sharp visual grade contrast between mineralization and waste, which provides a natural blank. However, in 2009 the use of field blanks was adopted to assess quality control of the sample preparation; i.e. to test for contamination from one job to the next and also from sample to sample within the job. These were produced by half core sampling 1.2m intervals of barren material. Intervals showing less than 0.03ppm were then split into 0.3m lengths, with each constituting a 'field blank'. From October 2012, this process was refined and original 1.2m samples were analyzed at ppb levels, for more precise determination of values below 0.03ppm/30ppb. A minimum of two field blank samples is inserted into each diamond drill hole sample batch. At least one field blank sample is inserted at the beginning of the job, with others inserted between mineralized samples.

In the period June 2014 – February 2016 interstitial blanks were routinely inserted within zones containing potential or observed visible gold as an attempt to control and quantify contamination between samples. From February 2016 this process was improved by instead inserting quartz wash samples between samples of potential or observed coarse gold, with blanks occasionally following these to verify the effectiveness of the quartz wash.

Since August 2012 laboratory blank samples have been imported and assessed as part of the FGM QAQC process for drill core. OSL reports blanks in Au Fire Assay only, where barren flux is fired in a new pot.

Elevated grades will usually either indicate drift in calibration, or contamination during fire assay. All elemental analytical methods requested by GAL and BVM have been reported with laboratory blanks.

11.4.5 FIELD DUPLICATES

Half core samples (cut in half longitudinally by diamond tipped saw blade) are duplicated at a rate of about one in every 80 samples per drill hole. The second half of core, usually discarded after a time or retained indefinitely for reference, is submitted blindly to the laboratory and processed like any primary sample within the same job. These test the sample representivity of the Fosterville half core sampling process and aid in quantifying the nugget effect.

Field duplicate data collected over the 2013 – 2015 period showed an R^2 value of 0.96 with no apparent bias.

Field duplicates from 2016 on sulfide samples represented 436 pairs, with insignificant bias (-0.97) and an R^2 of 0.922. Excluding two extreme outliers, which are believed to contain unobserved coarse gold, the R^2 becomes 0.980.

There were a total of 1,592 Field Duplicate pairs on half core diamond samples 2017-2018 (Figure 11-7), not including results where both halves were reported below 10x lower detection limit. Excluding one sample with observed visible gold (1515 vs 1349g/t) and one sample identified while logging as potentially containing coarse gold (0.79 vs 0.67g/t), this dataset is believed to represent sulfide-hosted ore and has a bias of 0.21% and an R^2 of 0.958.

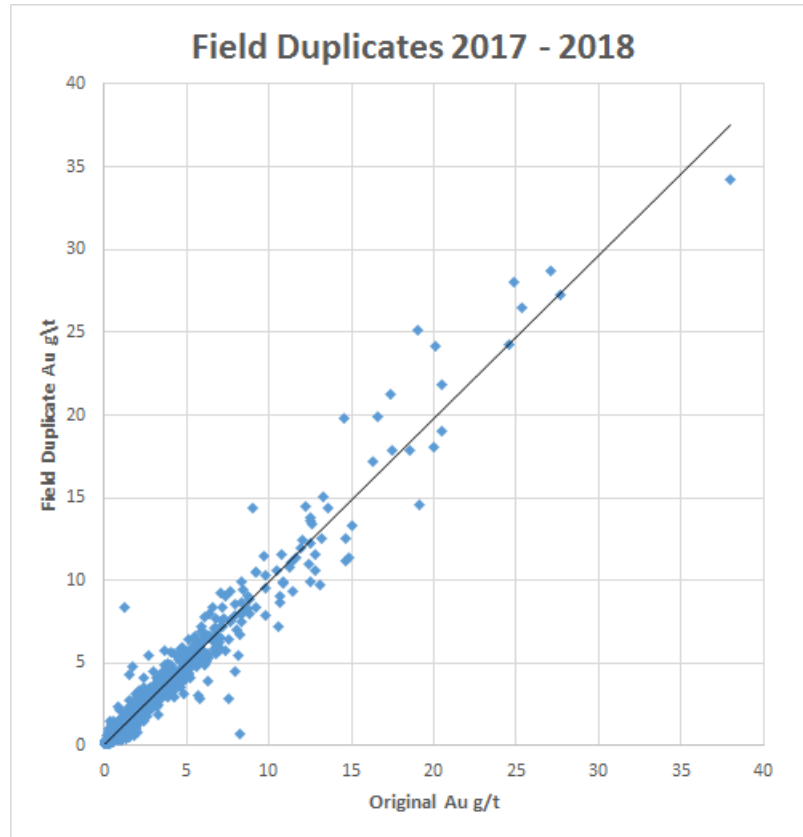


FIGURE 11-7 FIELD DUPLICATE GOLD DATA (2017 – 2018)

11.5 ANALYTICAL TECHNIQUE VERIFICATION

Various analytical testing had been conducted from 2016 to 2017 to ascertain the accuracy of using the FA25g analysis technique employed at FGM with respect to the suitability of it in high-grade visible gold resources and also to check the accuracy of the main service provider of analytical services to the mine.

11.5.1 COMPARISON OF ANALYTICAL TECHNIQUES

During May to July 2016 a series of stope samples were collected from three stoping panels on the P4240mRL. Each stope sample was collected as a truck dump grab from the ROM. The samples were approximately 3-5kg mass in a calico bag as per standard mine geology practice. In addition to each sample being tested using the FA25g technique, the pulp created for each sample was further tested for gold by fire assay with a 50g charge (FA50) and by Screen Fire Assay (SFA) techniques. The bulk of the same sample (sample mass minus pulp mass) was sub set to ~3kg (maximum) and 2kg of mass were then analyzed by Leach well with the tail residue being analyzed by FA25. The analysis type was selected in order of increasing sample analyzing mass (sample support) to detect any analytical bias introduced by FA25.

Quantitative Group Pty Ltd consultants (2016) reviewed the stope sample data and commented regarding the limitations regarding stope sampling ROM material in that the bias represented between FA25 and

Leachwell (for example) may be exacerbated. Notwithstanding this, the results do suggest that although the averages of each data set are very similar, there is a change in the nature of the correlation of the data, particularly between the FA25 and the LW data sets. There seems to be a positive conditional grade bias of the FA25 data over the other three methods with assays exceeding 20 g/t Au (Figure 11-8).

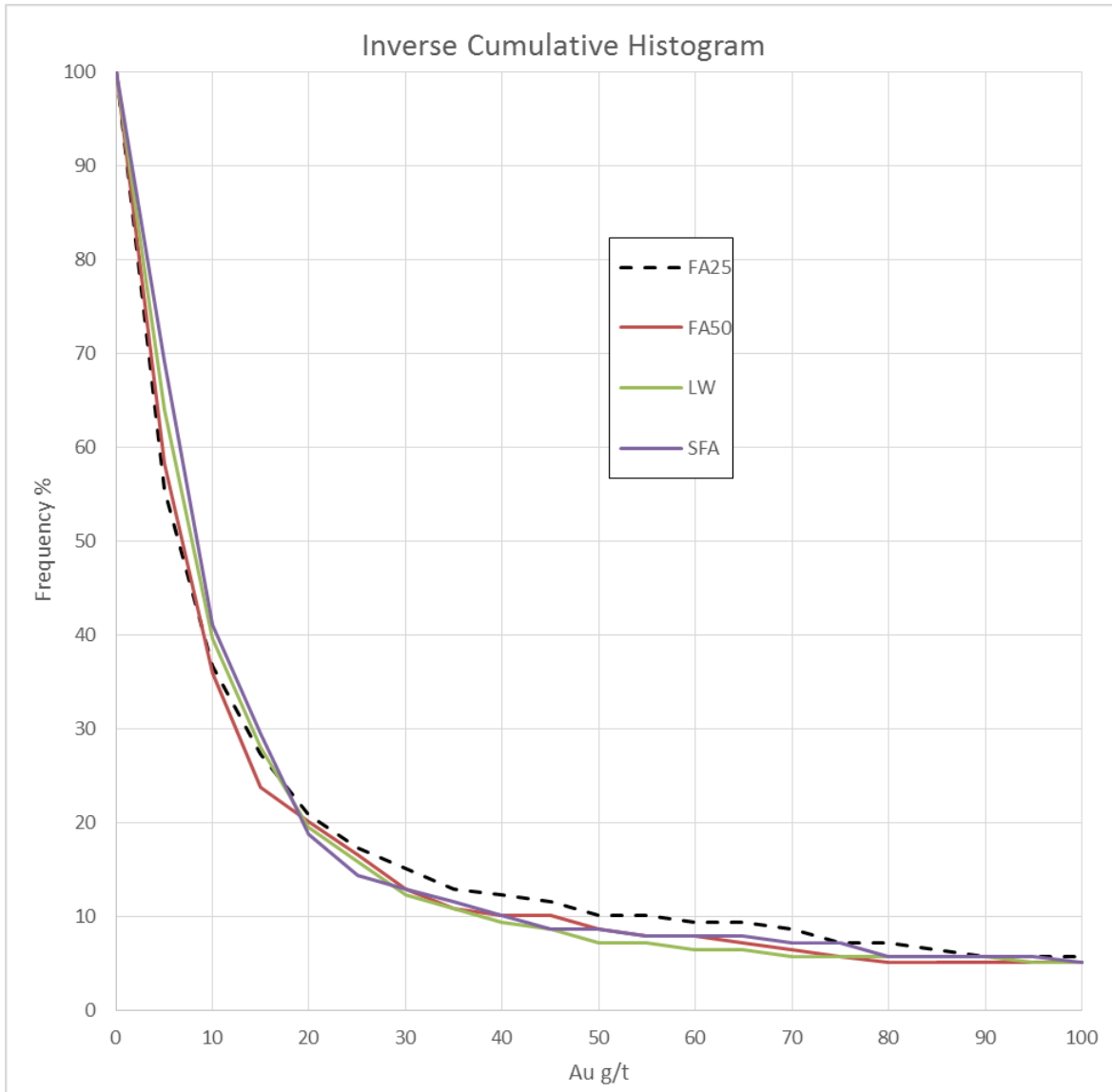


FIGURE 11-8 INVERSE CUMMULATIVE HISTOGRAM SHOWING A POSITIVE CONDITIONAL GRADE BIAS OF FA25 GOLD DATA. (QG CONSULTANT REPORT 2016)

In 2017, a large scale project was initiated to compare traditional 25g Fire Assay and ~2kg 36-hour Leachwell on drill core samples of observed or potential visible gold. Preliminary results are charted in Figure 11-9 . A clear population of samples up to 25g/t Au with low leachability and excellent correlation between the original fire assay and the fire assay on leachate (solids) are suggestive of samples containing only sulfide hosted gold.

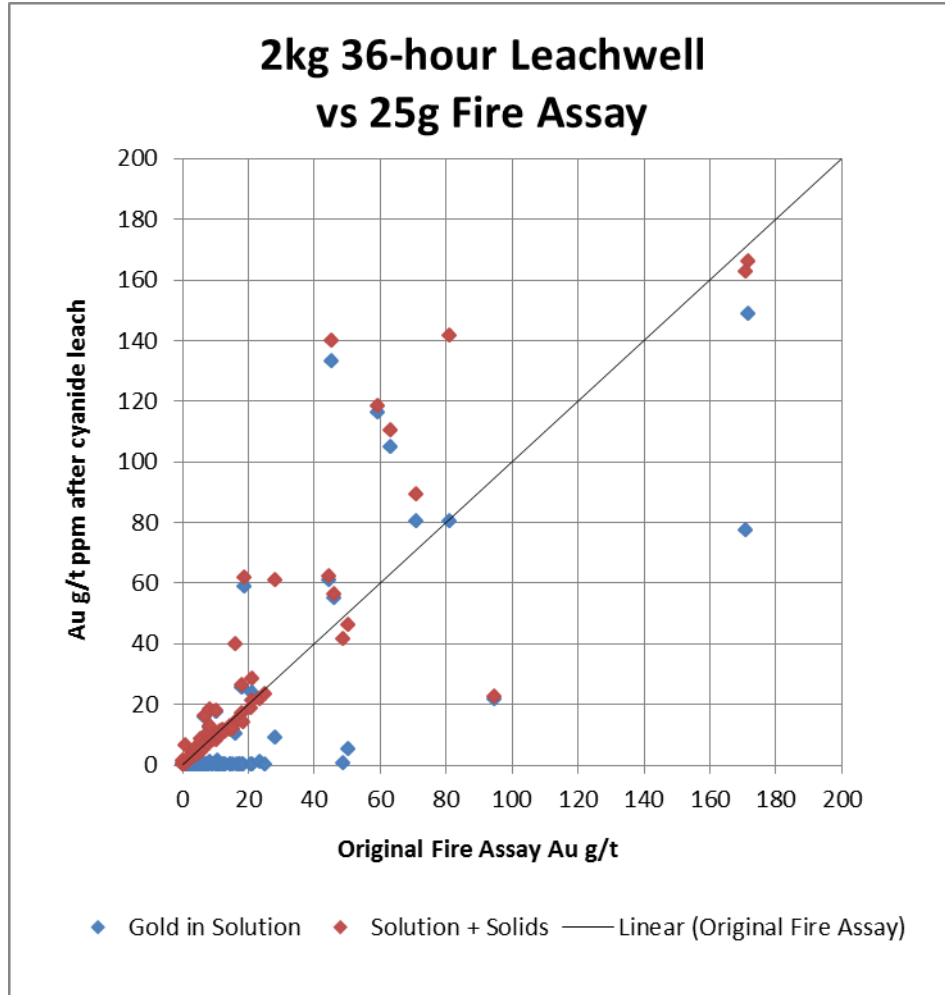


FIGURE 11-9 2017 FIRE ASSAY VS LEACHWELL

Some samples show gold in solids equal to or greater than the amount of gold in cyanide solution, which in many cases correlates with strong visual carbon content, i.e. preg-robbing. Some of these have been followed up by running Fire Assay to extinction on the leachate residue. In one case, having 63 individual 25g fires, high variability was seen in the leachate (Coefficient of Variation = 0.45) (Figure 11-10).

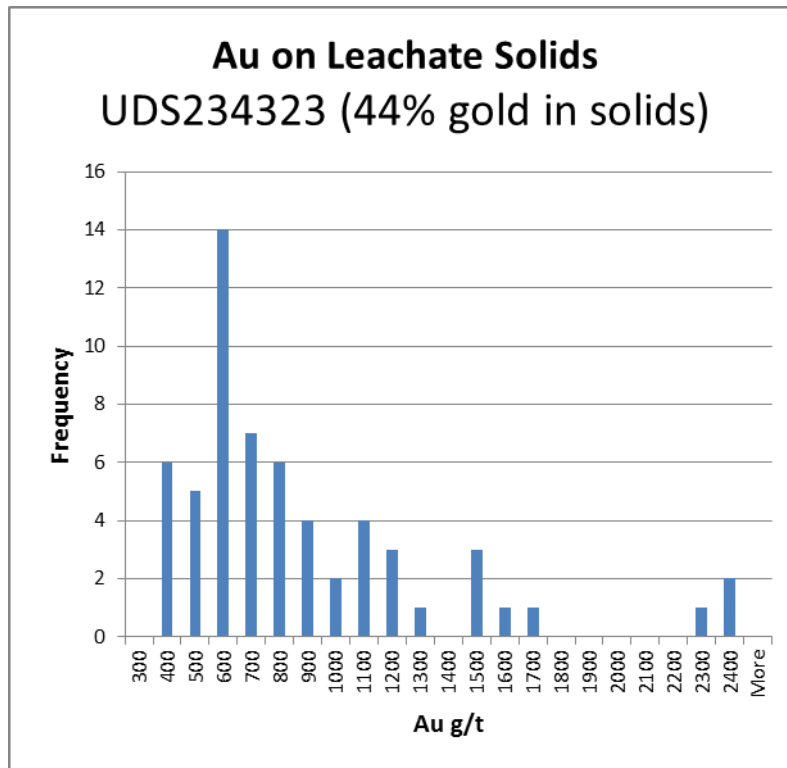


FIGURE 11-10 GOLD IN SOLIDS OF HIGH NCC SAMPLE

The project ended in early 2018 with Screen Fire Assay deemed a better option due the complete capture of the coarse gold component.

11.5.2 VISIBLE GOLD DUPLICATE SAMPLE COMPARISON

During 2016, some 81 remaining half core intervals were selected from diamond core tested quartz lode zones, many of them containing visible gold. A FA25 sample was analyzed from each half of the core, similar to the normal QAQC field duplicate protocol. This project was to augment the small population of field duplicates already taken in quartz lode zones so as to determine the homogeneity of the FA25 analyses from each half of the selected intervals.

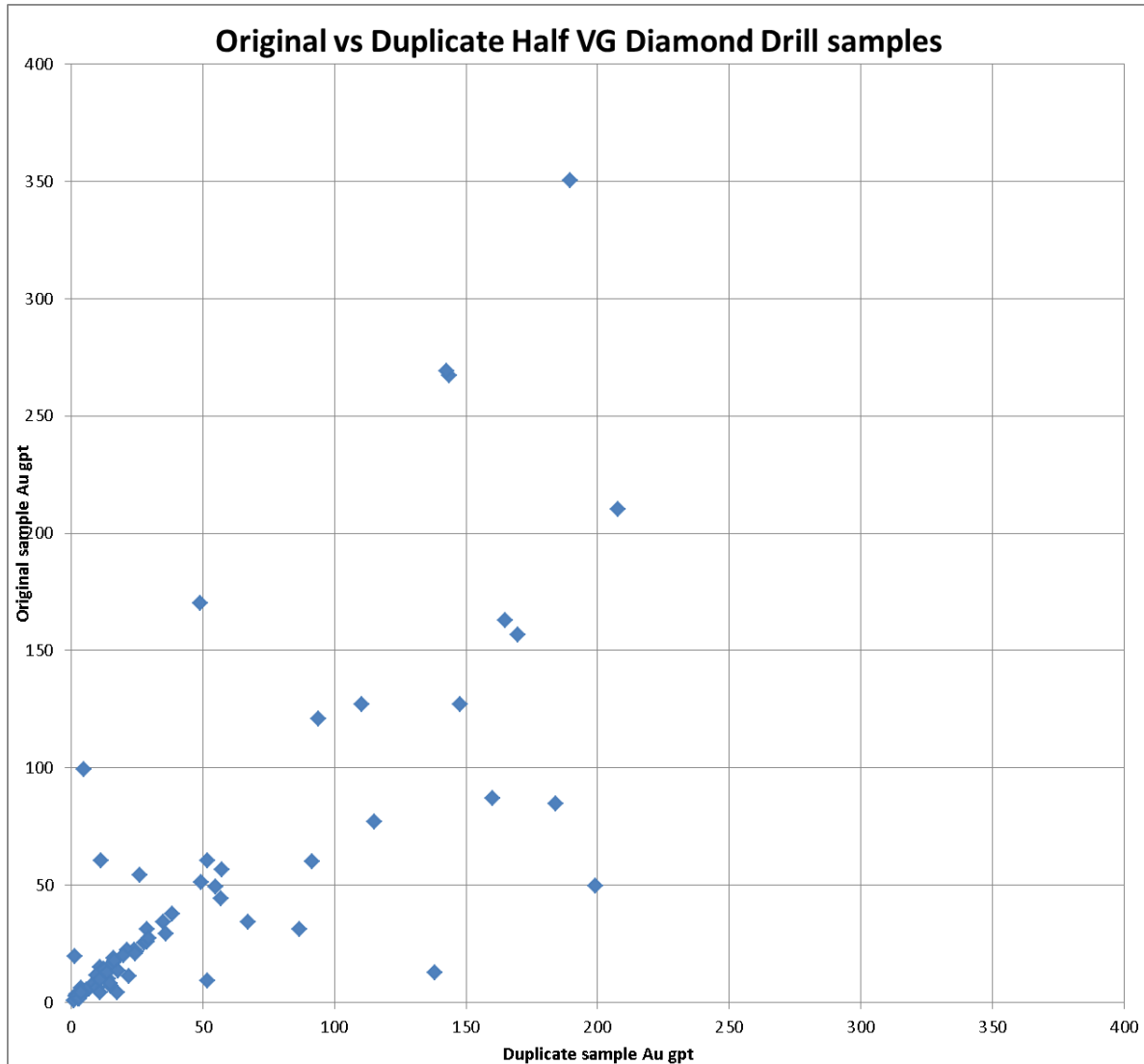


FIGURE 11-11 CORRELATION PLOT OF THE VISIBLE GOLD FIELD DUPLICATE DATA

Figure 11-11 shows a raw correlation of the VG field duplicate data set (excluding a handful of extreme outliers) where even without a regression model added, a change in the correlation of the data can be discerned over the 30-40 g/t Au grade level between the two field duplicate samples. Visible gold prepping procedures were identical for all of the samples as was the analysis method. Sample variability increases significantly above approximately 50g/t.

However, studies to date have not shown any significant bias between FA25 and larger fusion masses (FA50 and screen fire assays). Data continues to be analyzed to ensure this does not change in the future. Some departure is apparent in extremely high grade samples but the number of samples falling into this category has made it difficult to draw firm conclusions as to any consistent bias between FA25 and FA50 test regimes.

TABLE II-5 FIRE ASSAY WEIGHT STUDY RESULTS – Q-Q RESULTS

Percentile	Grade Threshold			Records		
	FA25	FA50	SFA	FA25	FA50	SFA
10%	2.61	2.51	2.93	224	224	224
20%	4.02	3.98	5.45	199	199	199
30%	6.75	7.01	7.58	174	174	174
40%	8.39	8.60	8.77	149	149	149
50%	10.20	9.75	10.47	125	125	125
60%	12.96	11.90	12.88	100	101	100
70%	15.20	14.20	15.99	77	76	75
80%	21.72	19.32	20.22	50	50	50
90%	39.12	34.28	38.53	25	25	25
93%	61.30	50.46	54.79	19	19	19
95%	105.72	81.90	91.71	13	13	13
98%	215.46	218.26	150.02	7	7	7
99%	366.51	536.37	370.07	3	3	3
100%	640.10	1,260.00	815.07	1	1	1

Other studies in 2017 compared Atomic Absorption Spectrometry results with Gravimetric detection methods. The results were inconclusive in establishing a clear departure point between the two detection methods. Additional test work will be required to refine this understanding further.

TABLE II-6 STATISTICAL COMPARISON BETWEEN AAS AND GRAVIMETRIC GOLD RESULTS

Parameter	AAS	Grav.
Mean	1,155	1,126
Median	1,014	968
Standard Deviation	639	590
Coefficient of Variation	55%	52%
Min	307	278
Max	3,489	3,135

11.5.3 UMPIRE LABORATORY CHECKS

Confidence in analytical accuracy is further assessed by re-submitting pulps from one laboratory to another and comparing differences in results. Such a program is usually done at least every few years.

A program of inter-laboratory checks was undertaken in 2002 comparing the AMDEL results to two other commercial laboratories – Aminya Laboratories Pty Ltd (Aminya) and Genalysis Laboratory Services (Genalysis). The two batches (147 samples) sent to Aminya returned an average of 9% higher with an R² correlation coefficient of 0.993. The Genalysis results were 2% lower with an R² correlation coefficient of 0.996. The inter-laboratory check samples range in grade from below detection (<0.01 g/t Au) to 45 g/t Au. This inter-laboratory check data is presented in Allwood (2003).

During 2013, the OSLS 25g Au Fire Assay method was compared against GAL’s 50g Au Fire Assay method. All 245 samples showed an overall bias of only 2%, with an R² correlation coefficient of 0.988.

In 2016, 82 samples were selected from various domains and their pulps submitted for umpire test work at Bureau Veritas Minerals (Adelaide) (BVM). A summary of the ore sources is shown in Table 11-7.

TABLE 11-7 UMPIRE SAMPLING BY ZONE

Zone	Sulfide	Visible Gold	Total
Eagle	20	23	43
Harrier	15	5	20
Phoenix	13	7	20
Total	48	35	83

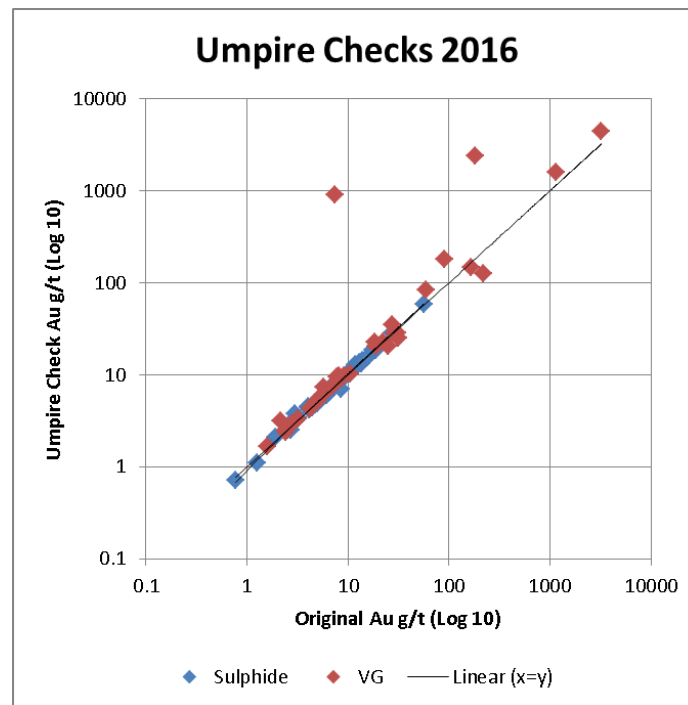


FIGURE 11-12 CORRELATION OF OSLS AND BVM PULPS

A correlation of FA samples from Bureau Veritas (BVM) and On Site Laboratory Services (OSLS) laboratories comprises the OSLS 25g Fire Assay method and the BVM 40g Fire Assay method (Figure 11-12). Following transportation, the pulps (sourced from OSLS) were re-homogenized at BVM by mat roll so as to avoid smearing and contamination in the pulverizer. Small population size should be taken into consideration when reviewing the following statistics, however the ‘Sulfide’ subset (n = 48) shows insignificant bias (0.957%) and an R² of 0.997. Apart from a few high-grade results showing significant variation, there is a very good correlation with the results, even considering the differences in charge weight and slight acid digest differences.

The umpire test work detailed within section 11.5.3 includes only 83 samples. FGM would aim for a yearly umpire comparison to be undertaken using up to 1000 samples.

11.5.4 SAMPLE SEGREGATION TESTING

A preliminary study was conducted in mid-2017 to assess if there was risk of sample bias during sample preparation at OSLs. The methods of collection of subsampling lead to gaining some comparative data that could assess differences between an “ideal sample preparation” collection regime against the actual practices employed at the laboratory. Two stages were identified for testing, one being the subsampling of ~3kg of pulverized material into a ~200g pulp packet, the other being the subsampling of the ~200g pulp packet into a 25g charge for Fire Assay. Twenty x 3kg high-grade samples containing coarse gold were taken from underground for the purpose of the study.

Results were largely inconclusive due to lack of sample size (number of tests). FGM intend to revisit this study on a larger scale.

11.6 SAMPLE AND DATA SECURITY

11.6.1 SAMPLE SECURITY

The methods of sample storage and transport have remained largely unchanged throughout the life of the project. In 2018, there have been a number of improvements to the process around sample security.

Samples are bagged and numbered either on site at the drill rig or at the FGM core handling facility.

Before samples are sent to laboratories outside they are placed in labeled plastic bags in lots of about five and transported using the laboratory’s pick up vehicles. On arrival at the laboratory, the list of samples sent is matched to the actual samples received and confirmation is sent by either fax or email using a sample consignment system. From late 2018 these plastic bags are now tied off with tamper tags before transport and chain of custody documentation is completed upon pickup by the Analytical laboratory contractor.

Analytical laboratories have operated in Bendigo during the periods 1992 – 2000 and 2005 to present. During these periods individual samples from the drill rig or core shed have been placed in a designated area within the mine security gate and collected daily by laboratory staff. Again, on arrival at the laboratory, the list of samples sent is matched to the actual samples received.

Work undertaken by employees at Fosterville is limited to core logging and the mark-up, cutting and bagging of samples. All other sample preparation and analysis is conducted off-site at commercial laboratories.

11.6.2 DATA SECURITY

Data security is ensured through the use of an ‘acquire™/SQL Server’ database of all company exploration drilling information. This database includes all assays, geological and geotechnical information. As well as data interrogation, the database allows automated error checking as new data is entered. The database

is backed up in full daily, and incrementally eight times a day. Additionally, a full image of the Virtual Machine environment hosting SQL Server is backed up once daily.

Access to the database is controlled by user login permissions (Windows NT Authentication). Write access is further restricted by requiring the acQuire™ database application and associated software licensing. All floating licenses are restricted to a License Reservation group of approved logins.

For users access to the database through the application, access to database interface objects is determined largely by department (Exploration vs Production), reducing user exposure to scripts and reports which are not required to complete expected tasks. Additional folders of high level and administrative objects are only visible to individuals at the discretion of the Database Administrator.

acQuire™ Data Tracking triggers are active to capture all data being updated or deleted, with a username and timestamp of modification. This system also provides a feature to 'lock holes', such that any attempts to insert/update/delete records linked to a locked hole are rejected. Holes are locked automatically as they are flagged 'Resource Valid'. Holes not 'Resource Valid' are locked in bulk within two years of their drilling end date.

11.7 ADEQUACY OF PROCEDURES

It is the opinion of the Authors that the sample preparation, security and analytical procedures are adequate and have been appropriately applied over the life of the project to ensure that the data is representative and of high quality.

12 DATA VERIFICATION

12.1 DATABASE VALIDATION

The drilling carried out by previous owners at Fosterville routinely included quality assurance and quality control checks. The nature of these checks evolved through time and these are described below. In addition, sampling QAQC consultants SMP Consultants reviewed the sampling, analytical and data storage procedures used in drilling programs to May 2002 (Cruse, 2002). Data system reviews of the exploration database were also undertaken by IO Digital Systems in 2004 and 2006 (Kelemen, 2004; McConville, 2006).

The database includes numerous automated data validation methods. The database structure and the use of primary key fields prevent certain types of invalid data (e.g. overlapping sample intervals) from being stored in the database. Also, numerous checks are performed on the data when it is imported (e.g. assay QAQC performance gates, variation in down-hole surveys from previous survey).

Prior to 2000, the geological data was entered directly into the database by hand from the original hardcopy geological log with a manual validation system. From 2001 until 2008, all geological data was uploaded directly from IPAQ hand held logging devices into the database with similar automatic checks as used for the assays. Immediately after the IPAQ was uploaded a hard copy of the geological log was printed to provide an extra back up of the data. Since 2008 geological information has been entered into laptops running acQuire™ offline logging software. This software supports an increased range of logging validation that prompts the user while logging and also prior to uploading of the logged data into the Fosterville Geological SQL database.

The down-hole drilling survey data, between 2001 and 2010, was the only data hand entered into the Fosterville geology database. Allwood (2003) reports a program conducted in 2002 where approximately 10% of the SPD holes were randomly selected for checking the database against the original survey shots. This check found several errors so it was decided to check the entire down-hole survey database against the original surveys shots. All errors found were corrected. Diamond drill hole (underground holes are prefixed by UD and UDH) traces are visually checked in MinePlan™ software against the design trace, as soon as the down-hole surveys are entered into the database.

12.2 DATA VERIFICATION

In addition to the quality control and data verification procedures discussed in detail above, the Qualified Persons preparing the Mineral Resource estimates have further validated the data upon extraction from the database prior to resource interpolation. This verification used MinePlan™ drill views as the primary tool to identify data problems. This allowed the omission of holes if they were of questionable quality, for example due to low quality sample techniques or incomplete assaying. When coupled with the more mechanical check processes ensuring high quality data is entering the database in the first place, these checks were effective in allowing the Qualified Persons to be confident that the data was geologically coherent and of appropriate quality and adequate for use in resource estimations and reserve studies.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Details of previous metallurgical test work conducted on a range of Fosterville ores can be referenced in the Fosterville Technical Report December 2015. Metallurgical test work is ongoing with particular focus on maximizing gravity recoverable gold and also understand and prepare for any future ore that will challenge existing gold recovery methods.

Several newly discovered geological structures at depth, such as Eagle, East Dipping and Swan Faults, have gold in the form of coarse visible gold that frequently occurs with low sulfide mineralization. In 2015, a series of plant trials and mineralogy surveys indicated that the visible gold is being recovered in the flotation concentrates (primarily Flash flotation concentrate) and is recoverable from this concentrate by gravity methods. A gravity gold circuit was commissioned in April 2016. The gravity circuit consists of a Knelson concentrator and Gemeni tables recovering gold from the recirculating load of the concentrate regrind mill. In August 2018, a second Knelson concentrator was commissioned in the SAG mill recirculating load. The SAG mill and regrind mill gravity concentrates are separately tabled, calcined and poured for accounting purposes.

In the opinion of the authors, all deleterious elements are effectively managed and it is considered that their presence does not have a significant impact on economic extraction. No identified processing factors have a significant impact on economic extraction.

14 MINERAL RESOURCE ESTIMATES

The Mineral Resources reported are broken down into areas contained within the Mining License MIN5404 and a minor component in Exploration License EL3539 (Section 4). Mineral Resource Areas of Central, Southern, Harrier and Robbin's Hill (Table 14-1) are defined resource areas, which were established at different times in the project's history. The Central Area contains multiple Mineral Resource models primarily for reasons of data handling. Details on Mineral Resource block model extents can be seen in Figure 14-1.

The current Mineral Resource estimate for FGM is presented in Table 14-1.

TABLE 14-1 MINERAL RESOURCES (EXCLUSIVE OF MINERAL RESERVE) FOR FGM AS AT DECEMBER 31, 2018

Mineral Resources (Exclusive of Mineral Reserves) - Fosterville as at December 31, 2018										
Classification		Measured			Indicated			Inferred		
		Tonnes (000's)	Grade (g/t Au)	Insitu Gold Ounces (000's)	Tonnes (000's)	Grade (g/t Au)	Insitu Gold Ounces (000's)	Tonnes (000's)	Grade (g/t Au)	Insitu Gold Ounces (000's)
Fosterville Fault Zone Sulfide Resources										
Central Area	Upper	1,440	2.5	116	779	2.8	69	15	1.5	1
	Lower	173	7.9	44	5,460	5.8	1,020	4,890	6.3	988
Southern Area	Upper	22	3.3	2	463	2.4	36	537	2.3	40
	Lower	0	0.0	0	0	0.0	0	66	3.5	7
Harrier Area	Upper	0	0.0	0	0	0.0	0	0	0.0	0
	Lower	11	6.7	2	2,820	6.0	544	1,240	7.2	286
Robbin's Hill Area Sulfide Resources										
Combined	Upper	0	0.0	0	1,440	2.3	108	663	2.2	48
	Lower	0	0.0	0	561	4.2	75	2,590	5.4	449
Sulfide Resources Summary										
Sulfide Upper		1,460	2.5	118	2,680	2.5	213	1,220	2.3	88
Sulfide Lower		184	7.8	46	8,840	5.8	1,640	8,790	6.1	1,730
Total Sulfide		1,640	3.1	165	12	5.0	1,850	10,000	5.7	1,820
Total Oxide		257	1.5	12	1,350	1.9	81	316	1.6	16
Total Oxide & Sulfide		1,900	2.9	177	12,900	4.7	1,930	10,300	5.5	1,830

Notes:

1. CIM definitions (2014) were followed in the estimation of Mineral Resource.
2. For the Mineral Resource estimate, the Qualified Person is Troy Fuller.
3. The Mineral Resources reported are exclusive of the Mineral Reserves.
4. Mineral Resources are rounded to three significant figures for tonnes and ounces and one decimal place for grade. Minor discrepancies in summation may occur due to rounding.
5. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
6. The Mineral Resource estimate used a gold price of US\$1,230 per ounce (A\$1,710 per ounce).
7. Cut-off grades applied are 0.7 g/t Au for oxide, 1.0 g/t Au for near-surface sulfide (above 5050mRL) and 3.0 g/t Au for underground sulfide mineralization (below 5050mRL).
8. Dry bulk density of mineralized material applied 2.40t/m³ for oxide, 2.56t/m³ for transitional material, 2.64t/m³ for fresh material between 5000mRL and 5050mRL, 2.72t/m³ for fresh material between 4500mRL and 5000mRL and 2.78t/m³ for fresh material below 4500mRL.

The reported Mineral Resources are as at December 31st 2018 and reported by Kirkland Lake Gold in accordance with NI43-101.

In all cases, the Qualified Person has complied with CIM standards as prescribed by NI43-101.

The Authors are not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing and political or other relevant factors that would materially affect the Mineral Resource estimate.

The location and extents of the block models for each of these areas are displayed in Figure 14-1. Current underground mining activities are confined to the Central (Northern, North Phoenix, South Phoenix, Central Models) and Harrier (Harrier Model) Areas. Open pit mining activities were last undertaken in 2012 in the Robbin's Hill Area (Robbin's Hill Model). The Robbin's Hill Resource was updated as at December 2018.

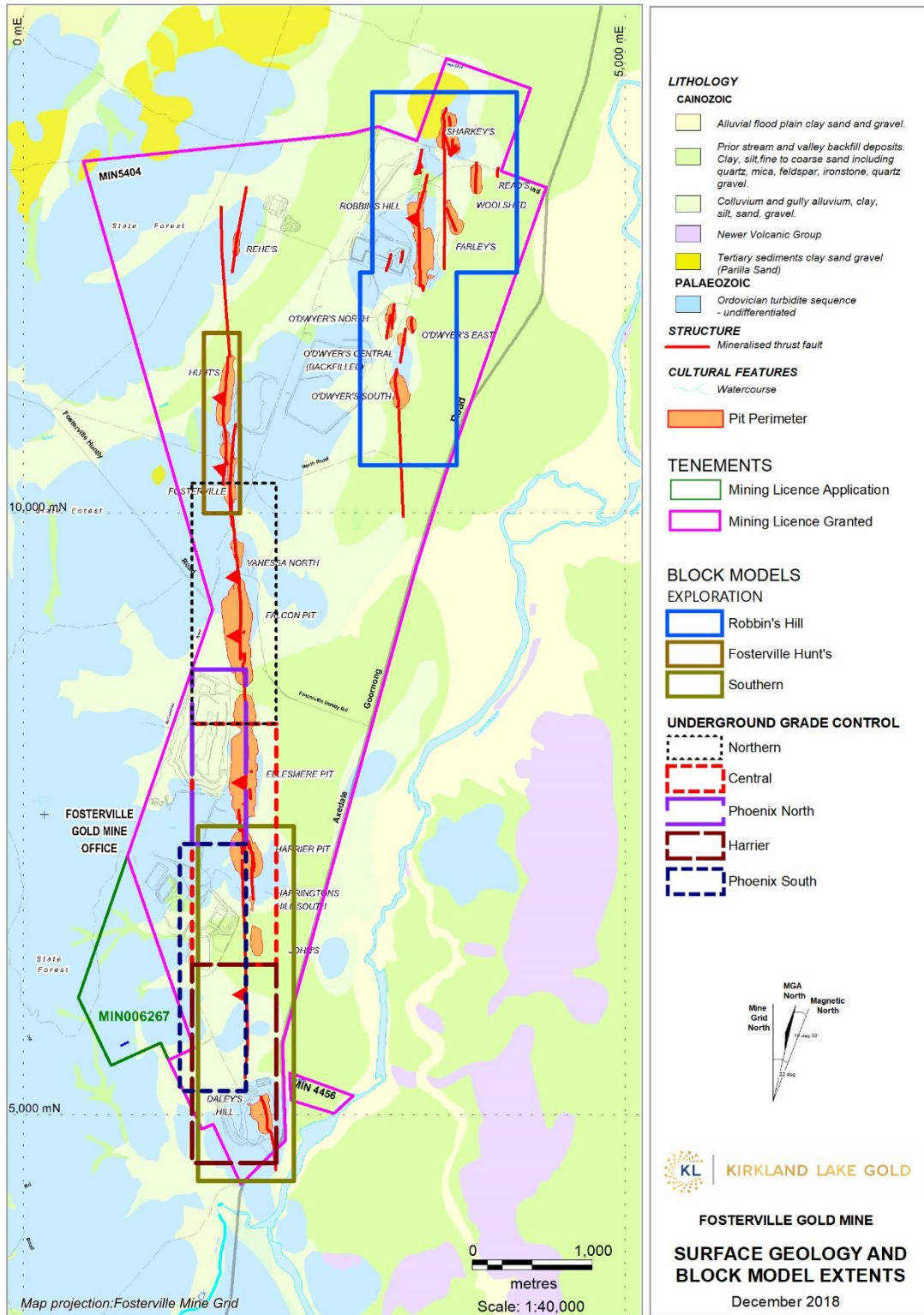


FIGURE 14-1 PLAN SHOWING MINING LEASES AND THE AREA COVERED BY EACH OF THE BLOCK MODELS

14.1 CENTRAL AREA

The Central Area is divided into 33 separate mineralized domains, some of which extend through multiple model zones as detailed in Table 14-2.

TABLE 14-2 CENTRAL AREA MINERALIZED DOMAINS BY MODEL ZONE

Domain Code	Domain Name	1809_CRM	1812_SPRM	1805_NPRM	1201_NRM
D01	Fosterville HG	✓			✓
D02	Fosterville LG	✓			✓
D03	Phoenix HG	✓	✓	✓	✓
D04	Phoenix LG	✓			
D05	Splay HG	✓	✓	✓	
D06	Splay LG	✓	✓	✓	✓
D07	Kite	✓			
D08	Allwood		✓	✓	
D09	Vertical		✓	✓	
D10	Vulture	✓			
D11	Harrier OP	✓			
D12	Phoenix Base	✓	✓	✓	
D13	Benu		✓	✓	
D14	Benu FW		✓	✓	
D15	Kestrel		✓	✓	
D16	Bedded East		✓	✓	
D17	Shallow East Dippers		✓	✓	
D18	East Dippers	✓	✓	✓	
D19	Phoenix Base S		✓		
D20	Eagle		✓		
D21	Allwood East		✓		
D22	Audax FW		✓		
D23	Phoenix Base FW		✓	✓	
D24	Audax Sulfide		✓		
D25	Swan Sulfide		✓		
D26	Swan Upper		✓		
D27	West Dipping Splays		✓		
D28	Griffon				✓
D59	Audax		✓		
D60	Benu WI		✓		
D61	Swan		✓		
D66	Sparrowhawk		✓		
D67	Shallow North Dippers		✓		

As at December 2018 the majority of drilling, mining, mapping, interpretation and subsequent Mineral Resource Modeling were undertaken within the extents of the Lower Central (Phoenix) and Harrier Areas, below the 5050mRL.

14.1.1 GEOLOGICAL MODELS

In order to constrain the mineral resource models, a number of three-dimensional geological models were generated for each zone using MinePlan™ software. The models produced were of three types:

- structural wireframe models;
- mineralization wireframe models; and
- waste wireframe models.

Structural models contain three-dimensional wireframe surfaces of major faults and minor structures as interpreted from surveyed data points obtained from open pit and underground mapping and diamond drill core logs. The mineralization model defines the interpreted gold-bearing mineralized envelopes and is constrained either by structural, lithological or grade boundaries. The waste model is defined by a 10m to 15m envelope surrounding the mineralization model.

Mineralization domain wireframes are constructed on screen using MinePlan™ where points are added to a wireframe mesh until the desired interpretation is achieved. This has resulted in interpretations completed on 6.25m sections in areas of open pit grade control drilling and on 12.5m to 25m in areas of underground grade control drilling and, 50m and 100m sections where there is only surface and underground exploration drilling. All drill hole interpreted intercepts are snapped to the wireframe to ensure the mineralization geometry is honored.

Historical information derived from RC and more recently from diamond drill data (assays, structure, lithology, etc.) are used in the initial construction of the mineralized domains. Mineralized zones that become viable for mining are further constrained by the addition of geological mapping, surveyed structures, open pit blast hole samples, underground sludge hole and face samples (Figure 14-2).

Mineralization used within the domain boundary is selected based on a current cut-off of four grams per meter (generally two meters at 2.0 g/t Au). Internal waste below the cut-off may be incorporated into the mineralization envelope where there is adjacent higher gold grade data directly adjacent or if the intercept lies central to other peripheral economic intercepts on the same interpreted structure. Sub-economic mineralization may also be included around the periphery of the domain to produce more representative estimates towards the margins of the mineralized envelope.

Data points that satisfy particular economic or geological criteria for inclusion are directly clipped into the domain solid so that the assay interval is either entirely within or entirely excluded from the interpreted mineralized envelope. Separate mineralization envelopes are created to distinguish between geologically or economically distinct zones such as high-grade/low-grade envelopes or changes in structural orientations.

In mid-2017, high-grade sub-domains were also utilized in the Southern Phoenix Resource model to better spatially separate the zones with a higher prevalence of high grade visible gold related mineralization. Due to the high contrast between quartz and sulfide mineralization, sub-domaining was expanded in the 1712_SPRM, with the separation of the high grade D01 Audax and D11 Swan domains into separate

laminated quartz domains nested within lower grade sulfide halo domains in an effort to improve the ordinary kriged estimate.

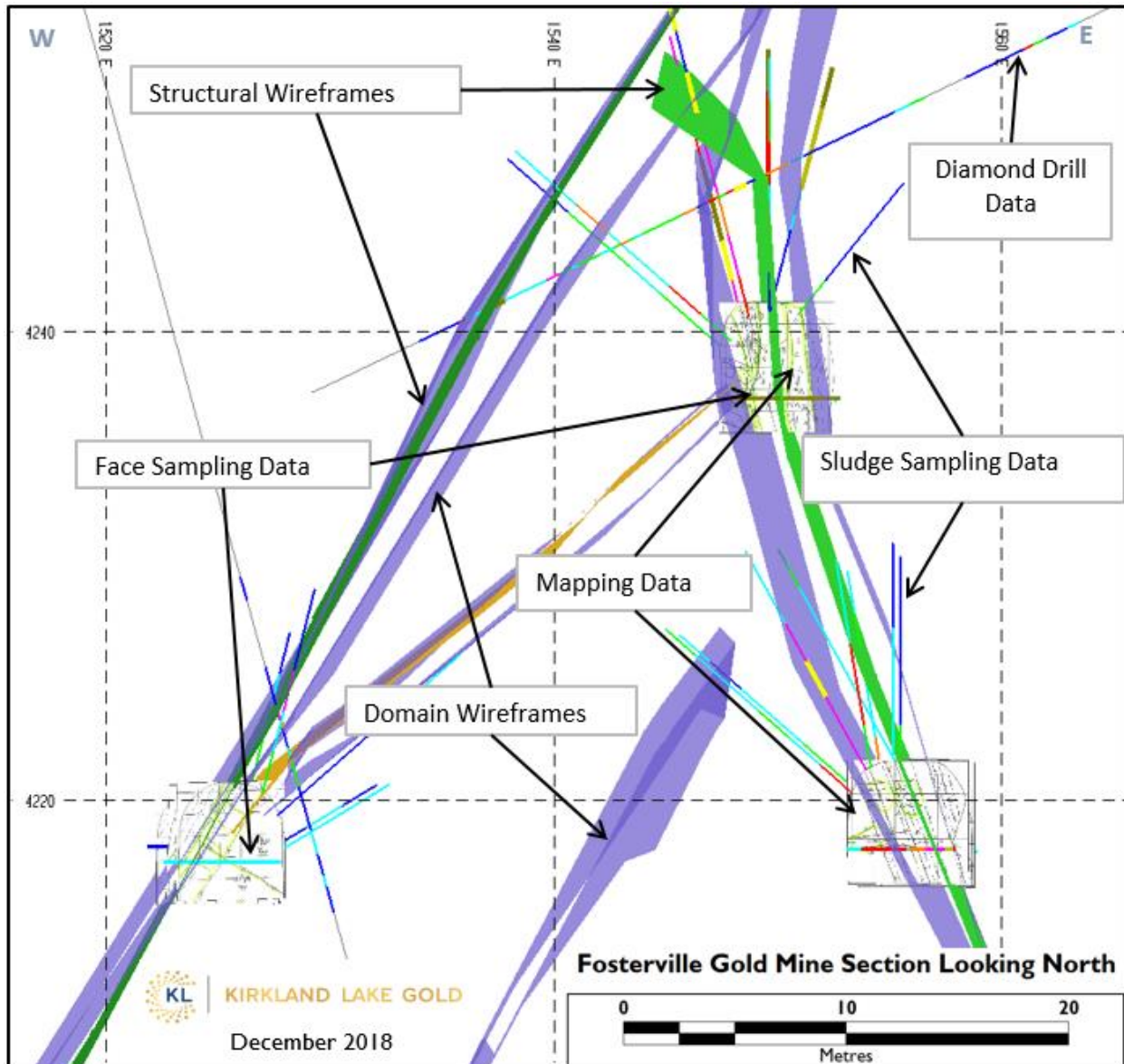


FIGURE 14-2 6770MN SECTION SHOWING DATA FOR CREATING MINERALIZATION DOMAIN WIREFRAMES (UNDERGROUND)

14.1.2 DRILLING DATA

Drill hole assay data used to produce the model was subjected to a number of data preparation processes:

1. Files containing all drill hole logging and assay data were imported from the acquire™ production and exploration database into MinePlan™ using a MinePlan™ procedure.
2. The drill holes were then coded with the appropriate properties from the geological models, and a drill hole composite file coded with resource wireframe geology information.

3. The drill hole files were viewed in MinePlan™ in order to identify holes that contained obvious erroneous data missed during the validation process. Data that was considered erroneous was either corrected or deleted from the data set. Note: step 1 and 2 were also completed prior to the geological models being finalized to ensure the interpretations were completed on a validated drill hole file.

14.1.3 COMPOSITING

The raw assays were composited to 2m intervals in Resource block models using the MinePlan™ compositing procedure. A 2m composite length was selected as it encompasses the vast amount of legacy data left over from open pit mining and RC drilling. Composite length was reviewed in December 2018 and deemed to still be appropriate given the average sample interval length and domain widths.

The compositing process creates composites of the primary assay intervals in a down-hole direction honoring the coded geological domains. The MinePlan™ software down-hole compositing routine provides an option to accumulate short intervals (up to 50% of the composite length) into the preceding interval, with assay intervals above the minimum 50% primary sample length treated as a new composite interval. For example, an assay interval over 1.0m in length is left in the composite file as is, and an assay interval less than 1.0m is added into the preceding composite interval (Figure 14-3) This option has been used to honor the grade distribution of composites within the coded geological domains without exclusion or redistribution etc.

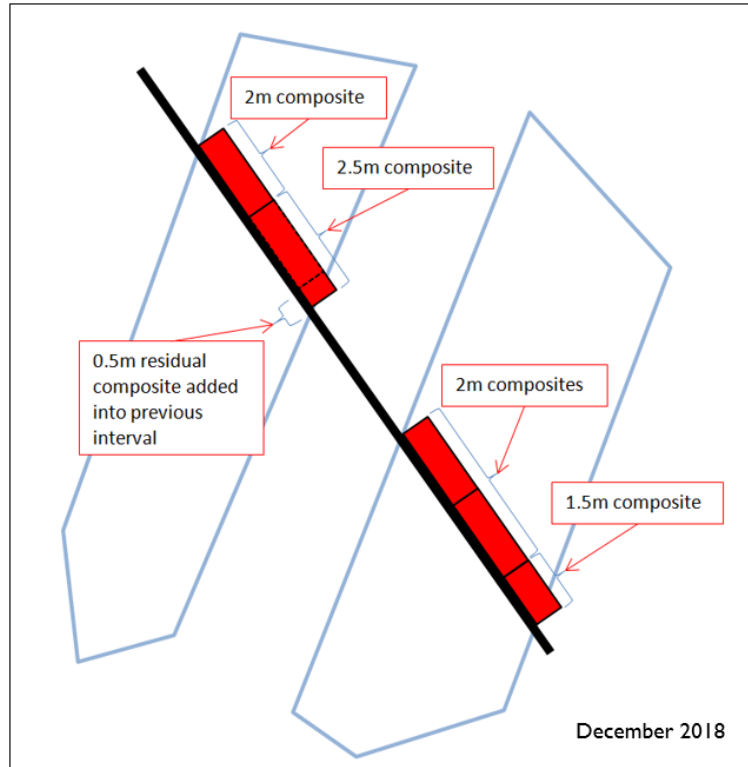


FIGURE 14-3 DOWN-HOLE COMPOSITING WHERE DOMAIN BOUNDARIES ARE HONORED IN THE COMPOSITE FILE

A listing of descriptive statistics for the mineralized domains is provided for the Northern Model (1201_NRM) in Table 14-3, with a listing of composite statistics provided in Table 14-4.

TABLE 14-3 DESCRIPTIVE STATISTICS FOR THE NORTHERN MODEL

Model	1201_NRM		Descriptive Statistics					
Date:	Dec-2011							
Variable	Data Type(s)	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std Dev g/t	Variance g/t ²	Coeff of Var
Code 1 Fosterville HG								
Au 2.0m Composites TC 40	DD	1,701	0.01	49.60	4.61	5.45	29.70	1.18
Code 2 Fosterville LG								
Au 2.0m Composites	DD	9,949	0.00	104.60	5.66	6.63	43.96	1.17
Code 3 Phoenix HG								
Au 2.0m Composites	DD	4,021	0.00	60.44	5.50	6.95	48.30	1.26
Code 6 Splay LG								
Au 2.0m Composites	DD	740	0.00	36.89	2.25	3.41	11.63	1.52
Code 7 Griffon								
Au 2.0m Composites	DD	101	0.20	57.21	9.74	10.62	112.78	1.09

TABLE 14-4 COMPOSITE STATISTICS BY COMPOSITE LENGTH IN THE NORTHERN MODEL

Composite Length	Number	% of Composites	Mean Length (m)	Mean Grade (g/t Au)
< 1.0m	41	0%	0.65	3.37
≥ 1.0 and < 2.0	8209	98%	1.97	5.39
≥ 2.0m	129	2%	2.49	5.60
Total*	8,379	100%	1.97	5.38

*Some 70 composites had zero length and grade and were deleted from the data.

A listing of descriptive statistics for the mineralized domains is provided in Table 14-5, Table 14-6 and Table 14-7 for the 1812_SPRM Southern Phoenix Model, 1805_NPRM Northern Phoenix and the 1809_CRM Central Models respectively. These statistics are provided as a context for the size and the average grade in each of the domains.

The 1201_NRM model name encompasses the build date of the model and infers that the model includes the latest drilling and interpolation data in that respective area. Therefore, the Northern area has not had interpretational and/or drilling additions since January 2012. The Southern Phoenix model was updated in December 2018, The Northern Phoenix Model was updated in May 2018, and the Central Model was updated in September 2018 to encompass grid transform changes to diamond drilling data. The spatial distribution of the Central area models including the Harrier model is shown in Figure 14-8.

TABLE 14-5 DESCRIPTIVE STATISTICS OF GOLD FOR THE SOUTHERN PHOENIX MODEL

Model:	1812_SPRM	Descriptive Statistics					
Date:	Dec-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 3 Phoenix HG	Au Assays (length weighted)	269	0.02	38.60	7.72	6.0	0.78
	Au 2.0m Composites (length weighted)	122	0.52	25.03	7.67	4.6	0.59
	Au 2.0m Top-cut Declustered Composites	122	0.52	25.03	7.14	4.4	0.62
Code 5 Splay HG	Au Assays (length weighted)	720	0.03	62.30	6.09	6.0	0.99
	Au 2.0m Composites (length weighted)	288	0.14	44.70	6.09	4.5	0.74
	Au 2.0m Top-cut Declustered Composites	288	0.14	44.70	6.05	4.3	0.71
Code 6 Splay LG	Au Assays (length weighted)	1,554	0.01	2,847.00	6.50	59.1	9.09
	Au 2.0m Composites (length weighted)	486	0.01	659.13	8.38	34.2	4.08
	Au 2.0m Top-cut Declustered Composites	486	0.01	75.00	5.81	5.5	0.95
Code 8 Allwood	Au Assays (length weighted)	260	0.02	25.50	4.81	4.0	0.83
	Au 2.0m Composites (length weighted)	114	0.19	17.40	4.82	3.0	0.63
	Au 2.0m Top-cut Declustered Composites	114	0.19	17.40	4.53	2.7	0.60
Code 9 Vertical	Au Assays (length weighted)	639	0.01	7,368.00	48.70	349.1	7.17
	Au 2.0m Composites (length weighted)	239	0.30	1,541.03	48.51	181.2	3.74
	Au 2.0m Top-cut Declustered Composites	239	0.30	1,541.03	31.08	133.6	4.30
Code 12 Phoenix Base	Au Assays (length weighted)	735	0.01	1,694.70	11.86	72.6	6.12
	Au 2.0m Composites (length weighted)	289	0.01	806.87	11.87	49.7	4.18
	Au 2.0m Top-cut Declustered Composites	289	0.01	75.00	8.59	7.6	0.88
Code 13 Benu	Au Assays (length weighted)	1,730	0.01	1,685.00	11.19	46.3	4.14
	Au 2.0m Composites (length weighted)	723	0.03	1,685.00	11.21	37.2	3.32
	Au 2.0m Top-cut Declustered Composites	723	0.03	1,685.00	11.78	71.9	6.11
Code 14 Benu FW	Au Assays (length weighted)	529	0.01	186.80	8.55	10.3	1.21
	Au 2.0m Composites (length weighted)	206	0.04	55.20	8.55	7.1	0.83
	Au 2.0m Top-cut Declustered Composites	206	0.04	55.20	9.16	9.5	1.03
Code 15 Kestrel	Au Assays (length weighted)	549	0.03	16.90	4.12	2.6	0.63
	Au 2.0m Composites (length weighted)	210	0.55	10.58	4.12	1.9	0.46
	Au 2.0m Top-cut Declustered Composites	210	0.55	10.58	3.97	1.7	0.43
Code 16 Bedding East	Au Assays (length weighted)	2,492	0.01	104.00	5.47	6.1	1.11
	Au 2.0m Composites (length weighted)	1,081	0.01	84.47	5.47	5.0	0.92
	Au 2.0m Top-cut Declustered Composites	1,081	0.01	75.00	4.67	3.9	0.84
Code 17 Shallow East Dippers	Au Assays (length weighted)	515	0.01	1,290.00	14.05	81.7	5.82
	Au 2.0m Composites (length weighted)	233	0.12	1,290.00	14.05	74.8	5.32
	Au 2.0m Top-cut Declustered Composites	233	0.12	75.00	6.83	11.5	1.69
Code 18 East Dipper	Au Assays (length weighted)	1,644	0.01	454.00	6.64	9.4	1.42
	Au 2.0m Composites (length weighted)	694	0.04	52.58	6.64	5.6	0.85
	Au 2.0m Top-cut Declustered Composites	694	0.04	52.58	5.78	4.9	0.85
Code 19 Px Base Sth	Au Assays (length weighted)	151	0.09	29.20	5.79	4.9	0.85
	Au 2.0m Composites (length weighted)	52	1.16	21.99	5.79	3.6	0.63
	Au 2.0m Top-cut Declustered Composites	52	1.16	21.99	6.04	3.8	0.63
Code 20 Eagle	Au Assays (length weighted)	383	0.01	175.00	8.18	13.4	1.63
	Au 2.0m Composites (length weighted)	142	0.80	175.00	8.18	11.4	1.39
	Au 2.0m Top-cut Declustered Composites	142	0.80	75.00	7.77	7.4	0.95
Code 21 Allwood East	Au Assays (length weighted)	576	0.01	17,050.00	31.31	363.4	11.61
	Au 2.0m Composites (length weighted)	190	0.36	1,667.77	31.31	146.2	4.67
	Au 2.0m Top-cut Declustered Composites	190	0.36	1,667.77	22.82	111.5	4.89

Model:	1812_SPRM	Descriptive Statistics					
Date:	Dec-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 22 Audax FW	Au Assays (length weighted)	904	0.01	180.40	3.79	7.6	2.00
	Au 2.0m Composites (length weighted)	312	0.01	65.25	3.79	4.9	1.30
	Au 2.0m Top-cut Declustered Composites	312	0.01	65.25	3.96	4.8	1.21
Code 23 Phoenix Base FW	Au Assays (length weighted)	327	0.02	47.70	6.25	5.5	0.88
	Au 2.0m Composites (length weighted)	164	0.02	29.90	6.28	4.3	0.69
	Au 2.0m Top-cut Declustered Composites	164	0.02	29.90	6.06	4.8	0.80
Code 24 Audax Sulfide	Au Assays (length weighted)	525	0.01	55.76	5.23	6.5	1.24
	Au 2.0m Composites (length weighted)	274	0.01	36.10	5.23	5.4	1.02
	Au 2.0m Top-cut Declustered Composites	274	0.01	36.10	3.83	4.3	1.13
Code 25 Swan Sulfide	Au Assays (length weighted)	1,668	0.01	1,230.00	7.58	32.4	4.27
	Au 2.0m Composites (length weighted)	737	0.01	589.70	7.58	21.4	2.82
	Au 2.0m Top-cut Declustered Composites	737	0.01	589.70	6.07	22.9	3.77
Code 26 Swan Upper	Au Assays (length weighted)	53	1.15	195.00	12.83	26.8	2.09
	Au 2.0m Composites (length weighted)	23	2.57	75.93	12.83	16.9	1.31
	Au 2.0m Top-cut Declustered Composites	23	2.57	75.93	8.98	11.0	1.23
Code 27 West Dipping Splays	Au Assays (length weighted)	61	0.12	40.20	6.12	6.1	1.00
	Au 2.0m Composites (length weighted)	32	0.12	17.23	6.12	3.9	0.63
	Au 2.0m Top-cut Declustered Composites	32	0.12	17.23	5.76	3.8	0.66
Code 59 Audax (global)	Au Assays (length weighted)	1,032	0.01	14,500.00	80.2	591.7	7.38
	Au 2.0m Composites (length weighted)	339	0.01	5,057.25	79.74	323.9	4.06
	Au 2.0m Top-cut Declustered Composites	339	0.01	3,000.00	68.41	280.1	4.09
Code 60 Benu W1	Au Assays (length weighted)	271	0.01	860.00	30.14	99.2	3.29
	Au 2.0m Composites (length weighted)	87	0.02	698.36	30.14	80.8	2.68
	Au 2.0m Top-cut Declustered Composites	87	0.02	100.00	21.13	25.4	1.20
Code 61 Swan (global)	Au Assays (length weighted)	1,728	0.01	21,490.00	153.76	806.7	5.25
	Au 2.0m Composites (length weighted)	556	0.01	7,492.54	154.73	432.3	2.79
	Au 2.0m Top-cut Declustered Composites	556	0.01	3,000.00	101.22	298.9	2.95
Code 66 Sparrowhawk	Au Assays (length weighted)	305	0.02	23.10	4.42	3.3	0.75
	Au 2.0m Composites (length weighted)	117	0.06	16.02	4.42	2.5	0.57
	Au 2.0m Top-cut Declustered Composites	117	0.06	16.02	3.63	2.6	0.72
Code 67 Shallow North Dippers	Au Assays (length weighted)	71	0.01	24.50	5.01	4.8	0.97
	Au 2.0m Composites (length weighted)	46	0.01	17.10	5.01	4.3	0.85
	Au 2.0m Top-cut Declustered Composites	46	0.01	17.10	4.64	4.1	0.89

TABLE 14-6 DESCRIPTIVE STATISTICS OF GOLD FOR THE NORTHERN PHOENIX MODEL

Model:	1805_NPRM	Descriptive Statistics					
Date:	May-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 3 Phoenix HG	Au Assays (length weighted)	450	0.05	75.00	8.04	7.5	0.93
	Au 2.0m Composites (length weighted)	209	0.62	47.98	8.03	6.0	0.75
	Au 2.0m Top-cut Declustered Composites	208	0.71	47.98	7.55	5.2	0.69
Code 5 Splay HG	Au Assays (length weighted)	85	0.26	19.20	5.57	3.8	0.69
	Au 2.0m Composites (length weighted)	37	0.31	14.27	5.57	3.0	0.53
	Au 2.0m Top-cut Declustered Composites	37	0.31	14.27	5.05	2.6	0.51
Code 6 Splay LG	Au Assays (length weighted)	388	0.01	35.70	4.91	4.6	0.95
	Au 2.0m Composites (length weighted)	192	0.01	23.40	4.91	3.8	0.77
	Au 2.0m Top-cut Declustered Composites	192	0.01	23.40	4.91	3.9	0.80
Code 8 Allwood	Au Assays (length weighted)	256	0.02	33.30	6.47	5.9	0.90
	Au 2.0m Composites (length weighted)	112	0.04	21.76	6.47	4.2	0.65
	Au 2.0m Top-cut Declustered Composites	112	0.04	21.76	6.62	3.9	0.59
Code 9 Vertical	Au Assays (length weighted)	27	0.47	13.00	4.19	2.8	0.68
	Au 2.0m Composites (length weighted)	14	0.80	13.00	4.19	2.2	0.53
	Au 2.0m Top-cut Declustered Composites	14	0.80	13.00	4.48	3.0	0.66
Code 12 Phoenix Base	Au Assays (length weighted)	71	0.02	23.60	6.41	5.7	0.89
	Au 2.0m Composites (length weighted)	36	0.02	15.63	6.41	4.1	0.64
	Au 2.0m Top-cut Declustered Composites	36	0.02	15.63	6.48	3.8	0.59
Code 13 Benu	Au Assays (length weighted)	949	0.01	57.10	7.53	6.8	0.90
	Au 2.0m Composites (length weighted)	433	0.01	37.17	7.53	5.3	0.70
	Au 2.0m Top-cut Declustered Composites	433	0.01	37.17	5.79	4.3	0.73
Code 14 Benu FW	Au Assays (length weighted)	350	0.03	58.95	8.56	8.0	0.93
	Au 2.0m Composites (length weighted)	144	0.35	45.65	8.56	6.6	0.77
	Au 2.0m Top-cut Declustered Composites	144	0.35	45.65	8.30	6.2	0.75
Code 15 Kestrel	Au Assays (length weighted)	165	0.04	25.20	4.78	2.8	0.59
	Au 2.0m Composites (length weighted)	79	0.76	10.89	4.78	2.0	0.41
	Au 2.0m Top-cut Declustered Composites	79	0.76	10.89	4.67	2.0	0.43
Code 16 Bedding East	Au Assays (length weighted)	557	0.01	104.00	5.91	8.6	1.46
	Au 2.0m Composites (length weighted)	232	0.01	84.37	5.91	7.5	1.27
	Au 2.0m Top-cut Declustered Composites	232	0.01	84.37	5.50	5.3	0.96
Code 17 Shallow East Dippers	Au Assays (length weighted)	93	0.44	25.10	4.95	3.6	0.73
	Au 2.0m Composites (length weighted)	42	1.11	16.80	4.95	2.6	0.53
	Au 2.0m Top-cut Declustered Composites	42	1.11	16.80	4.86	2.4	0.50
Code 18 East Dipper	Au Assays (length weighted)	305	0.13	31.60	6.15	4.9	0.80
	Au 2.0m Composites (length weighted)	151	0.19	20.49	6.15	3.7	0.60
	Au 2.0m Top-cut Declustered Composites	151	0.19	20.49	5.54	3.2	0.57
Code 23 Phoenix Base FW	Au Assays (length weighted)	119	0.04	44.30	6.59	6.9	1.04
	Au 2.0m Composites (length weighted)	65	0.04	31.65	6.59	5.9	0.89
	Au 2.0m Top-cut Declustered Composites	65	0.04	31.65	6.78	5.9	0.86

TABLE 14-7 DESCRIPTIVE STATISTICS OF GOLD FOR THE CENTRAL MODEL

Model:	1809_CRM	Descriptive Statistics					
Date:	Sep-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 1 Fosterville HG	Au Assays (length weighted)	572	0.02	72.00	7.62	5.9	0.77
	Au 2.0m Composites (length weighted)	287	0.02	28.98	7.63	4.7	0.61
	Au 2.0m Top-cut Declustered Composites	287	0.02	28.98	7.13	4.3	0.61
Code 2 Fosterville LG	Au Assays (length weighted)	6,984	0.00	41.00	2.83	3.7	1.31
	Au 2.0m Composites (length weighted)	6,509	0.01	41.00	2.85	3.7	1.29
	Au 2.0m Top-cut Declustered Composites	6,509	0.01	41.00	2.47	2.9	1.19
Code 3 Phoenix HG	Au Assays (length weighted)	2,692	0.01	104.80	8.03	8.0	1.00
	Au 2.0m Composites (length weighted)	1,292	0.01	49.54	8.09	6.4	0.79
	Au 2.0m Top-cut Declustered Composites	1,292	0.01	49.54	7.92	6.9	0.87
Code 4 Phoenix LG	Au Assays (length weighted)	124	0.01	27.30	4.32	5.0	1.16
	Au 2.0m Composites (length weighted)	75	0.01	17.57	4.33	4.2	0.98
	Au 2.0m Top-cut Declustered Composites	75	0.01	17.57	3.36	3.7	1.09
Code 5 Splay HG	Au Assays (length weighted)	873	0.01	57.60	6.08	6.7	1.10
	Au 2.0m Composites (length weighted)	401	0.01	38.18	6.05	5.5	0.91
	Au 2.0m Top-cut Declustered Composites	401	0.01	38.18	6.57	5.2	0.79
Code 6 Splay LG	Au Assays (length weighted)	2,279	0.00	28.80	2.01	2.6	1.28
	Au 2.0m Composites (length weighted)	1,902	0.01	24.60	2.08	2.5	1.22
	Au 2.0m Top-cut Declustered Composites	1,902	0.01	24.60	2.71	2.8	1.01
Code 7 Kite	Au Assays (length weighted)	298	0.42	28.60	8.03	5.9	0.73
	Au 2.0m Composites (length weighted)	145	1.21	23.85	8.01	4.5	0.56
	Au 2.0m Top-cut Declustered Composites	145	1.21	23.85	7.69	4.4	0.57
Code 10 Vulture	Au Assays (length weighted)	593	0.14	24.20	4.98	2.8	0.57
	Au 2.0m Composites (length weighted)	311	0.45	19.90	4.98	2.4	0.47
	Au 2.0m Top-cut Declustered Composites	311	0.45	19.90	4.69	2.4	0.51
Code 11 Harrier OP	Au Assays (length weighted)	1,635	0.00	15.33	2.41	2.7	1.11
	Au 2.0m Composites (length weighted)	1,570	0.01	15.33	2.42	2.7	1.10
	Au 2.0m Top-cut Declustered Composites	1,570	0.01	15.33	1.95	2.3	1.18
Code 12 Phoenix Base	Au Assays (length weighted)	184	0.01	52.40	10.65	8.8	0.83
	Au 2.0m Composites (length weighted)	93	0.01	32.40	10.18	7.0	0.69
	Au 2.0m Top-cut Declustered Composites	93	0.01	32.40	9.17	6.1	0.66
Code 18 East Dipper	Au Assays (length weighted)	245	0.06	59.40	7.43	5.7	0.77
	Au 2.0m Composites (length weighted)	147	0.32	24.61	7.26	4.1	0.56
	Au 2.0m Top-cut Declustered Composites	147	0.32	24.61	7.31	4.2	0.58

A listing of composite statistics is provided in Table 14-8 for the (1812_SPRM, 1805_NPRM and 1806_CRM) Phoenix and Central Models.

TABLE 14-8 COMPOSITE STATISTICS BY COMPOSITE LENGTH CLIPPED TO THE MODEL EXTENTS FOR THE CENTRAL MODEL (1809_CRM), SOUTHERN PHOENIX (1812_SPRM) AND NORTHERN PHOENIX MODEL (1805_NPRM)

Model	Composite Length	Number	% of Comps	Mean length (m)	Mean Grade (g/t Au)
1812_SPRM	< 1.0m	1,531	21.4%	0.61	15
	≥ 1.0 and <2.0m	1,909	26.7%	1.39	28.08
	≥ 2.0m	3,700	51.8%	2.12	24.74
	Total	7140	100%	1.6	23.54
1805_NPRM	< 1.0m	260	14.9%	0.69	5.34
	≥ 1.0 and <2.0m	446	25.6%	1.37	6.11
	≥ 2.0m	1,039	59.5%	2.03	6.96
	Total	1745	100%	1.66	6.50
1809_CRM	< 1.0m	168	1.3%	0.67	4.24
	≥ 1.0 and <2.0m	826	6.6%	1.31	5.94
	≥ 2.0m	11,581	92.1%	2.01	3.37
	Total	12575	100%	1.95	3.55

14.1.4 VARIOGRAPHY

Modeling of the spatial continuity (variography) of gold for the Harrier, Central and Lower Phoenix Models was carried out using Supervisor™ software (Figure 14-4), while the variography for the Northern Model was calculated using MinePlan™ 3D software. Sulfur is estimated in each domain as a variable using the domain geology shape, with a general sulfur variogram employed in the Northern and Central Models. Non-Carbonate Carbon (NCC) is estimated using two broad domain shapes, encompassing east and west geometries, as well as specific domains modelled to large black shale units, all utilizing a general variogram structure. Variography for the antimony estimate for the Lower Phoenix Models was carried out in Supervisor™ software.

Gold grade continuity is the highest along structures contained within parallel/oblique sedimentary host rock bedding contrasts. Within the parallel/oblique bedding zones it is common to see variogram structure ranges of up to 80m. In oblique/oblique host sedimentary settings the spatial grade continuity is less consistent, giving rise to variogram structures with ranges of less than 40m. Therefore, high level mining decisions (reserve block and capital development) are made where drill spacing is at least 50m x 50m and a decision to mine a given level is only made on an indicated resource with a drill spacing of at least 25m x 25m (sulfide hosted gold resources only), or 12.5m x 12.5m (visible gold resources). A similar rationale currently exists for confidence around the development and extraction of the visible gold quartz hosted style mineralization.

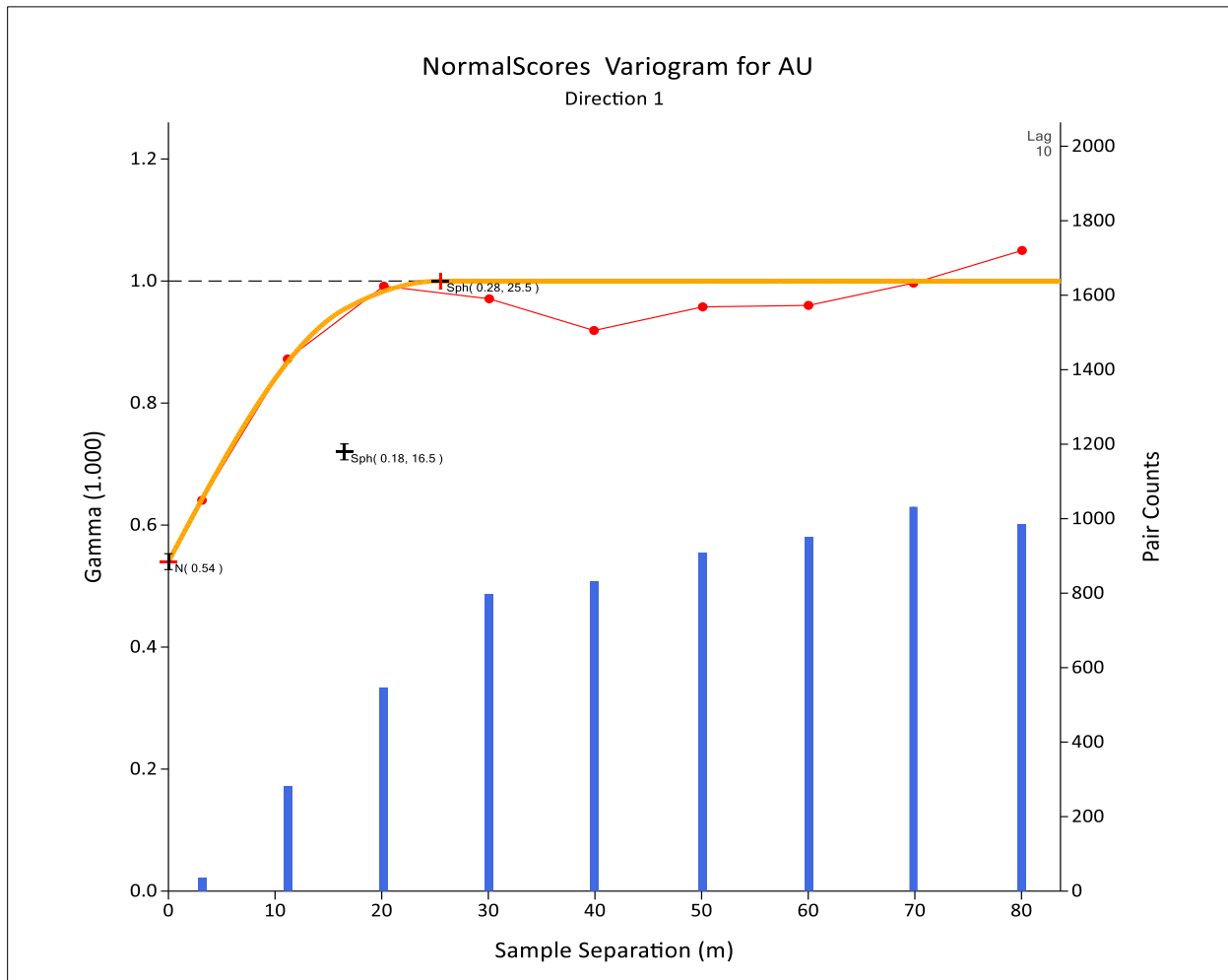


FIGURE 14-4 VARIOGRAM OF THE MAJOR DIRECTION OF THE HIGH GRADE SUB-DOMAIN OF DOMAIN=61 SWAN DOMAIN

Variogram parameters used for gold in the Northern Block Model (1201_NRM) estimation are listed in Table 14-9.

Variogram parameters used for gold in the Southern Phoenix Block Model (1812_SPRM) estimation are listed in Table 14-10. Variogram parameters used for gold in the Northern Phoenix Block Model (1805_NPRM) estimation are listed in Table 14-11. Variogram parameters used for gold in the Central Block Model (1809_CRM) estimation are listed in Table 14-12.

TABLE 14-9 VARIOGRAM PARAMETERS USED FOR NORTHERN MODEL GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE																
1201_NRM																		
AREA	Z Rotation	X Rotation	Y Rotation	Nugget	1st Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	2nd Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	3rd Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	Total Variance	Nugget
	<i>meds rotation</i>																	
D01 Fosterville LG	0	20	70	3.7	5.7	7	5	5	1.6	20	20	10	3.2	48	55	15	14.20	26%
D02 Fosterville HG	0	20	70	3.7	5.7	7	5	5	1.6	20	20	10	3.2	48	55	15	14.20	26%
D03 Phoenix HG	355	20	50	20.0	10.0	10	15	5	21	45	25	10					51.00	39%
D06 Splay LG	0	20	60	7.0	1.0	10	10	5	11.8	30	20	10					19.80	35%
D07 Griffon	0	20	60	20.0	10.0	10	15	5	21	45	25	10					51.00	39%

TABLE 14-10 VARIOGRAM PARAMETERS USED FOR THE SOUTHERN PHOENIX MODEL (1812_SPRM) GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE													
1812_SPRM (Southern Phoenix Model)		Z Rotation	X Rotation	Y Rotation	Nugget	1st Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	2nd Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	Total Variance (Total Sill)	Nugget
		<i>meds rotation</i>													
AU Waste		50	20	50	20.0	10.0	10.0	15.0	5.0	21.0	45.0	25.0	10.0	51	39%
D03 Phoenix HG		12	28	-131	0.2	0.4	7.0	5.5	8.0	0.3	40.0	20.5	10.0	1	24%
D05 Splay HG		4	9	-115	0.2	0.2	20.0	20.0	4.5	0.6	31.5	25.5	5.0	1	22%
D06 Splays LG		13	24	-129	0.3	0.7	50.0	129.0	10.0					1	29%
D08 Allwood		15	17	-122	0.2	0.2	6.0	8.5	5.0	0.7	51.0	22.0	10.0	1	18%
D09 Vertical		3	20	-85	0.1	0.3	2.0	2.5	3.5	0.7	40.0	30.5	10.0	1	7%
D09 Vertical High Grade Sub-domain		-9	18	-64	0.3	0.4	3.0	2.0	1.0	0.3	56.5	27.5	10.0	1	32%
D12 Phoenix Base		7	11	-147	0.5	0.3	5.0	3.5	5.0	0.3	85.5	60.5	10.0	1	45%
D13 Benu		10	17	-122	0.5	0.4	15.0	5.5	5.5	0.1	93.0	41.0	10.0	1	53%
D14 Benu FW		25	17	-149	0.3	0.1	8.0	4.5	5.0	0.7	181.5	86.5	10.0	1	25%
D15 Kestrel		-5	30	-90	0.4	0.1	6.5	3.0	5.0	0.5	56.5	40.0	10.0	1	39%
D16 Bedded East		-7	24	106	0.2	0.5	12.5	8.0	5.0	0.3	30.5	26.0	10.0	1	23%
D17 Shallow East Dippers		-175	0	165	0.4	0.6	32.5	10.0	6.0					1	36%
D18 East Dippers		-17	19	-47	0.3	0.3	50.0	20.5	5.0	0.4	78.0	39.0	10.0	1	28%
D19 Phoenix Base South		-14	8	-125	0.1	0.4	6.0	6.0	5.0	0.4	54.5	15.0	10.0	1	12%
D20 Eagle		-2	21	-41	0.6	0.4	73.0	15.0	5.0					1	59%
D21 Allwood East		7	40	-57	0.1	0.4	6.0	6.0	5.0	0.4	54.5	15.0	10.0	1	12%
D22 Audax FW		10	0	-20	0.6	0.1	3.0	33.0	5.0	0.3	33.5	33.5	10.0	1	58%
D23 Phoenix Base FW		-5	0	-120	0.4	0.1	5.0	4.5	5.0	0.6	45.5	30.5	10.0	1	36%
D24 Audax Sulfide		-6	44	-10	0.5	0.4	13.0	5.0	5.0	0.1	27.5	10.0	10.0	1	48%
D25 Swan Sulfide		-16	14	-137	0.1	0.5	15.5	29.0	5.0	0.4	62.5	46.5	10.0	1	14%
D26 Swan Upper		-35	9	3	0.4	0.3	38.5	11.5	5.0	0.3	84.0	19.5	10.0	1	44%
D27 West Dipping Splays		-11	0	-115	0.2	0.0	20.0	20.0	10.0	0.8	139.5	93.5	20.0	1	15%
D59 Audax		15	37	-16	0.6	0.3	11.0	13.0	5.0	0.1	61.5	30.0	8.0	1	62%
D59 Audax- Swan intersection Sub-domain		2	24	-51	0.7	0.1	28.5	20.0	5.0	0.2	51.5	40.0	10.0	1	73%
D59 Audax- Benu intersection Sub-domain		28	29	-28	0.5	0.4	9.0	7.0	5.0	0.1	39.5	9.5	10.0	1	45%
D60 Benu W1		16	13	-142	0.5	0.2	1.0	1.5	1.0	0.3	16.0	18.0	10.0	1	54%
D61 Swan		-15	23	-134	0.6	0.3	25.5	7.5	5.0	0.2	171.0	87.0	10.0	1	58%
D61 Swan Upper Splay		-7	29	-138	0.7	0.2	35.0	2.5	2.0	0.1	154.5	5.0	5.0	1	67%
D61 Swan 12.5m drill spacing		2	36	-143	0.6	0.2	16.5	2.0	3.0	0.2	25.5	5.0	5.0	1	62%
D66 Sparrowhawk		114	79	117	0.4	0.3	15.5	9.0	5.0	0.3	70.5	11.0	10.0	1	38%
D67 Shallow North Dippers		10	10	-2	0.3	0.2	5.0	9.0	2.0	0.5	15.5	12.0	4.0	1	26%

TABLE 14-11 VARIOGRAM PARAMETERS USED FOR THE NORTHERN PHOENIX MODEL (1805_NPRM) GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE												
1805_NPRM (Northern Phoenix Model)														
AREA	Z Rotation	X Rotation	Y Rotation	Nugget	1st Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	2nd Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	Total Variance	Nugget
	<i>meds rotation</i>													
Au Waste	50	20	50	20.00	10	10	15	5	21	45	25	10	51	39%
D03 Phoenix HG	-20	-11	-131	0.26	0.39	61	8	9	0.36	67	21	10	1	26%
D05 Splay HG	56	72	-147	0.11	0.41	9	13	10	0.48	79	65	14	1	11%
D06 Splays LG	-3	19	-111	0.21	0.58	26	22	14	0.22	109	30	20	1	21%
D08 Allwood	176	12	-54	0.17	0.52	17	9	3	0.31	62	12	6	1	25%
D09 Vertical	-1	30	-79	0.81	0.05	47	35	10	0.14	142	45	20	1	81%
D12 Phoenix Base	15	9	-120	0.25	0.26	7	6	3	0.49	22	6	8	1	25%
D13 Benu	-9	-18	-116	0.33	0.67	109	37	8					1	33%
D14 Benu FW	40	22	-152	0.52	0.48	113	104	10					1	52%
D15 Kestrel	-17	38	-71	0.16	0.84	25	23	11					1	16%
D16 Bedding East	4	-9	-65	0.26	0.74	94	61	17					1	26%
D17 Shallow East Dippers	40	22	-152	0.36	0.64	33	10	6					1	36%
D18 East Dipper	-22	38	-51	0.40	0.24	33	14	12	0.37	80	41	32	1	40%
D23 Phoenix Base FW	-23	-24	-129	0.40	0.6	68	20	10					1	40%

TABLE 14-12 VARIOGRAM PARAMETERS USED FOR THE CENTRAL MODEL (1809_CRM) GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE												
1809_CRM (Central Model)														
AREA	Z Rotation	X Rotation	Y Rotation	Nugget	1st Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	2nd Rotation Spherical Sill	Range (y)	Range (x)	Range (z)	Total Variance	Nugget
	<i>meds rotation</i>													
Au Waste	50	20	50	20.0	10.0	10.0	15.0	5.0	21.0	45.0	25.0	10.0	51	39%
Code 1 Fosterville HG	36	54	-126	0.1	0.1	9.5	11.5	6.0	0.7	25.0	13.0	8.0	1	13%
Code 2 Fosterville LG	11	28	-113	0.2	0.4	61.0	43.5	10.0	0.5	121.5	53.5	20.0	1	19%
Code 3 Phoenix HG	2	16	-127	0.1	0.7	6.5	3.5	4.8	0.2	29.5	29.5	8.5	1	14%
Code 4 Phoenix LG	4	27	-118	0.1	0.7	81.5	20.0	5.0	0.2	94.0	28.0	10.0	1	12%
Code 5 Splay HG	-21	-13	-142	0.2	0.6	23.0	22.5	7.5	0.2	52.0	23.5	8.5	1	19%
Code 6 Splay LG	13	24	-129	0.4	0.3	24.0	16.5	5.0	0.3	103.5	78.0	10.0	1	38%
Code 7 Kite	30	45	-144	0.5	0.0	20.0	5.0	5.0	0.5	44.0	10.0	10.0	1	51%
Code 10 Vulture	8	24	-129	0.5	0.2	57.0	34.5	5.0	0.3	86.0	71.0	10.0	1	53%
Code 11 Harrier OP	75	70	180	0.1	0.4	4.0	17.0	2.5	0.6	25.0	20.0	7.5	1	7%
Code 12 Phoenix Base	7	11	-147	0.5	0.3	5.0	3.5	5.0	0.3	85.5	60.5	10.0	1	45%
Code 18 East Dipper	6	18	-64	0.2	0.8	52.0	4.0	1.0					1	22%

14.1.5 TOP CUTS

Historically, gold grades which were predominantly associated with disseminated sulfides were top cut to 75 g/t Au in order to limit the influence of a low number of high-grade intercepts. Mineralogically, ~75 g/t is seen as the stoichiometric limit of sulfide mineralization, with grades exceeding this thought to be associated with coarse gold and quartz. This top cut approach has been applied to the Northern, Central and Northern Phoenix models, whereas an increasing frequency of high-grade composites associated with visible gold intersections evident in the Southern Phoenix model (Table 14-3) has driven ongoing review of top cut values and methodology.

TABLE 14-13 COMPARISON BETWEEN NUMBER OF COMPOSITES PRESENT ABOVE THE CUT-OFF VALUE FROM 2014 TO DECEMBER 2018 FOR THE SAME RESOURCE AREA

Model Year	2m Composite Grade Cut-off (g/t Au)					
	50	100	200	500	1,000	3,000
	Number of Composites above Grade Cut-off					
2014	20	10	5	1	-	-
2015	75	46	23	8	3	-
2016	143	84	48	23	13	-
2017	235	154	97	48	20	2
2018	344	231	150	64	26	3

Top cut values are determined using analysis of the Au histograms, mean and variance plots (Figure 14-5) and log probability plots (Figure 14-6) in the geostatistical package Supervisor™. In consultation with SRK the method of Au top cut application was reviewed mid-2017, resulting in the use of an outlier range restriction with an over-arching high Au grade top cut value. This outlier range restriction methodology limits the influence of the very high-grade values by allowing them to be utilized for the estimation for model blocks within a specified range, while blocks beyond the range utilize the specified outlier value as a top cut. The outlier threshold value is chosen using the same method used for top cut selection, with the distance for the range restriction guided by the range in the major direction of a Normal scores nested variogram structure as calculated for the chosen outlier grade threshold. An overarching top cut value of 3,000 g/t Au was also applied to limit the influence of extreme grades in the 1812_SPRM model, corresponding with inflection points noted in the log probability plots and mean and variance plots for the Swan mineralized domain (Figure 14-5 and Figure 14-6).

This methodology combined sub domaining producing a more consistent Au grade distribution. This allows separate analysis and estimation of the sub domain and the remaining original domain, as well as the application of different outlier range restriction values for the spatially distinct populations. Composite top cuts and outlier range restrictions will be revised on an ongoing basis as data populations increase through additional drilling and mining in the visible gold environments of the Lower Phoenix Area.

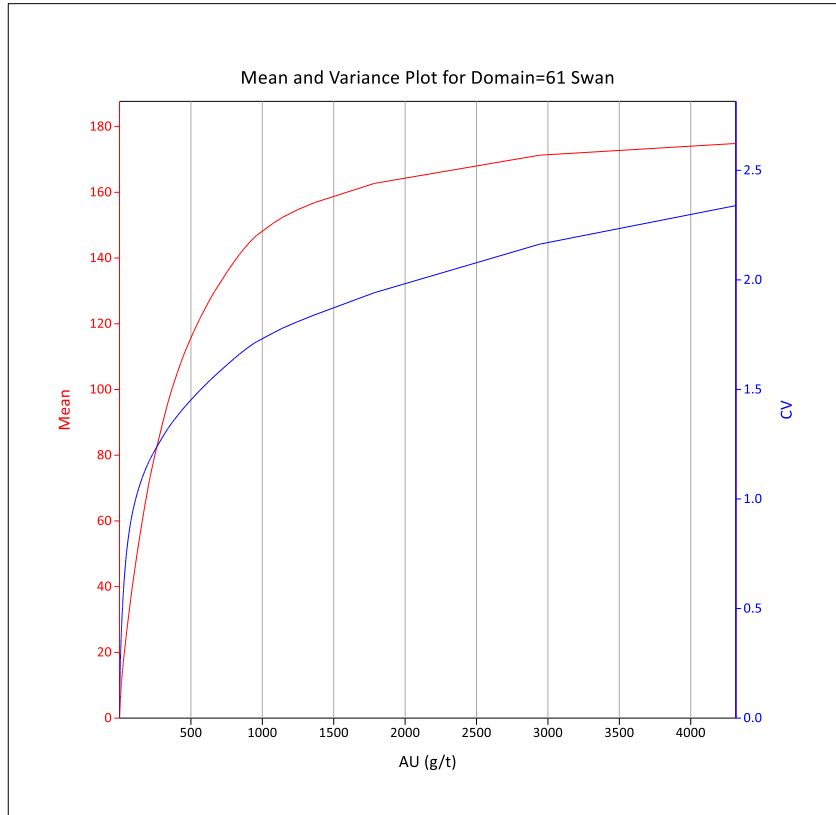


FIGURE 14-5 MEAN AU (G/T) AND CO-VARIANCE PLOT OF THE AU OF DOMAIN=61 SWAN

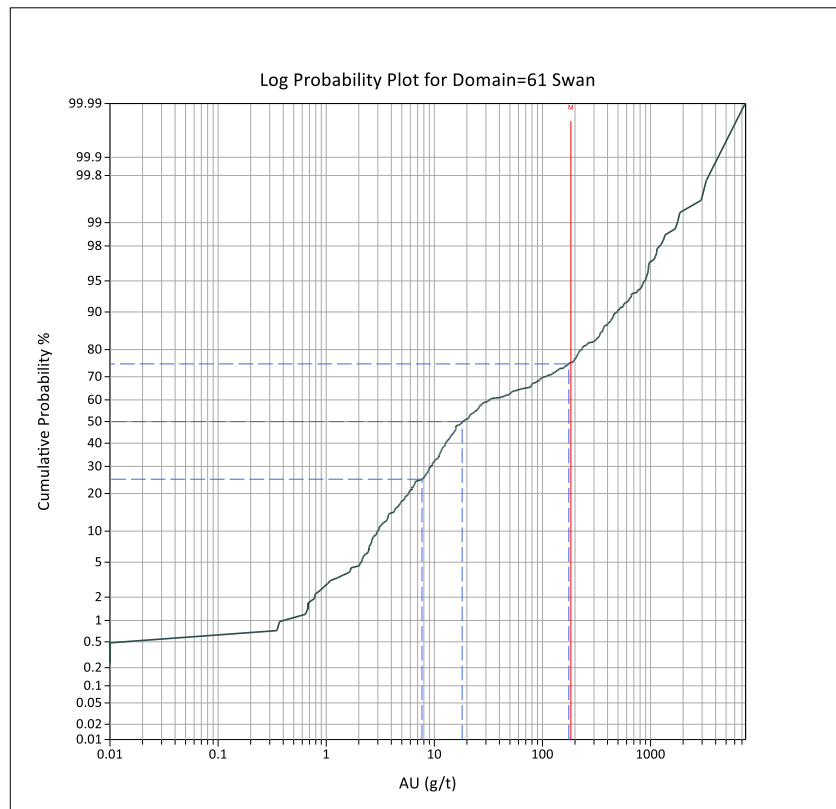


FIGURE 14-6 LOG PROBABILITY PLOT FOR THE AU OF THE DOMAIN=61 SWAN

14.1.6 BLOCK MODELS

For reasons of data handling, the Central Area was divided into four separate block models – Northern, Central, Southern Phoenix and Northern Phoenix, with the following extents and block dimensions contained within (Table 14-14) (Figure 14-10). All models use Ordinary Kriging to interpolate grades.

In 2018 the use of sub-block models was fully implemented, allowing for greater accuracy and flexibility in reporting. A sub-cell size of 0.2m x 1m x 0.5m was deemed to be optimal for the required resolution and model file size. The Northern Model is the only model in the Central area in which the final model is still a regularized percent model as it has not been updated since January 2012.

TABLE 14-14 CENTRAL AREA BLOCK MODEL DIMENSIONS

Parameter	Northern	Central	Northern Phoenix	Southern Phoenix
Northing Min (m)	8,250	6,250	7,250	5,200
Northing Max (m)	10,250	8,250	8,700	7,250
Easting Min (m)	1,400	1,400	1,400	1,300
Easting Max (m)	2,100	2,100	1,850	1,850
RL Max (m)	5,200	5,200	4,600	4,600
RL Min (m)	4,800	4,600	4,150	3,400
X direction m (East)	2	2	2	2
Y direction m (North)	10	10	10	10
Z direction m (Vertical)	5	5	5	5
X direction sub-cell size m (East)	-	0.2	0.2	0.2
Y direction sub-cell size m (North)	-	1	1	1
Z direction sub-cell size m (Vertical)	-	0.5	0.5	0.5

14.1.7 BULK DENSITY

To supplement the ongoing program of diamond drill core bulk density measurements, additional analysis was undertaken during 2013 and again in 2017 of bulk density values using grab samples from known underground production locations. Bulk density measurements conducted on production samples via a water displacement method (Lipton, 1997) shows the average densities of mineralized material at 2.79t/m³, Stibnite material at 3.20t/m³ and waste material at 2.76t/m³ (Table 14-15). This data is reflective of the diamond drill core data seen in Figure 14-7, where a total of 2,157 samples of mineralized and un-mineralized samples were charted against their respective reduced level. Figure 14-8 shows the bulk density values for only the mineralized diamond drill core samples. Based on the observed trends the current model density values have been deemed appropriate.

Bulk density within the oxide zone from surface to base of complete oxidation is determined from RC drilling, and test work assigns it a value of 2.40t/m³. Fresh rock is then divided into four zones determined by test work carried out on the diamond drill core. The three categories are based on reduced level with transitional material between the oxide zone and above 5050mRL assigned 2.56t/m³, fresh material between 5050mRL

and 5000mRL assigned 2.64t/m³, fresh material between 5000mRL and 4500mRL assigned 2.72t/m³ and fresh material below 4500mRL assigned 2.78t/m³ (Figure 14-9).

TABLE 14-15 BULK DENSITY SAMPLES FROM UNDERGROUND PRODUCTION LOCATIONS

Source	Reduced Level (m)	Description	Calculated Density (t/m ³)
O4640	4640	Mineralized	2.77
O4640	4640	Mineralized	2.68
C4480	4480	Mineralized	2.75
C4480	4480	Mineralized	2.94
C4480	4480	Stibnite	3.52
C4460	4460	Mineralized	2.84
C4460	4460	Mineralized	2.75
C4460	4460	Stibnite	3.00
C4460	4460	Stibnite	3.07
C4460	4460	Waste	2.67
C4460	4460	Waste	2.77
C4480	4480	Waste	2.82
C4480	4480	Waste	2.79
O4640	4640	Waste	2.70
O4640	4640	Waste	2.79

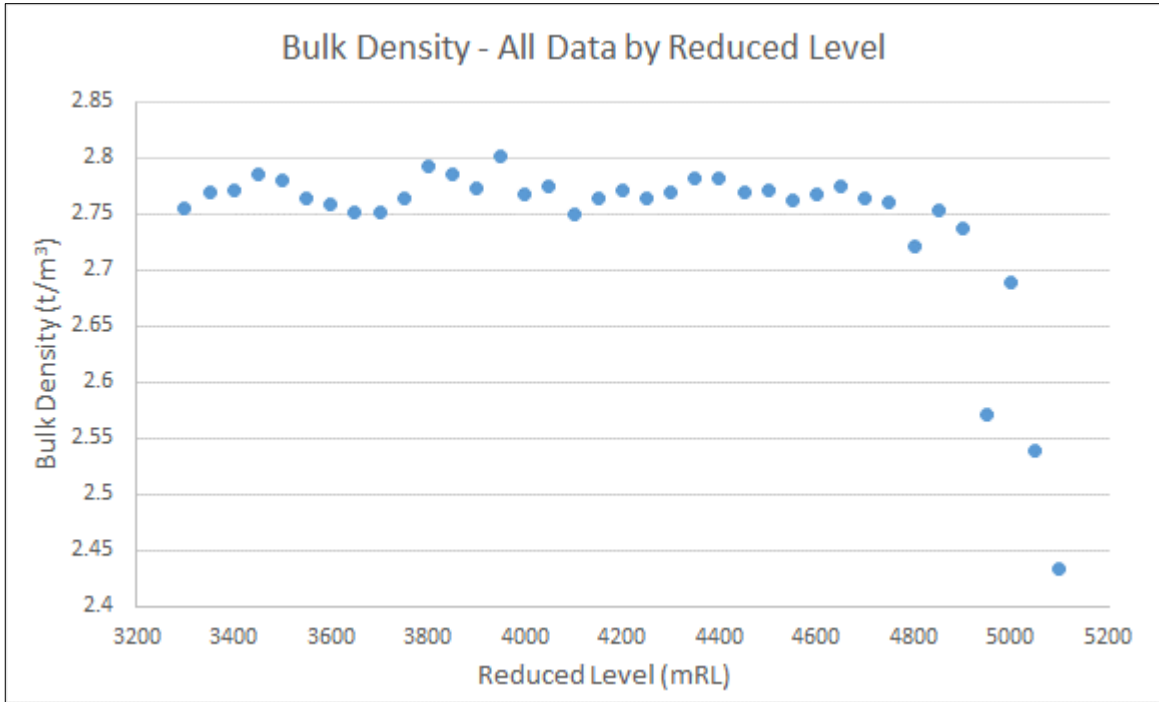


FIGURE 14-7 DIAMOND DRILL CORE BULK DENSITY VALUES VS. REDUCED LEVEL FOR DATA UP TO DECEMBER 2018

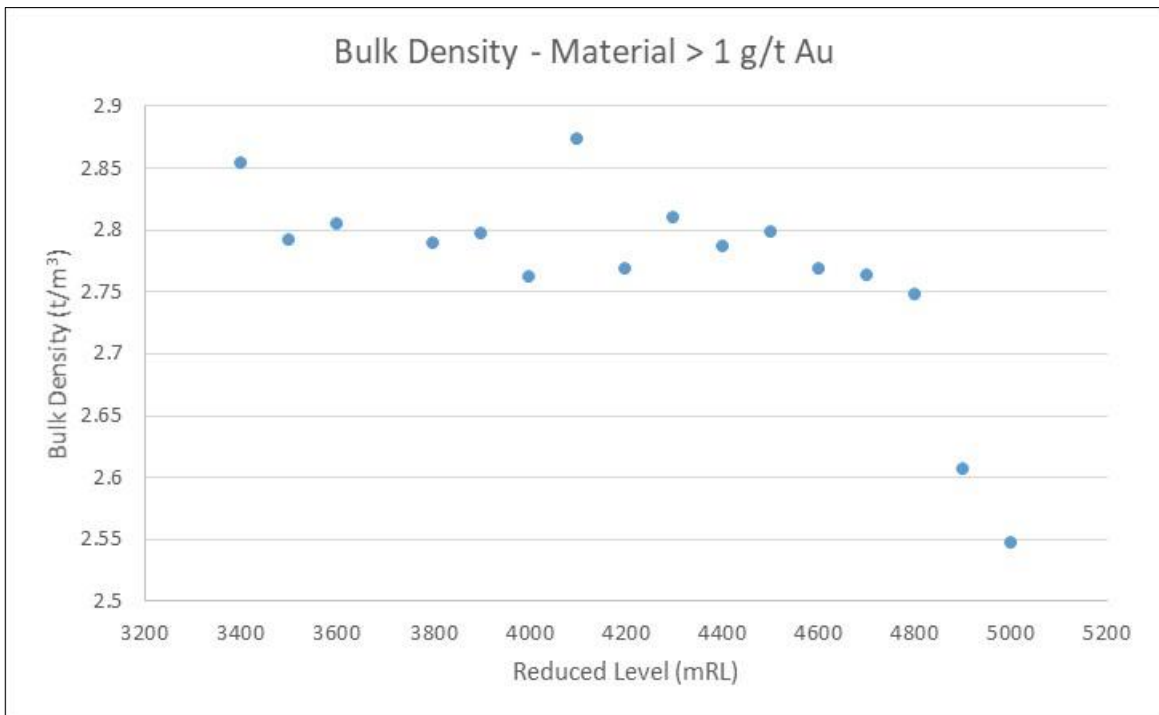


FIGURE 14-8 DRILL CORE BULK DENSITY VALUES (INTERVALS >1 G/T AU) VS. RL FOR DATA UP TO DECEMBER 2018

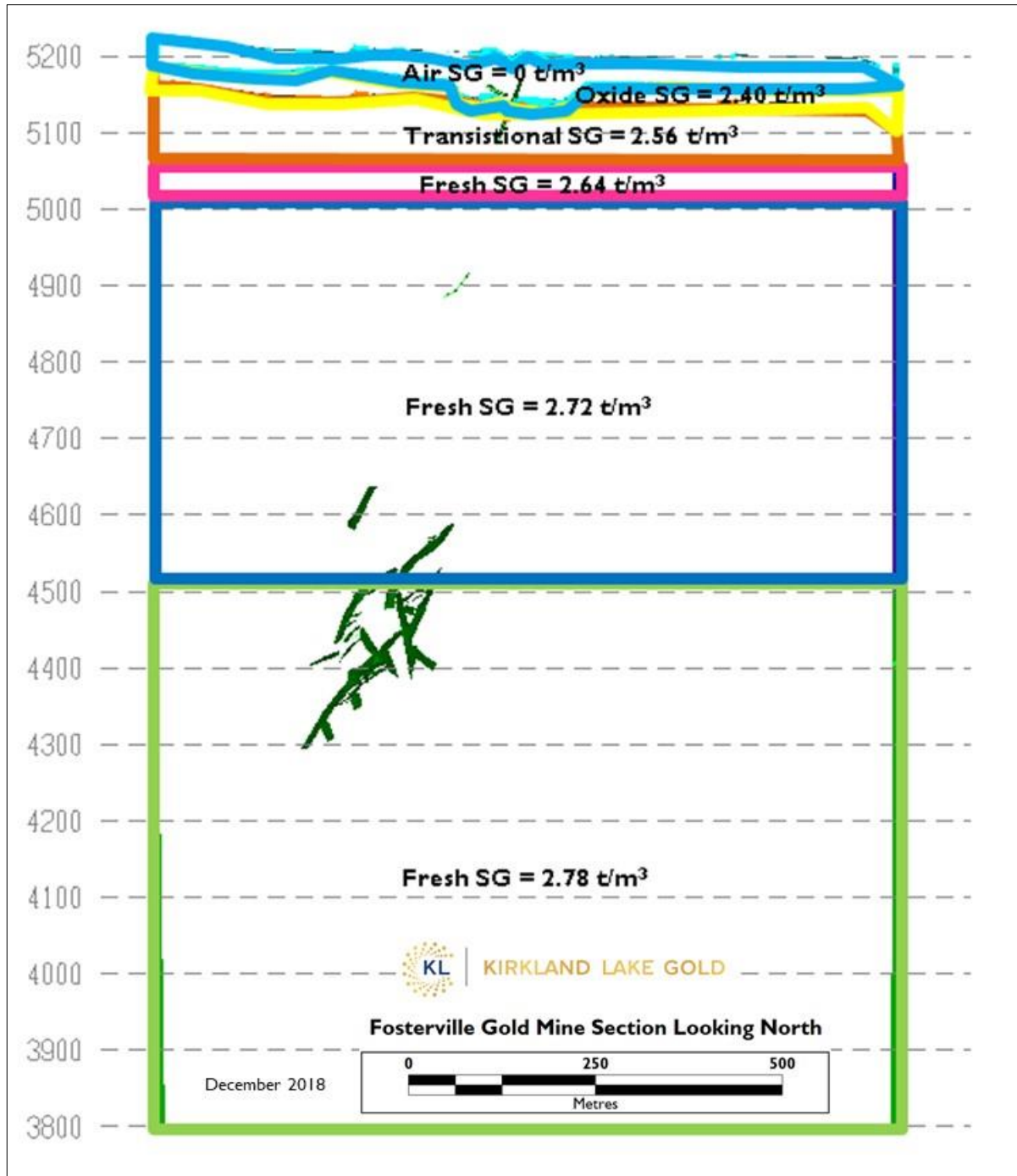


FIGURE 14-9 BULK DENSITY VALUES USED IN RESOURCE MODELS MINERAL RESOURCE CLASSIFICATION

14.1.8 SEARCH CRITERIA

Gold, Antimony, Sulfur and NCC grades are interpolated into blocks meeting the following criteria:

- Greater than 1% of the block volume is inside a domain envelope;
- Blocks within one of the domain solids; and

- Blocks whose search ellipsoid includes at least one composite, depending on the particular mineralized envelope.

The search ellipsoid geometries were based on optimized variogram models, also taking into account the geology and drill spacing of the relevant zone so that a block could 'see' at least the nearest sections along strike and holes up or down-dip.

Only composites meeting the following criteria are used to interpolate any one block, where:

- Composites (to a maximum of 35) within the search ellipsoid dimensions and search area limits;
- Where more than the maximum allowed composites lie within the search ellipsoid, the samples with the closest anisotropic distance are used, up to the maximum number specified;
- There was no quadrant search employed in the 1805_NPRM Model, 1812_SPRM Model or the 1809_CRM Model. A maximum of 10 composites per quadrant were estimated in a four sector quadrant search in the 1201_NRM Model (Table 14-19);
- Codes of both the composite and the block were matched by correlating the coded composite item with the coded block model item; and
- A maximum of up to ten composites can be taken from any single drill hole.

In order to optimize the search ellipsoids used for interpolation, variogram fans were calculated and analyzed. The variogram structure with the lowest nugget and longest range that was concordant with known geological trends or interactions was utilized to dictate the search ellipsoid. A Kriged 'de-bug' search ellipsoid was also created in MinePlan™ for the variogram to be used allowing visual inspection of the composites and Kriging weights calculated for the block.

Search range extents for the 1812_SPRM Model can be seen in Table 14-16, with the extents for the 1805_NPRM Model in Table 14-17, and the extents for the Central Model in Table 14-18. Search routines used to interpolate blocks in the model are a combination of a broad extensive search to populate the extents of the domain based on a low sample support estimate, combined with an overprint of a tighter estimation with a maximum search distance no greater than the range calculated in the variogram model.

The majority of the domains in the 1812_SPM and 1805_NPRM model have a moderate southerly plunge, following the observed mineralized shoot geometry resulting from the intersection of the main fault structures with secondary splay faults as well as the southerly plunging fold hinges. An example of the search direction in the 1812_SPRM following the observed structural interactions can be seen in Figure 14-11, which shows the search ellipsoid for DOMAIN=61 Swan plunging on a similar orientation to the footwall intersection with the Benu ELQ Fault.

The resultant block models are tightly constrained by wireframe envelopes derived from detailed geological interpretation and modeling of the mineralized zones. This provides the vital basic geological control over the computer-generated grade estimations. A section through the block model is included in Figure 14-12.

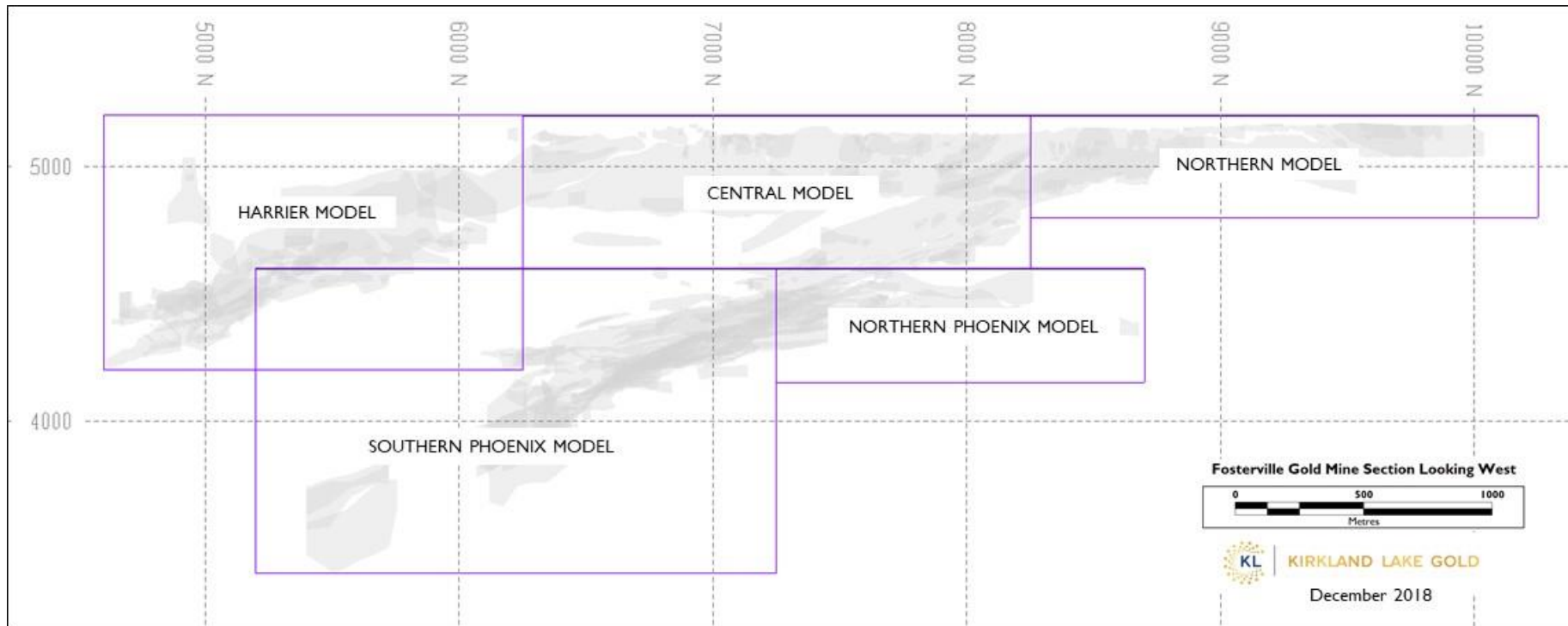


FIGURE 14-10 LONGITUDINAL PROJECTION SHOWING NORTHERN, CENTRAL AND HARRIER MODEL EXTENTS AS OF DECEMBER 31, 2018

TABLE 14-16 SEARCH PARAMETERS FOR THE SOUTHERN PHOENIX RESOURCE MODEL (1812_SPRM)

1812_SPRM (Southern Phoenix model)	SEARCH PARAMETER TABLE							
DOMAIN	y axis (°)	x axis (°)	z axis (°)	min samples 1st search	max samples 1st search	max samples per hole	Outlier range restriction grade (Au g/t)	Outlier restriction range (m)
	search distance			sample number definition				
D03 Phoenix HG	40	25	30	1	35	10		
D05 Splay HG first search	60	50	30	1	35	10		
D05 Splay HG second search	35	20	30	1	35	10		
D06 Splays LG first search	125	85	30	1	35	10	75	5
D06 Splays LG second search	40	20	20	1	35	10	75	5
D08 Allwood	55	35	10	1	35	10		
D09 Vertical first search	40	30	30	1	35	6	40	5
D09 Vertical second search	30	10	20	1	35	6	40	5
D09 Vertical High Grade Sub-domain	20	15	20	2	35	6		
D09 Vertical Low Grade Sub-domain	25	15	20	1	35	6		
D12 Phoenix Base	45	25	30	1	35	10	75	5
D13 Benu first search	100	70	20	1	16	10	100	50
D13 Benu second search	50	30	10	4	16	10		
D13 Benu Audax HW Sub-domain	90	40	10	2	20	10		
D14 Benu FW	40	30	30	1	35	10		
D15 Kestrel	50	30	30	1	35	6		
D16 Bedded East first search	100	80	40	1	35	10	75	5
D16 Bedded East second search	40	20	20	1	35	10	75	5
D17 Shallow East Dippers first search	100	50	60	1	35	10	75	5
D17 Shallow East Dippers second search	30	10	30	1	35	10	75	5
D18 East Dippers first search	65	45	50	1	35	10		
D18 East Dippers second search	40	20	30	1	35	10		
D19 Phoenix Base South	35	25	30	1	35	10		
D20 Eagle	35	20	30	1	35	10	75	5
D21 Allwood East	40	30	30	1	35	10		
D22 Audax FW	30	20	30	1	35	10		
D23 Phoenix Base FW	45	35	30	1	35	10		
D26 Swan Upper	85	20	40	1	20	4		
D27 West Dipping Splays	125	105	40	1	20	4		
D59 Audax first search	120	120	30	1	16	10	130	30
D59 Audax second search	60	30	30	1	16	10	250	10
D59 Audax- Swan intersection Sub-domain	50	30	10	1	16	10		
D59 Audax- Benu intersection Sub-domain	40	20	30	4	16	10		
D59 Audax- Benu intersection Sub-domain	40	10	30	1	16	10		
D60 Benu W1	20	20	30	1	35	10	100	5
D61 Swan first search	150	90	30	1	26	4	250	5
D61 Swan Lower Splay	80	50	30	5	26	4		
D61 Swan Upper Splay First Search	80	60	30	1	26	4	250	5
D61 Swan Upper Splay Second Search	70	10	30	1	26	4		
D61 Swan 12.5m drill spacing area	40	10	30	1	20	4	600	10
D61 Swan LG Benu ELQ HW sub-domain	60	30	30	4	26	10	100	5
D66 Sparrowhawk	70	10	30	1	35	10		
D67 Shallow North Dippers	20	20	20	1	35	10		
D24 Audax Sulfide first search	130	130	40	1	20	10		
D24 Audax Sulfide second search	30	10	30	4	20	10		
D25 Swan Sulfide	95	65	30	1	20	4		
Au Waste	200	200	50	1	35	4	5	5

TABLE 14-17 SEARCH PARAMETERS FOR THE NORTHERN PHOENIX RESOURCE MODEL (1805_NPRM)

1805_NPRM (Northern Phoenix model)	SEARCH PARAMETER TABLE							
DOMAIN	y axis (°)	x axis (°)	z axis (°)	min. samples	max. samples	max. samples per hole	Outlier range restriction grade (Au g/t)	Outlier search distance (m)
	search distance			sample number definition				
Au Waste	200	200	50	1	35	10	5	10
D03 Phoenix HG	60	40	20	2	35	10	30	40
D05 Splay HG first search	140	120	50	1	35	10		
D05 Splay HG second search	60	50	20	1	35	10		
D06 Splays LG	80	60	40	2	35	10	15	40
D08 Allwood first search	90	60	30	1	35	1		
D08 Allwood second search	30	20	10	4	35	3		
D09 Vertical first search	40	30	30	1	35	6	40	5
D09 Vertical second search	30	10	20	1	35	6	40	5
D12 Phoenix Base	50	30	25	1	35	10		
D13 Benu first search	130	80	50	1	35	10		
D13 Benu second search	40	20	20	2	35	5		
D14 Benu FW	90	60	30	1	35	10		
D15 Kestrel	50	25	15	1	35	10		
D16 Bedded East	50	30	15	1	35	10		
D17 Shallow East Dippers	100	50	60	1	35	10	75	5
D18 East Dippers first search	60	50	15	1	35	10		
D18 East Dippers second search	40	30	10	5	35	10		
D23 Phoenix Base FW	40	30	20	1	35	10		

TABLE 14-18 SEARCH PARAMETERS FOR THE CENTRAL MODEL (1809_CRM)

1809_CRM (Central model)	SEARCH PARAMETER TABLE							
DOMAIN	y axis ⁰	x axis ⁰	z axis ⁰	min samples	max samples	max samples per hole	Outlier grade cut (Au g/t)	Outlier search distance (m)
	search distance			sample number definition				
Au Waste	200	200	50	1	35	4	-	-
Code 1 Fosterville HG first search	60	30	20	1	25	4	-	-
Code 1 Fosterville HG second search	30	15	20	3	25	4	-	-
Code 1 Fosterville HG outlier search	7	7	7	1	35	4	-	-
Code 2 Fosterville LG	120	70	30	2	25	4	-	-
Code 3 Phoenix HG first search	60	60	30	2	35	2	-	-
Code 3 Phoenix HG second search	30	30	30	4	35	2	-	-
Code 4 Phoenix LG	100	30	40	1	35	4	-	-
Code 5 Splay HG	40	30	30	1	35	4	-	-
Code 6 Splay LG first search	100	80	40	2	25	4	-	-
Code 6 Splay LG second search	50	30	30	4	25	4	-	-
Code 7 Kite first search	80	50	40	1	35	4	-	-
Code 7 Kite second search	50	20	40	2	35	4	-	-
Code 10 Vulture first search	115	105	40	1	35	4	-	-
Code 10 Vulture second search	50	30	30	2	25	4	-	-
Code 10 Vulture outlier search	7	7	7	1	35	4	-	-
Code 11 Harrier OP	50	40	40	1	25	4	-	-
Code 12 Phoenix Base	85	60	40	1	25	2	-	-
Code 18 East Dipper first search	60	30	30	1	35	4	-	-
Code 18 East Dipper second search	50	15	20	3	35	4	-	-

TABLE 14-19 SEARCH PARAMETERS FOR THE NORTHERN MODEL (1201_NRM)

1201_NRM (Northern Model)	SEARCH PARAMETER TABLE						
DOMAIN	y axis ⁰	x axis ⁰	z axis ⁰	min. samples 1st search	max. samples 1st search	Quadrant sample selection	max. samples per hole
	1st/3rd search distance			sample number definition			
D01 Fosterville HG first search	100	100	50	2	35	10	4
D01 Fosterville HG second search	40	40	20	5	35	10	4
D02 Fosterville LG first search	100	100	80	6	35	10	4
D02 Fosterville LG second search	80	80	50	8	35	10	4
D03 Phoenix HG first search	120	120	50	3	35	10	4
D03 Phoenix HG second search	60	50	30	8	35	10	4
D06 Splays LG first search	120	120	50	1	35	10	4
D06 Splays LG second search	100	100	50	8	35	10	4
D07 Griffon	80	80	50	8	35	10	4

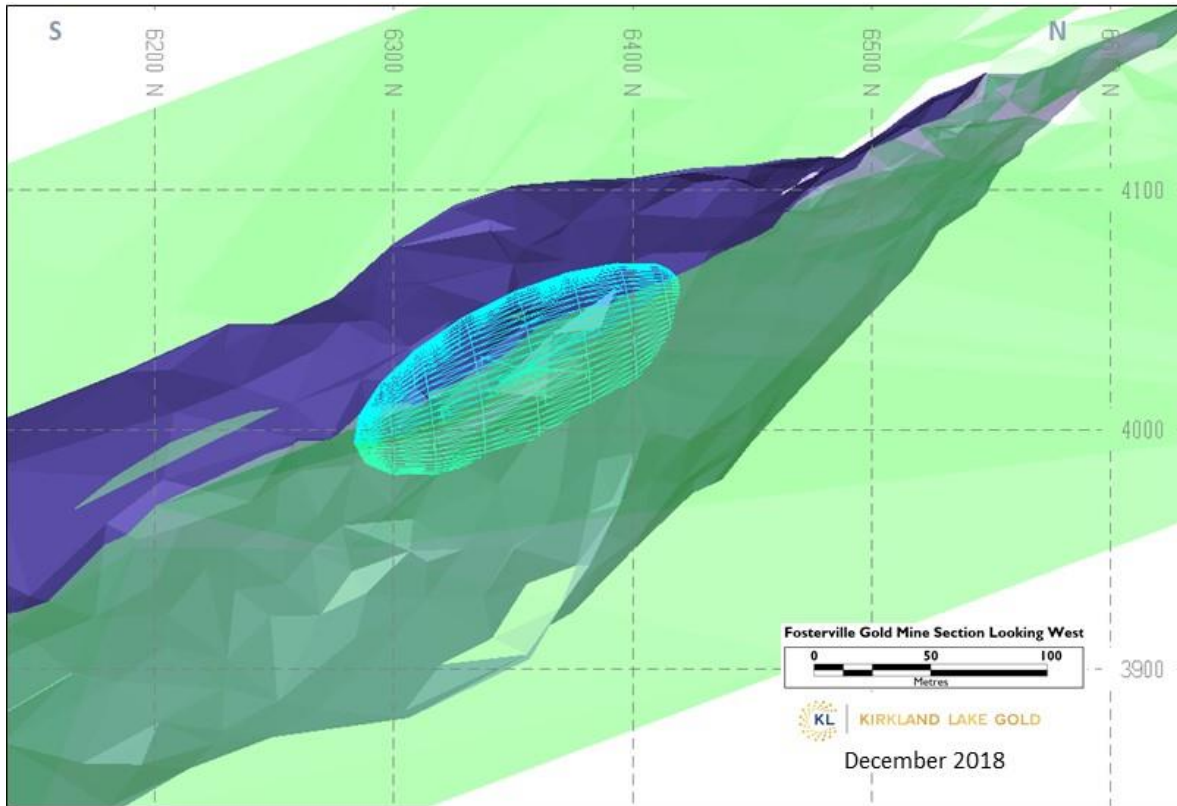


FIGURE 14-11 SEARCH ELLIPSOID FOR DOMAIN=61 SWAN (PURPLE) REFLECTING THE PLUNGE INTERSECTION WITH THE BENU ELQ FAULT (GREEN)

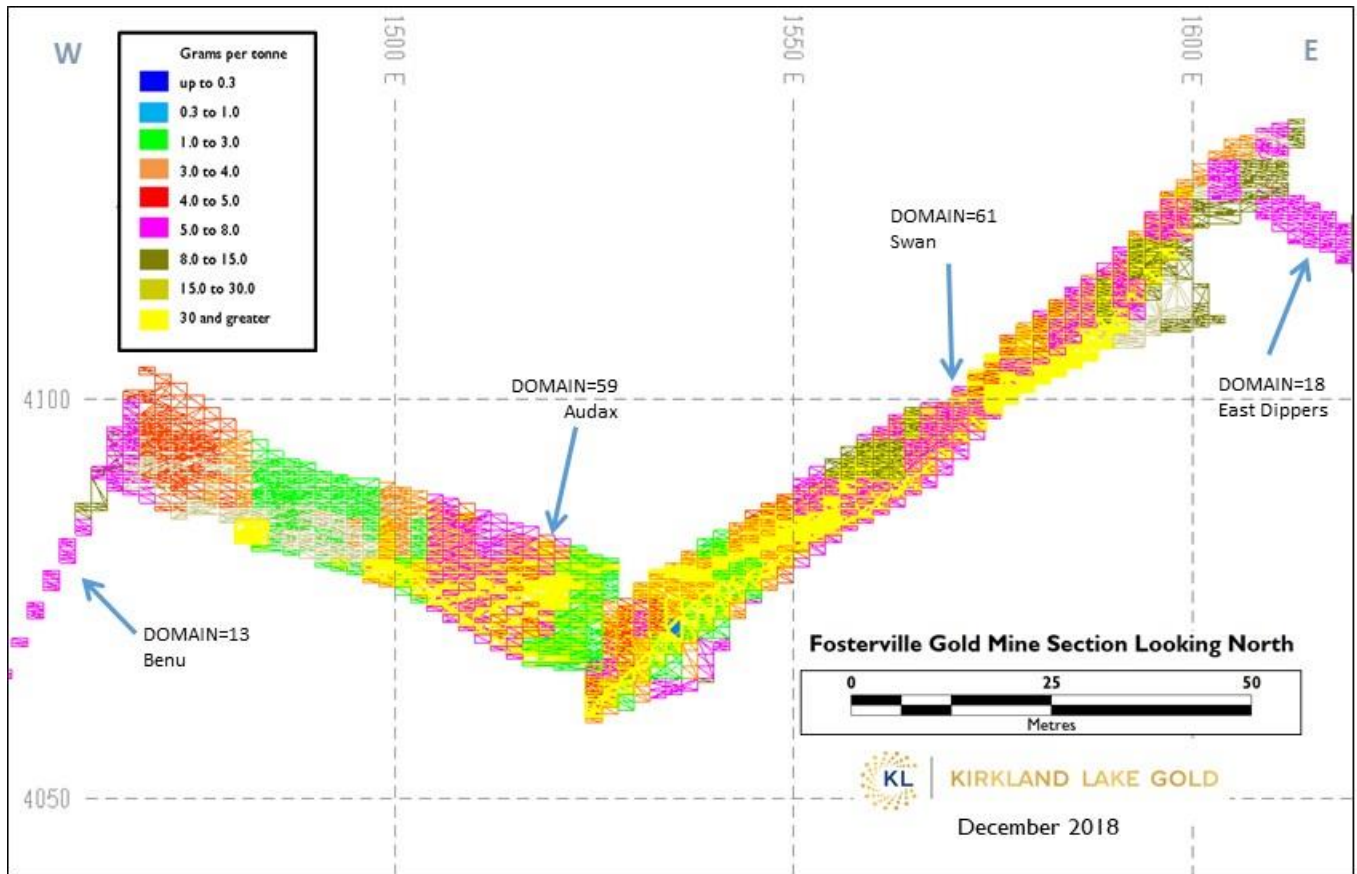


FIGURE 14-12 6500MN CROSS-SECTION OF THE SOUTHERN PHOENIX MODEL

The above Figure 14-12 shows DOMAIN=59 Audax, DOMAIN=61 SWAN, DOMAIN=13 Benu and DOMAIN=16 East Dippers mineralization envelopes.

14.1.9 MODEL VALIDATION

There are a number of methods employed to validate the block model estimate, including the generation of swath plots for each mineralized domain, statistical comparisons of the mean of each domain model estimate against the top cut de-clustered composite mean, and the diluted stope tonnage, grade and metal comparison with mill reconciled production data where available. Kriging neighborhood analysis is undertaken within the Reserve areas of the deposit and estimates are optimized for sample support and variogram range. A grade tonnage curve is produced for most domains including a comparison between the estimate and the de clustered composite data. Visual comparison of the estimated block grades is also carried out by displaying the blocks colored by grade against the drill hole composite data as well as the sludge and face samples.

The comparison of the model mean block grade of each mineralized domain against the composite mean grades for the 1812_SPRM, 1805_NPRM and 1809_CRM are shown in Table 14-20, Table 14-21 and Table 14-22 respectively. For most of the domains the correlation is deemed acceptable, with the under call evident in some of the minor domains due to the low data support in inferred areas of the resource. Other discrepancies observed around some of the subdomain estimations is due to the difficulty comparing the model estimate, which was estimated with a soft boundary, against the composites, which were reported with

a hard boundary over the same subdomain. In these cases, analysis of the swath plots was used to assess suitability of the estimate.

An example swath plot for the 25m drill spacing subdomain in Domain=61 Swan is shown in Figure 14-13.

TABLE 14-20 MINERALIZED DOMAIN MEAN GRADE COMPARISON FOR 1812_SPM

Domain Name	Model Block Mean Grade (g/t Au)	Length Weighted Composite Mean Grade (g/t Au)	Top Cut Declustered Composite Mean Grade (g/t Au)	Variance from Declustered mean %
Code 3 Phoenix HG	6.07	7.49	7.14	-15%
Code 5 Splay HG	5.88	6.15	6.05	-3%
Code 6 Splay LG	5.76	6.67	5.81	-1%
Code 8 Allwood	4.71	4.46	4.53	4%
Code 9 Vertical	30.61	39.07	31.08	-2%
Code 12 Phoenix Base	9.20	8.79	8.59	7%
Code 13 Benu	9.80	11.79	11.78	-17%
Code 14 Benu FW	8.37	8.54	9.16	-9%
Code 15 Kestrel	4.13	4.18	3.97	4%
Code 16 Bedding East	4.93	5.15	4.67	6%
Code 17 Shallow East Dippers	4.90	9.13	6.83	-28%
Code 18 East Dipper	5.89	6.10	5.78	2%
Code 19 Px Base Sth	5.88	5.92	6.04	-3%
Code 20 Eagle	8.27	7.96	7.77	6%
Code 21 Allwood East	27.27	31.17	22.82	20%
Code 22 Audax FW	3.67	3.80	3.96	-7%
Code 23 Phoenix Base FW	6.51	6.09	6.06	7%
Code 24 Audax Sulfide	3.58	4.49	3.83	-7%
Code 25 Swan Sulfide	7.30	6.96	6.07	20%
Code 26 Swan Upper	10.21	11.11	8.98	14%
Code 27 West Dipping Splays	5.90	5.76	5.76	2%
Code 59 Audax (HG hinge intersection subdomain)*	119.17	135.37	153.42	-22%
Code 59 Audax (HG Benu intersection subdomain)*	248.58	305.36	305.36	-19%
Code 59 Audax (are outside HG subdomains)	24.82	25.51	25.79	-4%
Code 60 Benu W1	22.79	21.58	21.13	8%
Code 61 Swan (12.5m drill spacing area)*	149.27	158.70	130.50	14%
Code 61 Swan (25m drill spacing area, upper splay)	116.85	166.45	114.27	2%
Code 61 Swan (LG Benu ELQ HW)*	14.40	12.43	10.96	31%
Code 61 Swan (lower splay)	38.53	55.83	42.13	-9%
Code 61 Swan (southern Swan)	6.92	7.54	7.54	-8%
Code 66 Sparrowhawk	4.44	4.24	3.63	22%
Code 67 Shallow North Dippers	4.88	4.73	4.64	5%

*model estimated with a soft boundary, but composites reported with a hard boundary over the same sub-domain

TABLE 14-21 MINERALIZED DOMAIN MEAN GRADE COMPARISON FOR 1805_NPRM

Domain Name	Model Block Mean Grade (g/t Au)	Length Weighted Composite Mean Grade (g/t Au)	Top Cut Declustered Composite Mean Grade (g/t Au)	Variance from declustered mean %
Code 3 Phoenix HG	7.90	8.03	7.55	5%
Code 5 Splay HG	4.72	5.57	5.05	-7%
Code 6 Splay LG	4.50	4.91	4.91	-8%
Code 8 Allwood	6.49	6.47	6.62	-2%
Code 9 Vertical	4.31	4.19	4.48	-4%
Code 12 Phoenix Base	6.04	6.41	6.48	-7%
Code 13 Benu	6.12	7.53	5.79	6%
Code 14 Benu FW	8.36	8.56	8.30	1%
Code 15 Kestrel	4.71	4.78	4.67	1%
Code 16 Bedding East	5.90	5.91	5.50	7%
Code 17 Shallow East Dippers	4.97	4.95	4.86	2%
Code 18 East Dipper	5.24	6.15	5.54	-5%
Code 23 Phoenix Base FW	6.83	6.59	6.78	1%

TABLE 14-22 MINERALIZED DOMAIN MEAN GRADE COMPARISON FOR 1809_CRM

Domain Name	Model Block Mean Grade (g/t Au)	Length Weighted Composite Mean Grade (g/t Au)	Top Cut Declustered Composite Mean Grade (g/t Au)	Variance from Declustered mean %
Code 1 Fosterville HG	7.38	7.63	7.13	4%
Code 2 Fosterville LG	2.45	2.85	2.47	-1%
Code 3 Phoenix HG	7.85	8.09	7.92	-1%
Code 4 Phoenix LG	3.35	4.33	3.36	0%
Code 5 Splay HG	5.53	6.05	6.57	-16%
Code 6 Splay LG	2.45	2.08	2.71	-10%
Code 7 Kite	7.36	8.01	7.69	-4%
Code 10 Vulture	4.79	4.98	4.69	2%
Code 11 Harrier OP	2.24	2.42	1.95	15%
Code 12 Phoenix Base	9.79	10.18	9.17	7%
Code 18 East Dipper	7.10	7.26	7.31	-3%

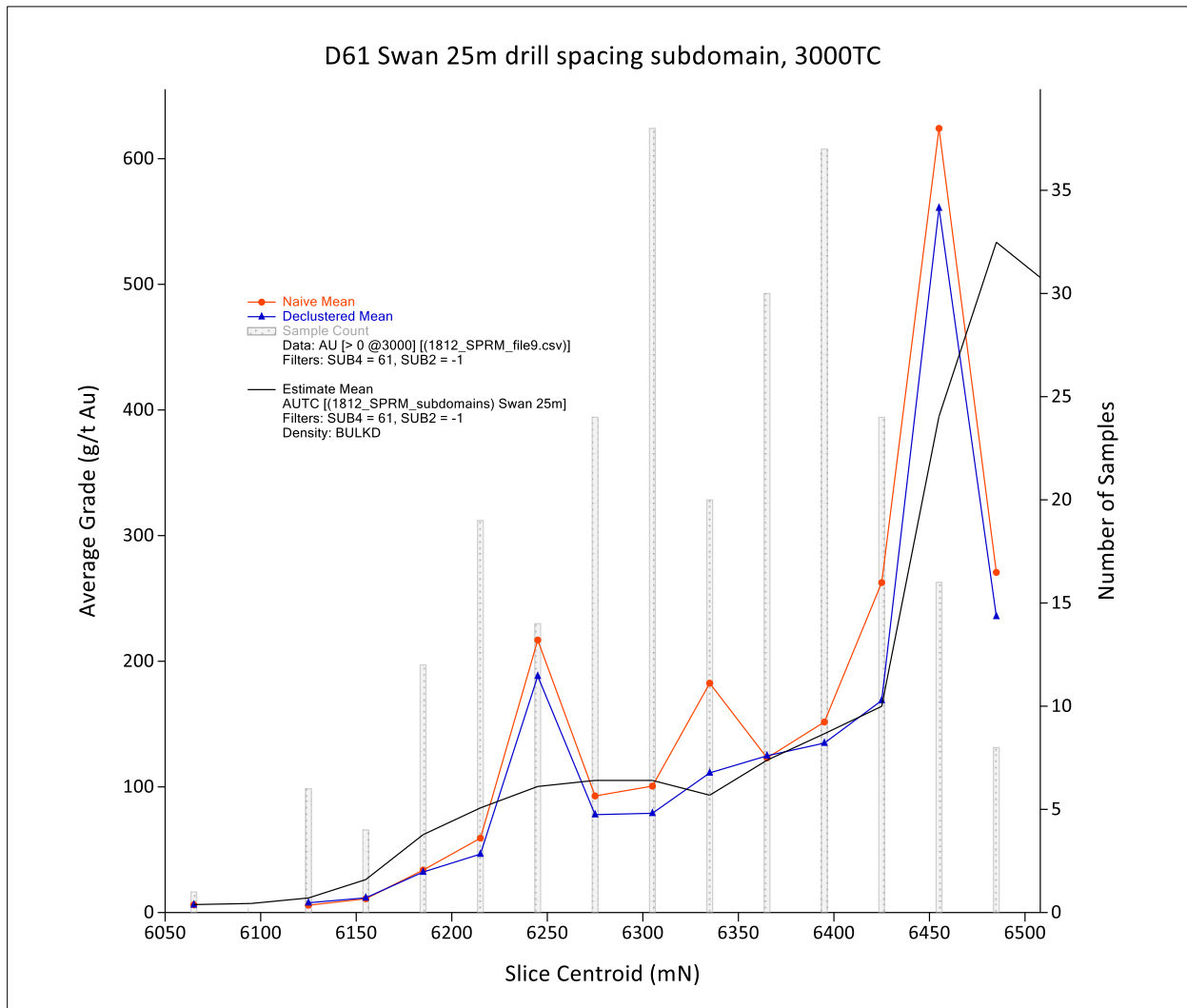


FIGURE 14-13 EXAMPLE SWATH PLOT BY NORTHING SLICES FOR THE 25M DRILL SPACING SUBDOMAIN IN DOMAIN=61 SWAN

14.1.10 MINERAL RESOURCE CLASSIFICATION

The Mineral Resource estimates were generally classified according to the following parameters:

- Areas that have proximal underground development including face sample data and face mapping completed (as a draw point to a stoping block) were classified as Measured Mineral Resources. This does not extend to the material in stoping blocks below the lowest developed level in the area. This also infers that diamond drilling has been completed to a maximum spacing of at least 25m x 25m in sulfide resources, or at least 12.5 x 12.5m in visible gold resources. In the sulfide zones, where diamond drilling has been completed to a density of at least 25m spacing, and development levels have been mined with face mapping and sampling complete, sludge drilling is required to be completed before the resource can attain a confidence of Measured.
- Otherwise, areas drilled from a spacing of 50 x 50m to a spacing of 25m x 25m were classified as Indicated Mineral Resources.
- Areas drilled to a spacing wider than 50m x 50m were classified as Inferred Mineral Resources.

These parameters may vary subject to the level of geological confidence in specific areas.

- Other factors used in the verification of mineral resources at FGM are; grade stationarity, slope of regression, kriging variance, average distance of samples used in the estimate, number of samples used to estimate a block, and geological setting.

Figure 14-4 depicts Mineral Resource classifications encompassing the Central and Phoenix Areas as at 31st December 2018.

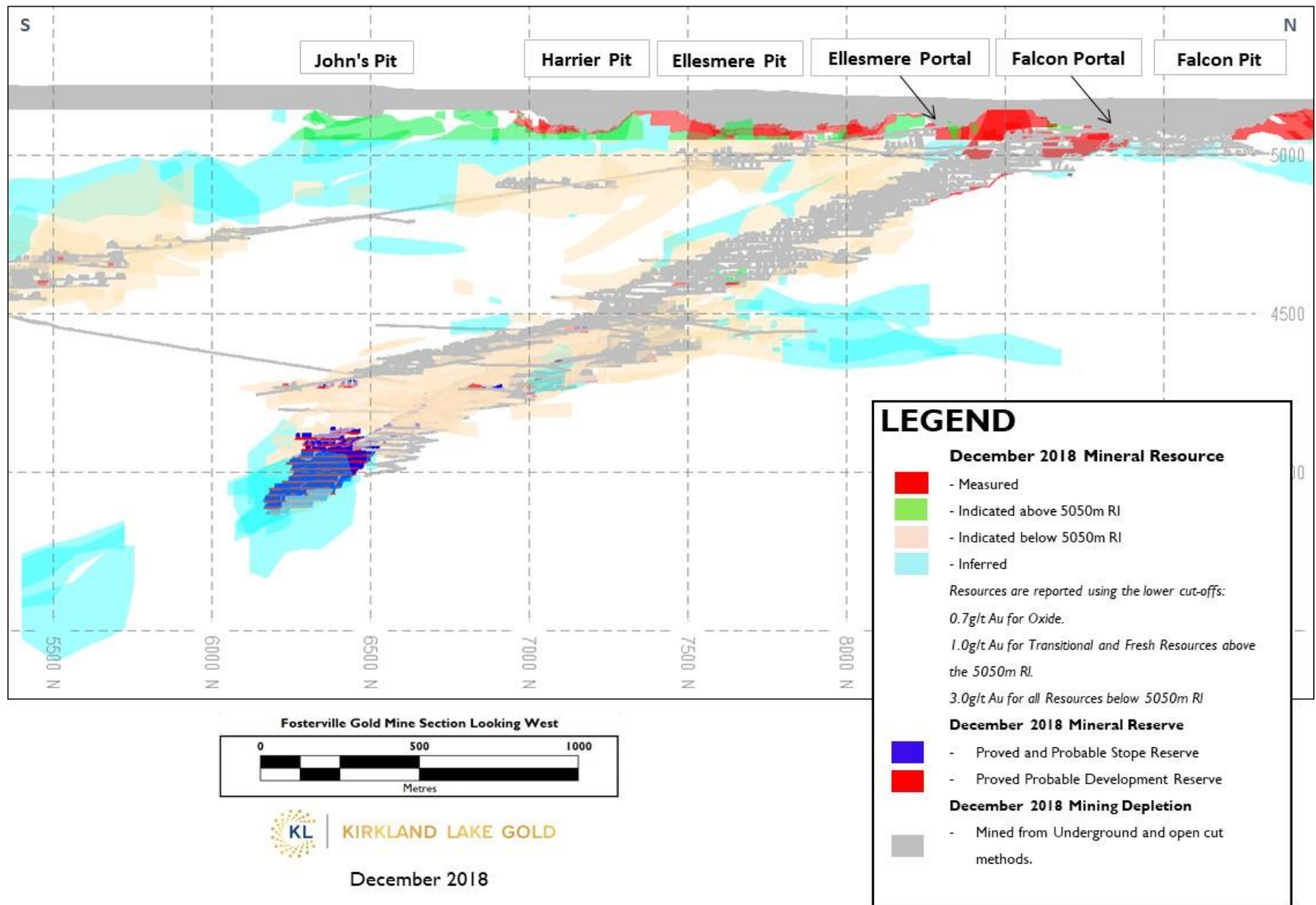


FIGURE 14-14 LONGITUDINAL PROJECTION SHOWING MINERAL RESOURCES CLASSIFICATION IN THE NORTHERN, CENTRAL AND LOWER PHOENIX MODELS

14.1.11 RESULTS

Results for the Mineral Resources contained in the Central Area (Central, Phoenix and Northern Model) are provided in Table 14-1.

14.1.12 FURTHER WORK

Analysis of the results of the sub-domaining work in the Swan mineralized domain reveals there is still a strong bimodal population in the data set. Collation of multi-element data is still underway, with analysis required to determine whether the populations in the domain can be differentiated based on their elemental signature to improve grade stationarity. Based on this work, and depending on the spatial relationship of the different populations, alternative estimation methods such as probabilistic kriging will be investigated for its potential to refine the estimate.

Preliminary work has also been undertaken to build a conditional simulation model of the Swan mineralized domain to assist with assessment of the estimation risk. This process needs refinement and the method will be reviewed for its suitability to be incorporated in the general modelling process and potential to cover a wider area of the model.

14.2 HARRIER AREA

The Harrier UG Area sits within the bounds of the Southern Model Area and replaced the Wirrawilla region in 2009, and does not encompass the Daley's Hill Open Pit region, which is reported in the Southern Model Area. Project definitions and model boundaries were altered to coincide with the transition of the Harrier UG project from Exploration to Mine Geology (Figure 14-1).

In late 2009 a detailed review of the information gathered was undertaken to determine mining risk. Analogues derived from systems developed to understand Central Area geology were applied to the Harrier UG dataset. While fundamental Fosterville geological principles such as the larger faulting systems, stratigraphy and plunge were found to be sound; the inter-relationship between structure and grade required further investigation. Further discussion of the Harrier Base geological domain is covered in Section 7.6.1.

14.2.1 GEOLOGICAL MODEL

The geological models for the Harrier are generated using the same methods employed in the Central models (detailed in section 14.1.1).

In 2018, a similar sub-domaining approach to that is applied in the Southern Phoenix model was employed in the D36 Harrier Base domain in the Harrier model. The subdomains are defined by zones of spatially correlated high grade samples, generally associated with a specific structural intersection or interaction, which allows for more refined variography, top cut and range restriction analysis.

14.2.2 DRILLING DATA

Drilling data is compiled using the same methods as the Central models (detailed in 14.1.2).

14.2.3 COMPOSITING

The same compositing procedure was used for the Harrier model as employed in the Central models (detailed in section 14.1.3).

Table 14-23 includes descriptive model statistics for the Harrier Model (1810_HRM) and Table 14-24 includes composite length statistics for the composite file.

TABLE 14-23 DESCRIPTIVE STATISTICS FOR THE HARRIER MODEL (1810_HRM)

Model:	1810_HRM	Descriptive Statistics					
Date:	Oct-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 6 Splay LG	Au Assays (length weighted)	289	0.01	27.10	3.87	3.9	1.01
	Au 2.0m Composites (length weighted)	172	0.01	15.34	3.87	3.3	0.86
	Au 2.0m Top-cut declustered Composites	172	0.01	15.34	3.71	3.5	0.95
Code 29 N Dipper	Au Assays (length weighted)	189	0.01	153.80	7.65	11.5	1.50
	Au 2.0m Composites (length weighted)	98	0.01	88.20	7.65	9.0	1.17
	Au 2.0m Top-cut declustered Composites	98	0.01	88.20	7.32	9.0	1.22
Code 30 Osprey	Au Assays (length weighted)	1,055	0.01	29.80	6.36	5.0	0.79
	Au 2.0m Composites (length weighted)	587	0.01	27.32	6.36	4.3	0.68
	Au 2.0m Top-cut declustered Composites	587	0.01	27.32	5.57	4.1	0.73
Code 31 Osprey Base	Au Assays (length weighted)	67	0.02	45.70	7.66	7.1	0.93
	Au 2.0m Composites (length weighted)	34	0.60	27.62	7.66	5.6	0.73
	Au 2.0m Top-cut declustered Composites	34	0.60	27.62	6.63	4.7	0.71
Code 32 Osprey Link	Au Assays (length weighted)	306	0.07	28.00	5.82	4.0	0.69
	Au 2.0m Composites (length weighted)	174	0.15	20.22	5.82	3.2	0.55
	Au 2.0m Top-cut declustered Composites	174	0.15	20.22	5.69	3.1	0.54
Code 33 Wagon Wheel	Au Assays (length weighted)	35	0.11	315.70	16.17	51.3	3.17
	Au 2.0m Composites (length weighted)	13	2.45	86.81	16.17	24.4	1.51
	Au 2.0m Top-cut declustered Composites	13	2.45	75.00	14.06	22.7	1.61
Code 34 Harrier	Au Assays (length weighted)	1,060	0.01	45.30	7.06	6.0	0.85
	Au 2.0m Composites (length weighted)	515	0.01	28.96	7.06	4.7	0.67
	Au 2.0m Top-cut declustered Composites	515	0.01	28.96	6.22	4.4	0.70
Code 35 Osprey Splays	Au Assays (length weighted)	358	0.02	24.00	5.16	3.9	0.75
	Au 2.0m Composites (length weighted)	197	0.07	15.75	5.16	3.0	0.57
	Au 2.0m Top-cut declustered Composites	197	0.07	15.75	5.07	3.1	0.62
Code 36 Harrier Base	Au Assays (length weighted)	563	0.04	879.00	14.16	58.8	4.15
	Au 2.0m Composites (length weighted)	220	0.11	586.29	14.17	41.7	2.94
	Au 2.0m Top-cut declustered Composites	220	0.11	586.29	10.37	30.3	2.92
Code 37 Harrier Link	Au Assays (length weighted)	231	0.01	300.60	6.82	17.3	2.54
	Au 2.0m Composites (length weighted)	123	0.01	73.57	6.78	9.7	1.44
	Au 2.0m Top-cut declustered Composites	123	0.01	73.57	5.61	6.9	1.23
Code 38 Harrier HW	Au Assays (length weighted)	577	0.02	34.68	7.12	5.6	0.79
	Au 2.0m Composites (length weighted)	291	0.02	20.91	7.12	4.3	0.60
	Au 2.0m Top-cut declustered Composites	291	0.02	20.91	6.46	4.0	0.62
Code 39 Harrier Splay	Au Assays (length weighted)	603	0.01	1,033.00	7.31	29.8	4.08
	Au 2.0m Composites (length weighted)	299	0.07	272.32	7.28	15.6	2.14
	Au 2.0m Top-cut declustered Composites	299	0.07	75.00	6.60	5.9	0.90
Code 58 Harrier E Dipper	Au Assays (length weighted)	30	1.02	26.90	7.05	4.4	0.63
	Au 2.0m Composites (length weighted)	16	3.99	10.44	7.05	2.1	0.30
	Au 2.0m Top-cut declustered Composites	16	3.99	10.44	7.06	1.8	0.26

TABLE 14-24 COMPOSITE STATISTICS BY COMPOSITE LENGTH FOR THE (1712_HRM) HARRIER MODEL

Composite Length	Number	% of comps	mean length (m)	mean grade (g/t Au)
< 1.0m	762	27.8%	0.60	5.22
≥ 1.0m and < 2.0m	906	33.1%	1.34	7.04
≥ 2.0m	1071	39.1%	2.14	7.47
Total	2739	100%	1.45	6.70

14.2.4 VARIOGRAPHY

The variography for each domain was analyzed and optimized using Supervisor™, with variogram principal directions cross-referenced against geological interpretations. The variogram and search parameters for the gold variables in the Harrier (1810_HRM) Model domains are summarized in Table 14-25.

14.2.5 TOP CUTS

No gold top cuts were imposed in the 1812_HRM Model. However, similar to the Southern Phoenix Model, outlier range restrictions were used to constrain high-grade data in the Harrier Base mineralized domain. The methodology for choosing the outlier range restriction parameters were the same as detailed in section 14.1.5.

TABLE 14-25 VARIOGRAM PARAMETERS USED FOR THE HARRIER RESOURCE MODEL (1810_HRM) GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE													
1810_HRM (Harrier Model)															
AREA	Z Rotation (°)	X Rotation (°)	Y Rotation (°)	Nugget	1st Rotation Spherical Sill	Range (y) (m)	Range (x) (m)	Range (z) (m)	2nd Rotation Spherical Sill	Range (y) (m)	Range (x) (m)	Range (z) (m)	Total Variance	Nugget	
	<i>meds rotation</i>														
Au Waste	355	20	50	2.5	2.0	10.0	5.0	5.0	2.9	28.0	30.0	13.0	7.5	34%	
Code 6 Splay LG	4	18	-116	0.2	0.8	61.0	43.5	5.0					1.0	17%	
Code 29 N Dipper	69	-19	24	0.6	0.2	28.5	20.0	20.0	0.2	64.0	65.0	52.0	1.0	57%	
Code 30 Osprey	-50	-45	-144	0.2	0.4	16.0	17.5	10.0	0.4	60.5	25.5	20.0	1.0	20%	
Code 31 Osprey Base	40	45	-145	0.2	0.8	64.0	16.5	5.0					1.0	22%	
Code 32 Osprey Link	28	29	-138	0.7	0.2	7.5	16.0	10.0	0.1	19.0	16.5	20.0	1.0	65%	
Code 33 Wagon Wheel	360	20	70	5.0	4.3	32.9	10.6	6.8	0.7	87.3	23.7	12.4	10.0	50%	
Code 34 Harrier	5	23	-134	0.3	0.5	25.0	56.0	5.5	0.2	81.0	63.0	10.0	1.0	28%	
Code 35 Osprey Splays	26	27	-142	0.6	0.1	20.5	20.0	10.0	0.3	67.5	28.0	20.0	1.0	62%	
Code 36 Harrier Base	-6	19	-144	0.7	0.2	47.0	22.0	0.5	0.1	61.5	24.5	2.0	1.0	72%	
Code 37 Harrier Link	-9	-19	-144	0.6	0.4	61.0	54.0	3.0					1.0	58%	
Code 38 Harrier HW	20	23	-134	0.5	0.3	17.5	43.5	10.0	0.2	75.5	49.5	20.0	1.0	47%	
Code 39 Harrier Splay	14	19	-144	0.7	0.0	5.5	18.5	10.0	0.3	41.5	20.5	20.0	1.0	73%	
Code 58 Harrier E Dipper	8	12	-30	0.6	0.5	65.0	20.0	10.0					1.0	55%	

14.2.6 BLOCK MODELS

The Harrier Block Model was created to allow modeling of mineralization between 4600mN and 6250mN (Table 14-26). The XYZ block dimensions of 2m (East) by 10m (North) by 5m (RL) were used.

The parent block size was chosen after consideration of:

- Drilling with the intent to mine was conducted at a nominal density of 25m x 25m spacing, although some areas of the Harrier Mineral Resource are drilled to 12.5m spacing;
- Typical mineralization width of 1m to 8m; and
- Likely underground mining methods (Selective Mining Unit).

Similarly to the Central area models, the use of a sub-block model was implemented in 2018, with a chosen sub-cell size of 0.2m (East) by 1m (North) by 0.5m (RL).

TABLE 14-26 HARRIER BLOCK MODEL EXTENTS AND CELL SIZE

Model Extents	Minimum	Maximum	Cell	Dimension (m)	Sub-Cell	Dimension (m)
Northing (m N)	4,600	6,250	Y Direction (North)	10	Y Direction sub-cell (North)	1
Easting (m E)	1,400	2,100	X Direction (East)	2	X Direction sub-cell (East)	0.2
Reduced Level (m RL)	4,200	5,200	Z Direction (Vertical)	5	Z Direction sub-cell (Vertical)	0.5

The Harrier Block Model used Ordinary Kriging to interpolate grades.

14.2.7 BULK DENSITY

Bulk density data obtained from exploration diamond core testing within the model area showed no material difference from density data obtained in the Central Area Models. Consequently, bulk density values were assigned to the Harrier Block Model according to material type using values from data collected in the Central Area (Figure 14-9). As mining continues below the 4500mRL, collecting of further density data will be required to compliment density measurement taken from similar levels within the Phoenix Area.

14.2.8 SEARCH CRITERIA

Search Criteria methods and justification within the Harrier Block Model are the same as those used for the Central Area.

Search ellipsoids, shown in Figure 14-15, depict the maximum range extents that composites can be used to estimate a block. Search parameters for the Harrier Block Model are provided in Table 14-27. Search ellipsoids for the 1810_HRM model were derived from variography for each domain. Variography was scrutinized against geological mapping, mining performance and interpretations made from diamond drilling.

Figure 14-16 shows a cross section of the 1810_HRM Block Model with respect block size and Resource Domains.

TABLE 14-27 SEARCH PARAMETERS FOR THE HARRIER RESOURCE MODEL (1810_HRM)

1810_HRM (Harrier model)	SEARCH PARAMETER TABLE							
DOMAIN	y axis (°)	x axis (°)	z axis (°)	min samples 1st search	max samples 1st search	max samples per hole	Outlier grade (g/t Au)	Outlier restriction range (m)
	search distance			sample number definition				
Au Waste	220	220	80	1	20	4		
Code 6 Splay LG first search	150	100	50	1	20	6		
Code 6 Splay LG second search	60	40	20	1	20	6		
Code 29 N Dipper	50	40	15	1	20	6	50	20
Code 30 Osprey first search	100	75	30	1	16	6		
Code 30 Osprey second search	60	30	30	2	16	6		
Code 31 Osprey Base	50	50	30	1	20	6		
Code 32 Osprey Link first search	80	60	40	1	20	6		
Code 32 Osprey Link second search	30	20	30	1	20	6		
Code 33 Wagon Wheel	90	70	80	1	20	6	75	20
Code 34 Harrier first search	80	55	30	1	16	6		
Code 34 Harrier second search	40	30	30	3	16	6		
Code 35 Osprey Splays	45	35	20	1	20	6		
Code 36 Harrier Base first search	80	50	30	1	16	10		
Code 36 Harrier Base second search	60	30	30	3	16	10	20	30
Code 36 Harrier Base HG subdomain	40	20	30	2	16	10	100	20
Code 37 Harrier Link	60	50	30	1	20	6	20	20
Code 38 Harrier HW	60	30	30	1	20	6		
Code 39 Harrier Splay first search	100	50	30	1	20	10	75	10
Code 39 Harrier Splay second search	40	20	30	1	20	10	75	10
Code 58 Harrier E Dipper	50	45	30	1	20	3		

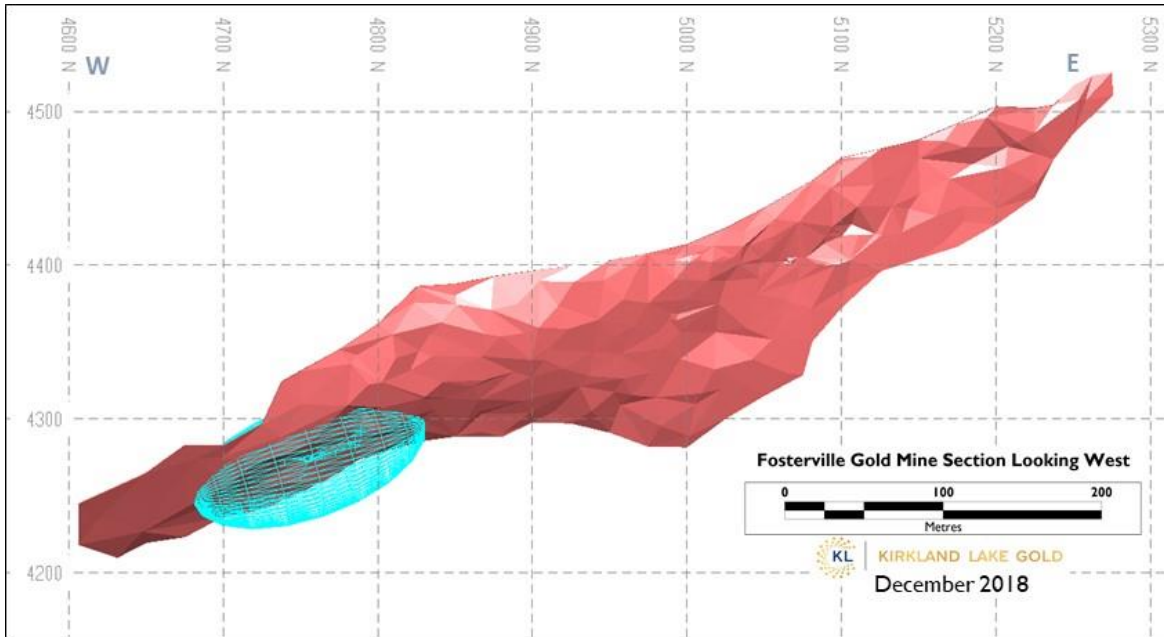


FIGURE 14-15 SEARCH ELLIPSOID FOR DOMAIN=36 HARRIER BASE

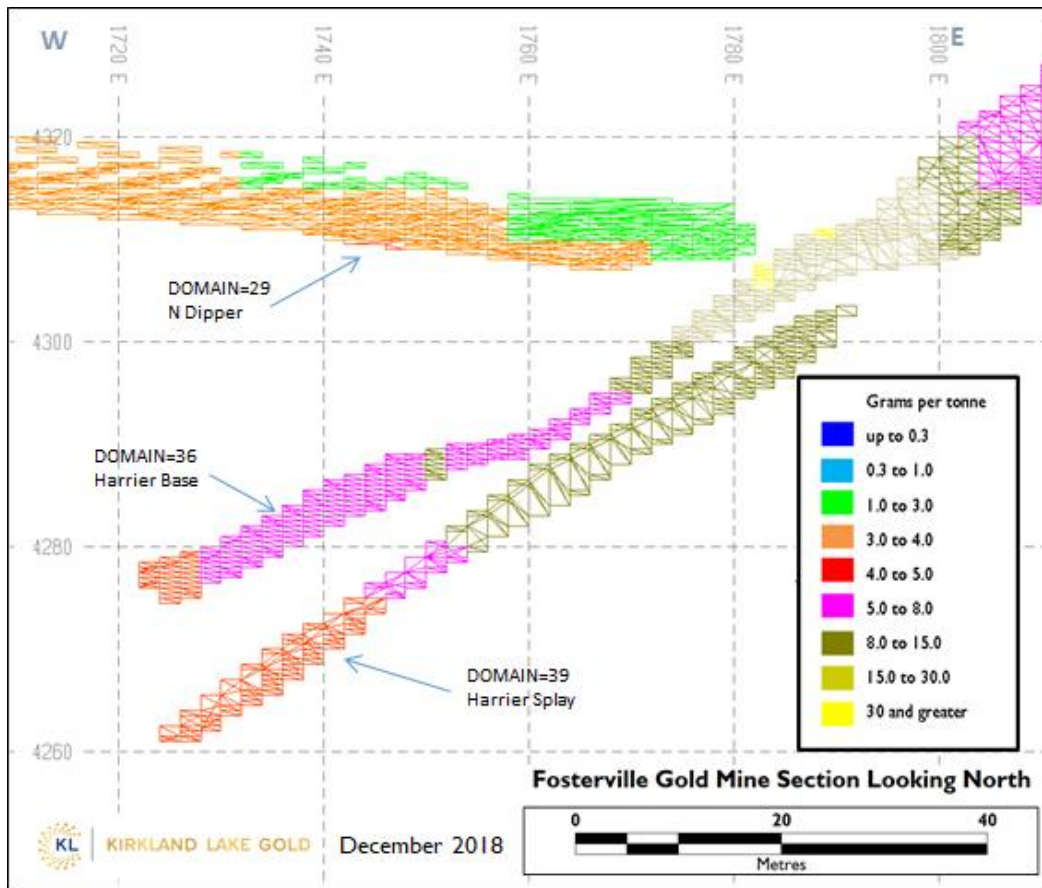


FIGURE 14-16 CROSS-SECTION 4700 MN OF THE 1810_HRM HARRIER MODEL

Shown in Figure 14-16 are DOMAIN=36 Harrier Base, DOMAIN=29 N Dipper and DOMAIN=39 Harrier Splay Mineralization Domains.

14.2.9 MODEL VALIDATION

The same model validation techniques and principles were applied to the Harrier models as used on the Central models (detailed in section 14.1.9).

The comparison of the mean domain grades against the composite grades for the 1810_HRM is shown in Table 14-28. For most of the domains the variation is deemed adequate, with the under call evident in some of the minor domains due to the low data support in inferred areas of the resource.

TABLE 14-28 MINERALIZED DOMAIN MEAN GRADE COMPARISON FOR 1810_HRM

Domain Name	Model Block Mean Grade (g/t Au)	Length Weighted Composite Mean Grade (g/t Au)	Top Cut Declustered Composite Mean Grade (g/t Au)	Variance from Declustered Mean %
Code 6 Splay LG	3.13	3.87	3.71	-16%
Code 29 N Dipper	7.39	7.65	7.32	1%
Code 30 Osprey	5.92	6.36	5.57	6%
Code 31 Osprey Base	6.39	7.66	6.63	-4%
Code 32 Osprey Link	5.67	5.82	5.69	0%
Code 33 Wagon Wheel	12.58	16.17	14.06	-11%
Code 34 Harrier	6.42	7.06	6.22	3%
Code 35 Osprey Splays	5.22	5.16	5.07	3%
Code 36 Harrier Base	10.55	14.17	10.37	2%
Code 37 Harrier Link	6.13	6.78	5.61	9%
Code 38 Harrier HW	6.62	7.12	6.46	2%
Code 39 Harrier Splay	6.51	7.28	6.60	-1%
Code 58 Harrier E Dipper	7.56	7.05	7.06	7%

14.2.10 MINERAL RESOURCE CLASSIFICATION

The Mineral Resource classification for the Harrier Block Model uses the same techniques as within the Central Area (detailed in section 14.1.10). Figure 14-17 illustrates the Harrier Model Resource classification.

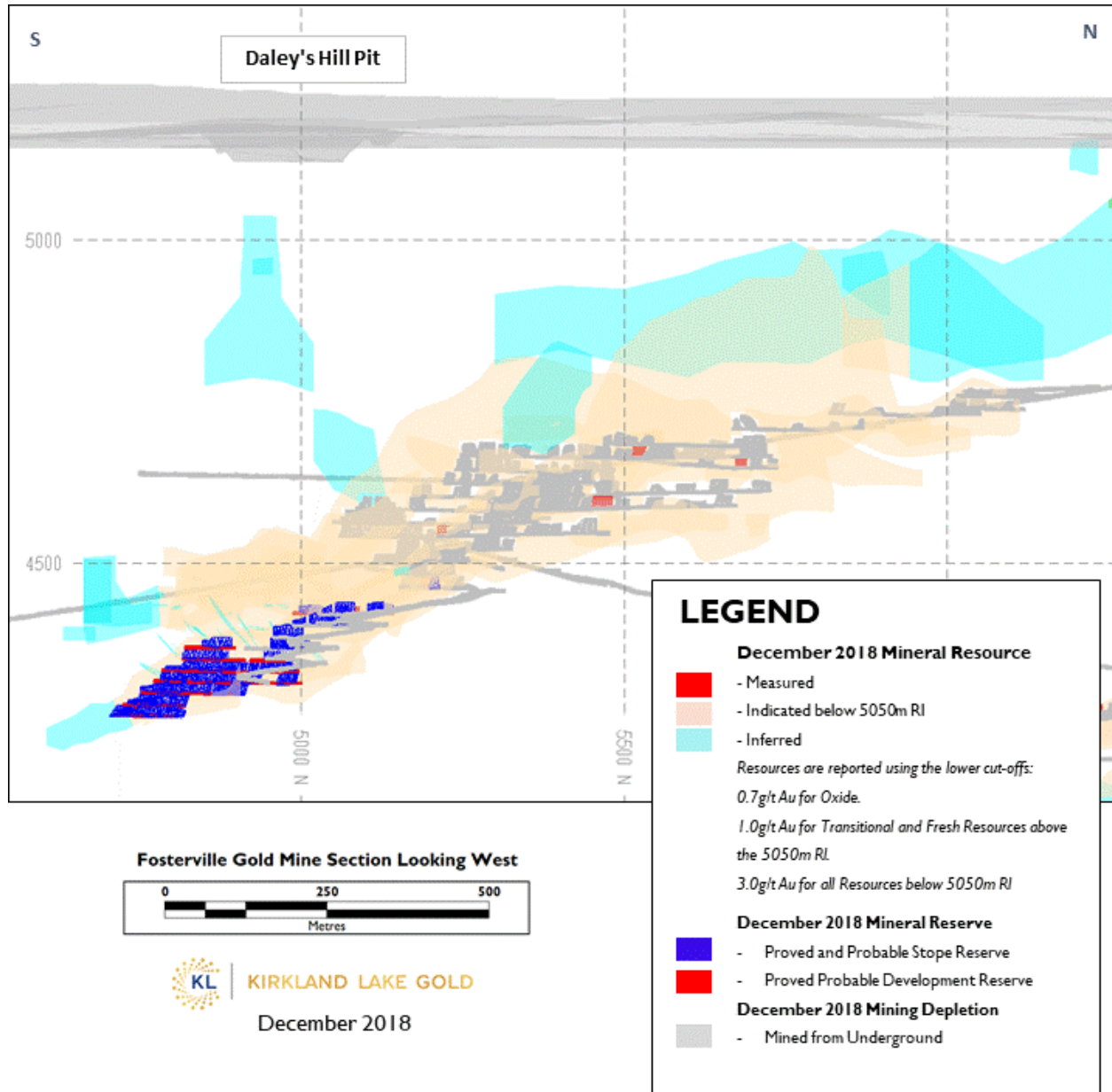


FIGURE 14-17 LONGITUDINAL PROJECTION SHOWING RESOURCE CLASSIFICATION FOR THE HARRIER MODEL

14.2.11 RESULTS

Results for the Mineral Resources contained in the Harrier Area are provided in Table 14-1.

14.2.12 FURTHER WORK

Increasing levels of stibnite and carbonaceous shale observed in the mining of the Harrier Base mineralized domain has established the need to incorporate an antimony and NCC (non-carbonate carbon) estimate in the Harrier model. Collation of the additional assay information is currently underway.

14.3 FOSTERVILLE-HUNTS AREA

The Fosterville-Hunts Model is located to the north of the Central Area and is defined as the zone between 10,000mN and 11,500mN (Figure 14-1) and conveniently extends over Fosterville and Hunt's oxide pits.

14.3.1 AREA DISCUSSION AND RESULTS

The controlling structural features from west to east include: the moderately west dipping Hunt's Fault, several footwall splays and the Fosterville Fault (Figure 14-18). The geology of the area was assessed by Fosterville staff, later reviewed by Stephen King (King, 2007) and Mineral Resource Modeling undertaken by Kerrin Allwood (2008).

The gold mineralization in the Fosterville-Hunt's area was historically mined for oxide gold and in the 1990's mining for oxide heap leach material created the Fosterville and Hunt's oxide pits.

However, since 2010, flotation in-pit tailings have and are, being placed into the Fosterville and Hunt's pits. This tailings placement has occurred due to an FGM assessment relating to there being only limited resources below the Fosterville and Hunt's pits to sterilize.

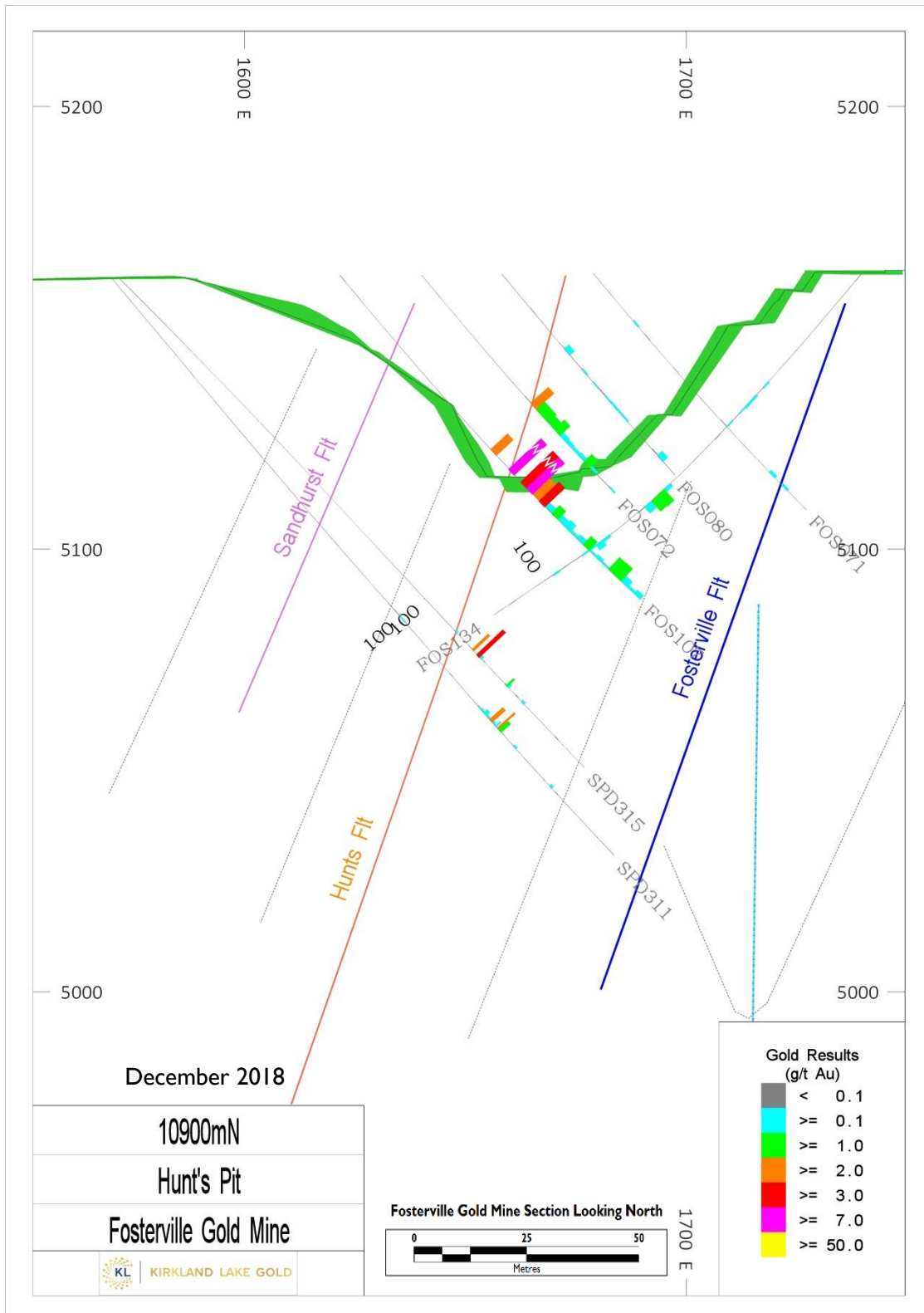


FIGURE 14-18 GEOLOGICAL CROSS-SECTION 10,900MN THROUGH HUNT'S PIT

Shown are the relationships between the Hunt's Fault, bedding and the set of splays that strike obliquely to the fault.

14.4 DALEY'S HILL AREA

The Southern Model spans from the Harrier Pit area to Daley's Hill Pit, close to the southern margin of the Fosterville Mine Lease (MIN5404) as shown in Figure 14-1.

The Southern Model was in existence before the initial Harrier Mine Model became operational. Where there is overlap between the Harrier Model and Southern Model, the Harrier Model is used in preference for Mineral Resource reporting with the only exception being the Daley's Hill Pit area (south of 5300mN and above 4800mRL), where Southern Model has been used. Only the Daley's Hill area is discussed in detail in the following sections.

14.4.1 GEOLOGICAL MODELS

Geological modeling undertaken is essentially identical to that used for the Fosterville-Hunt's and Robbin's Hill Models. Several iterations of Mineral Resource modeling of the Southern Model were undertaken and reported in Hitchman (2006). A review of the 2006 resource work was undertaken by Scott Jackson from QG Consultants (Jackson, 2007).

14.4.2 DRILLING DATA

The drilling quality is variable in the southern area and includes:

- RAB – Rotary air blast;
- Reverse circulation – Cross over hammer and face sampling hammer variants; and
- Diamond core – HQ and NQ2, often with RC pre-collars.

During drill hole data extraction for resource interpolations, the omission of RAB holes and one diamond hole was required owing to low quality sample techniques and incomplete assaying respectively. MinePlan™ drill views were the primary tool used to identify data problems.

Included as part of the drill data review process assay data were:

- Imported from the acQuire™ Exploration databases into MinePlan™ using customizable parameter screens; and
- Coded for mineralization using 3D gold wireframe solids.

Within the oxide open pit areas, the historical 5m blast holes are vertical and generally had one sample collected over a 5m length. These holes were used to aid interpretation, but were not used during subsequent Kriging owing to sample quality and that the 5m sample lengths were in excess of the desired 2m composite lengths.

14.4.3 COMPOSITING

Compositing and coding of drill holes was undertaken similar to the Central Area (detailed in section 14.1.3).

14.4.4 VARIOGRAPHY

In the Daley's Hill area where drill spacing is nominally on 10m to 20m, variography work demonstrates relative nugget effect values of 50% and most of the variance in the first ~30m. The variogram models closely follow the expected geological controls with 20° southerly plunging shoots in 70° west dipping faults.

14.4.5 BLOCK MODELS

The Southern Block Model (Southern Model) was originally created to allow modeling of gold mineralization south of 7400mN to the southern end of the Fosterville Mine Lease. However, as mining advanced southwards, the use of the Southern Model has diminished, such that it is only being used for reporting Mineral Resources in the Daley's Hill Area.

The Southern Model XYZ block dimensions used were 4m (east) by 10m (north) by 5m (RL). This block size was chosen after consideration of the maximum drilling density (25m by 15m), mineralization geometry (typical mineralization width of 3m to 8m) and probable open pit mining methods.

14.4.6 TOP CUTS

No top cuts were used in the Daley's Hill estimation.

14.4.7 BULK DENSITY

The bulk density profile (Figure 14-14) established for the Central Area was taken as being appropriate for the Southern Model given the similar rock types, levels of oxidation and identical mineralization and gangue mineralogy. Deep drilling in the Central Area and Harrier Area has supported the inclusion of a bulk density value of 2.78t/m³ for material below 4500mRL. However, as the mineralization at Daley's Hill is shallower than 4500mRL, reporting of Resources for this area from the Southern Model is unchanged.

14.4.8 SEARCH CRITERIA

Gold grades were interpolated into blocks meeting the following block criteria:

- Greater than 1% of the block volume is inside one of the domain envelopes;
- Blocks whose search ellipsoid includes at least five composites; and
- Blocks whose material code is set to Fresh (1), Transitional (2) or Oxide (3).

Similarly, only composites meeting the following criteria are used to interpolate any one block:

- All composites (to a maximum of 30 composites) within the search ellipsoid dimensions and search area limits outlined in the table below;
- Where more than 30 composites lie within the search ellipsoid the 30 closest composites in ellipsoid space are used;

- Maximum of six composites are used from any split quadrant of the search ellipsoid (a split-quadrant is 1/8th of the search ellipsoid dividend in the major, intermediate and minor ellipsoid axes); and
- The CODE1 and MATL values of both the composite and the block must match (i.e. only fresh composites are used to interpolate a fresh block and vice versa for oxide).

The search ellipsoid orientations are in line with the directions of kriging. The search ellipsoid dimensions allow the block being interpolated to 'see' two sections along strike and two holes up or down-dip.

14.4.9 MINERAL RESOURCE CLASSIFICATION

Three solids were created enclosing regions of geological confidence (Measured=1, Indicated=2 and Inferred=3) and these three regions were used to code the Mineral Resource category item in the block model. The solids generally enclose areas of approximately equally spaced drilling, but also allow areas where there is reduced confidence in the geological interpretation to be reported to a lower confidence category.

In areas of the Southern Model at depth below and to the north of the Daley's Hill Pit, the diamond drilling is on nominal 100m north spaced drill sections with 50m down-dip holes spacing, and for this drill density the mineralization is broadly classified as Inferred Mineral Resource. Beneath the open pits where the drill spacing is reduced to 10m to 20m north by 10m to 15m east, mineralization is classified as Measured Mineral Resource with a halo of Indicated Mineral Resource.

The Daley's Hill east-west structures are not well understood and as such this mineralization is classified as Inferred Mineral Resource. During 2017 drilling of some of this resource was completed on a nominal 50m section spacing and an Inferred Resource was targeted, known as the Wagon Wheel. The Wagon Wheel resource has been transferred to the Harrier resource model area given the juxtaposition of the resource to the upper Osprey Resource in the Harrier area.

14.4.10 RESULTS

Results for the Mineral Resources contained in the Southern Model are provided in Table 14-1.

Small oxide gold resources exist in the Daley's Hill Area and are confined along strike from the previously mined open pit in the top 40m from surface.

The bulk of the sulfide Mineral Resources reported from the Daley's Hill Area within the Southern Model are based on 100m by 50m spaced diamond drilling supplemented by closer spaced, but lower quality face and cross over RC drilling. Infill drilling will be required to increase resource confidence from an Inferred Mineral Resource category.

14.5 ROBBIN'S HILL AREA

The Robbin's Hill Area lies northeast of the Central Area and contains the O'Dwyer's, Robbin's Hill, Farley's, Sharkey's, Woolshed and Read's oxide pits as shown in Figure 14-1. The area can be defined as the zone east of 2,900mE, between 10,000mN and 14,000mN. The fault architecture of the Robbin's Hill Area is much more complex than that observed in the Fosterville Fault Zone.

The controlling structural features in the area include a variety of north-trending west-dipping faults and failed anticline axes intruded by dykes.

The geology of the area was assessed by Fosterville staff during diamond drilling activities between 2004 and 2007, reported by Reed (2007a) and reviewed twice by Stephen King (2005 and 2007). The area was also the subject of a study conducted by Chris Davis (Davis, 2006). Robbin's Hill Model resource modeling conducted by Kerrin Allwood and Simon Hitchman is reported in Allwood (2006) and Hitchman (2007). A further review of modeling in the Farley's-Sharkey's area is also reported in Allwood (2007). Following on from an open pit optimization study in March 2011 (Dincer, 2011) 5,257m of combined RC and diamond drilling was undertaken in the Robbin's Hill Project area to test beneath and along strike from existing open pits. This drilling was for both open pit and underground targets occurring in the Robbin's Hill Area until August 2012, during which resource modeling was undertaken.

Since 2013 to 2015, limited diamond drilling has taken place at Robbin's Hill. In 2016 diamond drilling resumed on the 12400 – 12600m N sections and has continued North until the time of writing of this report. Mineralization has been delineated along the Curie Fault (formerly the Farley's Fault) and limited mineralization has been discovered along Farley's footwall structures.

A short-lived sulfide open pit mining operation was completed at the O'Dwyer's South Pit in 2012 and is now the site for flotation tailing storage.

14.5.1 GEOLOGICAL MODELS

Geological modeling undertaken was essentially identical to that described for the Southern Models above.

14.5.2 DRILLING DATA

The quality of the drilling is variable in the Robbin's Hill Area. Drilling was conducted from 1989 to 2011, and up until 2001 drilling was focused on oxide heap leach targets and as such cheaper less precise drilling methods were used and dominate the dataset. After 2004, diamond holes were used to aid structural interpretation and often, RC pre-collars were diamond tailed.

The model uses more than 1,110 holes of which about 95% are RC holes and 5% are NQ₂ and HQ diamond core holes. Pre-2016 drill data was treated as per previous model procedures; with data omitted where there was uncertainty of coordinates, dubious down-hole surveys and grade or geological mismatch.

MinePlan™ drill views were the primary tool used to identify data grade and geological mismatches. Post-2016 drill data was assessed and validated to the same standard as used in the Central and Harrier Models.

Subsequent to the drill data review, process assay data were:

- Imported from the acquire™ exploration databases into MinePlan™ using customizable parameter screens; and
- Coded for mineralization using 3D gold wireframe solids.

14.5.3 COMPOSITING

Similar to the Central Area, the Robbin’s Hill Model area drill data was composited to 2m. (refer to Section 14.1.3). The 2m composite lengths were chosen to reflect the anticipated minimum mining width, to allow across strike variability to be maintained within the data, and because the vast majority of RC drilling samples are 2m in width. Table 14-29 below shows the Robbin’s Hill Model composite statistics, with Table 14-30 and Table 14-31 detailing the descriptive statistics by domain for the Robbin’s Hill North and South models respectively. In 2017 model export issues led to the project being split at the 12000m N section. The 1701_RHRM has current Resources reported in the area south of 12000m N. The 1810_RHRM_North model has its extents north of 12000m N being the actively drilled part of the Robbins Hill area.

TABLE 14-29 COMPOSITE STATISTICS BY COMPOSITE LENGTH FOR THE ROBBIN'S HILL MODEL

Model	Composite Length	Number	% of Comps	Mean length (m)	Mean Grade (g/t Au)
1810_RHRM (N)	< 1.0m	61	2.3%	0.72	4.49
	≥ 1.0 and <2.0m	359	13.4%	1.18	3.14
	≥ 2.0m	2,255	84.3%	2.00	2.55
	Total	2675	100%	1.86	2.63
1701_RHRM (S)	< 1.0m	3	0.2%	0.60	2.03
	≥ 1.0 and <2.0m	28	2.0%	1.17	2.64
	≥ 2.0m	1,372	97.8%	2.00	1.73
	Total	1403	100%	1.98	1.74

TABLE 14-30 DESCRIPTIVE STATISTICS OF GOLD FOR THE ROBBIN'S HILL NORTH MODEL

Model:	1810_RHRM (North)	Descriptive Statistics					
Date:	Oct-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 40	Au Assays (length weighted)	431	0.08	162.00	3.45	7.8	2.25
	Au 2.0m Composites (length weighted)	331	0.08	86.00	3.45	6.4	1.86
	Au 2.0m Top-cut declustered Composites	331	0.08	86.00	3.43	5.8	1.70
Code 41 Rubin	Au Assays (length weighted)	93	0.03	15.00	2.96	2.5	0.83
	Au 2.0m Composites (length weighted)	70	0.24	15.00	2.96	2.2	0.75
	Au 2.0m Top-cut declustered Composites	70	0.24	15.00	4.07	3.1	0.77
Code 42 Dyke	Au Assays (length weighted)	863	0.02	61.90	1.85	2.3	1.23
	Au 2.0m Composites (length weighted)	579	0.02	27.48	1.85	1.9	1.03
	Au 2.0m Top-cut declustered Composites	579	0.02	27.48	2.18	2.7	1.23
Code 43 Syncline Fault	Au Assays (length weighted)	98	0.17	17.41	4.54	3.1	0.69
	Au 2.0m Composites (length weighted)	52	1.72	14.30	4.54	2.5	0.56
	Au 2.0m Top-cut declustered Composites	52	1.72	14.30	4.39	2.2	0.49
Code 44 Curie	Au Assays (length weighted)	283	0.07	35.30	5.06	4.0	0.78
	Au 2.0m Composites (length weighted)	132	0.31	30.34	5.07	3.6	0.70
	Au 2.0m Top-cut declustered Composites	132	0.31	14.00	5.07	2.7	0.53
Code 45	Au Assays (length weighted)	527	0.01	31.80	2.70	3.0	1.11
	Au 2.0m Composites (length weighted)	326	0.03	16.73	2.70	2.5	0.91
	Au 2.0m Top-cut declustered Composites	326	0.03	16.73	2.26	2.1	0.94
Code 46	Au Assays (length weighted)	41	0.09	6.96	2.69	1.8	0.66
	Au 2.0m Composites (length weighted)	31	0.11	5.87	2.69	1.7	0.62
	Au 2.0m Top-cut declustered Composites	31	0.11	5.87	2.40	1.7	0.70
Code 47 Curie HW	Au Assays (length weighted)	402	0.01	14.70	2.20	1.9	0.85
	Au 2.0m Composites (length weighted)	323	0.01	11.43	2.20	1.8	0.82
	Au 2.0m Top-cut declustered Composites	323	0.01	11.43	1.87	1.7	0.91
Code 48 Smith	Au Assays (length weighted)	148	0.05	12.00	2.17	1.4	0.64
	Au 2.0m Composites (length weighted)	93	0.06	6.88	2.17	1.1	0.52
	Au 2.0m Top-cut declustered Composites	93	0.06	6.88	2.33	1.1	0.49
Code 49	Au Assays (length weighted)	98	0.03	9.38	1.59	1.5	0.97
	Au 2.0m Composites (length weighted)	82	0.03	7.02	1.59	1.4	0.89
	Au 2.0m Top-cut declustered Composites	82	0.03	7.02	1.63	1.5	0.93
Code 50	Au Assays (length weighted)	164	0.10	32.80	3.40	3.6	1.06
	Au 2.0m Composites (length weighted)	100	0.14	20.34	3.41	3.1	0.90
	Au 2.0m Top-cut declustered Composites	100	0.14	20.34	3.26	2.5	0.76
Code 51 East Dipper HG	Au Assays (length weighted)	446	0.04	23.80	2.26	2.5	1.11
	Au 2.0m Composites (length weighted)	363	0.05	23.80	2.26	2.4	1.08
	Au 2.0m Top-cut declustered Composites	363	0.05	23.80	2.50	2.7	1.08
Code 52 Curie HW1	Au Assays (length weighted)	96	0.06	10.10	2.75	1.9	0.70
	Au 2.0m Composites (length weighted)	57	0.06	6.50	2.75	1.7	0.61
	Au 2.0m Top-cut declustered Composites	57	0.06	6.50	3.29	1.9	0.58
Code 53	Au Assays (length weighted)	89	0.08	12.00	2.93	2.1	0.70
	Au 2.0m Composites (length weighted)	79	0.08	8.76	2.93	2.0	0.67
	Au 2.0m Top-cut declustered Composites	79	0.08	8.76	3.00	1.9	0.64

Model:	1810_RHRM (North)	Descriptive Statistics					
Date:	Oct-18						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 54	Au Assays (length weighted)	8	0.61	9.60	4.70	3.5	0.74
	Au 2.0m Composites (length weighted)	4	3.82	6.40	4.79	0.9	0.19
	Au 2.0m Top-cut declustered Composites	4	3.82	6.40	4.92	1.1	0.23
Code 55 Shallow East Dipper	Au Assays (length weighted)	36	0.11	19.40	5.73	3.9	0.68
	Au 2.0m Composites (length weighted)	13	1.81	9.80	5.72	2.7	0.46
	Au 2.0m Top-cut declustered Composites	13	1.81	9.80	5.12	2.6	0.51
Code 56 Franklin	Au Assays (length weighted)	17	0.50	7.44	3.55	2.2	0.61
	Au 2.0m Composites (length weighted)	10	1.65	7.27	3.54	1.7	0.48
	Au 2.0m Top-cut declustered Composites	10	1.65	7.27	4.02	1.6	0.40
Code 57 Linker	Au Assays (length weighted)	64	0.10	20.10	3.32	2.3	0.69
	Au 2.0m Composites (length weighted)	28	0.66	7.60	3.31	1.7	0.51
	Au 2.0m Top-cut declustered Composites	28	0.66	7.60	3.60	1.8	0.49

TABLE 14-31 DESCRIPTIVE STATISTICS OF GOLD FOR THE ROBBIN'S HILL SOUTH MODEL

Model:	1701_RHRM South	Descriptive Statistics					
Date:	Jan-17						
Mineralized Domain	DD Variable	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Std. Dev.	Coeff. of Var.
Code 40	Au Assays (length weighted)	311	0.02	15.30	1.84	1.9	1.05
	Au 2.0m Composites (length weighted)	303	0.02	15.30	1.84	1.9	1.04
	Au 2.0m Top-cut declustered Composites	303	0.02	15.30	1.88	2.0	1.05
Code 41	Au Assays (length weighted)	87	0.02	7.03	1.65	1.6	0.98
	Au 2.0m Composites (length weighted)	79	0.02	7.03	1.65	1.6	0.97
	Au 2.0m Top-cut declustered Composites	79	0.02	7.03	1.77	1.6	0.91
Code 42 Dyke	Au Assays (length weighted)	504	0.01	17.40	0.89	1.0	1.11
	Au 2.0m Composites (length weighted)	458	0.01	10.36	0.89	0.9	1.03
	Au 2.0m Top-cut declustered Composites	458	0.01	10.36	0.96	1.0	1.05
Code 44	Au Assays (length weighted)	227	0.01	13.00	1.68	1.6	0.96
	Au 2.0m Composites (length weighted)	213	0.01	8.92	1.68	1.6	0.93
	Au 2.0m Top-cut declustered Composites	213	0.01	8.92	1.91	1.7	0.91
Code 46	Au Assays (length weighted)	15	0.03	2.67	1.02	0.8	0.81
	Au 2.0m Composites (length weighted)	15	0.03	2.67	1.02	0.8	0.81
	Au 2.0m Top-cut declustered Composites	15	0.03	2.67	1.23	0.9	0.76
Code 49	Au Assays (length weighted)	148	0.03	616.00	4.22	22.4	5.31
	Au 2.0m Composites (length weighted)	132	0.05	92.82	4.22	11.5	2.73
	Au 2.0m Top-cut declustered Composites	132	0.05	20.00	2.57	3.3	1.26
Code 50	Au Assays (length weighted)	22	0.01	5.36	0.98	1.2	1.23
	Au 2.0m Composites (length weighted)	22	0.01	5.36	0.98	1.2	1.23
	Au 2.0m Top-cut declustered Composites	22	0.01	5.36	1.15	1.3	1.09
Code 51	Au Assays (length weighted)	14	0.05	3.79	1.22	1.1	0.88
	Au 2.0m Composites (length weighted)	13	0.05	3.79	1.22	1.0	0.85
	Au 2.0m Top-cut declustered Composites	13	0.05	3.79	1.23	0.9	0.76
Code 52	Au Assays (length weighted)	175	0.07	8.32	2.28	1.7	0.73
	Au 2.0m Composites (length weighted)	168	0.07	8.32	2.28	1.7	0.72
	Au 2.0m Top-cut declustered Composites	168	0.07	8.32	1.77	1.4	0.78

14.5.4 VARIOGRAPHY

In all domains, the nugget effect (46% to 59%) is typical most gold mineralization at Fosterville. Typically, moderate nugget effects reflect the fine grained, disseminated nature of the sulfide minerals hosting the elements analyzed and are confirmed by the very low variability exhibited in assay QAQC data. The higher nugget effects modeled for these domains may reflect some mixing of populations, possibly owing to re-mobilization of gold by weathering resulting in erratically distributed extreme gold grades.

The longer range structures in the RH-ODW Areas possibly reflect high-grade zones occurring where faults intersect the quartz porphyry dykes. The variogram models closely follow the expected geological controls with flat to shallowly south plunging shoots in steeply west dipping faults and sub vertical porphyry contact zones.

The variogram parameters used in the Robbin's Hill North and South model estimates are detailed in Table 14-33 and Table 14-34, respectively.

14.5.5 TOP CUTS

No topcuts were employed in the Robbin's Hill estimation, though outlier range restriction was used on select domains, determined using the same methods employed in the Central models (as detailed in section 14.1.5).

14.5.6 BLOCK MODELS

The combined Robbin's Hill Block Model was created in 2017 and has sufficient extents to contain all drilled mineralization beneath the open pits in the area, replicating model extent parameters setup in 2016. Previously, several smaller block models were used as inventory mineralization for the oxide pits in the area. These models had differing block dimensions and orientations from one another and so combining them into a single unified model was not possible. In 2017 the model was split into a northern and southern model to facilitate faster processing. The block model extents are detailed in Table 14-32.

The Robbin's Hill Model has XYZ block dimensions of 2m (East) by 10m (North) by 5m (mRL). The 2m width was chosen as it approximates the minimum mining width for both open pit and underground mining. The 10m N-S block dimension is half the section spacing in the most densely drilled areas. The 5m vertical block dimension is the likely open pit mining bench height and allows sufficient resolution for future pit optimization.

Similarly to the Central area and Harrier models, the use of a sub-block model was implemented for the 1810_RHRM North model, with sub-cell dimensions of 0.2m (East) by 1m (North) by 0.5m (mRL). The Robbin's Hill South model is still in the regularized percent model format as it has not been updated since January 2017.

No active mining has been conducted within the Robbin's Hill resource model data extents since 2012.

TABLE 14-32 ROBBIN'S HILL BLOCK MODEL EXTENTS

Parameter	Robbin's Hill North	Robbin's Hill South
Northing Min (m)	12,000	10,400
Northing Max (m)	13,500	12000
Easting Min (m)	2,900	2,800
Easting Max (m)	4,100	3600
RL Min (m)	4,100	4,800
RL Max (m)	5,200	5,200
X direction m (east)	2	2
Y direction m (north)	10	10
Z direction m (vertical)	5	5
X direction sub-cell m (east)	0.2	-
Y direction sub-cell m (north)	1	-
Z direction sub-cell m (vertical)	0.5	-

TABLE I4-33 VARIOGRAM PARAMETERS USED FOR THE ROBBIN'S HILL NORTH RESOURCE MODEL GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE													
1810_RHRM (North)															
AREA	Z Rotation (°)	X Rotation (°)	Y Rotation (°)	Nugget	1st Rotation Spherical Sill	Range (y) (m)	Range (x) (m)	Range (z) (m)	2nd Rotation Spherical Sill	Range (y) (m)	Range (x) (m)	Range (z) (m)	Total Variance	Nugget	
	<i>meds rotation</i>														
Au Waste	359	0	70	20.0	10.0	10.0	15.0	5.0	21.0	45.0	25.0	10.0	51.0	39%	
Code 40	352	2	62	0.1	0.1	135.0	80.0	40.0					0.2	61%	
Code 41 Rubin	4	2	54	2.1	1.7	40.0	25.0	12.0					3.9	55%	
Code 42 Dyke	1	0	90	0.8	0.8	80.0	50.0	25.0					1.6	50%	
Code 43 Syncline Fault	29	31	52	1.8	1.2	90.0	60.0	30.0					3.1	59%	
Code 44 Curie	8	24	-129	0.4	0.3	255.0	87.5	6.5	0.4	362.5	331.5	20.0	1.0	35%	
Code 45	182	31	71	2.8	4.5	70.0	40.0	20.0					7.3	38%	
Code 46	42	46	70	0.1	0.1	135.0	80.0	40.0					0.2	61%	
Code 47 Curie HW	332	1	68	0.5	0.4	30.0	20.0	10.0	0.1	80.0	50.0	25.0	1.0	48%	
Code 48 Smith	193	11	64	0.6	0.8	55.0	33.0	11.0					1.4	42%	
Code 49	16	21	-47	0.3	0.3	60.0	20.0	10.0					0.6	46%	
Code 50	4	1	70	0.6	0.6	80.0	48.0	24.0					1.2	50%	
Code 51 East Dipper HG	1	4	-20	0.8	0.4	40.0	24.0	12.0					1.1	68%	
Code 52 Curie HW1	358	2	54	0.3	0.2	40.0	24.0	12.0	0.1	90.0	54.0	27.0	0.6	54%	
Code 53	165	16	75	0.5	1.3	15.0	9.0	5.0	2.4	80.0	48.0	24.0	4.2	12%	
Code 54	176	2	90	0.4	0.8	120.0	60.0	30.0	0.8	66.0	44.0	33.0	2.0	22%	
Code 55 Shallow East Dipper	1	4	-20	0.8	0.4	40.0	24.0	12.0					1.1	68%	
Code 56 Franklin	4	1	70	0.6	0.6	80.0	48.0	24.0					1.2	50%	
Code 57 Linker	332	1	68	0.5	0.4	30.0	20.0	10.0	0.1	80.0	50.0	25.0	1.0	48%	

TABLE I 4-34 VARIOGRAM PARAMETERS USED FOR THE ROBBIN'S HILL SOUTH RESOURCE MODEL GOLD ESTIMATION

Fosterville		GOLD VARIOGRAM PARAMETER TABLE													
1701_RHRM (South)															
AREA	Z Rotation (°)	X Rotation (°)	Y Rotation (°)	Nugget	1st Rotation Spherical Sill	Range (y) (m)	Range (x) (m)	Range (z) (m)	2nd Rotation Spherical Sill	Range (y) (m)	Range (x) (m)	Range (z) (m)	Total Variance	Nugget	
	<i>meds rotation</i>														
Au Waste	359	0	70	20.0	10.0	10.0	15.0	5.0	21.0	45.0	25.0	10.0	51.0	39%	
Code 40	352	2	62	0.1	0.1	135.0	80.0	40.0					0.2	61%	
Code 41	2	2	54	2.1	1.7	40.0	25.0	12.0					3.9	55%	
Code 42 Dyke	1	0	90	0.8	0.8	80.0	50.0	25.0					1.6	50%	
Code 44	338	2	61	1.1	0.5	80.0	50.0	25.0					1.6	66%	
Code 46	42	46	70	0.1	0.1	135.0	80.0	40.0					0.2	61%	
Code 49	16	21	-47	0.3	0.3	60.0	20.0	10.0					0.6	46%	
Code 50	4	1	70	0.6	0.6	80.0	48.0	24.0					1.2	50%	
Code 51	1	4	-20	0.8	0.4	40.0	24.0	12.0					1.1	68%	
Code 52	358	2	54	0.3	0.2	40.0	24.0	12.0	0.1	66.0	54.0	27.0	0.6	54%	

14.5.7 BULK DENSITY

The bulk density profile established for the Central Area was taken as being appropriate for the Robbin's Hill Model area given the similar rock types, levels of oxidation and identical mineralization and gangue mineralogy.

14.5.8 SEARCH CRITERIA

Gold and sulfur grades are only interpolated into blocks meeting the following criteria:

- Greater than 1% of the block volume is inside one of the domain envelopes; and
- Blocks whose search ellipsoid includes at least one composite.

Similar to the Central Area models, only composites meeting the following criteria are used to interpolate any one block:

- All composites to a maximum of 35 composites within the search ellipsoid dimensions and search area limits;
- Where more than 35 composites lie within the search ellipsoid the 35 closest composites in ellipsoid space are used; and
- The mineralization code of both the composite and the block match by relating a block coding of the same numerical suffix as the composite code.

The search ellipsoid orientations follow interpreted variogram structures (similar to the central models). The search ellipsoid within domains follows the dimensions of the ranges set in the variograms, and allow the block being interpolated to 'see' two sections along strike and two holes up or down-dip.

To check the suitability of the search ellipsoids used, search ellipsoids were checked in MinePlan™ to allow visual inspection of the composites to be used and the suitability of the interpolation direction within the domain which closely matches the structural framework of the mineralized lens.

The search parameters for Robbin's Hill North and South models are detailed in Table 14-35 and Table 14-36, respectively.

TABLE 14-35 SEARCH PARAMETERS FOR THE ROBBIN'S HILL NORTH RESOURCE MODEL (1810_RHRM NORTH)

1810_RHRM (North)	SEARCH PARAMETER TABLE							
DOMAIN	y axis (°)	x axis (°)	z axis (°)	min samples 1st search	max samples 1st search	max samples per hole	Outlier range restriction grade (Au g/t)	Outlier restriction range (m)
	search distance			sample number definition				
Au Waste	200	200	50	1	35	10		
Code 40 first search	120	70	40	1	35	10	20	20
Code 40 second search	30	20	20	2	35	10	20	20
Code 41 Rubin first search	150	90	40	1	35	10	5	40
Code 41 Rubin second search	50	30	30	5	35	10		
Code 42 Dyke first search	150	100	40	1	35	10		
Code 42 Dyke second search	80	50	10	3	35	10		
Code 43 Syncline Fault first search	90	80	50	1	35	10		
Code 43 Syncline Fault second search	60	40	20	2	35	10		
Code 44 Curie first search	200	180	50	1	35	10		
Code 44 Curie second search	90	70	30	1	35	2		
Code 45	75	40	20	1	35	10		
Code 46	60	40	40	1	35	10		
Code 47 Curie HW first search	80	60	20	1	35	10		
Code 47 Curie HW second search	30	20	10	2	35	10		
Code 48 Smith	80	50	20	1	35	10	7	50
Code 49 first search	70	50	30	1	35	10	20	20
Code 49 second search	40	30	10	3	35	10	20	20
Code 50	80	60	30	1	35	10		
Code 51 East Dipper HG	90	60	20	1	35	10		
Code 52 Curie HW1 first search	85	75	30	1	35	10		
Code 52 Curie HW1 second search	30	20	10	2	35	6		
Code 53	100	60	20	1	35	10		
Code 54	120	60	30	1	35	10		
Code 55 Shallow East Dipper	100	60	30	1	35	10		
Code 56 Franklin	150	120	40	1	35	10		
Code 57 Linker	150	100	60	1	35	10		

TABLE 14-36 SEARCH PARAMETERS FOR THE ROBBIN'S HILL SOUTH RESOURCE MODEL (1810_RHRM SOUTH)

1701_RHRM (South)	SEARCH PARAMETER TABLE							
DOMAIN	y axis	x axis	z axis	min. samples 1st search	max. samples 1st search	max. samples per hole	Outlier restriction grade	Outlier sample cut distance
	<i>search distance</i>			<i>sample number definition</i>				
Au Waste	200	200	50	1	35	10		
Code 40 first search	120	70	40	1	35	10	20	20
Code 40 second search	30	20	20	2	35	10	20	20
Code 41 first search	110	50	20	1	35	10		
Code 41 second search	40	30	10	2	35	10		
Code 42 Dyke first search	150	90	30	2	35	10		
Code 42 Dyke second search	60	40	10	2	35	10		
Code 44 first search	180	150	90	1	35	10		
Code 44 second search	50	40	20	2	35	10		
D46	60	40	40	1	35	10		
Code 49 first search	70	50	30	1	35	10	20	20
Code 49 second search	40	30	10	3	35	10	20	20
D50	100	80	40	1	35	10		
D51	90	60	20	1	35	10		
Code 52 first search	85	75	30	1	35	10		
Code 52 second search	30	20	10	2	35	6		

14.5.9 MODEL VALIDATION

The same model validation techniques and principles were applied to the Robbins Hill models as used on the Central models (detailed in section 14.1.9).

The comparison of the mean domain grades against the composite grades for the 1810_RHRM (North) and 1701_RHRM (South) is shown in Table 14-37 and Table 14-38. For most of the domains the variation is deemed adequate, with the under call evident in several domains due to the low data support in inferred areas of the resource.

TABLE 14-37 MINERALIZED DOMAIN MEAN GRADE COMPARISON FOR 1810_RHRM_NORTH

Domain Name	Model Block Mean Grade (g/t Au)	Naïve Length Weighted Composite Mean Grade (g/t Au)	Top Cut Declustered Composite Mean Grade (g/t Au)	Variance from declustered mean %
Code 40	3.32	3.45	3.43	-3%
Code 41 Rubin	3.56	2.96	4.07	-14%
Code 42 Dyke	1.86	1.85	2.18	-17%
Code 43 Syncline Fault	4.45	4.54	4.39	1%
Code 44 Curie	5.82	5.07	5.07	13%
Code 45	2.51	2.70	2.26	10%
Code 46	2.45	2.69	2.40	2%
Code 47 Curie HW	2.06	2.20	1.87	9%
Code 48 Smith	2.48	2.17	2.33	6%
Code 49	1.63	1.59	1.63	0%
Code 50	3.37	3.41	3.26	3%
Code 51 East Dipper HG	2.29	2.26	2.50	-9%
Code 52 Curie HW1	3.06	2.75	3.29	-8%
Code 53	2.68	2.93	3.00	-12%
Code 54	4.94	4.79	4.92	0%
Code 55 Shallow East Dipper	5.47	5.72	5.12	6%
Code 56 Franklin	3.48	3.54	4.02	-16%
Code 57 Linker	3.16	3.31	3.60	-14%

TABLE 14-38 MINERALIZED DOMAIN MEAN GRADE COMPARISON FOR 1701_RHRM_SOUTH

Domain Name	Model Block Mean Grade (g/t Au)	Naïve Length Weighted Composite Mean Grade (g/t Au)	Top Cut Declustered Composite Mean Grade (g/t Au)	Variance from declustered mean %
Code 40	1.93	1.84	1.88	3%
Code 41	1.76	1.65	1.77	-1%
Code 42 Dyke	0.86	0.89	0.96	-10%
Code 44	1.60	1.68	1.91	-16%
Code 46	1.08	1.02	1.23	-12%
Code 49	2.92	4.22	2.57	14%
Code 50	1.25	0.98	1.15	9%
Code 51	1.19	1.22	1.23	-3%
Code 52	1.91	2.28	1.77	8%

14.5.10 MINERAL RESOURCE CLASSIFICATION

No Mineral Resources in the Robbin’s Hill Area have been categorized as Measured owing to drill hole data spacing and the absence of suitable spaced drilling proximal to mined pits. To date there is no underground mining related mapping, face sampling or sludge data to augment raising the Resource confidence to Measured.

Two solids were created enclosing regions of geological confidence (Indicated or Inferred Mineral Resources) and these regions were in turn used to identify Inferred and Indicated Resource for reporting purposes. The solids generally enclose areas of approximately equally spaced drilling, but also allow areas where there is reduced confidence in the geological interpretation to be reported to a lower confidence category. The Indicated Mineral Resource solid is always surrounded by a halo of Inferred Resource. There is some modelled mineralization falling outside both the Indicated and Inferred solids. These areas were not reported as Mineral Resource and were flagged as non-resource zones (Figure 14-19).

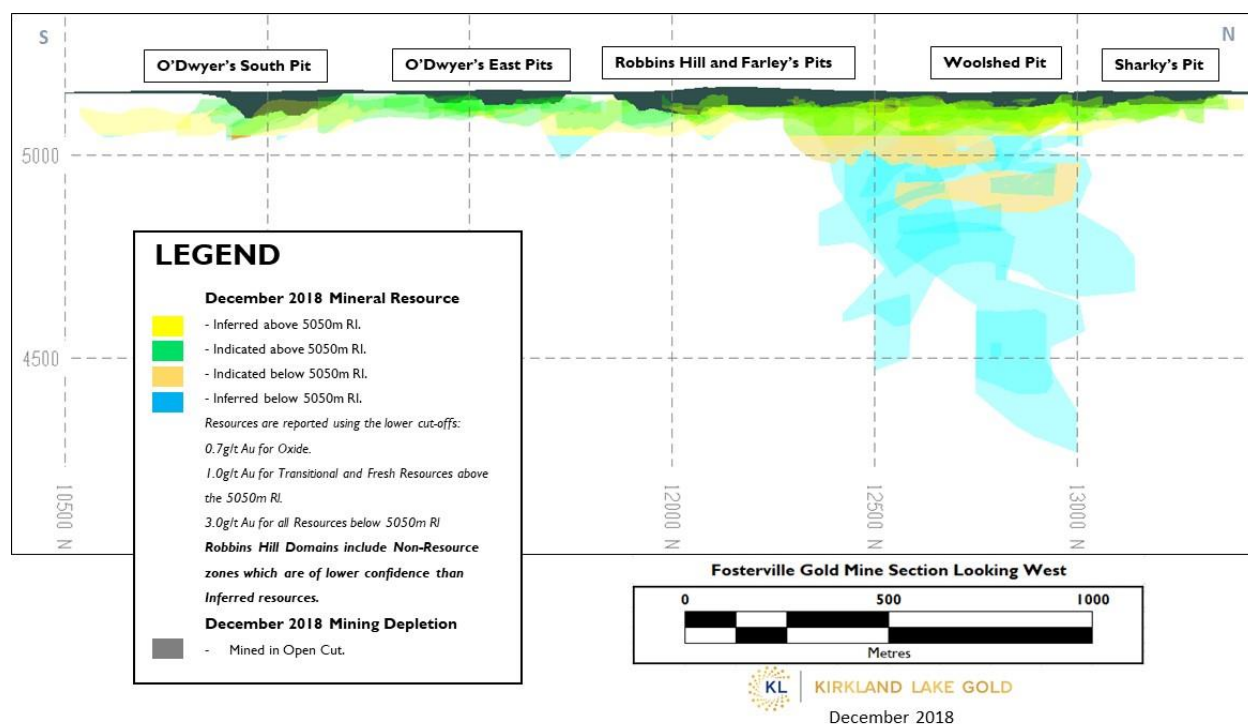


FIGURE 14-19 LONGITUDINAL SECTION VIEW OF MINERAL RESOURCE IN ROBBIN'S HILL AREA

14.5.11 RESULTS

Oxide gold resources exist in the Robbin’s Hill Model area, notably east of Sharkey’s Pit where exploration drilling in 2007 discovered shallow oxide mineralization. Elsewhere, remnant low-grade oxide gold mineralization is found below and along strike from previously mined open pits.

Resources in the Farley's-Sharkey's area are based on modern face sampling RC methods and substantial diamond drilling and as such the geological information is better than elsewhere in the modeled area.

Inferred resources at Robbin's Hill have increased significantly toward the end of 2018 with the extension of the moderate-high grade Curie fault domain (Figure 14-20).

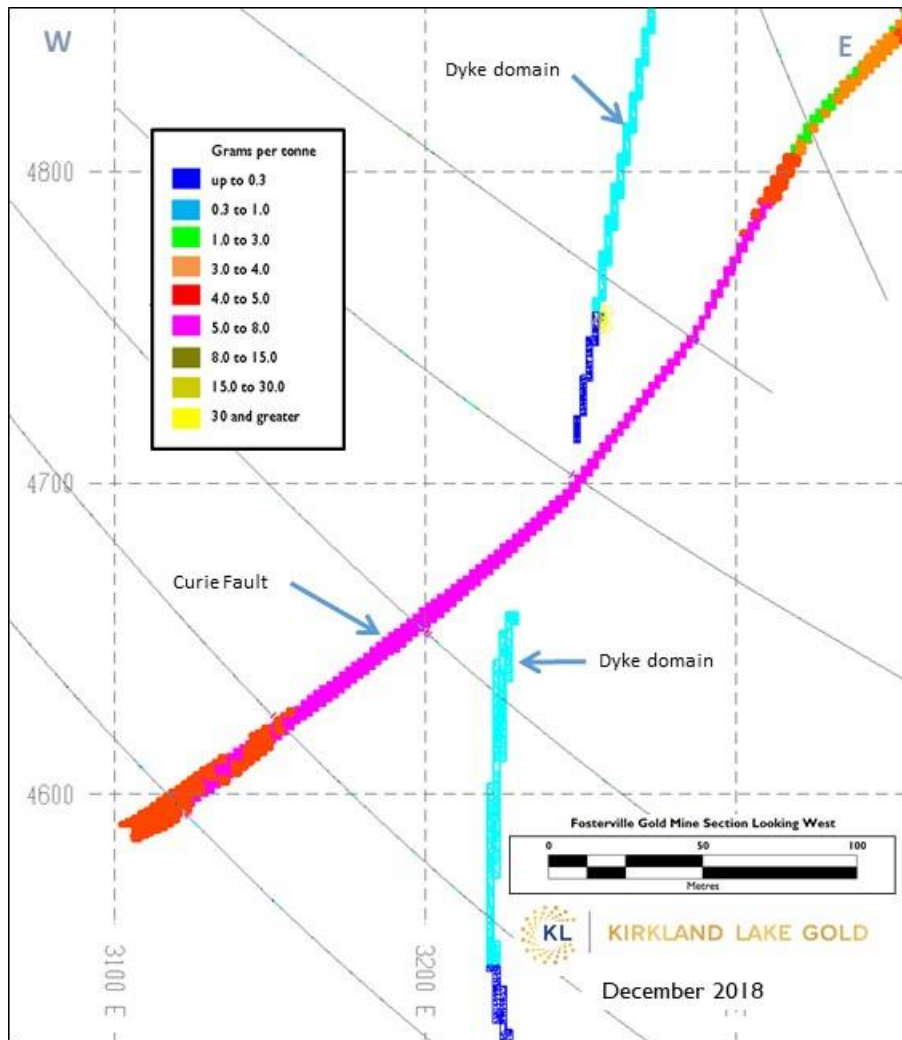


FIGURE 14-20 ROBBIN'S HILL CROSS-SECTION 12575MN

15 MINERAL RESERVE ESTIMATES

The current Mineral Reserve estimate, from the available Mineral Resource estimates, is presented below in Table 15-1. Mineral Reserves are subdivided on the basis of accessing decline i.e. Central, Phoenix and Harrier. A further breakdown of the Phoenix Mineral Reserves is presented in Table 15-2, where reserves on the Eagle and Swan structures are separated.

In the QP's opinion, there are no known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors that could materially affect the mineral reserve estimate.

CIL Residue Mineral Reserves are distinguished from in situ Mineral Reserves in Table 15-1 and Table 15-2 on the basis of differing recovery assumptions.

TABLE 15-1 MINERAL RESERVES FOR FGM AS AT DECEMBER 31, 2018

Classification	Proven			Probable			Total		
	Tonnes (000's)	Grade (g/t Au)	In situ Gold Ounces (000's)	Tonnes (000's)	Grade (g/t Au)	In situ Gold Ounces (000's)	Tonnes (000's)	Grade (g/t Au)	In situ Gold Ounces (000's)
Underground									
Central	1	5.8	0	73	4.6	11	74	4.6	11
Phoenix	168	17.4	94	2,120	37.1	2,530	2,290	35.6	2,630
Harrier	8	4.7	1	350	6.9	77	358	6.8	79
Surface									
	0	0.0	0	0	0.0	0	0	0.0	0
Total	178	16.7	96	2,550	32.0	2,620	2,720	31.0	2,720
Residues									
CIL Residues	683	7.6	168	0	0.0	0	683	7.6	168
Total	683	7.6	168	0	0.0	0	683	7.6	168

Notes:

1. CIM definitions (2014) were followed in the estimation of Mineral Reserves.
2. For the Mineral Reserves estimate, the Qualified Person is Ion Hann.
3. The Mineral Reserve estimate used a gold price of US\$1,230 per ounce (A\$1,710 per ounce).
4. Cut-off grades applied ranged from 2.0 g/t Au to 5.4 g/t Au for underground sulfide ore depending upon width, mining method and ground conditions.
5. Dilution and mining recovery factors as per Table 15-3 were applied to stopes within the Mineral Reserves estimate.
6. Mineral Reserves are rounded to three significant figures for tonnes and ounces and one decimal place for grade. Minor discrepancies in summation may occur due to rounding.
7. CIL residues are stated as contained ounces – 25% recovery is expected. Recoveries are based on laboratory and processing plant test work and operating experience.

TABLE 15-2 MINERAL RESERVES (WITH EAGLE / SWAN SUBDIVISIONS) FOR FGM AS AT DECEMBER 31, 2018

Classification	Proven			Probable			Total		
	Tonnes (000's)	Grade (g/t Au)	In situ Gold Ounces (000's)	Tonnes (000's)	Grade (g/t Au)	In situ Gold Ounces (000's)	Tonnes (000's)	Grade (g/t Au)	In situ Gold Ounces (000's)
Underground									
Central	1	5.8	0	73	4.6	11	74	4.6	11
Phoenix	37	9.1	11	69	7.6	17	106	8.2	28
Kestrel	0	0.0	0	302	5.2	50	302	5.2	50
Eagle	69	12.7	28	253	17.6	143	322	16.5	171
Swan	62	27.6	55	1,410	50.6	2,290	1,470	49.6	2,340
Swan Splay	0	0.0	0	94	11.4	34	94	11.4	34
Harrier	8	4.7	1	350	6.9	77	358	6.8	79
Surface									
	0	0.0	0	0	0.0	0	0	0.0	0.00
Total	178	16.7	96	2,550	32.0	2,620	2,720	31.0	2,720
Residues									
CIL Residues	683	7.6	168	0	0.0	0	683	7.6	168
Total	683	7.6	168	0	0.0	0	683	7.6	168

Notes:

1. CIM definitions (2014) were followed in the estimation of Mineral Reserves.
2. For the Mineral Reserves estimate, the Qualified Person is Ion Hann.
3. The Mineral Reserve estimate used a gold price of US\$1,230 per ounce (A\$1,710 per ounce).
4. Cut-off grades applied ranged from 2.0 g/t Au to 5.4 g/t Au for underground sulfide ore depending upon width, mining method and ground conditions.
5. Dilution and mining recovery factors as per Table 15-3 were applied to stopes within the Mineral Reserves estimate.
6. Mineral Reserves are rounded to three significant figures for tonnes and grade and one decimal place for grade. Minor discrepancies in summation may occur due to rounding.
7. CIL residues are stated as contained ounces – 25% recovery is expected. Recoveries are based on laboratory and processing plant test work and operating experience.

15.1 MINERAL RESERVE ESTIMATE

The mining methods that were considered for the Mineral Reserve estimation process were sill driving, up-hole open stoping, up-hole stoping with fill, underhand open stoping with chain and rib pillars and transverse open stoping. These methods were selected based upon previous experience at the Fosterville mine or because they were considered suitable for the ore zone geometry and geotechnical conditions present and expected.

15.1.1 OPEN STOPE DESIGN

Stope reserve shapes were created to cover all active and planned mining areas. These stope shapes do not necessarily reflect the final stope strike and/or crown pillar dimensions, however, they provide a reasonable representation of the effective exploitation of the resource. Stopping widths vary from a minimum of 2.7m out to 20m.

The open stope reserve wireframe design parameters applied were:

- Strike length dictated by grade distribution in block model;
- Minimum true width of 2.7m;
- Maximum height of 20m vertical from backs to floor; and
- Internal waste incorporated within the stope block design.

Mining recovery from open stopes at Fosterville is principally influenced by the following factors:

- Accuracy of the geological interpretation;
- Accuracy of the production hole drilling;
- Stope dimensions;
- Sill drive dimensions and position relative to bench stope;
- Presence or absence of adjacent filled voids and pillars;
- Mining induced stress;
- Open span time; and
- Geotechnical integrity of stope and sill drive walls.

The above factors manifest themselves as ore loss in the following ways:

- The need for planned pillars due to accessing of ore blocks (i.e. top down mining sequence);
- Frozen rings due to ground movement or out of sequence firing;
- Bridged stopes;
- Failure of the stope to break back to a main structural plane of weakness; and
- Unplanned ore pillars left to improve ground support.

Unplanned dilution in open stopes at Fosterville is a function of the following factors:

- Regional geotechnical conditions;
- Location of sill drives relative to the open stope;
- Width of sill drives relative to the open stope width;
- Production drilling accuracy;
- Quantity, quality and type of ground support in sill drive walls;
- Speed of ore extraction from active stopes; and
- Length of time sill drives have been open before stoping commences.

Inclusive within the production mining cycle are systematic cavity monitoring surveys, data from which is fed back into the understanding and scaling of dilution factors by area.

In order to correctly apply recovery and dilution factors to all stopes in the Mineral Reserve, factors such as ore body dip, rock RQD and development and stope sequence were considered.

Table 15-3 show the recovery and dilution factors that were applied to the reserve blocks:

TABLE 15-3 RECOVERY AND DILUTION FACTORS FOR THE RESERVE BLOCKS AS DISPLAYED IN FIGURE 15-1

Description	Recovery Factor - Tonnes	Dilution Factor - Tonnes	Comments
Stoping - Phoenix	86%	21%	Top down, crown and rib pillars, and/or CRF and/or paste, underhand open stoping with chain and rib pillars
Stoping – Harrier	71%	29%	Top down, crown and rib pillars, and/or CRF underhand open stoping with chain and rib pillars
Strike Development	100%	15% to 18%	

Notes:

1. Dilution and Recovery factors are assigned based on sequence, angle of the hangingwall, strike length of panel and surrounding voids whether open, failed or filled, both laterally and vertically (and the likelihood of adjacent panels failed).
2. Primary stopes are in-situ with solid unfired material on all extremities excluding development.
3. Secondary panels are those adjacent to a single panel either laterally or vertically that may or may not be filled.
4. Tertiary panels are those adjacent to two or more panels either laterally or vertically that may or may not be filled.
5. Table 15-4, Figure 15-1 and Figure 15-2 provides guidelines for individual panel recovery and dilution for specific mining scenarios.

TABLE 15-4 DILUTION AND RECOVERY FACTORS USED FOR THE DECEMBER 2018 MINERAL RESERVES

		Dilution	Recovery			
Development		1.15	1.00			
		Dilution	Recovery	Type	Angle	Strike
PRIMARY	Stope	1.10	0.90	Pillar / Initial Panel	Steep	<15m
	Stope	1.15	0.85	Pillar / Initial Panel	Steep	15m to 25m
	Shrink	1.25	0.75	No Pillar / Shrink	Steep	>25m
	Stope	1.15	0.85	Pillar / Initial Panel	Average	<15m
	Stope	1.20	0.80	Pillar / Initial Panel	Average	15m to 25m
	Shrink	1.30	0.70	No Pillar / Shrink	Average	>25m
	Stope	1.20	0.80	Pillar / Initial Panel	Flat/Narrow	<15m
	Stope	1.25	0.75	Pillar / Initial Panel	Flat/Narrow	15m to 25m
	Shrink	1.40	0.55	No Pillar / Shrink	Flat/Narrow	>25m
SECONDARY	Stope	1.15	0.90	Secondary Stope against CRF	Steep	<15m
	Stope	1.20	0.90	Secondary Stope against CRF	Steep	15m to 25m
	Stope	1.25	0.85	Secondary Stope against CRF	Average	<15m
	Stope	1.30	0.85	Secondary Stope against CRF	Average	15m to 25m
	Stope	1.30	0.75	Secondary Stope against CRF	Flat/Narrow	<15m
	Stope	1.40	0.65	Secondary Stope against CRF	Flat/Narrow	15m to 25m
	Stope	1.30	0.75	Pillar / Initial Panel below caved	Steep	<15m
SECONDARY	Stope	1.40	0.65	Pillar / Initial Panel below caved	Steep	15m to 25m
	Stope	1.50	0.50	Pillar / Initial Panel below caved	Steep	>25m
	Stope	1.25	0.80	Pillar / Initial Panel below caved	Average	<15m
	Stope	1.35	0.70	Pillar / Initial Panel below caved	Average	15m to 25m
	Stope	1.45	0.60	Pillar / Initial Panel below caved	Average	>25m
	Stope	1.20	0.85	Pillar / Initial Panel below caved	Flat/Narrow	<15m
	Stope	1.30	0.75	Pillar / Initial Panel below caved	Flat/Narrow	15m to 25m
	Stope	1.40	0.65	Pillar / Initial Panel below caved	Flat/Narrow	>25m
	SECONDARY	Stope	1.20	0.85	Pillar / Initial Panel below CRF	Steep
Stope		1.25	0.80	Pillar / Initial Panel below CRF	Steep	15m to 25m
Stope		1.30	0.75	Pillar / Initial Panel below CRF	Steep	>25m
Stope		1.25	0.80	Pillar / Initial Panel below CRF	Average	<15m
Stope		1.30	0.75	Pillar / Initial Panel below CRF	Average	15m to 25m
Stope		1.35	0.70	Pillar / Initial Panel below CRF	Average	>25m
Stope		1.30	0.70	Pillar / Initial Panel below CRF	Flat/Narrow	<15m
Stope		1.35	0.65	Pillar / Initial Panel below CRF	Flat/Narrow	15m to 25m
Stope		1.40	0.60	Pillar / Initial Panel below CRF	Flat/Narrow	>25m
TERTIARY	Stope	1.25	0.80	Tertiary Stope	Steep	<15m
	Stope	1.30	0.75	Tertiary Stope	Steep	15m to 25m
	Stope	1.35	0.75	Tertiary Stope	Average	<15m
	Stope	1.40	0.70	Tertiary Stope	Average	15m to 25m
	Stope	1.40	0.60	Tertiary Stope	Flat/Narrow	<15m
	Stope	1.50	0.60	Tertiary Stope	Flat/Narrow	15m to 25m
	Stope	1.40	0.60	Tertiary Stope	Steep	<15m
TERTIARY	Stope	1.50	0.55	Tertiary Stope	Steep	15m to 25m
	Stope	1.60	0.50	Tertiary Stope	Steep	>25m
	Stope	1.35	0.65	Tertiary Stope	Average	<15m
	Stope	1.45	0.60	Tertiary Stope	Average	15m to 25m
	Stope	1.55	0.55	Tertiary Stope	Average	>25m
	Stope	1.30	0.70	Tertiary Stope	Flat/Narrow	<15m
	Stope	1.40	0.65	Tertiary Stope	Flat/Narrow	15m to 25m
	Stope	1.50	0.60	Tertiary Stope	Flat/Narrow	>25m
	TERTIARY	Stope	1.50	0.55	Tertiary Stope	Steep
Stope		1.55	0.50	Tertiary Stope	Steep	15m to 25m
Stope		1.60	0.45	Tertiary Stope	Steep	>25m
Stope		1.45	0.60	Tertiary Stope	Average	<15m
Stope		1.50	0.55	Tertiary Stope	Average	15m to 25m
Stope		1.55	0.50	Tertiary Stope	Average	>25m
Stope		1.40	0.65	Tertiary Stope	Flat/Narrow	<15m
Stope		1.45	0.60	Tertiary Stope	Flat/Narrow	15m to 25m
Stope		1.50	0.55	Tertiary Stope	Flat/Narrow	>25m

Dilution and Recovery Factors for High Grade Orebodies

Higher grade stopes using CRF/Flowable fill or paste have the following dilution and recovery factors applied.

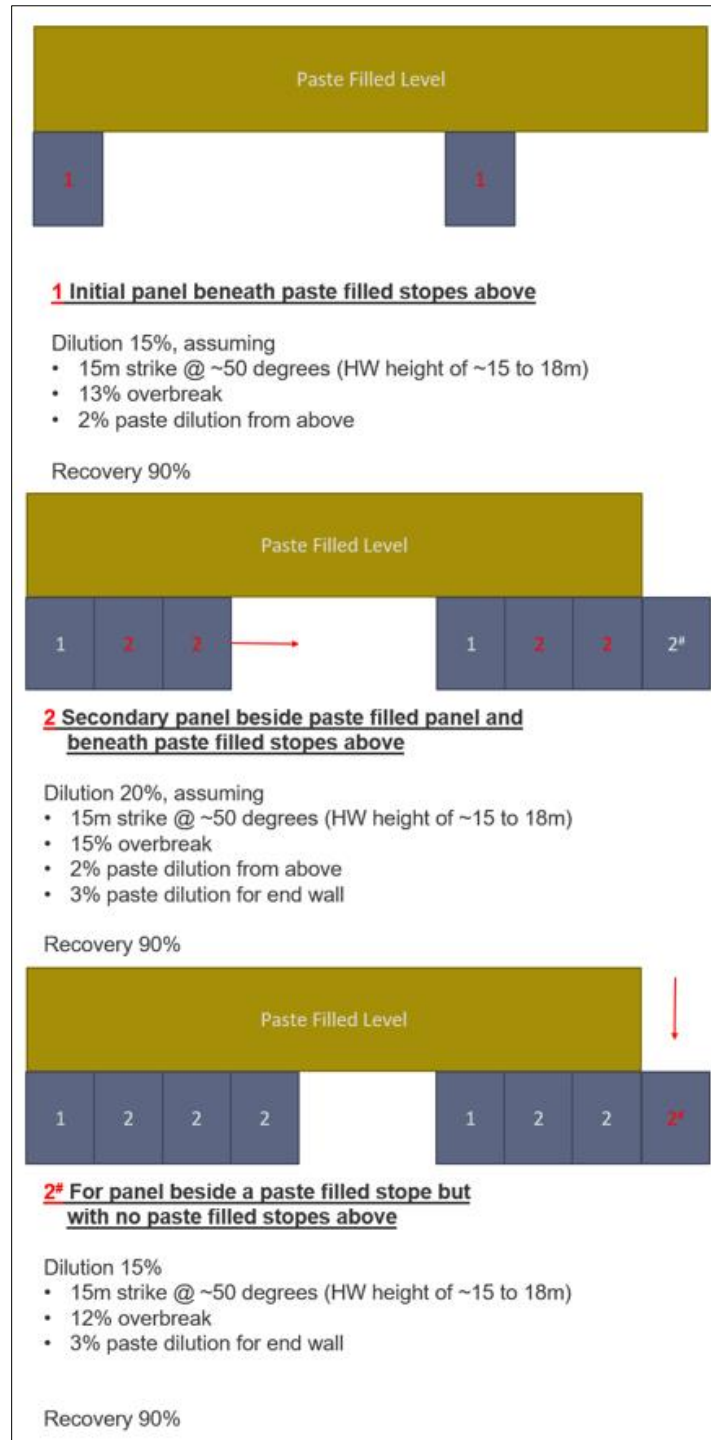


FIGURE 15-1 DILUTION & RECOVERY FACTORS FOR HIGH GRADE OREBODIES

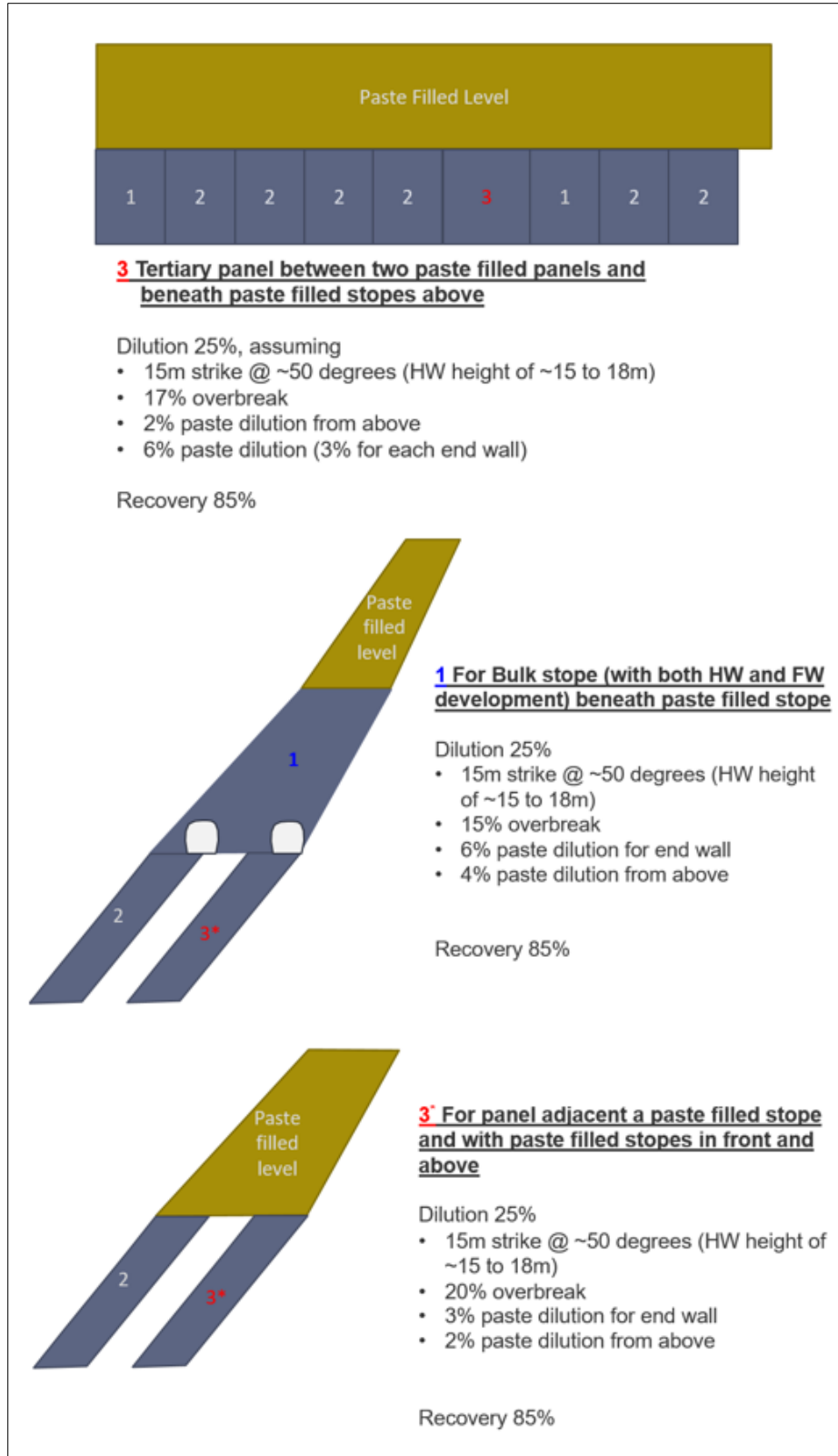


FIGURE 15-1 (CONT)

DILUTION & RECOVERY FACTORS FOR HIGH GRADE OREBODIES

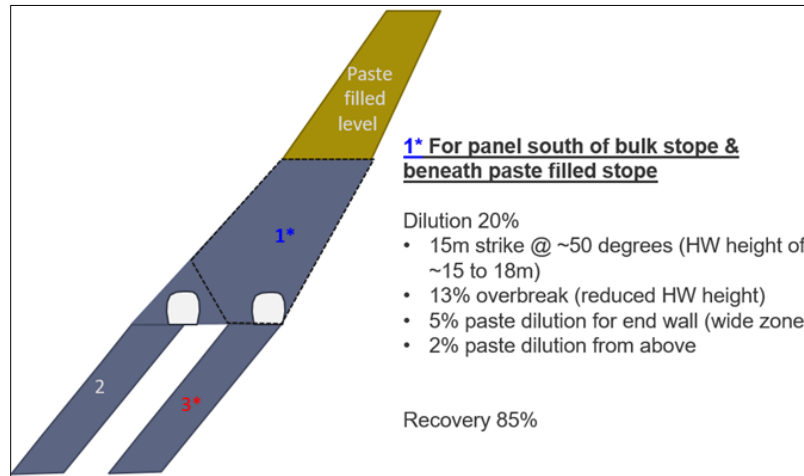


FIGURE 15-1 (CONT) DILUTION & RECOVERY FACTORS FOR HIGH GRADE OREBODIES

Wider zones encountered within the Raptor (Kestrel subset) ore zone have the following dilution and recovery factors applied based on a sequence as defined.

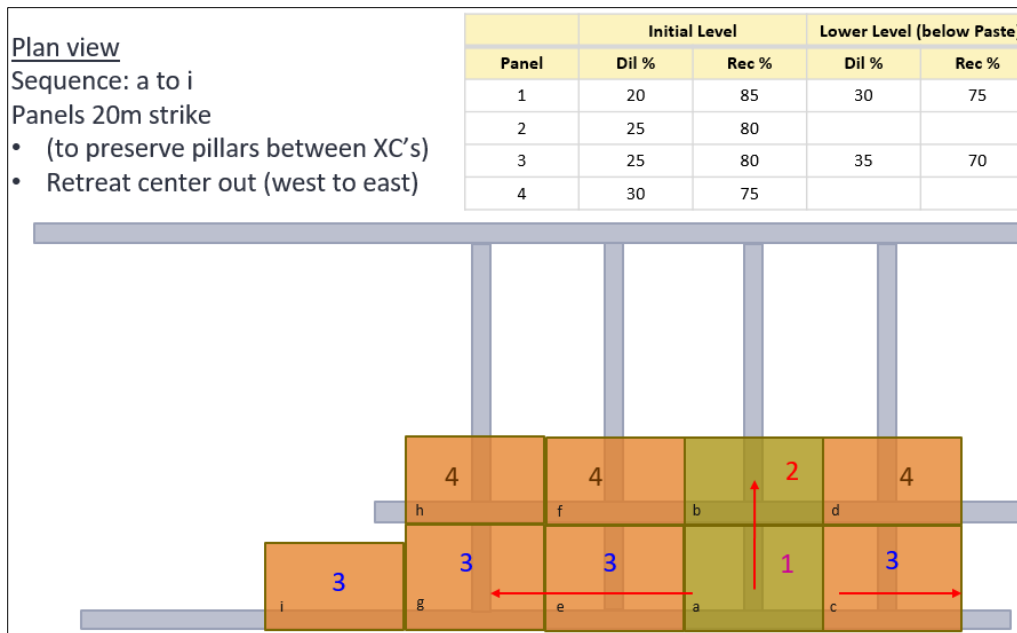


FIGURE 15-2 DILUTION & RECOVERY FACTORS FOR RAPTOR TRANSVERSE ZONE

15.1.2 GOLD CUT-OFF GRADES

Table 15-5 shows the calculated cut-off grades used in the estimation of the Mineral Reserve. Cost assumptions are based on the 2019 Budget (inclusive of royalties) and 2018 performance.

TABLE 15-5 MINERAL RESERVE GOLD CUT-OFF GRADES

Description	g/t Au
Site - Stoping Full	4.87
Site - Stoping (filled) Marginal	2.70
Site - Stoping Full NO FILL	4.50
Site - Stoping (filled) Marginal NO FILL	2.33
Phoenix - Stoping Full	5.35
Phoenix - Stoping (filled) Marginal	2.84
Harrier - Stoping Full NO FILL	3.88
Harrier - Stoping Marginal NO FILL	2.37
Phoenix - Development Marginal	3.26
Harrier - Development Marginal	3.97

For other situations, a lower cut-off grade is applied. For development, which is justified for other reasons (i.e. access to a higher grade block or infrastructure considerations), the marginal cut-off grade is applied to reflect that the material only has to cover the non-mining costs to break even. This is only applied if the development material had to be trucked to surface anyway and that it is not displacing higher-grade ore from the mill. Likewise, for incremental stoping production where the development has already been mined (i.e. for access to a higher-grade block), the marginal cut-off grade is applied to reflect that the development cost has already been incurred.

Stope and development shapes are limited in their extremity by the application of appropriate COGs (Table 15-5) and a full conceptual design is subsequently created around the resultant shapes. This design includes, but is not necessarily limited to; decline design, associated level infrastructure and vertical development.

Physicals generated from the design are applied against budget unit rates and assumptions to provide an economic model by level and area. This model is capable of representing various cost structures and is utilized as the final economic hurdle point for determination of inclusion/exclusion of material into the mine plan and reserve statement.

15.1.3 DEPLETION AND RESULTS

The Mineral Reserves reported above are the result of work based on data to December 31, 2018 and reported by Kirkland Lake Gold in accordance with NI43-101. The evaluation models have been depleted for material mined up to December 31, 2018. The process involved the generation of surveyed solid models for the mined development and stope areas and then running a depletion process in order that the depleted areas can be excluded from the Mineral Reserve.

Results for the Mineral Reserves contained in the Fosterville operating areas are provided in Table 15-1.

Infrastructure required for the exploitation of the stated reserves are either in place or have been planned to be developed within the LOM plan generated through the reserving process. All works fall within the granted mining lease boundaries and are covered within the existing approved work plan. It is unlikely that either infrastructure or permitting could materially affect the stated reserve position.

There are no known political, legal, environmental or other risks that could materially affect the potential development of the Mineral Reserves.

16 MINING METHODS

Since the completion of the Harrier Open Cut Mine in early December 2007, the sole source of ore had been the underground operations until Q2 2011 when ore feed became available from a series of open pit cut backs on the Harrier Pit, John's Pit and O'Dwyer's South Pit. Following the completion of O'Dwyer's South cut back in Q4 2012, the sole source of ore has been from the underground operations. The current Life of Mine (LOM) plan contains ore sourced from underground operations only (Figure 16-1, Figure 16-2 and Figure 16-3).

The underground mine commenced declining in March 2006 with production first recorded in September 2006. Development and stoping have been conducted in the Phoenix, Falcon, Ellesmere, Kink, Vulture, Raven, Robin and Harrier ore bodies since that time. As at January 1, 2019 works are planned to continue in the Phoenix (including Swan, Eagle, et al), Central and Harrier ore bodies.

Access to the underground workings is via two portals, located in the Ellesmere and Falcon open pits, and connected declines that run at an average gradient of 1 in 7 down. Nominal decline dimensions are 5.5 meters wide by 5.8 meters high with other access development varying in size but can generally be considered at least 5.5 meters wide by 5.0 meters high.

The Phoenix to 4240mRL, Harrier below 4500mRL, Central and Robin ore bodies are accessed from a footwall decline position while the Phoenix below 4240mRL and Harrier ore body above 4500mRL are accessed from the hangingwall. All areas are planned to be extracted using open stoping techniques, primarily in a top down sequence, with the application of Cemented Rock Fill (CRF) or Paste Fill (PF) where applicable and practical. Selection of the specific mining method and extraction sequence within the open stoping regime is based upon previous experience at the Fosterville Mine and expectations of ore zone geometry and geotechnical conditions. A standard level interval of 20 vertical meters can be applied across all mining areas however, this can be and is varied as is required to maximize the extraction of the economic material.

16.1 MINING FLEET

Underground mining is conducted using a conventional fleet of trackless diesel equipment including development jumbos, production drills, loaders, trucks and ancillary equipment. Current operations are undertaken predominately as owner miner, with mining activity undertaken on a continuous roster of 12 hour shifts, 7 days per week.

The FGM mobile fleet comprises the following equipment:

- Two boom development jumbos – Sandvik DD421-60C (enclosed cab) x 3 and Axera DD420-60 (open cab) x 2
- Production drill rigs – Epiroc Simba E7-C x 1 and a Tamrock Solo 7-7v x 1
- Haulage trucks – Sandvik TH663 dump tray x 6 and TH663 ejector tray x 2
- Loaders – CAT R2900G x 6

- Shotcrete machines – Normet Spraymec SF050D x 1, Jacon Maxijet MX3 x 1 and Maxijet 0400SC x 1
- Agitator trucks – Normet Ultimec LF700 x 3
- Charge-up rigs – Normet Charmec 1610B x 2, Normet Charmec LC605 x 2
- Graders – CAT 12M x 1 and CAT12H x 1
- Integrated tool carriers – CAT IT28G (Workshop) x 1, CAT 930H x 5 and Volvo 120F x 1

Contractor mobile fleet comprises the following equipment:

- Cable bolting drill rigs – Epiroc Cabletec M x 1, Sandvik DS421-C x 2
- Raisebore/Boxhole rigs – Redbore 30 and Redbore 40

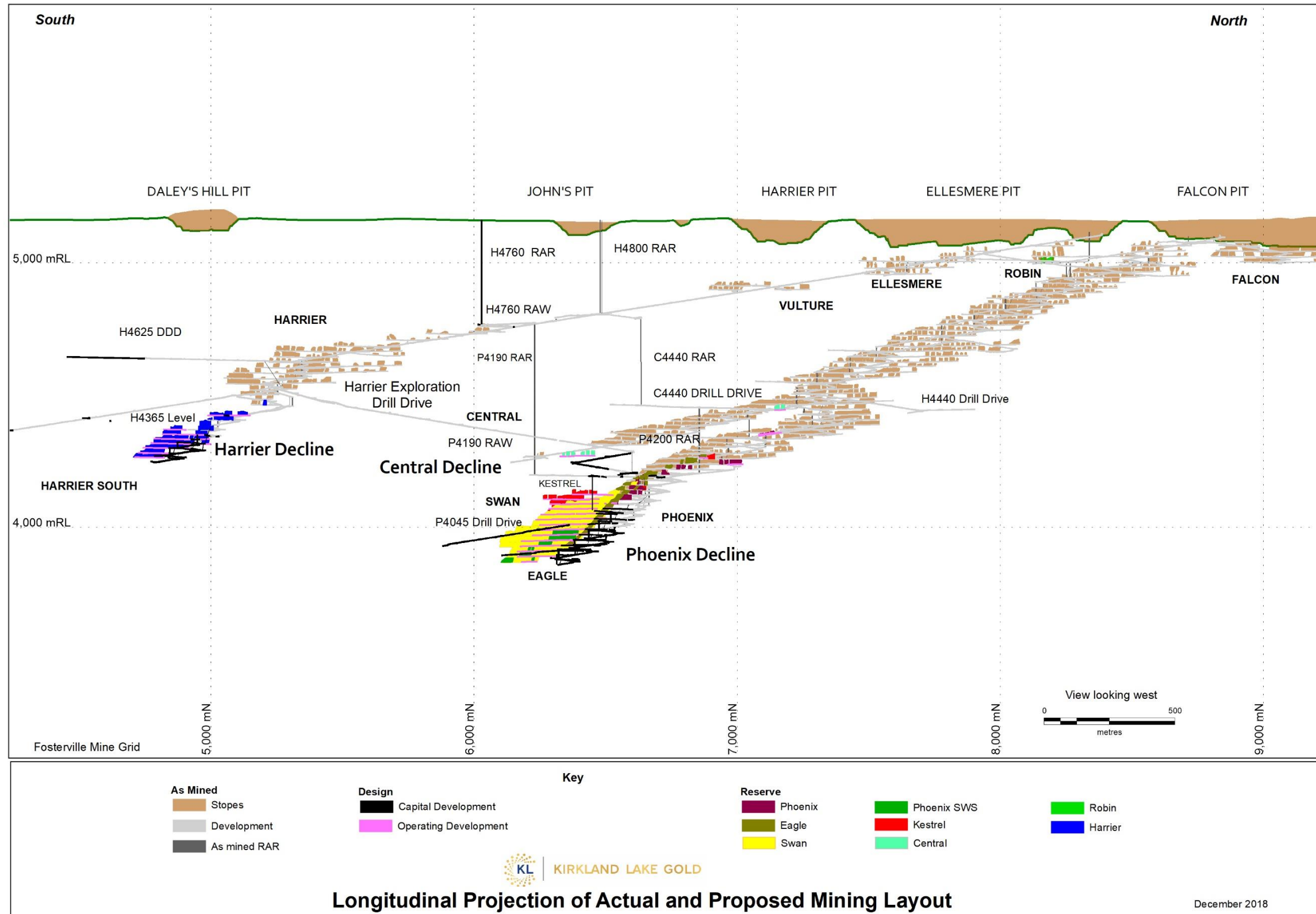


FIGURE 16-1 LONGITUDINAL PROJECTION OF ACTUAL AND PROPOSED MINING LAYOUT AS AT DECEMBER 31, 2018

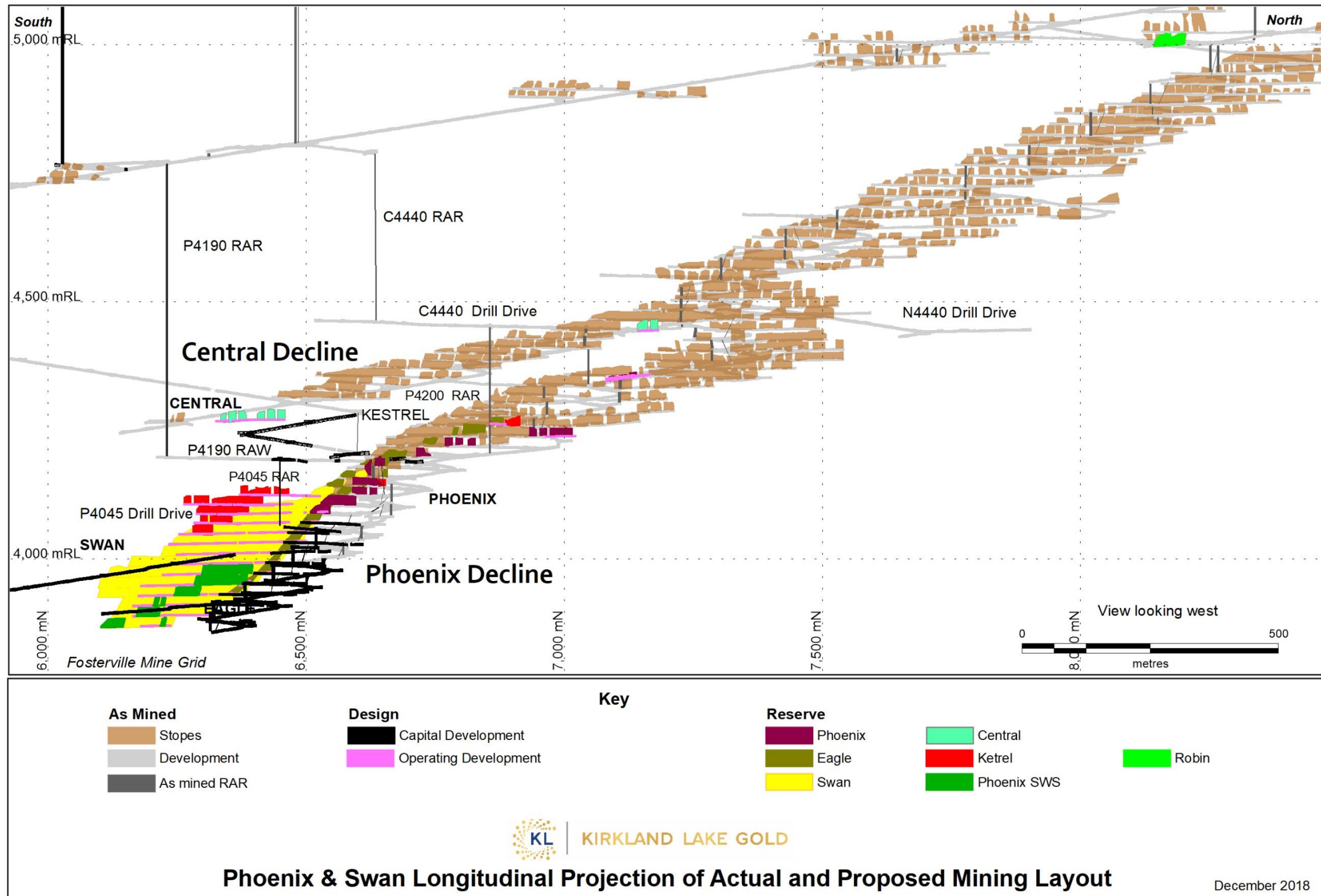


FIGURE 16-2 LONGITUDINAL PROJECTION OF PHOENIX AND SWAN ACTUAL AND PROPOSED MINING LAYOUT AS AT DECEMBER 31, 2018

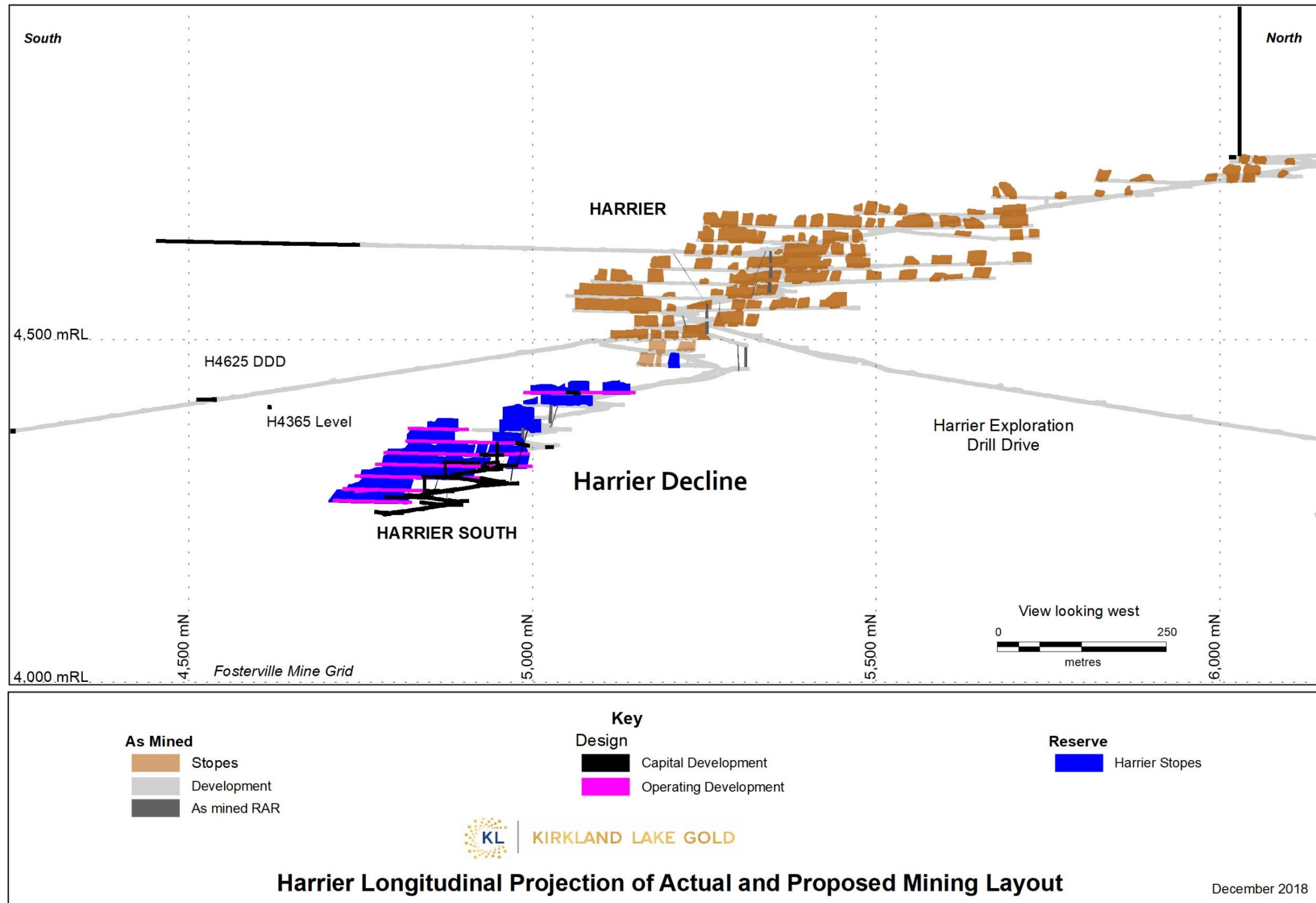


FIGURE 16-3 LONGITUDINAL PROJECTION OF HARRIER ACTUAL AND PROPOSED MINING LAYOUT AS AT DECEMBER 31, 2018

16.2 LOM PRODUCTION PLAN

The December 2018 LOM model, which is based solely on the December 2018 Mineral Reserves has an expected mine life of 6 years. Production rates within the Phoenix and Harrier orebodies are expected to increase over the coming years as ventilation upgrades take effect and both areas open up through previous development and sequencing. Peak production output within the plan is >600,000 tonnes and mined ounces per annum. The LOM production schedule assumes some rock and cemented rock fill (CRF) mainly performed within the high grade Phoenix orebody. The commencement of paste fill in late 2019 will become the predominant backfill medium and will be supplemented by rock and CRF thereafter. The current LOM plan does not include backfill in the Harrier orebody.

TABLE 16-1 LOM PRODUCTION PHYSICALS

	LOM
Tonnes (000's)	2,720
Grade (g/t Au)	31.00
Ounces Mined (000's)	2,720
Mill Recovery	97%
Ounces Recovered (000's)	2,640

Notes:

1. LOM based off December 2018 Mineral Reserves model.
2. Tonnes and Ounces rounded to three significant figures and grade to one decimal point.

17 RECOVERY METHODS

Since the commissioning of the processing plant in 2004, all processing models for the mill have been based on actual plant performances. The processing budget takes into consideration the mining schedule (ore source location, tonnes to be mined and gold grade), and predicted sulfur grades to be processed. Recovery data for Fosterville is detailed in Table 17-1.

TABLE 17-1 ACTUAL PLANT PERFORMANCES (2009 – 2018)

Plant Parameter		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Tonnes Milled	t	781,878	817,535	785,503	786,572	792,166	814,835	703,788	693,066	547,476	456,909
Sulfur Feed grade	%	1.71	1.6	1.59	1.44	1.35	1.36	1.34	1.71	1.51	1.28
Feed Grade	g/t Au	4.79	4.57	4.87	4.36	4.53	4.62	6.11	7.55	15.78	24.93
Flotation recovery	%	96.2	96.2	96.7	95.0	95.9	95.7	96.6	97.0	98.6	99.2
Gravity gold recovery	%								12.9	27.6	45.7
BIOX® recovery	%	99.0	98.7	98.4	97.8	98.0	98.6	98.5	98.4	98.7	98.8
Sulfide Oxidation	%	96.3	98.6	97.7	97.7	98.2	98.1	98.3	97.7	97.3	98.0
CIL recovery	%	86.2	79.8	81.3	80.5	86.2	87.1	90.9	89.9	93.9	95.1
Heated leach recovery	%	0.3	7.1	6.0	7.6	4.5	4.6	2.0	3.7	2.4	2.0
Overall Leach recovery	%	86.6	86.9	87.3	88.1	90.7	91.6	92.9	93.6	96.2	97.1
Overall Plant recovery	%	85.0	82.5	83.0	82.0	85.2	86.5	88.5	90.1	95.0	97.3
Mining Au recovered	oz	102,336	99,032	102,048	90,358	98,354	104,518	122,362	151,585	263,845	356,230
Retreat: Leach tails: tonnes	t	9,634	13,222	4,495	2,623	854	4,951	4,519	2,141	0	0
Retreat: Leach tails: grade	g/t Au	10.25	10.37	8.27	6.98	7.05	10.48	10.75	7.90	0	0
Retreat: Leach tails: recovery	%	32.5	30.3	12.2	12.1	35.2	49.0	46.3	30.8	0	0
Retreat: Leach tails: Au recovered	oz	1024	1,410	154	80	69	824	734	169	0	0
Total gold recovered	oz	103,360	100,442	102,201	90,439	98,423	105,342	123,096	151,755	263,845	356,230

The process plant incorporates the following unit operations:

- Single stage crushing with a primary jaw crusher;
- Open stockpile with reclaim tunnel;
- 20ft diameter by 20ft length Semi-autogenous grinding (SAG) mill;
- A gravity circuit to recover coarse gold from the grinding circuit recirculating load;
- Flotation circuit to produce a gold bearing sulfide mineral concentrate and a barren residue;
- 8ft diameter by 13ft length flotation concentrate regrind mill;
- A gravity circuit to recover coarse gold from the flotation concentrate with gravity circuit concentrate being direct smelted;

- A Bio-oxidation circuit consisting of BIOX[®] reactors to oxidize the flotation concentrate, releasing gold from the sulfide mineral matrix;
- A three-stage CCD circuit to separate the gold bearing oxidized solid residue from the solubilized acid oxidation products;
- A liquor neutralization circuit to neutralize acid and precipitate arsenic as stable basic ferric arsenate and sulfate as calcium sulfate (gypsum) using both ground limestone and lime slurries;
- A limestone grinding facility comprising a single wet ball mill operated in closed circuit with a hydrocyclone to produce ground limestone slurry for pH control in the BIOX[®] tanks and neutralization of sulfuric and arsenic acids produced from oxidation of gold bearing sulfide minerals;
- Carbon-in-leach (CIL) circuit, with a pH adjustment tank at the head of the circuit, to leach gold from oxidized material and load the cyanide soluble gold onto activated carbon;
- Heated Leach (HL) circuit to combat preg-robbing capabilities of the non-carbonaceous carbon always present in the Fosterville orebody. Specialized in-house technology unique to Fosterville; and
- Pressure Zadra elution circuit to remove gold from carbon, followed by electro-winning recovery and smelting to doré.

A schematic flow sheet detailing unit operations is presented in Figure 17-1.

The plant was laid out on either side of a central rack in order to facilitate the distribution of reagents, services, and piping arrays. Individual plant areas are separated by bunding to isolate and contain spillage. Storm water and abnormal spillage events report to an existing drainage channel, which discharges to a separate containment dam.

The layout of the comminution circuit allows for installation of a pebble crushing circuit should it be required, and a secondary ball mill to increase grinding circuit capacity. Space was left in the area layouts for additional tank farms and equipment to accommodate a nominal increase in plant capacity. Space exists to the east of the plant site to duplicate existing facilities to double plant throughput if required.

Plant commissioning began in November 2004 with first gold production in April 2005.

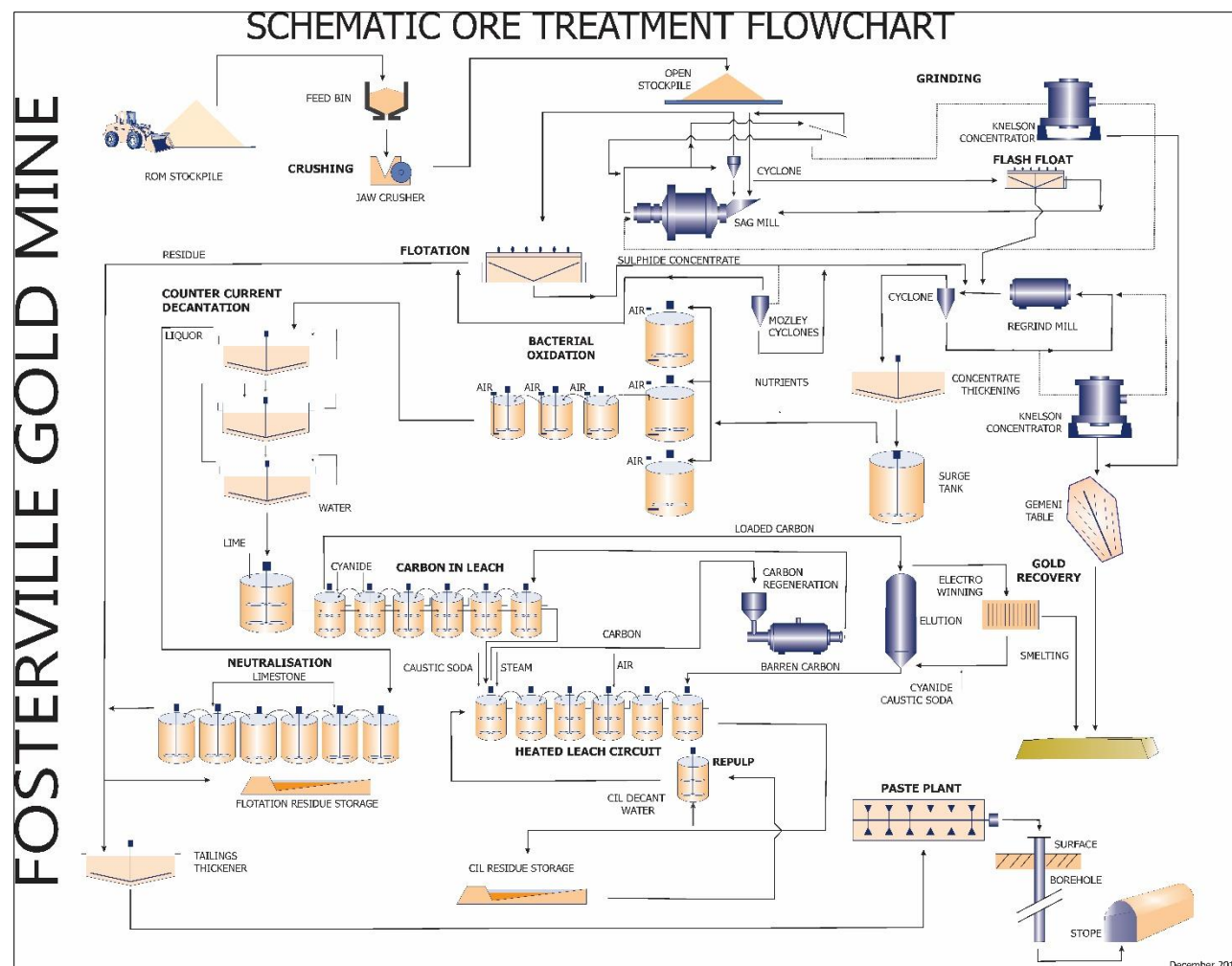


FIGURE 17-1 SCHEMATIC ORE TREATMENT FLOWCHART

17.1 CRUSHING AND MILLING

The crushing circuit has the capacity to operate 24 hours per day, 7 days/week, at the design availability of 80%.

Run of Mine (ROM) ore is reclaimed from stockpiles on the ROM pad and fed to a bin by front-end loader, blending the ore in the process. Ore is then fed to a 760mm x 1,372mm single toggle jaw crusher by a vibrating grizzly feeder and minus 90mm crushed ore is conveyed to a coarse ore open stockpile with reclaim tunnel providing feed to a SAG mill.

Dust suppression measures are installed at the ROM bin. The crusher discharge and conveyor transfer points both being fitted with dust collectors.

Crushed ore is fed at a controlled rate onto a conveyor feeding a 3,500kW SAG mill (~6.1m in diameter x 6.1m). The ore is ground to a P₈₀ of 75µm in closed circuit with hydrocyclones to liberate sulfide minerals

containing gold from the barren gangue minerals. The milling circuit is designed to operate 24 hours per day with a throughput of up to 120 dry tph.

17.2 FLOTATION

Hydrocyclone overflow from the SAG mill gravitates to the flotation circuit where the gold containing sulfide minerals are concentrated into a flotation concentrate containing about 8 - 10% of the feed mass with a barren flotation residue, which is rejected from the process.

The design basis for the flotation circuit is to maximize gold recovery to a concentrate grading approximately 20% S². The flotation circuit consists of a rougher-scavenger cleaner circuit. Rougher concentrate passes directly to final concentrate, while scavenger concentrate passes to the cleaning circuit for upgrading. Cleaner tailing is recycled to the head of the rougher circuit.

The following flotation reagents are added to the hydrocyclone overflow launder and flash flotation feed:

- Copper sulfate – as Activator;
- Potassium amyl xanthate (PAX) – as Collector; and
- Frother.

Reagent selectivity is a key aspect of the flotation circuit management, based not just on performance, but also toxicity and preg-robbing aspects to the downstream Bacterial Oxidation Circuit and the Cyanide leach circuit respectively.

Flotation residue gravitates to a tailings hopper where it is combined with the products from neutralization of the BIOX[®] liquor and the combined product is pumped to the flotation residue storage facility.

Flotation concentrate is reground to 80% passing 20µm and is thickened in a high-rate thickener prior to feeding the BIOX[®] circuit.

17.3 GRAVITY RECOVERABLE GOLD

With recent changes in the ore body showing increased occurrences of visible gold, a gravity recoverable gold circuit was constructed in Q1 2016 and commissioned in April 2016.

The gravity recoverable gold circuit is installed in the flotation concentrate regrind circuit and continuously processes 100% of the recirculating load. A Knelson concentrator is used as the primary concentrating device, with Knelson concentrate passing to a surge tank. On a day shift basis only, gravity concentrate is removed from the day surge tank and processed over a secondary concentrating Gemini GT1000 table. GT1000 concentrate is then tertiary processed over a GT250 Gemini table. All table tails are passed directly back to the regrind mill recirculating load where they pass back through the Knelson concentrator.

In August 2018 the gravity recoverable gold circuit was upgraded with an additional Knelson concentrator which processes a side stream of the SAG mill recirculating load. The SAG Knelson concentrate is processed daily over a Holman 8000 shaking table.

Final shaking table concentrate are separately calcined in an oven with oven exhaust being wet scrubbed. Calcine concentrates are direct smelted to doré bars.

17.4 OXIDATION - BIOX[®]

Due to the different design availabilities between the milling/flotation circuits and BIOX[®] circuit, and the need for steady operation of the BIOX[®] circuit, a surge tank with a live capacity of about 48 hours acts as a buffer between the circuits.

The BIOX[®] bacteria are sensitive to chloride levels in the water, and management of BIOX[®] feed dilution water quality to <1,000ppm Cl⁻ is critical for the health of the BIOX[®] circuit. Likewise, cyanide and thiocyanate species are also toxic materials to the bacteria, hence the Flotation and Neutralization waters, plus CIL decant liquors are managed separately at the Fosterville operations to eliminate any processing risks.

Nutrient solution is dosed to the feed splitter box to maintain the correct levels of nitrogen (N), potassium (K) and phosphorous (P) levels in the BIOX[®] reactors.

The BIOX[®] culture is kept active in the reactors by controlling the slurry conditions within specific ranges. The oxidation reactions are exothermic and it is necessary to constantly cool the slurry. The reactors are equipped with cooling coil baffles through which cooling water is circulated to control the slurry temperature at about 43°C in each reactor.

Oxygen requirements for sulfide oxidation are significant and medium pressure air is injected into each of the reactors.

The slurry pH in each of the reactors is controlled between 1.0 and 1.6 by addition of ground limestone. Hence the corrosive nature of the BIOX[®] slurry and the potential risk for elevated chloride levels resulted in selection of SAF 2205 stainless steel for equipment in the BIOX[®], CCD, and neutralization circuits.

The oxidized product discharged from the final secondary BIOX[®] reactor gravitates to the first of three CCD thickeners.

During bio-oxidation iron, sulfur and arsenic is solubilized and is washed from the solid oxidized gold containing residue in the series of three CCD thickeners. A three-stage CCD circuit with a wash ratio of 4.0 is used to ensure soluble arsenic and acid is reduced to levels acceptable in the oxidized concentrate prior to the CIL process. Process water is used as wash water in the CCD circuit and is added to the feed tank ahead of the third (last) CCD thickener. The underflow from the last CCD thickener (washed product) is pumped to an agitated pH adjustment tank at the head of the CIL circuit.

The acidic solution overflowing the first CCD thickener is pumped to the first of six agitated neutralization tanks in series and the solution flows from tank to tank via launders. By-pass launders allow tanks to be taken off line for cleaning and maintenance. In the neutralization circuit the majority of the sulfuric acid is neutralized and precipitated as calcium sulfate (gypsum) and the soluble arsenic and iron precipitated as stable basic ferric arsenate.

The neutralized effluent gravitates to the flotation residue hopper and is pumped with the flotation residue to the residue storage facility.

17.5 MOZLEY CYCLONES

Ahead of the BIOX[®] surge tank, the Mozley de-sliming cyclones were installed in April 2008. The Mozley cyclones are used when the feed blend to the flotation circuit is more than 0.3% NCC. The rougher and cleaner concentrate from the flotation concentrate is run through the Mozley cyclones.

The cyclone clusters come in two sets of 20 cyclones and have a typical spigot /vortex finder arrangement of 2.2/7.0mm. The cyclones are fed at a pressure of 250Kpa resulting in typical mass split of 60% to the underflow. Typical feed rate of 40-50m³/hr at 16% solids with 30-40m³/hr at 5-8% solids reporting to the overflow tailings.

17.6 LEACHING

Six adsorption tanks are identical in size at 190m³ with a total circuit residence time of about 48 hours at a 30% pulp density. Test-work indicates that the leaching of the oxidized residue plateaus at 36 to 48 hours. Underflow from the last CCD thickener is pumped to the pH adjustment tank and lime slurry is used to neutralize residual acid and raise the pH of the pulp to 11 prior to cyanide addition.

Carbon concentrations (20-30g/L) are maintained in all tanks to ensure high gold adsorption efficiency and maintain a low solution tail. The last CIL tank can be used as tails retreat feed tank.

17.7 HEATED LEACH

CIL discharge is fed to heated leach circuit, which was commissioned in April 2009. The process utilizes heat from steam injection and caustic to facilitate gold release from native carbon.

The heated leach circuit consists of six 75m³ tanks with a residence time of 8-12 hours. The first three tanks are heated while the last three tanks are cooled to avoid loss of gold in solution. The heated leach process is effective in destroying WAD cyanide to <50ppm and has replaced the former detoxification circuit.

17.8 ELUTION AND GOLD ELECTRO-WINNING

The following operations are carried out in the elution and gold room areas:

- Acid washing of carbon;
- Stripping of gold from loaded carbon using a pressure Zadra elution circuit;
- Electro-winning of gold from pregnant solution; and
- Smelting of electro-winning and gravity products.

The elution and gold room areas operate seven days a week, with the loaded carbon recovery on nightshift and the majority of the elution occurring during dayshift. The 3.5t pressure Zadra elution circuit consists of separate rubber lined acid wash and stainless steel elution columns.

Energy, water and major process reagents consumed by the processing plant are all readily available in Australia. FGM do not anticipate there to be any significant increases or decreases to the current consumption rates.

In the QP's opinion, there are no processing factors or deleterious elements that could have a significant effect on potential economic extraction at the Fosterville Mine.

18 PROJECT INFRASTRUCTURE

All project infrastructures are in place servicing mining and processing operations (Figure 18-1).

18.1 SURFACE INFRASTRUCTURE

18.1.1 PLANT

The process plant site was selected close to the western boundary of the Fosterville Mining License, as it:

- Offers easy access from the existing public road system;
- Minimizes haulage distances from mining operations, particularly, the underground portal location; and
- Minimizes the potential for noise impact on nearby residential areas to the east and south by allowing waste dumps and noise abatement bunds to be constructed to the east of the plant site.

The process plant has a nominal capacity of 830,000tpa and incorporates the following unit process operations (Figure 18-2):

- Single stage crushing with a primary jaw crusher;
- Open stockpile with reclaim tunnel;
- Semi-autogenous grinding (SAG) mill;
- A gravity gold recovery circuit;
- Flotation circuit;
- Flotation concentrate regrind mill;
- A gravity gold recovery circuit;
- De-sliming hydrocyclones;
- Bio-oxidation circuit;
- A three stage CCD circuit;
- A liquor neutralization circuit;
- A limestone grinding facility comprising a single wet ball mill operated in closed circuit with hydrocyclones;
- Carbon-in-leach (CIL) circuit;
- A heated leach circuit; and
- Pressure Zadra elution circuit and electro-winning.

The plant is laid out on either side of a central rack in order to facilitate the distribution of reagents, services and inter-area piping. Individual plant areas are separately bunded to isolate and contain spillage. Storm water and abnormal spillage events report to an existing drainage channel, to the west of the plant area, which discharges to an existing containment dam to the north.

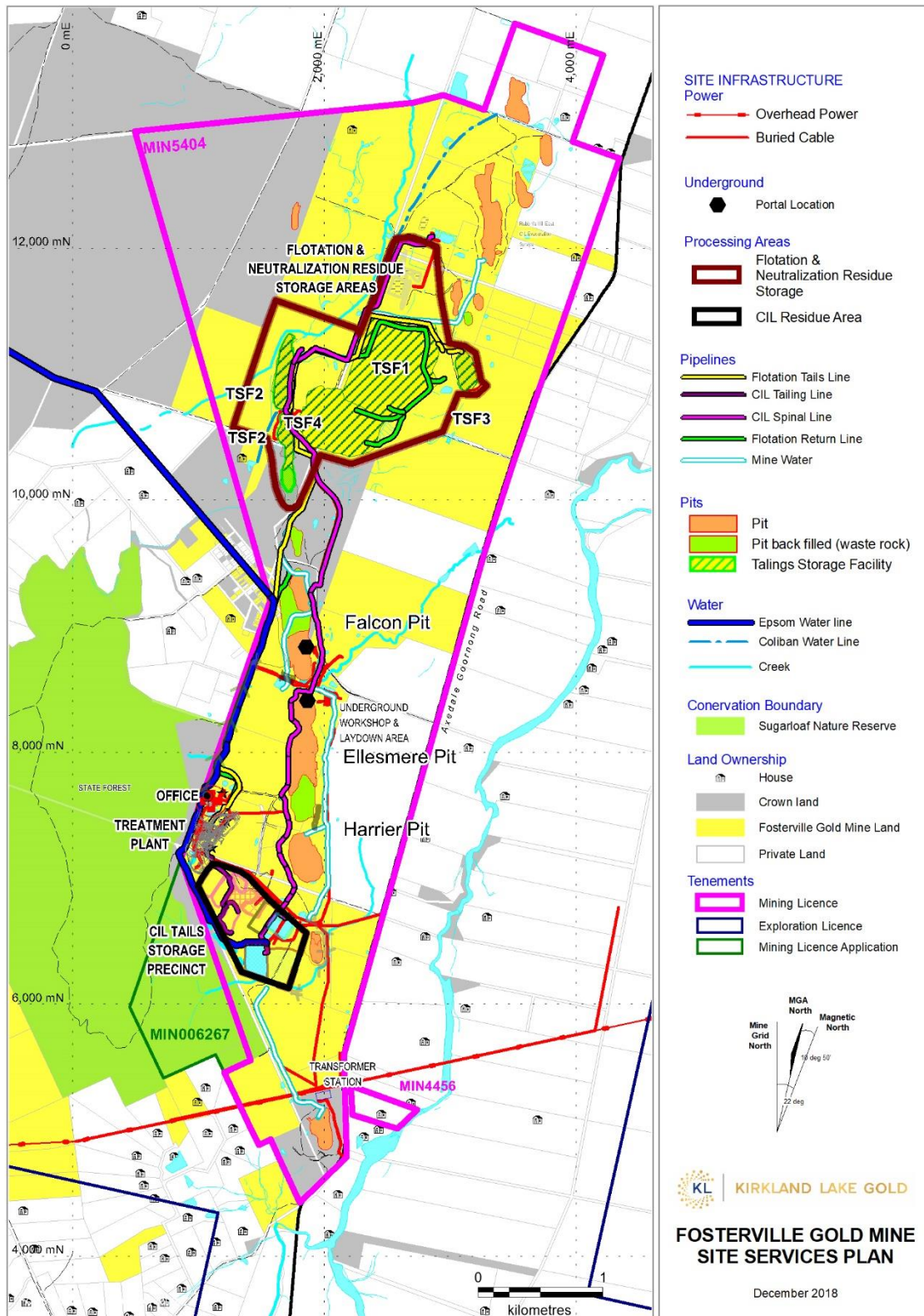


FIGURE 18-1 FOSTERVILLE GOLD MINE SITE SERVICES PLAN



Map Projection: MGA 94 Zone 55



FOSTERVILLE PROCESSING PLANT AREA PLAN

December 2018

FIGURE 18-2 FOSTERVILLE PROCESSING PLANT AREA PLAN

18.1.2 BUILDINGS

The site buildings comprise of administration, processing and mining office complexes, toilet/shower/change room facilities, store/warehouse, light vehicle and heavy vehicle workshops, a surface maintenance workshop and core shed facility.

The site is serviced by security infrastructure, phone and internet services.

18.1.3 POWER

Site power is supplied by the Fosterville Terminal Station (FVTS), which is a zone substation on the 220kV power line from Bendigo to Shepparton (BETS-SHTS). The terminal station is owned by FGM, operated by SP Ausnet and maintained by Powercor.

The terminal station has a single 15/20MVA ONAN/ONAF 220/11kV transformer.

An overhead 11kV power line runs from the FVTS to the processing plant. The power line is 2,800m long at consists of 19 poles.

At pole 9 there is an 11kV switch room, which supplies the U/G operation.

The processing plant has five 11kV/ 415V transformers and low voltage MCC's to supply and control the processing plant.

There is also an 11kV 3,500kW SAG Mill motor and three 11kV 750kW motors for the BIOX[®] Blowers.

The processing plant also has a Power Factor Correction unit.

Power consumption in the processing plant is approximately 7,000kW at a power factor of 0.98.

There are also a couple of 22kV supplies into site, which supply remote areas for site water management as well as the main administration offices.

The site also has a 2.5km long 11kV cable from the U/G settling dams to the in pit Tails MCC, which has a 750kVA 11kv/415V transformer.

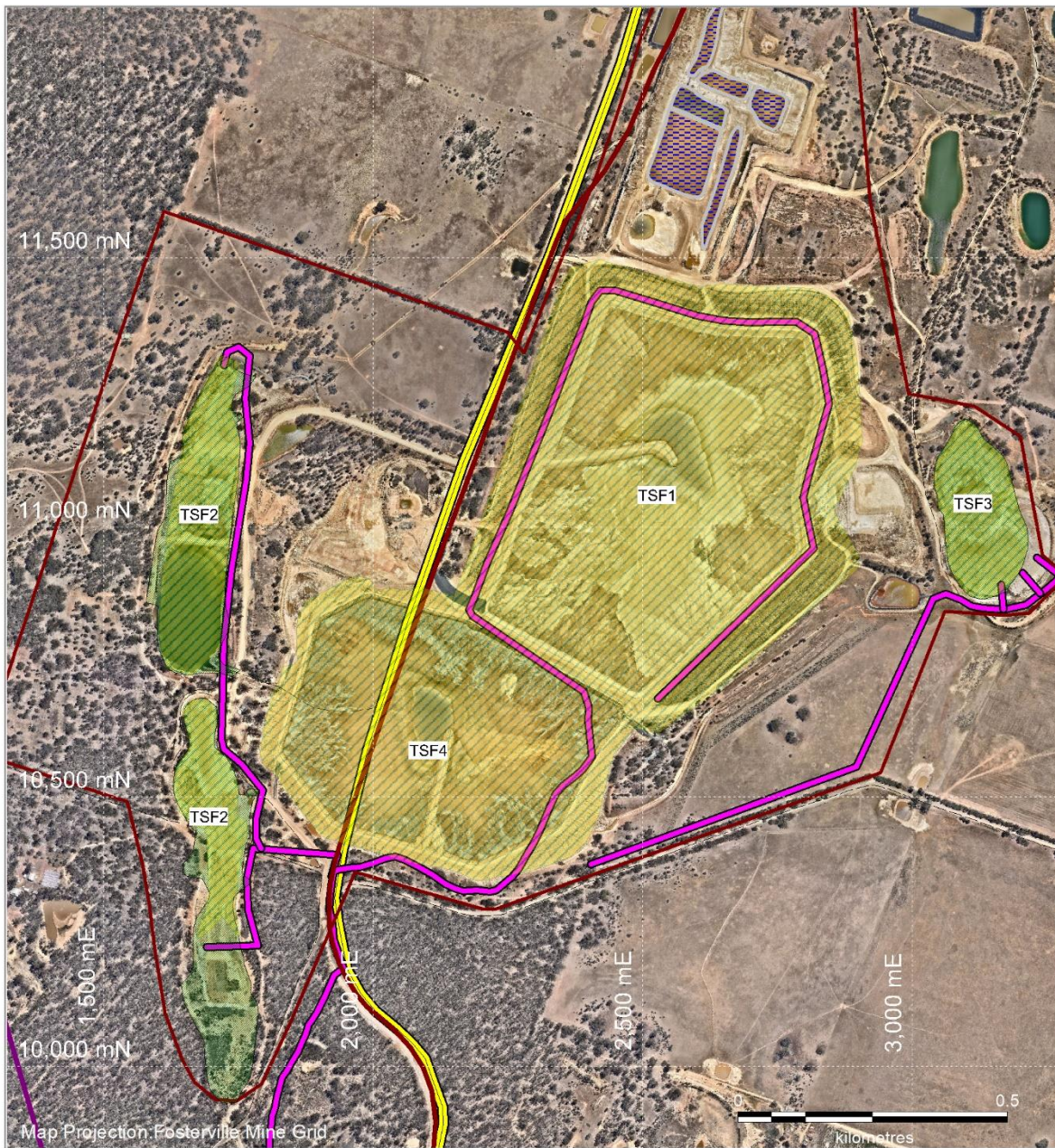
18.1.4 TAILINGS

There are two separate residue streams at Fosterville, a flotation/neutralization residue (Figure 18-3) and a cyanide bearing residue (Figure 18-4):

- The flotation / neutralization residue is a combination of flotation tails (95%) which is ground ore and neutralized liquor containing precipitated solids (5%) from the oxidation process. These tailings are either stored within an above ground paddock style Residue storage facility, or within an In-Pit facility. Fosterville operates Victoria's first In-Pit facilities, whereby through extensive hydro-geological modeling, abandoned oxide ore pits were identified as preferred storage

options. In-Pit facilities offer significantly lower capital and operating costs compared to above ground facilities, and also contribute to the overall rehabilitation of the mine site. Water from these facilities is reused back through the milling, flotation and bacterial oxidation processes. The starter embankment for TSF#4 was constructed in 2015 and has the capacity to hold two years' worth of flotation/neutralization tailings. Fosterville currently has at least four years of permitted (regulator approved) storage capacity. Therefore, Fosterville has a permitted flotation/neutralization storage plan until 2021. Planning of future flotation / neutralization storage is underway to provide adequate storage for LOM; and

- Cyanide bearing leach residue: The leaching circuit uses cyanide to extract the gold and subsequently the liquor possesses traces of cyanide species. As a consequence, the leach residue is deliberately stored separately to that of the flotation residue in a HDPE or clay lined storage facility and only utilized back within the leaching circuits. Tailings is excavated annually from one of the CIL TSF's and placed onto one of the CIL hardstands. Fosterville has at least four years of storage capacity available on existing CIL Hardstands. In 2020, Fosterville will seek regulatory approval for further CIL Hardstand upgrades.



- Legend**
- Tailings Storage Facility
 - Robbin's Hill Spinal Line
 - Tailings Return Line
 - 8 inch float Pipeline



FLOTATION AND NEUTRALIZATION RESIDUE STORAGE AREAS

December 2018

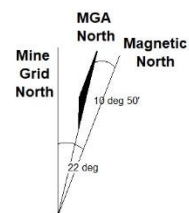


FIGURE 18-3

FOSTERVILLE FLOTATION AND NEUTRALIZATION RESIDUE STORAGE AREA PLAN

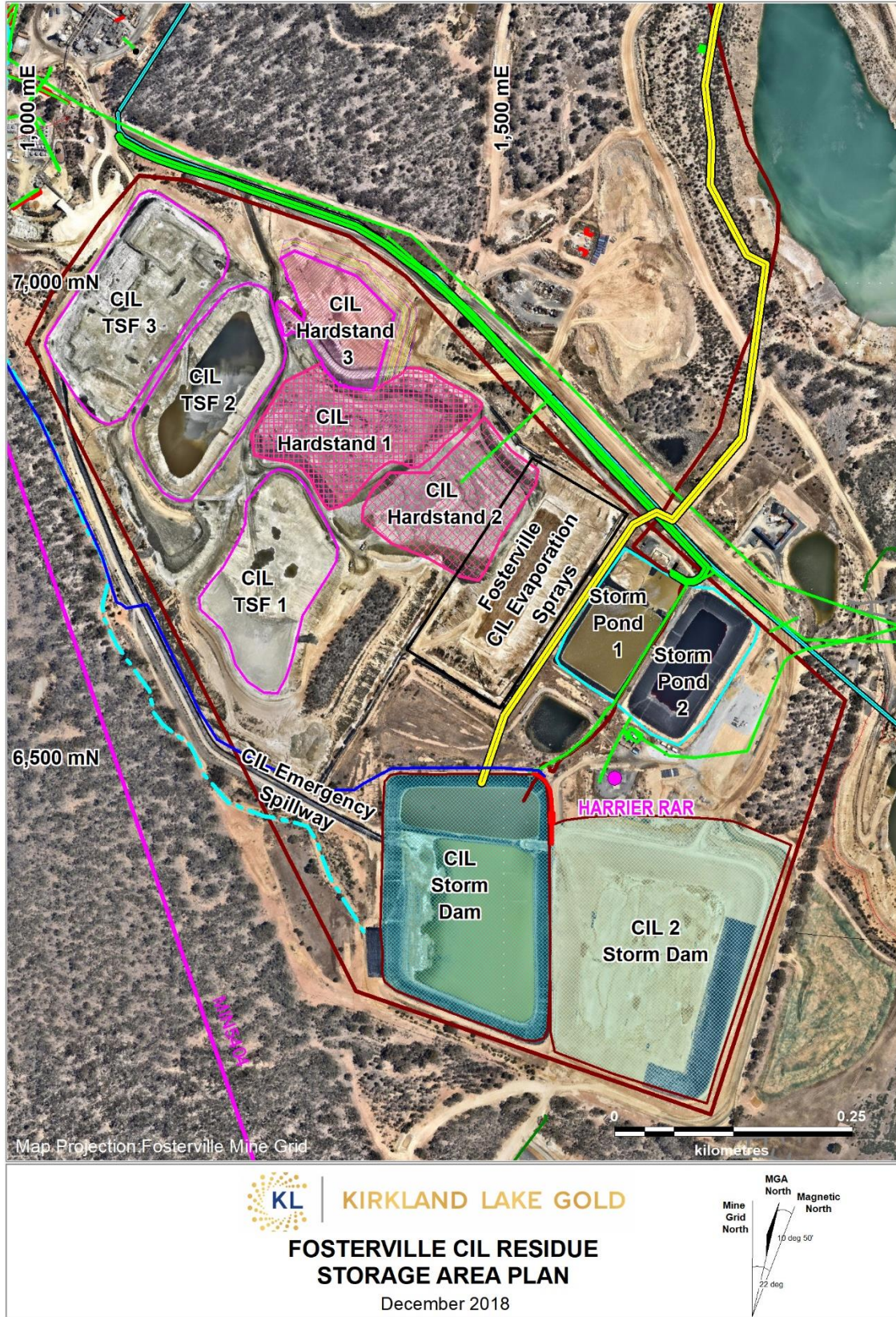


FIGURE 18-4 FOSTERVILLE CIL RESIDUE STORAGE AREA PLAN

18.2 UNDERGROUND INFRASTRUCTURE

18.2.1 POWER

Power for the underground operations is drawn from the Fosterville Terminal Station (FVTS) Transformer located adjacent to Daley's Hill. From here two 11kV overhead power lines (OHL) feed power to the site.

OHL#1 – an 11kV overhead line consisting of 19 power poles with a distance of 2,900 meters that feeds the processing plant high voltage switch room and the mine high voltage switch room (pole 9).

OHL#2 – an 11kV overhead power line consisting of 8 power poles with a distance of 810 meters that feeds power to the surface ventilation fan location and future power to the underground lower Phoenix zone.

Four 11,000 volt feeds enter the underground workings at:

- UGFDR1 - Phoenix at the 5031m RL Sub Station, via a service hole;
- UGFDR2 - Harrier at the 4775m RL Sub Station, via the Harrier vent shaft;
- UGFDR3 - Harrier 4735m RL via the new HV Cable hole; and
- UGFDR4 - Ellesmere at the 4968m RL Sub Station, via a service hole.

Power from these four locations distributes power to the following areas of the mine:

- UGFDR1 - runs from Pole 9 and is buried direct up the eastern boundary of the lease and enters the underground workings via the vent rise in the Ellesmere pit and continues to lower depth via a series of service holes and cables installed in the decline. This feeder supplies power to the Central and upper Phoenix areas of the mine,
- UGFDR2 - runs from Pole 9 and is buried direct until it enters the underground workings via the Harrier vent rise and continues to lower depth via a series of service holes and cables installed in the decline. This feeder supplies power to the Harrier and lower Phoenix areas of the mine,
- UGFDR3 - OHL #2 ends at this location. The future connection will power the surface primary ventilation fans and the lower Phoenix areas of the mine, and
- UGFDR4 – runs from the processing high voltage switch room and is buried direct until it reaches RMU-030 located above the Ellesmere underground workings. From here two cables feed the upper areas of the Ellesmere and Harrier workings and the surface mine workshop area and underground Falcon power.

From these locations low voltage (1000 volt) is reticulated to the working areas via cable and distribution boxes. Further 11,000 volt sub-stations are cascaded from the above named primary points as mine working load requires.

Existing and planned future underground power reticulation has been sized to meet the designed LOM requirements.

18.2.2 WATER

Underground mine process water requirements are provided by recycled mine water and is reticulated to the underground working areas from a tank farm on the surface. The tank farm comprises 4 x 45,000 liter tanks used for storage of mine water pumped from underground. From the surface tanks the water is distributed underground via 110mm diameter PN12 poly pipelines with water pressure reducers strategically placed along the declines to keep water pressure below the poly pipeline rating.

Dewatering of the Fosterville underground workings is conducted utilizing two pumping stations. The Phoenix/Central pump station average flow rate is 26 litres/sec and the Harrier pump station average flow rate is 14 litres/sec.

Each of these stations comprises of three by WT088 helical rotor pumps that are fed from purpose constructed feed dams.

The Phoenix/Central Area is serviced by a station situated at the 4830m RL; this station pumps directly to the surface via a 150mm diameter steel rising main line that is run through service holes and mine workings and discharges into the Falcon Pit caving area for final settlement of mine solids so that the water can then be utilized within the mine water reticulation system. The water is pumped via 2 x WT104 helical rotor type pumps (capable of 40-50 litres/sec) out from underground to the mine surface dam where it is ultimately re-cycled as feed for the underground mine process water.

The Harrier Area is serviced by a station situated at the 4775m RL; this station pumps directly to the surface via 150mm diameter steel rising main that is run through service holes, mine workings and the Harrier vent shaft and discharges to the Harrier pit.

Mine water is managed through sumps that are, where possible, connected by drain holes, otherwise pumps are used to move water to collection points where it enters staged pumps that transport water from the working areas of the mine to the pump station feed dams. Pumps used for the staged transfer of water are of the WT103 helical rotor type. Currently there are 36 of these secondary pumps. Every location is separated vertically by between 90-110 meters and comprises 2 x WT103 pumps. Each set up discharges via 2 x 110mm diameter PN16 poly pipes (first length) and then PN12 poly pipes running in the decline to the next location.

18.2.3 VENTILATION

Primary ventilation of the Fosterville underground workings is achieved utilizing three return air systems; fresh air is drawn into the mine workings via the Falcon, Ellesmere portals and also via a fresh air intake system that terminates at the 4305m RL, a total of 370m³/s is delivered to the underground workings.

Central/Phoenix

- Uses a shared system that exhausts through the Harrier ventilation shaft.
 - 1 x Howden 1500/2400 axial fan situated within the Harrier workings draws air through a series of rises and horizontal development that at present terminate at the Phoenix 4010m RL.
 - 5 x 180kW Clemcorp fans are situated underground at the Phoenix 4080m RL and draw air through a series of rises and horizontal development that at present terminate at the 4010m RL. These fans work in series with the main Howden 1500/2400 axial primary fan.

Falcon

- 1 x FlaktWoods TR-1400-GV-4P fan situated underground at the Phoenix 5071m RL draws air through a series of rises and horizontal development to maintain flow through the underground magazines and Falcon underground settlement dam. Exhaust is via a rise to the Falcon pit.

Harrier

- 3 x 180kW Clemcorp fans are situated underground and draw air through a series of rises and horizontal development that at present terminate at the 4350m RL. Exhaust to the surface is via the Harrier ventilation shaft.

Secondary ventilation of the mine working areas is achieved using electric fans and flexible ducting to redirect fresh air into areas where flow through ventilation does not exist, before it exhausts to the return air systems and exits the mine. Fans are sized according to air-flow requirements and range in size from 22-180 kW.

An underground 2100kW refrigeration plant is located at the Phoenix 4200 RAW to service three 450kW(R) and three 300kW(R) air handler units (AHU). One x 450 kW(R) and one x 300 kW(R) AHU service the Phoenix Decline fans as the RAW location advances. The remainder of the AHU's service the production and development areas from the Phoenix 4160m RL level down.

18.2.4 DUMPS

Waste material that cannot be placed underground is brought to the surface and dumped within the confines of the Ellesmere pit. As the available volume for waste material within the Ellesmere pit moves towards exhaustion, waste material placement processes will be modified to exploit void available within alternative pit envelopes.

19 MARKET STUDIES AND CONTRACTS

19.1 MARKETS

Fosterville produces gold doré bars at mine site, which during the period January 1 to December 31, 2018 were transported to the ABC Refinery in Marrickville, NSW, Australia and refined to produce gold bullion. The gold bullion is sold over the counter through ABC Refinery directly.

Gold is the principal commodity at Fosterville and is freely traded, at prices that are widely known, so that prospects of any production are virtually assured. Prices are quoted in US dollars per ounce.

To determine the Australian denominated gold price to use in the Mineral Resource and Mineral Reserve calculations, reference was made to publicly available price forecasts by industry analysts for both the gold price in US dollar terms and the A\$/US\$ foreign exchange rate.

This exercise was completed in 2018, and yielded the following average gold forecast prices and corresponding average forecast A\$/US\$ FX rates;

For Mineral Reserve purposes, a US\$1,230 per ounce gold price was used and an FX rate of 1.39 for an approximate Australian dollar gold price of A\$1,710 per ounce.

19.2 CONTRACTS

Fosterville is subject to a license fee following a License agreement entered into with Biomin South Africa Pty Limited (Biomin) (formally known as Minsaco) in 2003. Biomin has a License from the proprietor to implement a process known as the BIOX® process in Australia whereby micro-organisms are used in the oxidation of certain gold bearing sulfidic minerals in order to facilitate gold recovery. Fosterville agreed to pay a license fee to Biomin. The license fee was payable from the date of commencement of operations and shall terminate when 1,500koz of gold in the aggregate has been produced from FGM treated at the BIOX® plant. License costs are integrated into the operating expenditure cost structure. At the end of 2018 there was only 27,664oz remaining on the royalty agreement. In 2017 Biomin South Africa Pty Ltd, changed its name to Outotec Biomin Pty Ltd.

Fosterville is an owner/operator business with mining, processing, technical and administration functions undertaken by personnel employed by Kirkland Lake Gold. Supplementary support to the operation is sourced through various service contracts. The most significant service contracts include:

- E.B. Mawson & Sons Pty Ltd – providing services and supply of concrete products;
- Macmahon Underground Pty Ltd – providing underground drilling services;
- Hoare Bros. Pty Ltd – providing surface haulage services; and
- Swick Mining Services (SMS) Operations Pty Ltd – providing underground diamond drilling
- Deepcore Australia Pty Ltd – providing surface diamond drilling services.

The terms and rates of these contracts are within industry norms. The Authors are not aware of any other agreements that are not within normal market parameters.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 ENVIRONMENTAL STUDIES AND RELATED ISSUES

Environmental studies conducted at FGM related to environmental issues are outlined below:

20.1.1 PASTE PLANT

Paste Fill is the use of mine tailings or imported aggregate material to backfill excavated zones created by underground mining operations. The backfill material is prepared on the surface in a dedicated Paste Plant facility. Thickened mine tailings are mixed with a binder, usually cement, and then pumped underground via bores to fill voids and help support the underground workings.

The current practice at Fosterville is to utilize cemented rock fill (CRF) to fill these mine voids. Cemented Rock Fill differs from Paste Fill through the use of waste rock mixed with a cement slurry delivered by concrete agitator trucks from a surface batch plant. This material is prepared in dedicated mix bays underground, and tipped directly into the stope.

In preliminary feasibility studies (Outotec, 2017) Fosterville Gold Mine identified Paste Fill technology as the preferred option to environmentally and efficiently improve underground stope stability and mining practices. The identification of the project need centers on the mine sites continuous improvement practices.

In summary:

- Paste Fill allows better confinement than the CRF;
- Improved safety is experienced through tighter and more rapid filling of voids;
- CRF is not suitable for flatter ore bodies, such as Lower Phoenix, and may present a barrier to future mining of similar ore body structures at Fosterville; and
- Paste Fill also minimizes the foot print of surface tailings facilities, and is considered a leading best practice within the mining industry.

The paste plant project is currently going through the final approval stage with construction having started. It is anticipated that the plant will be fully approved and operating by late Q3 2019.

20.1.2 WATER TREATMENT PLANT

Fosterville Gold Mine produces an excess of mine water from the dewatering of underground operations. Regulatory approval has been gained to treat excess mine water using a water treatment plant, which contains a Reverse Osmosis (RO) plant and a precipitation and ion exchange plant. Reverse Osmosis technology is a common solution for water treatment, readily available and understood. A by-product of the process is the generation of a concentrated saline solution called brine. The brine produced will be stored in a new evaporation pond, which will be able to withstand seasonal rainfalls without discharge.

Construction of the mine water treatment plant commenced during 2018 and commissioning is scheduled for Q1 2019.

Treated mine water will be used within the process circuit, reducing the amount of recycled water, which is delivered via pipeline from the Epsom Wastewater Treatment Plant. This will also assist in reducing the volume of water pumped into mine water storage, therefore improving the water management on site.

20.1.3 ENVIRONMENTAL NOISE ASSESSMENTS AND MITIGATION

Fosterville Gold Mine's operations generate noise from a variety of sources that have the potential to impact off site receptors. Noise-generating activities include, but are not limited to, heavy vehicle movements, ore processing, operation of fixed plant and ancillary infrastructure, surface and underground blasting, and exploration activities. Noise levels at sensitive receptors vary depending on a range of factors, such as the location and elevation of the receptor, any intervening topography or noise attenuation barriers, climatic conditions, the presence of other non-mine extraneous noise sources and the effectiveness of any additional noise attenuation controls installed by FGM.

During 2018 the following noise related projects have been investigated and/or implemented:

- A targeted mine noise investigation study was completed using continuous unattended noise loggers at two on site and four off site locations. This report built on previous mine noise investigations completed in 2017. The report found that mine-related noise from the processing plant was not likely to cause exceedances at sensitive receptors, however intermittent noise from the Ellesmere Pit saddle could pose a risk to compliance. Fosterville will continue to investigate additional noise mitigation measures.
- Shipping container noise attenuation walls have been used at various project drilling sites to the south of the MIN5404 mining lease area. Attended noise monitoring indicates these sound attenuation walls are extremely effective, and have reduced noise by up to 22dB at locations approximately 10m from the wall.
- Monitoring indicated that the ore stockpile fan was operating at an elevated noise level. In 2018, a silencer for these fans was installed which resulted in a decrease in noise emissions from the fan of up to 5dB.
- The primary crusher was assessed by an acoustic engineer/specialist for potential noise attenuation controls. A structure to support the installation of noise attenuation curtains was designed and installation commenced in Q1 2019.
- A hay bale noise attenuation wall was installed around a compressor to the south of site to help mitigate noise emissions. Noise monitoring confirmed this control was effective, with noise from the compressor reducing by approximately 40dB immediately behind the hay bales.
- New agitators for the BIOX cells in the processing plant have been procured and will be installed progressively throughout 2019. The newly designed agitators are expected to reduce noise levels and improve operational efficiency. Preliminary noise monitoring results indicate a potential noise reduce of up to 5dB at each agitator.

20.1.4 STORM WATER MANAGEMENT

During 2018, FGM completed works on the northern diversion drain to improve flow and reduce erosion by straightening the channel, adding riprap to the corners and applying an erosion suppressant and hydro seed mix.

Storm water dams have been maintained with the ability to contain mine affected runoff from a 1:100 year rainfall event with improved pumping capacity, dam size and diversion of upstream catchment. The operational management plan for storm water management of the catchment continues to be implemented.

20.1.5 BIOSOLIDS TRIAL

During 2018, Fosterville Gold Mine in collaboration with Coliban Water progressed a field trial to assess the viability of using biosolids as a medium for improving soil structure and quality as part of the overall rehabilitation for the site.

Biosolids are a solid product from the sewage treatment processes, which have been treated to make them safe for further use. The Biosolids fertilizer has previously been incorporated into a number of soil plots and planted with native species.

The trial was located on a historical in-pit tailings storage facility (TSF2), which was capped with oxide material. The trial commenced in early 2018 with physical earthworks taking place to install surface water drainage infrastructure. Biosolids were delivered in May 2018, with spreading, incorporation and seeding taking place soon after.

In accordance with the EPA approved Environmental Improvement Plan, the site is assessed on a quarterly basis to monitor groundcover, species diversity and health rating. Monitoring to-date confirms germination rates across the site have exceeded expectations, given the poor quality of the soil profile prior to sowing and the unfavorable climatic conditions. The incorporation of biosolids has increased species diversity and revegetation success. FGM will maintain quarterly monitoring during 2019 to assess the success of the biosolids trial.

20.1.6 DUST MONITORING AND CONTROLS

During 2017, an additional High Volume Air Sampler was installed to the south of the mine site, to enable monitoring of ambient air quality upwind and downwind of site, depending on the wind direction.

In October 2018, FGM installed a continuous ambient air quality monitoring station in proximity to the northern High Volume Air Sampler (HVAS1) to further investigate the PM10 and PM2.5 high volume data. This station is portable and therefore can be used in a variety of locations to provide real time information on air quality around site.

Fosterville Gold Mine continued to implement and investigate improved dust mitigation measures for site. In addition to the use of water carts for dust suppression, a chemical dust suppressant (Vital Bon-Matt

Stonewall) was applied to various areas on site, including the CIL tailings precinct. The binding agent provides a semi-permanent and rain resistant crust to mitigate dust generation from disturbed areas.

A hydro-seeding and dust suppressant mix (VE Gro-Matt) was also applied to 8,200m² of the RSF1 embankment wall, 20,000m² of a topsoil stockpile and 3,000m² of the northern diversion drain. The hydro-seeding mix contains a binding agent with the addition of mulch and seed to promote plant growth and further reduce dust generation.

20.2 WASTE AND TAILINGS DISPOSAL, SITE MONITORING AND WATER MANAGEMENT

20.2.1 REQUIREMENTS

Requirements for residue storage sites are provided in the following documents:

- Section 4.5 of the 2004 Work Plan;
- Work Plan Variation, Additional Portal Access Points (three in total), additional CIL storage facilities (including on the Fosterville Heap Leach Pad) and the construction of a reload facility (February 22, 2005);
- Work Plan Variation, CIL Tails Storage and Decant Water Management (July 1, 2008);
- Work Plan Variation CIL Residue Hardstand Area (October 23, 2009);
- Work Plan Variation, In-Pit Residue Disposal Facility (November 2009);
- Work Plan Variation, CIL Residue Hardstand #2 Area (March 2012);
- Work Plan Variation, In-Pit Residue Disposal Facility – TSF3 O’Dwyer’s South Pit (November 2012);
- Work Plan Variation, Raising of existing embankment of TSF1 (December 2013);
- Work Plan Variation, Additional Residue Storage Facility – TSF4 (September 2014); and
- Work Plan Variation, CIL Residue Hardstand #3 Area (April 2018).

20.2.1.1 FLOTATION AND NEUTRALIZATION TAILS

Flotation and neutralization tails have been stored in the following facilities:

- TSF1;
- Hunts and Fosterville In-Pit Facilities;
- O’Dwyer’s South In-Pit Facility; and
- TSF4

During 2018, FGM has been depositing flotation and neutralization tails into TSF1, Hunts In-Pit Facility, O’Dwyer’s South In-Pit Facility and TSF4.

The Fosterville In-Pit Facility has been filled and capped. Capping performance is being monitored by the amount of rainfall infiltration through the cap, and is measured by two lysimeters installed within the cover profile.

20.2.1.2 CIL TAILINGS

All CIL tailings have been stored in plastic lined facilities within and adjacent to the old Fosterville Heap leach pads. The Fosterville CIL tailings precinct includes the following facilities:

- CIL TSF1, CILTSF2 and CILTSF3;
- CIL Hardstand 1 and 2
- CIL Storm Pond 1 and 2
- CIL Storm Dam 1

Construction of CIL Hardstand 3 commenced in 2018, following work plan approval. Operation of this facility is planned to commence in 2019.

20.2.1.3 OVERBURDEN WASTE

The deposition/distribution of overburden waste throughout the Fosterville site is outlined in Table 20-1.

20.2.1.4 POTENTIALLY ACID FORMING MATERIALS

Potentially acid forming (PAF) materials excavated from open pits have been stored in:

- McCormick’s Waste Dump;
- Johns Pit (taken from Johns Pit and Harrier Pit); and
- Flotation and Neutralization Tailings.

A Waste Rock Management Plan was developed in 2014, which indicated that FGM’s waste rock was non-acid-forming and contained a significant inherent Acid Neutralizing Capacity that was available to offset any isolated acid formation. Kinetic column leach testing of the main waste rock lithologies is continuing to further understand the long term leaching characteristics of the main waste rock sources. Additional ongoing characterization has begun, with weekly waste rock samples being collected from the Ellesmere tip head for testing of chemical composition and acid-forming potential.

TABLE 20-1 OVERBURDEN USE AT FOSTERVILLE GOLD MINE

Overburden Source	Use
Falcon Pit	Construction of TSF1 (internal rock armouring of walls) Construction of the ROM pad Construction of haul roads Backfill into Vanessa’s North Pit and at the southern end of Fosterville Pit (the remainder is flotation tailings) Construction of McCormick’s Waste Dump (majority)
Ellesmere Pit	Sound bunds on the eastern side of Ellesmere (possibly Harrier sound bund as well) McCormick’s Waste Dump Falcon Backfill

Overburden Source	Use
Johns Pit	Backfilling Harrington Hill South Open Pit ¹ Backfilling into Harrier Open Pit (western side) Use for repairing the CIL Storm Dam wall Abandonment bund walls for Johns Pit South end of Ellesmere
O'Dwyer's South Open Pit	To be used as backfill into the northern end of the Pit To be placed into the existing O'Dwyer's South Waste Dump
Harrier	Backfilling into Ellesmere Pit south to north Construction of internal ramps in Harrier Pit Sound walls to the east of Harrier Pit To be used for rock fill for CIL #3
Hunts	TSF1 ² main embankment TSF4 embankments Fosterville In Pit Tailings capping material Building Hunts Pit Waste Dump
Fosterville	Hunts Waste Dump
Underground	Backfilled into underground workings Used as base in the Ellesmere Saddle

Notes:

1. Sediment from Fosterville Storm Dam was also transferred into Harrington Hill South Pit.
2. TSF1 was also constructed using heap leach material from Robbin's Hill.

20.2.2 SITE MONITORING AND WATER MANAGEMENT

20.2.2.1 WATER MANAGEMENT

The Fosterville annual water monitoring plan is designed to monitor the impacts of mining activities on surface and groundwater quality and quantity in the regional and local aquifer systems. Water samples are collected on monthly, quarterly or an annual basis in accordance with the Consolidated Work Plan (2017) and the annual water monitoring schedule, which is reviewed annually.

Groundwater levels in monitoring bores are also recorded on a monthly basis.

20.2.2.2 NOISE MONITORING

Attended noise monitoring is undertaken in accordance with the Consolidated Work Plan (2017) and includes periodic day, evening and night measurements at nine representative locations surrounding the mine. Noise results are assessed against EPA criteria and any mine related exceedances are reported to the Regulators.

20.2.2.3 AIR QUALITY

Dust deposition rates are monitored on a monthly basis at 11 locations around the FGM's site. The quantity of material deposited is analyzed for total insoluble material (g/m²/month), which comprises

non-combustible material (ash) and combustible material. Ash content provides an indication of the mineral content of a sample. The mineral content may be attributable to mining, but may also be attributable to other sources such as agriculture, unsealed roads etc. The combustible material will not be attributable to mining as this is mostly organic matter.

Two High Volume Air Samplers (HVAS) are installed to the north and south of the site, which measure the particulate matter in the air less than 10 and 2.5 microns ($\mu\text{g}/\text{m}^3$). The two High Volume Air Samplers are positioned upwind and downwind of site, depending on the prevailing wind direction, in accordance with the recommendation of air quality specialist consultants.

A portable continuous Ambient Air Quality Monitoring Station has been installed in proximity to the northern High Volume Air Sampler (HVAS1). This monitor provides continuous air quality data and allows a comparison of results with High Volume Air Samplers. The continuous Ambient Air Quality Monitoring Station provides real-time readings via telemetry of TSP (Total Suspended Particles) and particulate loading in the air less than 10, 2.5 and 1 microns ($\mu\text{g}/\text{m}^3$).

Fosterville Gold Mine's primary ventilation exhaust point, the Harrier Vent Shaft, is monitored for emissions testing annually.

Greenhouse gases and other emissions are also evaluated and reported under the National Greenhouse and Energy Reporting and National Pollutant Inventory regulatory programs on an annual basis.

20.2.2.4 CIL AND MINE WATER EVAPORATION SPRAY MONITORING PROGRAMS

Evaporation sprays have been established in the Robbins Hill, Falcon Pit, and Fosterville precincts to reduce excess mine-affected water that cannot be re-used in the Processing Plant. Environmental monitoring is conducted in the Robbins Hill and Fosterville CIL evaporation facilities as per the CIL Management Plan. Monitoring is conducted at the Falcon Pit mine water evaporation facility in accordance with the approved Work Plan Variation.

Vegetation assessments, soil sampling and spray drift monitoring is carried out routinely to determine if the operation of the sprays is having any adverse impact on the surrounding environment.

The Robbins Hill and Fosterville evaporation sprays are controlled by telemetry, with established triggers for wind speed, wind gusts and humidity, which control the operation of the sprays during specific environmental conditions.

20.2.2.5 REHABILITATION MONITORING

As part of the Rehabilitation Management Plan, Fosterville undertakes progressive rehabilitation of areas affected by the operations, taking into consideration the future land use. Progressive rehabilitation includes stabilization earthworks, drainage enhancement and control works, re-vegetation, weed and pest animal control and continual monitoring.

Bi-annual monitoring of the revegetation works associated with the McCormick's Waste Dump site and the O'Dwyer's South Pit remnant patch is conducted by an independent consultant. Landscape Function Analysis (LFA) monitoring is undertaken annually by the FGM Environment Department and an independent consultant. LFA uses visible indicators of plants, litter and soil surface condition to gauge how effectively a landscape is infiltrating water, cycling nutrients and keeping the soil stable, healthy and productive.

20.2.2.6 VIBRATION MONITORING

Vibration from FGM's underground blasting is monitored by continuous surface vibration monitors installed at four sensitive receptor locations outside the MIN5404 mining lease area. The monitor's measure peak particle velocity in mm/s. Vibration results are delivered daily and compared against the blasting criteria stipulated in FGM's MIN5404 license conditions.

20.3 PROJECT PERMITTING REQUIREMENTS

Fosterville currently operates under the Mining License MIN5404. The license was renewed in October 2018 and now has an expiry date in August 2035. A submission for a variation to extend the MIN5404 boundary occurred in October 2018.

A mining lease application MIN006267, which is adjacent to the south-western border of MIN5404, was submitted for approval in 2016. The Company and the Dja Dja Wurrung Clans Corporation are currently in negotiation regarding the Native Title Agreement.

A Work Plan was approved for the project in February 2, 2004. There have been a number of Work Plan Variations that have been prepared for the project which form addendums to the 2004 Work Plan. An amendment to the MRSD Act in 2015 introduced the requirement for holders of a mining license to lodge a risk based work plan prior to any further work plan variation approvals. FGM lodged a consolidated risk based work plan in April 2017 and approval was obtained in October 2017.

Approval was granted in April 2018 for the ventilation upgrade, CIL Hardstand #3 and power upgrade works. Each project commenced construction in 2018. A work plan variation was submitted to the regulator for the construction of a paste plant in June 2018. The work plan variation is yet to be approved.

There are a number of requirements relating to rehabilitation and closure both in the Mining License conditions and the Consolidated Work Plan (2017) Plan. All rehabilitation and closure requirements have been incorporated into the site Rehabilitation Management Plan.

20.4 SOCIAL OR COMMUNITY RELATED REQUIREMENTS AND PLANS

Community engagement and consultation on all aspects of the operation continues as an integral part of FGM's business model. There are a range of forums and consultation methods undertaken, including quarterly Environmental Review Committee meetings, an annual Open Day, newsletters, information updates, letters and an active Facebook Page. Project and/or activity-specific public meetings are also held, where future activities and plans are communicated to community. FGM considers the feedback from these sessions during planning and execution of future projects.

Fosterville Gold Mine has a Community Engagement Plan and prepares an annual Sustainability Report that is made available to all members of the community and is uploaded to the Kirkland Lake Gold website.

Throughout 2018, FGM held five open town hall meetings in the towns of Axedale and Goornong, located north and south of the operation. The meetings provided the community with information on FGM's operational activities within MIN5404 and the exploration programs occurring within FGM's exploration leases.

20.5 MINE CLOSURE (REMEDIATION AND RECLAMATION) REQUIREMENTS AND COSTS

The Rehabilitation Bond Liability was assessed in November 2017 by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) and is proposed to be increased from \$7,835,000 to \$8,274,000. Consultation with the community by the regulator was being conducted throughout December 2017 and January 2018 prior to final formal acceptance of the review. The final acceptance has not been received to date.

All closure requirements are included in the FGM Rehabilitation Management Plan.

Key operational domains for reclamation works include:

- Northern Site Facilities;
- Southern Site Facilities;
- Sulfide Infrastructure;
- Sulfide Open Pits;
- Adits and Shafts;
- Main Overburden Heap;
- Tailings Storage Facility;
- CIL Dams;
- Heap Leach Pads; and
- Oxide Open Pits.

After an investigation into the potential realization estimates of the FGM assets, including the processing plant, ancillary equipment, non-fixed assets and the mining mobile fleet, the Company considers the current processing plant as a valuable asset that will be able to be successfully sold as an entire operation unit and removed down to the foundations on a cash positive basis. The demolition of the plant is therefore an integral cost within the Rehabilitation Bond Liability at this time.

In addition to disposal of the plant, key closure activities for FGM include:

- Decommissioning and rehabilitation of the heap leach facilities, associated dams and infrastructure;
- Decommissioning and rehabilitation of the tailings facilities (including TSF1 and the in-pit storages);
- Decommissioning and rehabilitation of the CIL tails facilities and associated dams;
- Rehabilitation of old open pits; and
- Revegetation of all remaining disturbed areas.

21 CAPITAL AND OPERATING COSTS

21.1 CAPITAL AND OPERATING ESTIMATES

The capital and operating costs for FGM are presented below in Table 21-1 and Table 21-2 .

The estimates are based on the 2019 budget, first principle basis modelling, historical costs or budgetary quotations from suppliers in the industry. All costs shown are in Australian Dollars unless otherwise stated.

21.1.1 CAPITAL COSTS

Sustaining Capital is defined as capital required to maintain current operations at existing levels and includes plant and equipment and some mine development including declines and level access.

Growth Capital is defined as capital expenditures for major growth projects or enhancement capital for significant infrastructure improvements at existing operations and includes such things as water treatment plants, major electrical yard upgrades and paste plants.

Sustaining Capital expenditure over the period 2020-2021 is maintained at levels similar to 2019 with the intention to maintain two main declines/production fronts (Lower Phoenix South and Harrier South). This reflects the development required (decline, level accesses, ventilation raises) to access the subsequent year of production, plant and equipment and required resource definition drilling. The quantities of development used to estimate this cost are derived from 3D computer modelling and design. The sustaining capital cost estimate declines in 2022 as Mineral Reserves are depleted.

Growth Capital expenditure declines from 2019 – 2021 as major projects are completed. Growth Capital major projects include a Mine Water Treatment Plant - \$2M, Ventilation Upgrade - \$16M, Paste Fill Plant - \$26M, Refinery Upgrade - \$7M, Transformer Upgrade - \$8M, Thiocyanate Removal Plant - \$8M Surface Chiller Plant - \$8M and Drill Drive Development - \$6M.

TABLE 21-I LOM CAPITAL COST ESTIMATES FROM THE DECEMBER 2018 LOM PLAN

Capital Costs (000's)	LOM
Sustaining	\$408,000
Growth	\$108,000
Total	\$516,000

21.1.2 OPERATING COSTS

Mine operating expenditures include direct and indirect operating costs related to the Fosterville Mine. Allocated mining costs include mining operations, mine maintenance, mine technical and geology. General and administrative costs include OH&S, Administration, Environmental, Community and shared services.

Royalties are calculated at 2% of total revenue from total gold produced throughout the LOM.

Operating Mine costs and Mill costs are maintained at a consistent unit rate (per tonne) as per the 2019 FGM Budget throughout the LOM plan. These rates are not expected to vary greatly due to relatively stable production schedules, known/proven mining methods and incremental productivity improvements offsetting gradually increasing depth profiles. Administration cost estimates are consistent throughout the LOM plan.

Annual LOM operating costs per tonne for Fosterville are estimated to range from A\$264 per tonne to A\$287 per tonne, averaging A\$274 per tonne over the LOM. Annual LOM operating costs per ounce for Fosterville are estimated to range from A\$221 per ounce to A\$465 per ounce, averaging A\$283 per ounce over the LOM. Using an US\$ to A\$ exchange rate of 1.39, operating costs per ounce range from US\$159 to US\$335 per ounce and average US\$204 per ounce over the LOM.

TABLE 21-2 LOM OPERATING COST ESTIMATES FROM THE DECEMBER 2018 LOM PLAN

Operating Costs (000's)	LOM
Operating Expenditure	\$658,000
Mine	\$361,000
Mill	\$177,000
Administration	\$120,000
Royalties	\$89,100

22 ECONOMIC ANALYSIS

As per Item 22: Economic Analysis, Instruction 1, item 22 has been excluded on the basis that the property is currently in production and there are no plans for material expansion of current production.

23 ADJACENT PROPERTIES

As shown in Figure 4-2, the Fosterville Mining License (MIN5404) is completely enveloped by Exploration Licenses held by Kirkland Lake Gold (through Fosterville Gold Mine Pty Ltd). Within FGM held ELs sulfide-hosted gold mineralization has been identified in the Goornong area (5km to the north of MIN5404) and the Hallanan's area (2km to the south), as discussed in Van Riel (1999). However, the exploration of these prospects is only at an early stage.

No other sulfide hosted gold operations are in production in the Fosterville district. However, sulfide hosted gold mineralization does occur in the Lockington area (Boucher et al, 2008b; Arne et al, 2009), 50km north of Fosterville where eight mineralized trends have been mapped beneath thick cover using Aircore drilling. This information is not able to be verified by a Qualified Person (QP) and is not indicative of the mineralization that is the subject of this technical report.

24 OTHER RELEVANT DATA AND INFORMATION

No other relevant information is required to make the technical report understandable and not misleading.

25 INTERPRETATION AND CONCLUSIONS

The Authors have made the following interpretations and conclusions:

- The understanding of the fundamental geological controls on mineralization at Fosterville is high. Primary mineralization is structurally controlled with high-grade zones localized by the geometric relationship between bedding and faults. This predictive model has led to considerable exploration success in following the down-plunge extensions of high-grade mineralization.
 - The Lower Phoenix (Benu) Fault is a major west-dipping structure in the active mine development area and is defined by reverse faulting on a shale package where anticline thrust displacement of ~80m occurs. The fault dips 35-55° to the west and mineralization can be traced along an approximate dip extent of 190m and strike extent of 1.9km. The dominant mineralization style on this structure is gold bearing disseminated sulfide; however, occurrences of visible gold in quartz veins at depth have become increasingly more common and concentrated where footwall structures intersect one another. The Lower Phoenix System currently remains open to the north and south so maximum plunge extent has not yet been defined;
- Throughout the period from 2016 to 2018, development mapping and continued drilling confirmed that there were multiple mineralized structures of various size and continuity footwall to the main west-dipping Lower Phoenix (Benu) Fault, which present significant resource growth potential. Improved geological understanding of the Phoenix and Lower Phoenix footwall environs has highlighted the significance of these favorable settings for mineralization, including;
 - East-dipping mineralized structures, namely the Eagle Fault and East Dipping Faults, which commonly contain quartz–stibnite vein assemblages and substantial concentrations of visible gold which are typically enveloped by halos of disseminated sulfide. The Eagle Fault is discordant to bedding and variably dips between 10 and 60° to the east and transforms further to the south to strike in an ENE direction, dipping ~45° to the SSE. Mineralization on the Eagle Zone extends over a ~1km strike extent and is untested and open at depth below the 3805mRL and south of 6125mN. East Dipping Faults are typically bedding parallel to sub parallel with dips of ~70° east to sub-vertical. East Dipping structures are expansive along the strike extent of the Lower Phoenix system with highest intensity mineralization observed proximal to anticlinal hinge zones; and
 - Low-angled Lower Phoenix Footwall west-dipping structures typically consist of large laminated quartz veins up to several meters width, indicating a series of multiple mineralizing events, including a later stage quartz-stibnite phase of mineralization with visible gold. The faults are interpreted to only have a small amount of offset. Where these structures form linkages between the Lower Phoenix (Benu) and East Dipping Faults, extremely high-gold grades occur.
- During 2016 drilling extending footwall to the Lower Phoenix (Benu) Fault discovered the southwest-dipping Swan (previously reported as Lower Phoenix Footwall) mineralization, which occupies a

reverse fault structure exhibiting rotational displacement. The southwest-dipping Swan Fault exists as an oblique structure cross-cutting the eastern limb of the anticline and is bounded by the Eagle Fault down-dip and the Kestrel Syncline at its upper margin. The structure is characterized by a one to three meter thick quartz vein, which exhibits various textural features. Textures include, unique spotted stibnite and visible gold within quartz, zones of brecciation, country rock and stibnite laminations (particularly concentrated on vein margins), stibitic textures with concentrated trends of visible gold, vugs containing euhedral crystalline quartz, +/- sulfides and visible gold, sugary crypto crystalline quartz textures and massive quartz zones containing specs and slugs of visible gold. On its periphery there is a lower-grade wall-rock selvage of sulfide dominated gold mineralization, which can be up to 2m in true width. The Swan structure has returned some of the highest grade intercepts on the Fosterville License.

- Subsequent drilling during 2017 and 2018 reaffirmed the high-grade continuity of mineralization and increased the known extent of this highly mineralized structure, which is now defined over approximately 600m in strike length and 400m in vertical extent. During 2018 level developments and production stoping commenced on the Swan increasing the confidence in the extraordinary high grade nature of the ore shoot. The Swan is the highest grade mineralized zone defined at Fosterville to date and contributes 2,340,000oz at an average grade of 49.6g/t Au (1,470,000 tonnes) to the updated December 31, 2018 Mineral Reserve estimate making up 86% of the total in situ Mineral Reserves. Extremely high grades in Swan are coincident with the intersection of the Eagle and Swan Splay Faults. Continued drilling from the hangingwall drill platforms during 2019 will advance the understanding of the size and scale of this resource growth target.
- Continued drill definition of these structures over 2018, in combination with ore development and production exposure and reconciliation performance has reaffirmed the significance of footwall structures to the Lower Phoenix (Benu) Fault. The defined continuity, proximity to existing Mineral Resources and high-grade tenor of these structures enhances the December 2018 Mineral Resource and Reserve position. Furthermore, mineralization on these structures is open down-plunge, providing encouraging future Mineral Resource and Mineral Reserve growth potential for the Fosterville operation;
- Drilling into the Harrier System over 2016 identified high-grade mineralization containing occurrences of visible gold at depth, primarily associated with the Harrier Base structure. Resource drilling throughout 2017 and 2018 continued to support 2016 results and resource confidence has further increased in this zone. In addition, step out drilling identified significant mineralization approximately 100m to the south of the June 2017 Harrier Base Mineral Resource and up dip on the Osprey structure beneath the Daley's Hill Pit indicating the potential for resource growth in this zone. The Harrier Base structure exhibits reverse thrust movement of approximately 60m. Visible gold is hosted within a laminated quartz-carbonate vein assemblage, which may contain minor amounts of stibnite. In the strongest mineralized zones, a broad halo of sulfide mineralization surrounds quartz structures bearing visible gold. The high-grade visible gold mineralization was first recognized at approximately the 4480mRL, a comparable elevation to where visible gold occurrences in the Lower Phoenix became more prominent. The Harrier Base mineralization is open down dip and down plunge to the south.

The down dip target is considered particularly prospective where the Harrier Base Fault intersects and offsets an anticline hinge;

- There is an observed change in the nature of some of the Fosterville mineralization at depth with a number of high-grade, quartz-carbonate +/- stibnite vein hosted, visible gold drill intercepts recorded for the Swan, Eagle, Lower Phoenix, Lower Phoenix Footwall, East Dipping and Harrier Zones. In addition, visible gold occurrences have been observed at depth in the Robbin's Hill system in the north-east of the mining lease on a separate line of mineralization. Disseminated sulfide mineralization continues to persist at all depths and is relatively uniform in character. It is currently inferred that the quartz-carbonate +/-stibnite-visible gold assemblages have been emplaced at a later date to the disseminated sulfide providing an upgrade to the mineralization;
- Extensive 3D modelling and geological interpretation has led to the development of a robust geological understanding, which underpins the resource model and the associated Mineral Resource and Mineral Reserve estimates. The relationship between mineralization and the controlling structural/stratigraphic architecture means that quality geological interpretation is critical to producing quality resource/reserve estimates;
- FGM has completed industry standard resource definition programs to delineate mineralization to support the current Mineral Resource estimation. This work has been accompanied by industry best practice QA/QC programs;
- Regional exploration drilling programs have been successful in increasing the strike length of known mineralized systems from ~11km to ~15km (including Goornong, Mill's, Fosterville, Robbin's Hill and O'Dwyer's). In addition, programs have confirmed the presence of gold bearing sulfide mineralization at May Reef and Lyell and identified 2 previously undiscovered lines of mineralization to the east of Goornong and to the west of Russell's Reef;
- Geotechnical assessments of the orebody geometry and ground conditions and operational experience has determined that long-hole open stoping is an appropriate mining method. Extraction sequencing allows optimization of ore recovery while maintaining ground stability with stopes planned to be back filled with cemented rock fill or paste fill. The stability of the design has been checked with stress-strain models that confirm that stopes and developments are predicted to remain stable during active mining. The modifying factors used to convert the Mineral Resources to Mineral Reserves have been refined with the operating experience gained since underground production commenced in September 2006. In particular, the robustness of the mining recovery and dilution estimates has improved with experience relative to the pre-mining assessments. Productivities were generated from first principles and operational experience;
- In 2018, a second Knelson concentrator was commissioned in the SAG recirculating load to increase capacity at the front end of the circuit to recover gravity gold. The first Knelson concentrator was commissioned in April 2016 recovering gold from the recirculating load of the re-grind mill. The SAG and regrind mill gravity concentrates are separately tabled, calcined and poured for accounting purposes. Project plans are in place for 2019 to upgrade the refinery to accommodate increased gold production. No other major works are required and the processing facility has sufficient capacity to

accommodate expansion without modification. There is no planned change to the existing plant recovery method. The QP's opinion is that all deleterious elements are effectively managed and there are no identified processing factors that have a significant impact on economic extraction.

- Required site infrastructure to support exploitation of Mineral Reserves is within industry norms. Planned capital infrastructure projects include Mine Water Treatment Plant construction, Ventilation Upgrades, Paste Fill Plant construction, Refinery Upgrade, Transformer Upgrade, Thiocyanate Removal Plant, Surface Chiller Plant construction and Drill Drive Development.
- There is a significant amount of existing environmental baseline data available for the project. This data continues to be collected and reported to the regulators as part of operational controls. FGM will continue to work closely with all key stakeholders to ensure that permitting of the mine growth projects meets all regulatory requirements.
- Fosterville Gold Mine has a demonstrated solid production history over a 13 year plus period since the beginning of commercial sulfide gold production in April 2005, and it is the Authors' view that the risk of not achieving projected economic outcomes is low given the operational experience gained over this time period. A foreseeable risk and uncertainty facing the operation is the changing character of mineralization at depth with an increase in the occurrence of visible gold. Reconciliation results in the past have provided confidence in the sample collection procedures, the quality of assays and the resource estimation methodology, but these processes will need to be continually adapted / refined in consideration of the changing mineralization character at depth. Kirkland Lake Gold needs to continue research to better understand the potential implications on future geological, mining and metallurgical processes and will continue to seek external advice during 2019 in relation to sampling, assaying and Mineral Resource estimation of visible gold mineralization. Based on recommendations from previous external reviews, projects plans have been developed and implemented.
- In the QP's opinion, there are no reasonably foreseen impacts from risks and uncertainties identified in the Technical Report that could affect the projects continued economic viability. In the current gold environment the operation is expected to continue to generate significant cash flows that will benefit the Company's shareholders.

26 RECOMMENDATIONS

The following recommendations are made:

- Further growth exploration activities within the mine license should be pursued. Given the strong understanding of geological controls on mineralization, this could have the potential to yield additional resources and reserves. Particular areas that are recommended to focus upon are the down-plunge extensions of the Lower Phoenix system (southwards down-plunge from 6100mN), down plunge and down dip extensions of the Harrier system and the Robbin's Hill system which is positioned approximately 2.5km to the north-east of current mine workings;
- Exploration of the Lower Phoenix system southwards of 6100mN is technically challenging from surface due to target depths and as such, Kirkland Lake Gold has established a dedicated underground drill platform (Harrier Exploration Drill Drive) to undertake this drilling. At the end of 2018 this development had progressed in a northerly direction to the extent that unexplored extensions of the Phoenix and Lower Phoenix Mineral Resources can now be targeted from this platform. The Harrier Drill Drive development will continue to be developed over 2019 to form a connection with the Lower Phoenix capital infrastructure. The long term benefits of this development link are significant, not only providing a hangingwall drill platform to explore the Lower Phoenix and Phoenix extensions over a 1.5km strike extent, but also in supporting production, as it will provide an alternative ore haulage route. Drilling targeting extensions of the Lower Phoenix and Phoenix systems from this platform in 2019 is estimated to cost A\$5.1M;
- Given the potential of Near Mine exploration targets within the Mining License, it is recommended that growth drill programs are implemented in pursuit of defining potential Mineral Resources independent from current mining centers. Growth drill programs planned to be undertaken within the mining lease during 2019 include the Cygnet Drilling program, which will explore for gold mineralization footwall to the Swan Fault, Fosterville Trend Step-Out Surface Drilling which will explore for new Mineral Resources along the Fosterville Line trend up to 1.4km north of current Mineral Resources and Robbin's Hill Programs, which will continue to build an understanding of the underground Mineral Reserve potential beneath the Robbin's Hill pits. A total cost of A\$12M is budgeted in 2019 to execute these programs;
- Subsequent to the effective date of this report, FGM have been granted mining licence extensions to the north and south of the MIN5404 licence. These extensions increase the total area of the mining licence to 28.5km² and encompass potential resource extensions of the Harrier and Robbin's Hill Gold systems. It is recommended to drill these potential resource extensions. In particular, the extent and scale of the Harrier system should be defined and resources developed in a timely manner. With an increasing grade profile identified at depth and the establishment of high-grade Mineral Reserves at lower levels, it is strongly recommended that both the down-plunge and down dip extensions of the Harrier system are further explored. Growth projects step out drilling in Harrier for 2019 is estimated to cost A\$2.6M;

- Subsequent to the effective date of this report, EL3539 (which encloses the current mining licence MIN5404) expired on February 26, 2019. The tenement was unable to be renewed under current state legislation and has been placed in moratorium (currently exempt from licence application). It is recommended to submit an exploration licence application once the moratorium has been lifted. The tenement area holds substantial exploration potential along multiple identified lines of mineralization. Fosterville has proven exploration, mining and processing capabilities and is in a good position to maximize the potential of any mineral resources identified in the exploration licence area. With exemplar status in areas of environment and community engagement, Fosterville is well positioned to retain exploration rights to this prospective ground.
- With numerous prospective targets generated from exploration works undertaken to date within the surrounding exploration leases it is recommended to advance the pipeline of regional targets. The regional exploration project termed Large Ore Deposit Exploration (LODE) aims to integrate and interpret all available geoscientific data, rapidly cover the current exploration holdings with reconnaissance exploration techniques such as soil sampling, airborne electromagnetic, gravity and seismic surveys and advance development of prospective targets with various drilling techniques. A total of A\$15.5M has been estimated to undertake Fosterville LODE work during 2019;
- Growth Expensed diamond drilling is proposed for targeting extensions of known mineralized trends outside of Mineral Resources. The proposed drilling will target the extensions of Inferred Mineral Resources in both the Lower Phoenix and Harrier systems with the aim to deliver additional Mineral Resource inventory and provide definition along Mineral Resource boundaries. Total cost for this program is estimated at A\$5.7M;
- Growth Capital diamond drilling for a total cost of approximately A\$5.0M is proposed for the systematic expansion of Indicated Mineral Resources in the Lower Phoenix mineralized system. The proposed drilling will target Inferred Mineral Resources, with the objective to increase resource confidence to an Indicated Mineral Resource classification to allow for Mineral Reserve Evaluation. The drilling will not only provide increased confidence in Mineral Resources which could lead to expansion of Mineral Reserves, but additional geological and geotechnical information ahead of mining, essential for optimizing the placement of supporting infrastructure and the effective extraction of the resource;
- With this additional drilling data and further ongoing operational experience, it is recommended that mining recovery and dilution factors are reviewed and refined on an ongoing basis;
- FGM should continue to undertake test-work programs and seek external advice in relation to sampling, assaying and Mineral Resource estimation of visible gold mineralization;
- Mine reconciliation processes should be continually refined in pursuit of improved model and operational forecast accuracy. A review of reconciliation processes, including material management and reporting systems, the integration of additional instrumentation / measure points and new technologies should be investigated and implemented; and

- The Company will embark on a co-ordinated research program to advance understanding the detailed geological circumstances required to form high-grade orogenic gold deposits, and apply knowledge gained to discovery and extraction both at Fosterville and further afield. In addition, the Company will continue to advance its investigation and assessment of numerical exploration technologies with the objective to improve the quality, timing or ease of obtaining data, which will benefit the confidence, reliability or costs related to decisions Fosterville uses the geological data for.

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28 DATE AND SIGNATURE

28.1 DATE AND SIGNATURE

The undersigned prepared this Technical Report titled "Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia". The effective date of this Technical Report is December 31, 2018 and the disclosure date is April 01, 2019.

Signed,



"signed and sealed"

Ion Hann, FAusIMM

April 01, 2019

Kirkland Lake Gold Ltd.
Fosterville Gold Mine
McCormicks Road, Fosterville
Victoria 3557, Australia



"signed and sealed"

Troy Fuller, MAIG

April 01, 2019

Kirkland Lake Gold Ltd.
Fosterville Gold Mine
McCormicks Road, Fosterville
Victoria 3557, Australia

28.2 CERTIFICATE OF QUALIFIED PERSON

I, **Ion Hann, FAusIMM**, as an author of this report entitled “**Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia**” dated effective December 31, 2018 prepared for Kirkland Lake Gold Ltd. (the “**Issuer**”) do hereby certify that:

1. I am **General Manager**, at **Fosterville Gold Mine**, located at **McCormick’s Road, Fosterville, Victoria 3557, Australia**.
2. This certificate applies to the technical report entitled “**Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia**”, dated effective December 31, 2018 (the “**Technical Report**”).
3. I graduated with a **Bachelor of Engineering degree in Mining** from the **Western Australian School of Mines, Kalgoorlie**, in **1991**. I have worked as an engineer since graduation from university in **1991**. During that time, I have been employed in various operation and technical roles at several mining companies within Australia with exposure to gold, nickel and tantalum. I am a fellow in good standing of the **Australian Institute of Mining and Metallurgy** with Registration No. **302934**.
4. I am familiar with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* (“**NI 43-101**”) and by reason of education, experience and professional registration I fulfill the requirements of a “qualified person” as defined in NI 43-101.
5. I am currently employed on a full time basis at the **Fosterville Gold Mine**, subject of the Technical Report, and have been since March 2005.
6. I am responsible for Sections 15-16, 18.2, 28.1 and 28.2 of the Technical Report.
7. I am **not** independent of the Issuer as described in section 1.5 of NI 43-101 as I am an employee of the Issuer.
8. I have prior involvement with the property that is the subject of the Technical Report as I was a contributing author of the technical report on the Fosterville Gold Mine entitled “**Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia**” dated effective December 31, 2017. Since then, I have been frequently involved with the property by way of my role as General Manager.
9. I have read NI 43-101 and the parts of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
10. At the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this the 1st day of April, 2019.



Ion Hann, B.Eng (Mining), FAusIMM
GENERAL MANAGER
FOSTERVILLE GOLD MINE

28.3 CERTIFICATE OF QUALIFIED PERSON

I, **Troy Fuller, MAIG**, as an author of this report entitled “**Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia**” dated effective December 31, 2018 prepared for Kirkland Lake Gold Ltd. (the “**Issuer**”) do hereby certify that:

1. I am **Geology Manager**, at **Fosterville Gold Mine**, located at **McCormick’s Road, Fosterville, Victoria 3557, Australia**.
2. This certificate applies to the technical report entitled “**Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia**”, dated effective December 31, 2018 (the “**Technical Report**”).
3. I graduated with a **Bachelor of Science degree in Geology (Hons)** from **University of Ballarat**, in **1995**. I have worked as a geologist since graduation from university in **1995**. During that time, I have been employed as a Mine Geologist, Resource Geologist, Senior Mine Geologist, Mine Geology Superintendent and Geology Manager, at several mining companies. I have worked for more than 20 years in the mining industry, including more than 18 years in gold mining operations. I am familiar with and have worked on a variety of styles of mineral deposits in Australia, with a particular emphasis on gold mineralization. I am a member in full standing of the **Australian Institute of Geoscientists** with Registration No. **4570**.
4. I am familiar with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* (“**NI 43-101**”) and by reason of education, experience and professional registration I fulfill the requirements of a “qualified person” as defined in NI 43-101.
5. I am currently employed on a full time basis at the **Fosterville Gold Mine**, subject of the Technical Report, and have been since May, 2010.
6. I am responsible for Sections 1-14, 17, 18.1, 19–27, 28.1 and 28.3 of the Technical Report.
7. I am **not** independent of the Issuer as described in section 1.5 of NI 43-101 as I am an employee of the Issuer.
8. I have prior involvement with the property that is the subject of the Technical Report as I was a contributing author of the technical report on the Fosterville Gold Mine entitled “**Report on the Mineral Resources & Mineral Reserves of the Fosterville Gold Mine Victoria, Australia**” dated effective December 31, 2017. Since then, I have been frequently involved with the property by way of my role as Geology Manager.
9. I have read NI 43-101 and the parts of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
10. At the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 1st day of April, 2019.



Troy Fuller MAIG 4570

Troy Fuller, BSc (Geology) Hons, MAIG
GEOLOGY MANAGER
FOSTERVILLE GOLD MINE