Technical Report on the Björkdal Gold Mine, Sweden Report for NI 43-101

Mandalay Resources Corporation

SLR Project No: 233.3308U.R0000

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SLR

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1.1 Executive Summary

SLR Consulting Ltd (SLR) was retained by Mandalay Resources Corporation (Mandalay) to prepare an independent Technical Report on the Björkdal Gold Mine (Björkdal or the Mine), located in Västerbotten County in northern Sweden. SLR acquired Roscoe Postle Associates Inc. (RPA) in 2019. The purpose of this Technical Report is to support the disclosure of Mineral Resources and Mineral Reserves (MRMR) for Björkdal and the satellite Norrberget deposit (Norrberget), located approximately four kilometres east-southeast of the Mine. MRMR are estimated as of December 31, 2020, based on a drill hole database cut-off date of September 30, 2020 for Björkdal and September 30, 2017 for Norrberget. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). SLR has visited the Mine on several occasions, most recently in November 2019 and January 2020.

In 2020, Björkdal produced gold from an underground operation as operations in the open pit mine were suspended in July 2019. Approximately 81% of plant feed was delivered from the underground, with the remainder being drawn from the low-grade stockpile (19%). Total mill feed for 2020 was 1.32 million tonnes (Mt). The average reconciled grade for 2020 was 1.24 g/t Au. The Björkdal plant uses conventional crushing and grinding, followed by a combination of gravity and flotation processing techniques to recover gold to concentrates which are sold to smelters in Europe. The plant capacity is approximately 3,700 tonnes per day (tpd) and the plant is currently operating at approximately 3,600 tpd. Gold recovery for 2020 averaged approximately 88%, and production totalled approximately 46,300 ounces of gold (oz Au) in saleable concentrates.

The 2017 Pre-Feasibility Study (PFS) for Norrberget envisions an open pit mining operation feeding the existing Björkdal plant. No changes have been made to the underlying assumptions for the Norrberget PFS since the last Technical Report dated March 27, 2020.

Table 1-1 lists the Mineral Resource estimate for the Mine prepared by SLR with an effective date of December 31, 2020. Mineral Resources are reported inclusive of Mineral Reserves. Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions) were used for the estimate.

Table 1-1: Mineral Resources at the Björkdal Mine and Norrberget Deposit as of December 31, 2020
Mandalay Resources Corporation – Björkdal Mine

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
		Indicated Mineral Resources		
Björkdal	Open Pit	2,383	2.10	161
	Underground	11,482	2.32	858
	Stockpile	2,551	0.64	53
	Subtotal	*16,416*	*2.03*	*1,072*

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
Norrberget	Open Pit	144	3.29	15
Total, Indicated		**16,560**	**2.04**	**1,087**
		Inferred Mineral Resources		
	Open Pit	3,515	1.44	163
Björkdal	Underground	2,322	2.06	154
	Subtotal	*5,837*	*1.69*	*317*
Norrberget	Open Pit	3	4.03	0.5
Total, Inferred		**5,840**	**1.69**	**318**

Notes:

1. Björkdal Mineral Resources are estimated using drill hole and sample data as of September 30, 2020 and account for production to December 31, 2020.
2. Norrberget Mineral Resources are estimates using drill hole and sample data as of September 30, 2017.
3. CIM (2014) definitions were followed for Mineral Resources.
4. Mineral Resources are inclusive of Mineral Reserves.
5. Mineral Resources are estimated using an average gold price of US$1,700/oz for Björkdal, US$1,500/oz for Norrberget, and an exchange rate of 9.0 SEK/US$.
6. High gold assays were capped to 30 g/t Au for the open pit mine.
7. High gold assays for the underground mine were capped at 60 g/t Au for the first search pass and 40 g/t Au for subsequent passes.
8. High gold assays at Norrberget were capped at 24 g/t Au.
9. Interpolation was by inverse distance cubed utilizing diamond drill, reverse circulation, and chip channel samples.
10. Open pit Mineral Resources are constrained by open pit shells and estimated at a cut-off grade of 0.28 g/t Au for Björkdal and 0.35 g/t Au for Norrberget.
11. Underground Mineral Resources are estimated at a cut-off grade of 0.77 g/t Au.
12. A nominal two metres minimum mining width was used to interpret veins using diamond drill, reverse circulation, and underground chip sampling.
13. Stockpile Mineral Resources are estimated at a cut-off grade of 0.32 g/t Au and are based upon surveyed volumes supplemented by production data.
14. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
15. Numbers may not add due to rounding.

The Qualified Person (QP) is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

Table 1-2 lists the Mineral Reserve estimate for the Björkdal Mine and Norrberget deposit as of December 31, 2020.

Table 1-2: Mineral Reserves at the Björkdal Mine and Norrberget Deposit as of December 31, 2020
Mandalay Resources Corporation – Björkdal Mine

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
		Probable Mineral Reserves		
Björkdal	Open Pit	3,157	1.05	106
	Underground	5,623	2.05	371
Norrberget	Open Pit	162	2.80	15
Stockpile	Stockpile	2,551	0.64	53
Total, Probable		**11,493**	**1.47**	**544**

Notes:

1. Björkdal Mineral Reserves are estimated using drill hole and sample data as of September 30, 2020 and depleted for production through December 31, 2020.
2. Norrberget Mineral Reserves are based on a data cut-off date of September 30, 2017.
3. CIM definitions (2014) were followed for Mineral Reserves.
4. Open Pit Mineral Reserves are based on mine designs carried out on an updated resource model, applying a block dilution of 100% at 0.0 g/t Au for blocks above 1.0 g/t and 100% at in-situ grade for blocks below 1.0 g/t, but above a cut-off grade of 0.32 g/t Au. The application of these block dilution factors is based on historical reconciliation data. A marginal cut-off grade of 0.32 g/t Au was applied to estimate open pit Mineral Reserves.
5. Underground Mineral Reserves are based on mine designs carried out on an updated resource model. Minimum mining widths of 3.85 m for stopes (after dilution) and 4.35 m for development (after dilution) were used. Stope dilution was applied by adding 0.5 m on each side of stopes as well as an additional 10% over break dilution. Further dilution, ranging from 5% to 50%, was added on a stope-by-stope basis depending on their proximity to other stopes. An overall dilution factor of 25% was added to development designs. Mining extraction was assessed at 95% for contained ounces within stopes and 100% for development. A cut-off grade of 0.87 g/t Au was applied to material mined within stopes. An incremental cut-off grade of 0.32 g/t Au was used for development material.
6. Stockpile Mineral Reserves are estimated at a cut-off grade of 0.32 g/t Au and are based upon surveyed volumes supplemented by production data.
7. Mineral Reserves are estimated using an average long-term gold price of US$1,500/oz for Björkdal, US$1,300/oz for Norrberget, and an exchange rate of 9.0 SEK/US$.
8. Tonnes and contained gold are rounded to the nearest thousand.
9. Totals may not sum due to rounding.

The QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

1.1.1 Conclusions

The mineral processing plant at Björkdal commenced operation in 1989. Since that time, it has processed approximately 33.9 Mt of ore to December 31, 2020 to produce a total of approximately 1.49 million ounces of gold (Moz Au) at an average feed grade of 1.53 g/t Au. Both open pit and underground mining methods have been employed on the property.

1.1.1.1 Geology and Mineral Resources

Björkdal:

- Gold mineralization at the Mine occurs mostly as a large number of steeply dipping, structurally controlled narrow quartz veins that have been identified by drilling and grade control mapping and sampling for a distance of approximately 2,300 m in an east-west direction (along strike), 2,600 m in a north-south direction (across strike), and to a depth of approximately 750 m from surface.
- Exploration activities carried out since 2017 have discovered a number of mineralized zones that are associated with moderately north-dipping shear zones. These exploration programs have also discovered a number of gold bearing zones that are hosted by moderately north-dipping zones of prograde and retrograde skarns that have been developed in a marble unit.
- Ongoing exploration and grade control programs have identified the presence of a number of faults and shears present in the Mine. These programs have shown that the paragenetic relationships of these faults and shears with the gold mineralization is complex. The larger of these structures, the Björkdal shear, has been traced in the Mine from surface to a depth in excess of 500 m.
- Information collected from exploration and grade control programs in 2020 has improved the understanding of the control that the Björkdal shear has on the gold bearing quartz veins. The current view is that the Björkdal shear is a post-mineralization fault that truncates the gold bearing quartz veins into a hanging wall structural block and footwall structural block. Work is in progress to understand the magnitude and sense of movement along the Björkdal shear.
- The Björkdal open pit wireframes were based on a nominal 0.3 g/t Au cut-off grade over a minimum of two metres. The underground wireframes were based on a nominal two metre minimum width at a cut-off grade of 0.5 g/t Au. A total of 566 mineralized wireframe models were created for the underground mine and 453 wireframe models were created for the open pit mine.
- The dual capping value approach was continued to be used for estimation of the gold grades contained within the mineralized wireframe models in the underground mine. In this approach, the composited assays for diamond drill holes (DDH) and reverse circulation (RC) drill holes are capped to values of 60 g/t Au and 40 g/t Au. Two different area of influences are then used when estimating the block grades for each mineralized wireframe. The higher grade capped composites are used within a first pass search ellipse with a 15 m radius, while the lower grade capped composites are used for subsequent estimation passes. A single capping value of 40 g/t Au was applied to the composited samples contained within the chip sample database. A value of 30 g/t Au has been selected as the capping value for the DDH, RC, and chip samples contained within the open pit wireframes. This capping value was also applied to all samples contained within the dilution domain volume.
- The up-dip limits of the Aurora Zone along its western limits have not been defined by the current drilling pattern. The data available to date suggests that potential remains for hosting economic gold mineralization, as a weakly developed alignment of gold values suggests the presence of an east-plunging rake.
- Based on the examination of the reconciliation results, the year-end 2019 long-term block model predicted that approximately 40,100 oz Au may be present on an in-situ basis between the

development muck and stope muck sources excavated in 2020. The data shows that the plant produced a total of approximately 44, 900 oz Au on a recovered basis for the same period.

- A potential source of the additional gold produced by the plant includes additional gold mineralization discovered as a result of detailed mapping and sampling results. An additional source of the positive variance includes gold recovered as a result of processing material from the stockpiles. SLR notes that the gold grades used to estimate the grades in the long-term model represent the cyanide-leachable portion of the gold in a given sample, while the processing plant recovers all gold that may be present, as the process flow sheet does not include a cyanide leaching circuit. A component of the positive variance may be due to any non-cyanide leachable gold that is recovered by the plant.
- Considering that the current year-end 2020 long-term model was prepared using the same work flows and estimation parameters as were used to prepare the year-end 2019 long-term model, it is reasonable to assume that the current long-term block model may yield similar results going forward.

Norrberget:

- The primary gold mineralization at Norrberget is contained within bands of veinlets and alteration containing amphibole in a package of interbedded mafic tuffs and volcaniclastics.
- Mineralization wireframes were generated using a 0.4 g/t Au cut-off grade and a two metre minimum horizontal width. The wireframes represented a primary band of continuous mineralization and two limited footwall bands of mineralization.
- Samples within the Norrberget domains were capped at 24 g/t Au, affecting seven out of the 311 samples within the mineralized domains. Intercepts within the domain were composited to 1.0 m lengths with a minimum sample length of 0.5 m.
- Bulk density applied to the block model was based on average densities for each lithology. The mineralization has an average density of 2.78 g/cm^3.
- The low number of mineralized samples at Norrberget necessitated the use of inverse distance weighted interpolation rather than the ordinary kriging method. Continuity analysis of grade contours was reviewed to help define high grade trends that were used to inform the interpolation parameters.

1.1.1.2 Mining and Mineral Reserves

- At a cut-off grade of 0.32 g/t Au, open pit Probable Mineral Reserves at Björkdal are estimated to be approximately 3.16 Mt grading 1.05 g/t Au, containing 106,000 oz Au.
- At a cut-off grade 0.87 g/t Au for stopes and incremental cut-off grade of 0.32 g/t Au for development material, underground Probable Mineral Reserves at Björkdal are estimated to be approximately 5.62 Mt grading 2.05 g/t Au, containing 371,000 oz Au.
- Stockpile Mineral Reserves are estimated to be approximately 2.55 Mt grading 0.64 g/t Au, containing 53,000 oz Au, at a cut-off grade of 0.32 g/t Au.
- At Norrberget, there are estimated to be approximately 162,000 tonnes of Probable Mineral Reserves at a grade of 2.80 g/t Au for a total of 15,000 oz Au.
- The current Mineral Reserves for Björkdal support a mine life of approximately nine years at a production rate of approximately 1.3 million tonnes per annum (Mtpa), with the exception of the

last year of production. Gold production averages approximately 55,000 oz per year, excluding the final year. A number of opportunities that could further extend the mine life exist including:

- Continue upgrading Inferred Mineral Resources to Indicated Mineral Resources.
- Identify remnant underground mining areas with in-situ Mineral Resources that could be extracted in a safe and cost-effective manner.

- The Björkdal open pit mining operation was suspended in July 2019 and is now scheduled to recommence in 2024, however this may be delayed further as additional Mineral Reserves are added to underground. Mining will initially concentrate on a number of smaller satellite pits on the periphery of the main pit. Mining operations in these areas will not affect ongoing underground operations or existing portal access.
- The current mine plan includes the recovery of the crown pillar from the main open pit during the final years of mining. This pillar contains infrastructure servicing the underground operations that will be disrupted by mining of the crown pillar. It also contains a large number of voids from previous underground mining that may cause some operational issues during mining and potentially some high wall stability concerns.
- Mining of the crown pillar and main open pit area will commence with moraine and loose waste rock removal in 2024. Further mining will be postponed until 2026 when the eastern portal becomes obsolete and mining of the first pushback will begin. A final pushback is planned to commence when all underground operations have ceased in mid-2027.
- A cost benefit study, conducted during 2020, showed that it would not be financially beneficial to relocate the existing in-pit underground access in order to allow the crown pillar to be mined in parallel with underground operations. Such a proposal would necessarily require the costly development of an additional portal and decline.
- The open pit mining operation will use contractors for most of the mining activities. SLR considers that there may be an opportunity to reduce open pit operating costs by converting to a mine-owned fleet when the open pit operation restarts production.
- During 2021, the underground mine is scheduled to produce approximately 960,000 tonnes of Measured and Indicated ore from the updated Mineral Resource model and, an average of approximately 858,000 tonnes of Measured and Indicated ore over the following five years of the underground operations. SLR notes that additional tonnes of Inferred material have been included in the Bjorkdal 2021 Production Budget based upon last years' Mineral Resource model.
- Underground production will reduce and end in year seven (2027) of the current life of mine (LOM).
- The low grade stockpile will be used to provide the additional ore needed to allow the mill to operate at full capacity in all years through to the end of the mine life in 2029.
- Due to the variable quality of the material that comprises the low grade stockpiles, grade variations in the feed to the mill, from that forecast in the LOM plan, are anticipated.
- The underground Mineral Reserves at Björkdal are based on a minimum mining width of 3.85 m inclusive of dilution. This comprises a 2.5 m baseline minimum mining width, 0.5 m on both hanging wall and footwall, plus an additional 10% dilution to align with recent historic reconciliation data. Further dilution, ranging from 5% to 50%, was added on a stope-by-stope basis depending upon a stope's proximity to other stopes.

- Structural features such as folding and their impact on metal distribution are still not well understood in some areas which makes accurate forecasting of grade, dilution, and mining losses a challenge. SLR is of the opinion that some variation from planned, in the short term, is an inevitable consequence of the complexity of the orebody. As a result, historical dilution and recovery reconciliation data is heavily relied upon for mine planning.
- Mining method and stope design is driven primarily by geotechnical considerations. SLR considers it essential that continued attention be given to local and regional rock mechanics issues during future mine design as underground stresses are redistributed.
- Detailed reconciliation comparing design to actual mined tonnes (using cavity monitoring system (CMS)) and grade from all stopes, was undertaken on a quarterly basis throughout 2020. The results indicated that diluted stope ore tonnage was under-estimated by approximately 9% and gold content by approximately 5%. Historical reconciliation indicates that dilution averages 50% underground. This is consistent with factors used in the mine design and planning.
- The nature of the mining method is such that development ore will always represent a significant proportion of the underground tonnage production (13% for the LOM).
- As presently planned, mining of the Norrberget open pit will be carried out by the same contractor employed at the Björkdal open pit. The total mine life for Norrberget is estimated to be approximately six months.

1.1.1.3 Processing

- Björkdal has been successful in recovering nearly 90% of the gold, with approximately 70% to 76% of the gold recovered in gravity concentrates (i.e., gravity concentrate, middlings, and Knelson concentrate) and an additional 12% to 18% of the gold recovered in flotation concentrates.
- Preliminary metallurgical tests using samples from Norrberget show that the mineralogy is more complex and the gold grain sizes are smaller, which requires a finer grind size to achieve liberation. Since the deposit is small, it is not anticipated that modifications to the existing processing plant will be cost effective. Therefore, the data indicates that the average gold recovery for Norrberget will be approximately 75%.

1.1.1.4 Environmental, Permitting, and Social or Community Considerations

- A new operating permit was granted in December 2018 and remains valid for the tailings management facility (TMF) (dam and related water discharge) for ten years and until October 5, 2067 for all other aspects of the operations. The environmental permit allows for expansion of the TMF for a mill throughput of 1.7 Mtpa.
- A building permit was granted in May 2020 for Dam K1, however, approval of the change permit submitted in October 2019 is still pending. The change permit application also covers the extension of the underground mine and is supported by an Environmental Impact Assessment (EIA).
- A compensation agreement for lost grazing land and increased operating costs for the reindeer herders was signed with the Sami community of Svaipa in April 2017. This agreement is valid for the planned operating life of the Björkdal Mine.
- The Norrberget deposit is not covered by the aforementioned agreement. A new mining concession has been granted that covers Norrberget and is valid until January 2044. Mining of Norrberget is planned for 2028 and 2029.

- The 2018 environmental permit includes an updated, fully funded, closure and reclamation plan. A reclamation account is in place and held by the Swedish authorities.

1.1.1.5 Risks

- The Mine has been in production for over 30 years and is a mature operation. In SLR's opinion, there are no significant risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information, Mineral Resource or Mineral Reserve estimates, or projected economic outcomes.

1.1.2 Recommendations

SLR presents the following recommendations:

1.1.2.1 Geology and Mineral Resources

1. Conduct a study that determines the gold grades of the assays obtained from the on-site PAL1000 residues (tailings). The results from such a study may be useful in reducing the variances observed between the Mineral Resource block models and the plant production data.
2. Review and update as appropriate the validation procedures for the drill hole management protocol.
3. Continue efforts to use the actual as-mined volumes as determined from the CMS surveys to code the block model rather than the design shapes. Use of the actual excavated volumes will improve the block model reconciliation results for those stopes which are accessed by means of a bottom drive only (i.e., the "blind" stopes).
4. Continue efforts to construct a full three-dimensional digital model of the distribution of the host rocks in the vicinity of the Mine area. Use of immobile element geochemical signatures (e.g., Ti versus Zr plots) may be useful in assisting to discriminate between the footwall intermediate volcanic and the hanging wall mafic volcanic units.
5. Carry out exploration activities to search for the fault-displaced continuations of the quartz veins located in the upper portions of the Mine. In addition, exploration activities to search for the fault-displaced continuity of the Aurora Zone are also warranted.
6. Create clipped wireframe models for cross-cutting veins prior to their use in preparing Mineral Resource estimates.
7. Examine the two metre minimum width criteria used to create the vein interpretations in light of the reconciliation information being collected for the excavated stopes. Consideration may be given to modifying this minimum width to better reflect the thinnest openings that are being achieved on a day-to-day operational basis.
8. Continue to collect additional samples from selected exploration drill holes for density measurements.
9. Continue collecting information regarding the distribution of the gold grades in the walls of the development headings by means of the POD-series drill holes.
10. Carry out studies to examine the impact of the spacing of the POD-series drill holes on the accuracy of the local grade estimate.

11. Continue collecting chip samples across the full width of the face for underground development headings and entering all chip sample information into the drill hole database as pseudo-drill holes that span the full width of the face of the development heading.
12. Harmonize the across-strike dimensions (i.e., the northing, or Y-direction) of the blocks with the minimum widths selected for preparation of the mineralized wireframes to reduce the amount of dilution being introduced into the block model.
13. Evaluate alternate parameters for the search strategies to reduce the presence of estimation artifacts and improve the accuracy of the local estimate.
14. Test the up-dip projection of the moderately plunging shoot located on the western limit of the Aurora Zone mineralization by drilling.
15. Continue to collect high quality scans of all stope voids on a regular and timely basis. This information should then be integrated into the material tracking and metal accounting systems to permit comparisons to be made for the block model versus the mine actual production and then the mill output. The information will also be useful in evaluating the accuracy of the excavation voids against the designed excavations.
16. Consider expanding the time period for the reconciliation studies. The current reconciliation studies evaluate the predictive accuracy of the year-end 2019 long-term block model over the most recent 12-month production period. Use of the year-end 2017 block model for comparison with the production data for 2018, 2019, and 2020 will enable the quantification of the accuracy of the estimation procedures and parameters over a 36-month period.
17. At Norrberget, carry out additional drilling to delineate the mineralization at depth and along strike.

1.1.2.2 Mining and Mineral Reserves

1. Continue ongoing reconciliation and production management work to improve future grade and dilution forecasts.
2. Undertake a cost benefit analysis for relocating the underground access portals and developing additional underground infrastructure to gain access to potential additional Mineral Reserves from the Björkdal open pit whilst underground operations continue.
3. Review the 2017 Norrberget Mineral Reserves in light of recent changes in gold price, subject to the inclusion of any additional drilling information into the resource model.

1.1.2.3 Processing

1. Continue to monitor the performance of all unit operations and to optimize plant performance to achieve the highest economic outcome possible.
2. Continue to evaluate historic data and to use the results to estimate future plant gold recovery and operating costs.
3. In future metallurgical tests for Norrberget, use variability samples with a range of head grades from throughout the deposit, using test conditions that evaluate what the metallurgical response will be in the existing processing facility.

1.1.2.4 Permitting

1. The changed permit application covering the extension of the underground mine and raise of Dam K1 is pending a decision from the Swedish authorities. SLR notes however that the building permit for Dam K1 was issued in May 2020. Björkdal is actively engaging the authorities on the status of the change permit application. These efforts should be continued to ensure timely receipt of the required permit.

1.2 Economic Analysis

This section is not required as the property is currently in production, Mandalay is a producing issuer, and there is no material expansion of current production.

1.3 Technical Summary

1.3.1 Property Description and Location

The Björkdal property is located in Västerbotten County in northern Sweden, at approximately 20°35′26″ E longitude and 64°56′7″ N latitude (WGS84). Björkdal is located approximately 28 km northwest of the municipality of Skellefteå and approximately 750 km north of Stockholm. The property is accessible via Swedish national road 95 or European highway route E4 followed by all-weather paved roads. On the property, gravel roads link the main site gate entrance to the surface infrastructure. The nearest airport, located in Skellefteå, has regular daily service to Stockholm.

The Norrberget property is located approximately four kilometres east of the Björkdal Mine and is currently accessible via a forest road.

1.3.2 Land Tenure

Mandalay is a publicly listed company that effectively holds 100% of Björkdal through the Swedish registered companies Björkdalsgruvan AB and its subsidiary Björkdal Exploration AB. Björkdalsgruvan owns nine mining concessions on the Björkdal property and one mining concession on the Norrberget property. An eleventh concession, Norrliden K nr 1, is held by Explor Björkdalsgruvan AB. There are 18 exploration permits, 15 of which are owned by Björkdalsgruvan AB, two by Explor Björkdalsgruvan AB, and one by Björkdal Exploration AB.

The holder of an exploitation concession must pay an annual minerals fee to the landowners of the concession area and to the State. The fee is 0.2% of the average value of the minerals mined from the concession, 0.15% of which is paid to the landowners in proportion to their share of ownership of the concession area. The remaining 0.05% is paid to the State to be used for research and development in the field of sustainable development of mineral resources. The fee is estimated after consideration of the amount of mined ore, the amount of minerals in the ore, and the average price of the mineral during the year or by use of an equivalent value.

1.3.3 History

1.3.3.1 Björkdal

The Björkdal deposit was originally discovered in 1983 by Terra Mining AB (Terra Mining) during a till sampling program which discovered anomalous gold values in the glacial till profile. Anomalous gold values in bedrock were discovered in 1985 and definition drilling began in 1986.

Definition drilling was coincident with metallurgical testing and positive feasibility studies were completed in 1987. Terra Mining commenced mining operations at Björkdal in July 1988. In 1996, Terra Mining was purchased by William Resource Ltd. (William). William continued to operate the mine until the end of June 1999 when it was petitioned into bankruptcy. The assets were bought through public auction in June 2001 by International Gold Exploration, which operated the Mine from September 2001 until 2003 when it was acquired by Minmet plc (Minmet).

In 2006, Gold-Ore Resources Ltd. (Gold-Ore) acquired an option from Minmet to purchase the holding company for the mine. On December 31, 2007, Gold-Ore exercised its option and acquired all the shares of Björkdalsgruvan AB. During exploration and development of the Björkdal Mine, Gold-Ore generated cash flow from gold sales from the operation of the plant at the mine, fed by stockpiled material, open pit mining, and underground development operations, which commenced on a full scale basis in mid-2008. In January 2009, Gold-Ore's management concluded that there were sufficient mineral reserves and resources at Björkdal for at least a five year mine life and declared commercial production.

In May 2012, Elgin Mining Inc. (Elgin) acquired all of the issued and outstanding common shares of Gold-Ore. On June 4, 2014, Mandalay announced that it had entered into an arrangement agreement pursuant to which Mandalay would acquire all the outstanding common shares of Elgin. The transaction was completed on September 10, 2014.

The Mine has produced a total of approximately 1.49 Moz Au since the start of production in 1988.

1.3.3.2 Norrberget

The Norrberget deposit was discovered by COGEMA in 1994 and drilling occurred until 1996. In 1997, COGEMA withdrew from Sweden, and the exploration permits around the Björkdal dome including the Norrberget deposit were taken up by North Atlantic Nickel (NAN).

On September 28, 2007, Gold-Ore purchased exploration permits surrounding the Björkdal property from NAN. The property was acquired by Elgin and subsequently passed to Mandalay through the acquisition process described above.

1.3.4 Geology and Mineralization

The Skellefteå region lies within an ancient cratonic block named the Fennoscandian shield and consists of Paleoproterozoic-aged rocks that host several world-class volcanogenic massive sulphide (VMS) copper, zinc, and lead deposits. Mineralization in the Skellefteå region is focused within and around the Skellefteå belt, a regionally extensive, northwest trending structural feature 120 km long and 30 km wide, which consists of deformed and metamorphosed Paleoproterozoic-aged volcanic, sedimentary, and igneous rocks. The stratigraphy in the Mine area is divided into two groups, the Skellefte Group (lower division) and the Vargfors Group (upper division). The Björkdal gold deposit is hosted within the upper portions of the Skellefte Group, which is dominated by successions of mafic volcanic flows that are interbedded or intercalated on a large scale with clastic sediments.

As a result of detailed litho-stratigraphic mapping, petrological observations, and geochemical analysis undertaken by Mandalay/Björkdalsgruvan AB, geologists have observed that host rock geology, metamorphism, and alteration styles are much more complex and variable than previously documented. Instead of a large, massive plutonic-type intermediate intrusion occupying the domal structure observed within the Björkdal area, a variable and complex alteration signature overprints many different rock-types including pyroclastic, volcano-sedimentary, tuffaceous, extrusive-volcanic (andesitic to basaltic compositions), sub-volcanic intrusive (andesitic compositions), and sedimentary (silici-clastics, shales and carbonates) lithologies. Common alteration and metasomatic styles include silicification, carbonatization, calc-silicate (actinolite) alteration, albitization, chloritization, potassic (biotite and K-feldspar), epidotization, pyritization, tourmalinization, with various skarn-type alteration assemblages common in areas where a calcareous host rock is present (including actinolite, tremolite, pyroxene, and minor garnet).

The local stratigraphic succession consists of a lower assemblage that is dominated by intermediate volcanic units; this unit has historically been the host rock to all of the gold mineralization at the Mine. It is overlain by a narrow interval of clastic and chemical sediments referred to as the marble unit, which in turn is overlain by a mixed assemblage of mafic and intermediate volcanic units. The footwall contact of the marble unit has traditionally been thought to represent an unconformity, however, detailed mapping activities in the Mine suggest that the footwall contact may, in part, be due to faulting. A number of faults and shears have been recognized and mapped, of which the Björkdal shear is the most important. It has a north to northeasterly (true) dip, and observed kinematic indicators suggest oblique movement. Recent mapping activities have shown that this shear has truncated the footwall and marble unit in the northern extremities of the Mine and has brought the hanging wall mafic volcanic unit into fault contact with the footwall intermediate volcanic unit. To the north of the Björkdal shear, in the northern extremities of the Mine, drilling and development activities have shown that significant quantities of economic grade mineralization are hosted by the hanging wall mafic volcanic unit. This newly discovered zone is referred to as the Aurora Zone and is currently the main focus of the mining and exploration activities. The full extent of the gold mineralization in the Aurora Zone has not been defined by drilling. Initial exploration activities to the north of the Aurora Zone are discovering additional gold bearing veins and structures.

The Björkdal gold deposit has traditionally been viewed as a lode-style, sheeted vein deposit hosted within the upper portions of the Skellefte Group sediments. Gold is found within quartz veins that range in thickness from less than a centimetre to over several decimetres. These veins are usually observed as vertical to sub-vertical dipping veins that strike between azimuth 000° and azimuth 090°, with the majority of veins striking between azimuth 030° and 060°. The veining is locally structurally complex, with many cross-veining features observed and thin mineralized quartz veinlets in the wall rocks proximal to the main quartz veins. Gold-rich quartz veins are most often associated with the presence of minor quantities of sulphide minerals such as pyrite, pyrrhotite, marcasite, and chalcopyrite alongside more common non-sulphide minerals such as actinolite, tourmaline, and biotite. Scheelite and bismuth-telluride compounds (i.e., tellurobismuthite and tsumoite) are also commonly found within the gold-rich quartz veins and are both excellent indicators of gold mineralization.

Recent exploration and development activities have discovered that economic gold grades can also be hosted in skarn-altered rocks. Skarnification occurs commonly within the Björkdal Mine, especially in the limestone/marble unit as discreet patches and lenses.

At Norrberget, the mineralization is stratabound within an interbedded altered volcaniclastic package that sits unconformably below a 30 m to 40 m thick marble unit. Gold mineralization has been observed up to 50 m below this contact. The mineralization is primarily associated with amphibole alteration bands and veinlets. The gold is very fine grained and rarely visible. Where gold grains have been observed, they are found to be on the boundary or in the interstitial material between grains. High grade gold is mostly found in areas with low to no pyrite.

1.3.5 Exploration Status

For the period of September 2014 to September 2020, Mandalay completed a total of approximately 197,455 m of core drilling from surface-based and underground stations at the Björkdal Mine. The main focus of the drilling completed in 2020 was to continue to outline the strike and dip limits of the Aurora Zone, to define the limits of the high grade, skarn-hosted mineralization discovered in 2018, and to search for the presence of additional mineralized vein systems located in the hanging wall fault block to the north of the Aurora Zone.

The drilling programs were successful in extending the known limits of the Aurora Zone, and for outlining the limits of the high grade, skarn-hosted zones. As of September 30, 2020, the Aurora Zone has been outlined by drill hole and channel sample information along a strike length of approximately 650 m and along a dip length of approximately 400 m. As of September 30, 2020, the limits of the mineralization in the Aurora Zone have not been defined by drilling.

There is high likelihood of further discoveries in the Björkdal area, as deposit models currently being formulated and tested by Mandalay geologists are proving successful and much of the held ground remains either unexplored or under-explored.

1.3.6 Mineral Resource Estimate

1.3.6.1 Björkdal

SLR reviewed data for Björkdal and has independently prepared Mineral Resource estimates using a drill hole database with a cut-off date of September 30, 2020. The Mineral Resource estimate has an effective date of December 31, 2020. Mineral Resources were estimated for open pit, underground, and stockpile areas.

Mandalay built individual mineralized wireframes separately for open pit and underground domains. The open pit wireframes were based on a nominal 0.3 g/t Au cut-off value over a minimum of two metres. The underground wireframes were based on a nominal two metre minimum width at a cut-off value of 0.5 g/t Au. The open pit mineralized wireframe models were grouped into five separate areas and a total of 453 individual wireframe models were created for the open pit mine. The underground mineralized wireframe models were grouped into six separate areas and a total of 566 individual wireframe models were created for the underground mine.

Mandalay elected to maintain a dual capping value approach for estimation of the gold grades contained within the mineralized wireframe models in the underground mine. In this approach, the composited assays for diamond drill holes and RC drill holes are capped to values of 60 g/t Au and 40 g/t Au. A value of 30 g/t Au has been selected as the capping value for the diamond drill hole, RC drill hole, and chip samples contained within the open pit wireframes. This capping value was also applied to all samples contained within the dilution domain volume.

An upright, non-rotated block model was constructed to model the mineralization in the underground and open pit mines together. Gold grades were estimated into the blocks by means of inverse distance cubed (ID^3) interpolation algorithm. A total of three interpolation passes were carried out to estimate the grades in the underground block model. A two-pass search strategy was applied to estimate the grades in the open pit block model. A single-pass estimation strategy was applied when estimating the grades for the dilution domain in the open pit mine block model.

Separate cut-off grades were developed for reporting of the underground and open pit Mineral Resources. Each cut-off grade was developed using the January to September 2020 actual cost information along with a gold price of US$1,700 per ounce and an exchange rate of 9.0 SEK/US$. The cut-off grade for reporting of Mineral Resources was determined to be 0.77 g/t Au within the underground mine and 0.28 g/t Au for the open pit mine.

SLR classified the Mineral Resources as Indicated and Inferred based on drill hole spacing, grade continuity, and reliability of data. All material contained within either the North or South stockpile areas was classified into the Indicated Mineral Resource category.

1.3.6.2 Norrberget

RPA, now SLR, reviewed data for Norrberget and has independently prepared Mineral Resource estimates using a drill hole database with a cut-off date of September 30, 2017. RPA estimated the Norrberget Mineral Resources for the Technical Report dated March 29, 2018 and that Mineral Resource estimate remains unchanged as of the effective date of this Technical Report. Mineral Resources were estimated within a constraining open pit shell.

RPA generated three mineralized domains for Norrberget that reflected packages of mineralized and altered material above a 0.35 g/t Au cut-off grade that was a minimum of two metres in horizontal width.

RPA reviewed the Norrberget data and capped the grades to ensure that sporadic high grade values were not over-represented. A 24 g/t Au capping value was applied. The capped samples were flagged by the mineralized domain wireframes and the intercepts were composited on a 1.0 m length between the wireframe boundaries, with a minimum residual of 0.5 m.

A block model that encompassed the mineralization wireframes and sufficient waste to constrain the resource within a pit was generated. Gold grade were interpolated into the mineralized blocks using ID^3. A total of three interpolation passes were carried out to estimate the grades in the block model.

Cut-off grades were developed using the January to September 2017 actual cost information from Björkdal along with a gold price of US$1,400 per ounce. The cut-off grade for reporting of Mineral Resources for Norrberget was determined to be 0.35 g/t Au.

The Mineral Resources are classified as Indicated and Inferred based on drill hole spacing, grade continuity, and reliability of data.

1.3.7 Mineral Reserve Estimate

Open pit and underground Mineral Reserve estimates were prepared by Mandalay, and reviewed by SLR, using mine designs based on the updated Mineral Resource model. The Mineral Reserves have an effective date of December 31, 2020.

1.3.7.1 Björkdal

The underground Mineral Reserve estimate was based on a minimum mining width of 3.85 m for stopes (after dilution) and 4.35 m for development. Dilution was applied by adding 0.5 m on each side of stopes and an additional 10% for overbreak dilution. Further dilution, ranging from 5% to 50%, was added on a stope-by-stope basis depending on a stope’s proximity to other stopes. An overall dilution factor of 25%

was applied to development designs. The resulting overall planned stope dilution averages approximately 40%. Mining extraction was assessed at 95% for ore tonnes and corresponding contained ounces within stopes and 100% for development. For stopes, a cut-off grade of 0.87 g/t Au was applied, while for development material, an incremental cut-off grade of 0.32 g/t Au was used.

For the Björkdal open pit, potential pits were evaluated via pit optimization. A selective mining unit (SMU) of 5 m x 3 m x 3 m was used in the block model, and was re-blocked to 10 m x 6 m x 6 m to improve processing time. Based on historical reconciliation data for the Björkdal open pit, a tonnage dilution factor of 100% at in-situ grade was applied for blocks between 0.32 g/t Au and 1.0 g/t Au. For blocks above 1.0 g/t Au within the Björkdal open pit, compiled reconciliation data of the open pit high grade and low grade ore supports the use of a block dilution of 100% at zero grade. Based on the results of several pit optimization runs, the majority of ore tonnage is located in the crown pillar along the north wall of the pit, with the balance located in a number of smaller satellite pits lying to the southeast outside of the main Björkdal pit.

1.3.7.2 Norrberget

The Norrberget Mineral Reserve estimate remains unchanged from the Technical Report dated March 29, 2018. No further drilling, resource modelling, or re-optimisation of the Norrberget open pit was carried out during 2020.

For the Norrberget open pit, potential pits were previously evaluated using the Lerchs-Grossmann pit optimization algorithm and a parent block size of 6 m x 4 m x 4 m. As no production has occurred within the Norrberget open pit, local reconciled dilution and extraction factors were not available. As a result, a dilution factor of 15% and an extraction factor of 100% were nominally assigned based on reconciled production data from mining shallow dipping structures at the Björkdal open pit.

1.3.8 Mining

1.3.8.1 Björkdal

The Björkdal open pit ceased production in July 2019 as the processing of the low grade stockpile generated more value than the continued mining of the open pit. Mandalay intends on restarting open pit mining operations in 2024 ahead of underground reserves becoming depleted in 2027, however the restart of the open pit could be delayed further with additional reserve additions to underground.

The underground mining method used at Björkdal is longhole stoping with a sub-level spacing of 15 m to 20 m, depending on the zone. Cross-cuts are established perpendicular to the vein system. Veins are then developed by drifting on each sub-level from the cross-cut. All pre-production vein, cross-cut, and ramp development is drilled and blasted using conventional trackless mining equipment.

The current mill constraints limit the total Björkdal production capacity to 1.3 Mtpa. The average underground mine production rate is currently 1.14 Mtpa. A further 0.16 Mtpa of ore is planned from the low-grade stockpile, for an average annual throughput rate of 1.3 Mtpa. The open pit is currently scheduled to restart in 2024 as underground production volumes start to decrease, again supplemented by mill feed material from the low-grade stockpiles. During the final two years of production, all mill feed will come from the Björkdal open pit extension, the Norrberget pit, and the remainder of the surface stockpiles.

1.3.8.2 Norrberget

The Norrberget open pit will be mined by a contractor with trucks and shovels, as part of the larger Björkdal contract. Norrberget will be mined from 2028, when ore from the main Björkdal pit begins to reduce.

The Norrberget mining is integrated into the end of the Björkdal open pit schedule to minimize potential production shortfalls and to provide added flexibility to the deliverable mill feed. The plan for Norrberget will provide a further 162,000 tonnes to the mill over seven months. Stripping of overburden is scheduled to commence at the beginning of 2028, with ore being mined in the last quarter of 2028.

1.3.9 Mineral Processing

The mineral processing plant at Björkdal commenced operation in 1989. Since that time, it has processed more than 33.9 Mt of ore from open pit and underground sources and produced approximately 1.49 Moz Au. Currently, the concentrator throughput is 1.3 Mtpa and the overall gold recovery is 88.3%, of which 73% is obtained from the gravity processes and 17% from flotation.

The concentrator includes primary, secondary, and tertiary crushing, primary and secondary grinding, a series of gravity concentration steps, regrinding, and flotation to produce three gravity concentrates and a flotation concentrate.

The ore from the Norrberget deposit has more complex mineralogy than the mineralogy at Björkdal. Preliminary metallurgical tests show that the gold recovery in the existing plant will be at least 15% lower than the gold recovery for Björkdal ore.

The TMF is located in an area of gently undulating relief approximately 1.5 km north of the processing plant. During 2019 the Western Barrier Dam was raised by 2.5 m, which provides sufficient tailings capacity to April 2022. The raising of Dam K1 will be carried out in two stages. Stage 1 raise was initiated during 2020 and will be completed by the end of 2021. Stage 2 is scheduled to be completed during 2023. At the planned plant throughput of 1.3 Mtpa, this will provide sufficient tailings storage capacity for ten more years of mine life up to 2031.

1.3.10 Environmental, Permitting and Social Considerations

All operations are fully permitted and in compliance with Swedish environmental and health and safety legislation. A new operating permit (M 771-17) was granted in December 2018 and remains valid for ten years from the date of issue for the TMF at which point a new permit will be required. The permit remains valid until 05 October 2067 for all other aspects of the operations.

The environmental permit allows for expansion of the TMF for a mill throughput of 1.7 Mtpa.

Permit applications required for the extension of the underground mine and raise of Dam K1 have either been granted (building permit for Dam K1) or are pending a decision from the Swedish authorities (change permit and designated land permit in support of the construction of Dam K1).

A full environmental audit is carried out every three years by an independent consultant and the local authorities. The monitoring, control, and management policies and procedures are well documented and entirely appropriate to the type of operation.

The 2018 environmental permit includes an updated closure and reclamation plan. Mandalay presently has approximately US$4.43 million (SEK 43 million) held in a secured reclamation account with a bank as required by the Swedish authorities which is sufficient to cover costs of the closure and reclamation plan.

1.3.11 Capital and Operating Costs

A summary of capital requirements anticipated over the LOM is summarized in Table 1-3.

Table 1-3: Capital Cost Summary
Mandalay Resources Corporation – Björkdal Mine

Description	Value (US$000)
Sustaining Capital Fixed Assets	39,952
Capital Development Underground	19,820
Pre-Strip Open Pit	44,500
Total Sustaining Capital	**104,273**
Growth Capital Fixed Assets	13,007
Total LOM Capital Expenditure	**117,279**

Operating costs for the LOM plan are shown below in Table 1-4.

Table 1-4: Life of Mine Operating Costs
Mandalay Resources Corporation – Björkdal Mine

Description	LOM (US$000)	Annual Average (US$000)	Unit Cost (US$/t processed)
Mining	162,965	18,885	15.52
Processing	94,818	10,535	8.25
G&A	107,141	11,905	9.32
Total Operating Cost	**371,923**	**41,325**	**32.36**

2.0 INTRODUCTION

SLR Consulting Ltd (SLR) was retained by Mandalay Resources Corporation (Mandalay) to prepare an independent Technical Report on the Björkdal Gold Mine (Björkdal or the Mine), located in Västerbotten County in northern Sweden. SLR acquired Roscoe Postle Associates Inc. (RPA) in 2019. The purpose of this Technical Report is to support the disclosure of Mineral Resources and Mineral Reserves (MRMR) for Björkdal and the satellite Norrberget deposit (Norrberget), located approximately four kilometres east-southeast of the Mine. MRMR are estimated as of December 31, 2020, based on a drill hole database cut-off date of September 30, 2020 for Björkdal and September 30, 2017 for Norrberget. RPA previously prepared MRMR estimates and supporting Technical Reports for the Björkdal Mine, with the most recent in March 2020 (RPA, 2020). This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

In 2020, Björkdal produced gold from an underground mine only supplemented with stockpile feed, as operations in the open pit mine were suspended in July 2019. Approximately 81% of plant feed for 2020 was delivered from the underground, with the balance drawn from the low grade stockpiles (19%). Total mill feed for 2020 was approximately 1.32 million tonnes (Mt). The average reconciled head grade for 2020 was 1.18 g/t Au. The Björkdal plant uses conventional crushing and grinding, followed by a combination of gravity and flotation processing techniques to recover gold to concentrates which are sold to smelters in Europe. The plant capacity is 3,700 tonnes per day (tpd) and the plant is currently operating at approximately 3,600 tpd. Gold recovery for 2020 averaged approximately 88%, and production totalled approximately 46,300 ounces (oz) of saleable gold.

The 2017 Pre-Feasibility Study (PFS) for Norrberget envisions an open pit mining operation feeding the existing Björkdal plant. No changes have been made to the underlying assumptions for the Norrberget PFS since the last Technical Report dated March 26, 2020 (RPA, 2020).

Mandalay is a publicly listed Canadian mining company that holds 100% of Björkdal through its wholly-owned subsidiaries in Sweden. Mandalay's other operating mine is located in Australia (Costerfield).

2.1 Sources of Information

Site visits to Björkdal were carried out by Reno Pressacco, M.Sc.(A), P.Geo., SLR Principal Geologist, from November 18 to 21, 2019, as well as Kathleen A. Altman, Ph.D., P.E., SLR Associate Principal Metallurgist, and David J.F. Smith, CEng, SLR Principal Mining Engineer, from September 22 to 25, 2017. SLR visited all of the Björkdal open pit and underground operations, the processing plant, and surface infrastructure including the assay laboratory. A visit was also made to the Norrberget Project site by SLR.

The report was prepared by Reno Pressacco, Kathleen A. Altman, Richard C. Taylor, MAusIMM, CP, SLR Principal Mining Engineer, and Alessandra (Alex) Pheiffer, M.Sc., PrSciNat, SLR Technical Director, Environmental and Social Impact Assessment, Europe, all of whom are independent Qualified Persons (QP). Mr. Pressacco is responsible for Sections 2 to 12, 14, 23, and 24 and parts of Sections 1, 25, 26, and 27. Mr. Taylor is responsible for Sections 15, 16, 18, 19, 21, and 22, and parts of Sections 1, 25, 26, and 27. Dr. Altman is responsible for Sections 13 and 17, and parts of Sections 1, 25, 26, and 27. Ms. Pheiffer is responsible for Section 20, and parts of Sections 1, 25, 26, and 27.

Discussions in relation to the year-end 2020 MRMR estimates were held with personnel from Mandalay:

- Mr. Gunnar Rådberg, Björkdal General Manager
- Mr. Jose Javier Santabarbara, Björkdal Senior Resource Geologist

- Ms. Helena Moosberg-Bustnes, Björkdal Plant Manager
- Ms. Åsa Corin, Björkdal Geology Manager
- Mr. Samuel Miller, Björkdal Senior Exploration Geologist
- Mrs. Johanna Nordberg, Björkdal Geologist – Tenements and permits
- Mr. Ali Beyglou, Björkdal Strategic Planning Engineer
- Mr. Dawid Wrobel, Björkdal Mining Engineer
- Mrs. Lena Printzell, Björkdal Environmental Manager
- Mrs. Anna Magnusson, Björkdal HR & Safety Manager

The documentation reviewed, and other sources of information, are listed at the end of this Technical Report in Section 27 References.

2.2 List of Abbreviations

Units of measurement used in this Technical Report conform to the metric system. All currency in this Technical Report is US dollars (US$) unless otherwise noted.

μ	micron	kVA	kilovolt-amperes
μg	microgram	kW	kilowatt
a	annum	kWh	kilowatt-hour
A	ampere	L	litre
bbl	barrels	lb	pound
Btu	British thermal units	L/s	litres per second
°C	degree Celsius	m	metre
C$	Canadian dollars	M	mega (million); molar
cal	calorie	m^2	square metre
cfm	cubic feet per minute	m^3	cubic metre
cm	centimetre	MASL	metres above sea level
cm^2	square centimetre	m^3/h	cubic metres per hour
d	day	mi	mile
dia	diameter	min	minute
dmt	dry metric tonne	μm	micrometre
dwt	dead-weight ton	mm	millimetre
EIA	Environmental Impact Assessment	mph	miles per hour
°F	degree Fahrenheit	MVA	megavolt-amperes
ft	foot	MW	megawatt
ft^2	square foot	MWh	megawatt-hour
ft^3	cubic foot	oz	Troy ounce (31.1035g)
ft/s	foot per second	oz/st, opt	ounce per short ton
g	gram	ppb	part per billion
G	giga (billion)	ppm	part per million
Gal	Imperial gallon	psia	pound per square inch absolute
g/L	gram per litre	psig	pound per square inch gauge
Gpm	Imperial gallons per minute	RL	relative elevation
g/t	gram per tonne	s	second
gr/ft^3	grain per cubic foot	st	short ton
gr/m^3	grain per cubic metre	stpa	short ton per year
ha	hectare	stpd	short ton per day

hp	horsepower	t	metric tonne
hr	hour	tpa	metric tonne per year
Hz	hertz	tpd	metric tonne per day
in.	inch	US$	United States dollar
in^2	square inch	USg	United States gallon
J	joule	USgpm	US gallon per minute
k	kilo (thousand)	V	volt
kcal	kilocalorie	W	watt
kg	kilogram	wmt	wet metric tonne
km	kilometre	wt%	weight percent
km^2	square kilometre	yd^3	cubic yard
km/h	kilometre per hour	yr	year
kPa	kilopascal		

3.0 RELIANCE ON OTHER EXPERTS

This Technical Report has been prepared by SLR for Mandalay. The information, conclusions, opinions, and estimates contained herein are based on:

1. Information available to SLR at the time of preparation of this Technical Report, and
2. Assumptions, conditions, and qualifications as set forth in this Technical Report.

For the purpose of this Technical Report, SLR has relied on ownership information provided by Mandalay in Sections 1 and 4 of this Technical Report. SLR has not researched property title or mineral rights for the Mine and expresses no opinion as to the ownership status of the property.

SLR has relied on Mandalay for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Mine.

Except for the purposes legislated under provincial securities laws, any use of this Technical Report by any third party is at that party's sole risk.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Björkdal property is located in Västerbotten County in northern Sweden, at approximately 20°35'26" E longitude and 64°56'7" N latitude (WGS84). In the Swedish coordinate system used for government maps (SWEREF 99) the Björkdal property is located at approximately X: 7212941 and E: 764003. The Norrberget property is located approximately four kilometres east of the Mine. The Mine is situated approximately 28 km northwest of the municipality of Skellefteå and approximately 750 km north of Stockholm (Figure 4-1).

4.1 Swedish Mining Laws and Regulations

The Minerals Act (1991:45) came into force on July 1, 1992. The Mining Inspectorate of Sweden (Bergsstaten) is the agency responsible for decisions concerning permits for exploration (exploration permits) and mining (exploitation concessions). The Mining Inspectorate also carries out inspections of mines and provides information on mineral legislation and prospecting in Sweden.

On June 11, 2014, the Swedish Parliament amended the provisions of the Minerals Act (1991:45) governing exploration works. As per this bill, exploration permit holders are required to provide more detailed information about their exploration works.

An exploration permit does not give the right to undertake exploration work in contravention of any environmental regulations applying to the area. Applications for exemption are normally submitted to the County Administration Board (Länsstyrelsen).

Acts and regulations governing exploration work include:

- Minerals Act (1991:45)
- Mineral Ordinance (1992:285)
- Environmental Code (1998:808)
- Work Environment Act (1977:1160)
- Work Environment Ordinance (1977:1166)
- The Work Environment Authority's Statute Book (AFS)
- Off-Road Driving Act (1975:1313)
- Off-Road Driving Ordinance (1978:594)
- Forest Conservation Act (1979:429)
- Forest Conservation Ordinance (1993:1096)
- Heritage Conservation Act (1988:950)
- Heritage Conservation Ordinance (1988:1188)
- Protection Act (2010:305)

SLR

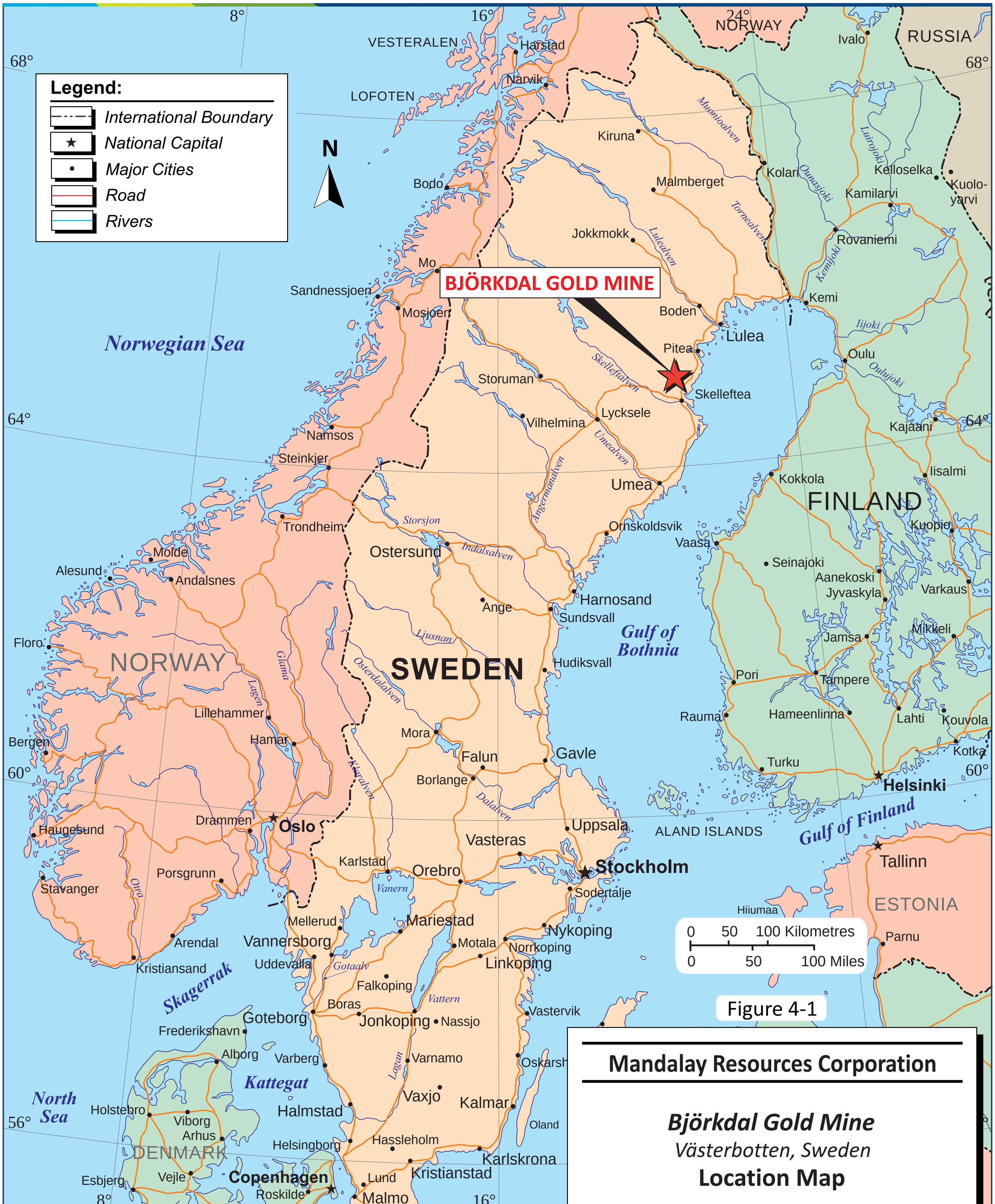


Figure 4-1

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Location Map

March 2021

Source: SLR, 2020.

4.2 Property Ownership and Land Tenure

Mandalay is a publicly listed company that effectively holds 100% of Björkdal through the Swedish registered companies Björkdalsgruvan AB and its subsidiary Björkdal Exploration AB. Björkdalsgruvan AB owns nine mining concessions on the Björkdal property and one mining concession on the Norrberget property. An eleventh concession, Norrliden K nr 1, is held by Explor Björkdalsgruvan AB. The total area of the mining concessions is approximately 413.42 ha. The property ownership includes one application for concession (Kvarnforsliden K nr 1).

There are 18 exploration permits, 15 of which are owned by Björkdalsgruvan AB, two by Explor Björkdalsgruvan AB, and one by Björkdal Exploration AB. The mining and exploration concessions are listed in Table 4-1 and Table 4-2, respectively, and their locations are shown in Figure 4-2.

Table 4-1: Mining Concessions Status as at February 5, 2021
Mandalay Resources Corporation – Björkdal Gold Mine

Mining Concessions		
Permit Name	**Size (ha)**	**Expiry Date**
Häbbersfors K nr 1	98.69	January 1, 2031
Häbbersfors K nr 2	34.88	February 2, 2025
Häbbersfors K nr 3	18.89	April 29, 2027
Häbbersfors K nr 4	5.00	November 21, 2025
Häbbersfors K nr 5	21.83	March 6, 2034
Häbbersfors K nr 6	23.49	April 24, 2038
Häbbersfors K nr 7	32.11	January 17, 2042
Norrberget K nr 1	25.28	January 25, 2044
Nylund K nr 1	73.47	January 30, 2043
Storheden K nr 1	61.27	November 8, 2043
Norrliden K nr 1*	18.51	January 1, 2032
Sub-Total	**413.42**	
Application for Mining Concession		
Permit Name	**Size (ha)**	**Application Date**
Kvarnforsliden K nr 1	6.74	February 27, 2020

Note.

1. Permit held by Explor Björkdalsgruvan AB

Table 4-2: Exploration Concessions Status as at March 4, 2021
Mandalay Resources Corporation – Björkdal Gold Mine

Permit Name	Size (ha)	Expiry Date	Remarks
Björkdal nr 28	39.53	October 14, 2024	COVID-19 year added
Björkdal nr 29	1,073.89	November 30, 2020	Applied for Extension November 19, 2020
Björkdal nr 30	64.03	February 23, 2021	Applied for Extension February 16, 2021
Björkdal nr 31	449.1	November 7, 2024	
Björkdal nr 32	2,219.60	November 27, 2021	Application for Extension[3]
Björkdal nr 33	1,409.35	October 19, 2023	
Björkdal nr 34	2,520.16	November 9, 2023	
Björkdal nr 35	135.43	October 17, 2021	Application for Extension[3]
Björkdal nr 36	670.40	April 10, 2022	
Björkdal nr 37	378.45	August 28, 2022	
Björkdal nr 39	978.45	November 5, 2023	
Lillträsket nr 3	246.59	October 17, 2021	Application for Extension[3]
Malånäset nr 100[1]	591.84	March 20, 2023	
Malånäset nr 101[1]	687.77	March 28, 2021	Application for Extension[3]
Olofsberg nr 102	42.79	June 4, 2023	
Sandfors nr 101	3,267.82	June 9, 2021	Application for Extension[3]
Vidmyran nr 100[2]	1,197.50	March 10, 2024	COVID-19 year added
Vorsberget nr 1	804.73	May 25, 2021	Application for Extension[3]
Total	**16,777.40**		

Notes:
1. Permit held by Explor Björkdalsgruvan AB
2. Permit held by Björkdal Exploration AB
3. Valid for one additional year due to COVID-19-pandemic (Change in Minerals Act valid from March 1, 2021).

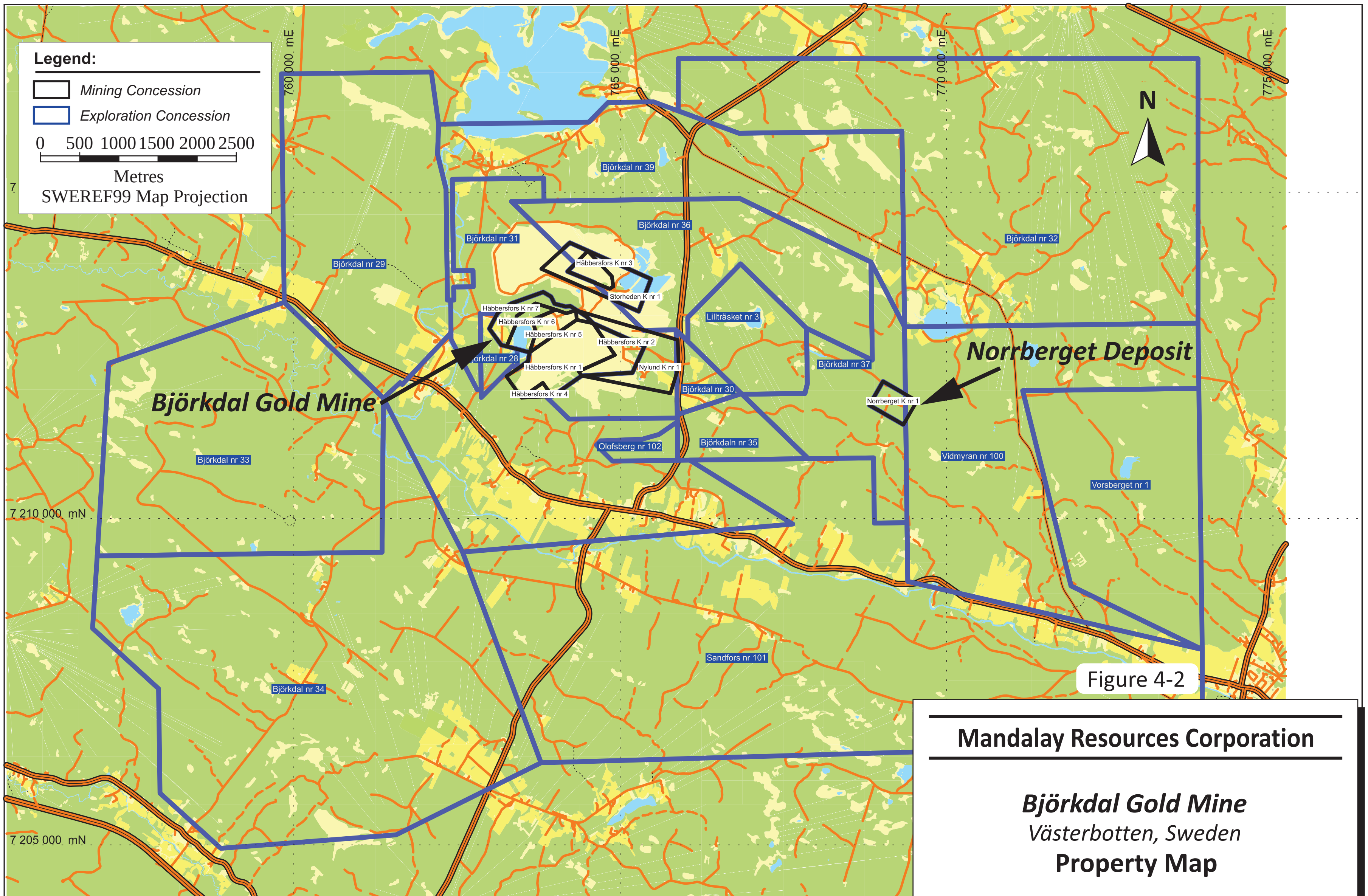


Figure 4-2

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Property Map

March 2021March 2021

Source: Mandalay Resources Corporation, 2021.

4.2.1 Exploitation (Mining) Concessions

The Björkdal deposit is located on Häbbersfors exploitation concessions. Key facts related to mining concessions are:

- A mining concession is valid for 25 years based on an application fee.
- The concession period can be extended for ten years at a time without special application if regular exploitation operations are in progress when the period of validity expires.
- An additional fee is sometimes paid to some landowners for a safety zone for blasting. This is an agreement between the Mine and landowners, and is not due to any legal obligations.

4.2.2 Exploration Permits

Obligations to retain exploration permits include:

- An application fee of SEK500, or approximately US$70, per every 2,000 ha area.
- Exploration fees totaling approximately SEK1,500,000, or approximately US$150,000, for 2020.
- Compensation for damage and encroachment to landowners upon completion of the operation.

4.3 Surface Usage/Land Lease

Mandalay has indicated to SLR that all land required for the Björkdal mining concessions has been designated to the company. Some of the land is owned by Mandalay, while some is still owned by landowners with long-term surface leases to the company. If the Mine activity is shut down for some reason, land is returned to the landowners after reclamation work is completed.

Björkdal is located in reindeer habitat belonging to the Sami village Mausjaure in the west and to the Sami village Svaipa in the east. The habitats are not active and there are no current issues with the indigenous Sami population.

4.4 Environmental Liabilities and Permitting

Mandalay reports that Björkdal is fully permitted in accordance with Swedish environmental and health and safety legislation. The latest environmental permit was issued in December 2018 and is in good standing. The permit is valid for 10 years and allows for expansion of the tailings management facility (TMF) for a mill throughput of 1.7 million tonnes per annum (Mtpa). A mining permit is included in the environmental permit.

4.5 Royalties, Back-in Rights, Payments or Other Encumbrances

The holder of an exploitation concession must pay an annual minerals fee to the landowners of the concession area and to the State. The fee is 0.2% of the average value of the minerals mined from the concession, 0.15% of which is paid to the landowners in proportion to their share of ownership of the concession area. The remaining 0.05% is paid to the State to be used for research and development in the field of sustainable development of mineral resources. The fee is estimated after consideration of the amount of mined ore, the amount of minerals in the ore, and the average price of the mineral during the year or by use of an equivalent value.

4.6 Discussion

SLR is not aware of any environmental liabilities on the property and Mandalay has confirmed that it is in possession of, or in the process of obtaining, all required permits to conduct the proposed work on the property. SLR is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Björkdal property is located approximately 40 km by road northwest of the municipality of Skellefteå (population of 72,000) and is accessible via Swedish national road 95 or European highway route E4 followed by all-weather paved roads. Norrberget is located approximately four kilometres east of the Mine and is accessible via a forest road.

On the Björkdal property, gravel roads link the main site gate entrance to the surface infrastructure. Gravity concentrates are trucked from the Mine to Skellefteå where they are loaded on ships for delivery to smelting customers in Europe. Sulphide flotation concentrates are trucked to nearby processing facilities. The nearest airport, located in Skellefteå, has regular daily service to Stockholm.

5.2 Climate

This area of Sweden has a subarctic climate with mild summers and cold snowy winters. The climate is, however, moderated by proximity to the Gulf Stream, so that while winters are cold, they are much less so than winters at similar latitudes in other parts of the world. The average low temperature for January is -14°C. The short summers are also reasonably warm for latitudes near the Arctic Circle. The average daily high temperature in July is 19°C, although, in recent years, temperatures above 30°C have been recorded. Yearly precipitation is low at less than 600 mm, with August being the wettest month at over 71 mm. Precipitation is quite low near the coast, but snow may lie on the ground for up to five months. Due to its high latitude, July is typified by an average of 21 hours of daylight while the average for December is four. Climatic conditions do not affect Björkdal's or Norrberget's exploration activities, and the Mine and processing operations function year round.

5.3 Local Resources

The Västerbotten region has a long history of mining activity and Skellefteå is an industrial town. The region is home to several competence centres and two universities with the bulk of Sweden's academic and vocational units related to mining, metallurgy, and geology located within a radius of 130 km. There are also a number of specialized companies, suppliers, and contractors linked to the mining industry including world-class manufacturers of mining equipment and machinery. Both experienced and general labour is readily available within the region. Björkdal has had success in hiring experienced staff and personnel with good mining expertise. The Mine enjoys the support of local communities as mining is accepted as a socially responsible and necessary contributor to the local economy.

5.4 Infrastructure

5.4.1 Björkdal

The Mine site hosts extensive surface and underground infrastructure, including the following:

- Well-kept gravel site roads,
- An administrative building consisting of office space, kitchen facilities,

- Barack modules with office space for contactors, changing rooms, and mine dry mess,
- An open pit mine with ramp access to the underground operations,
- An underground mine consisting of ramps and sub-levels,
- Raw ore stockpile facility containing a number of 5,000 tonne to 7,000 tonne capacity raw ore stockpiles,
- Primary jaw crushing facility with 400 tonne coarse ore stockpile,
- Secondary crushing facility,
- 5,000 tonne fine ore stockpile and reclaim facility,
- 3,700 tpd mill, gravity gold plant, and flotation plant,
- An internal metallurgical assay laboratory,
- Company and contractor maintenance facilities,
- A core logging facility with covered storage, sample preparation laboratory, and grade control assay laboratory,
- 250 ha TMF
- Fresh water supply and storage,
- Water treatment plant,
- Explosive magazine and mixing facilities,
- Storage facilities for chemical reagents and bulk supplies,
- An off-site covered core storage facility, and
- Swedish grid electrical power.

5.4.2 Norrberget

Currently, there is no infrastructure at the Norrberget deposit other than forest access roads, currently used for forestry and hunting access to the surrounding area, and exploration drill pads. Water for drilling is obtained from surface streams or pumped from previous drill holes.

In SLR's opinion, there are sufficient surface rights for mining operations and related infrastructure.

5.5 Physiography

The Björkdal property is located at an average elevation of 140 MASL. The terrain around Björkdal is relatively subdued with low hills and numerous shallow lakes. Glacial till forms the main soil cover over the area. The vegetation around Björkdal is dominated by managed forests of spruce and birch with some areas of cultivated land.

6.0 HISTORY

6.1 Prior Ownership

6.1.1 Björkdal

The Björkdal deposit was originally discovered in 1983 by Terra Mining AB (Terra Mining) during a till sampling program which discovered anomalous gold values in the glacial till profile. Anomalous gold values in bedrock were discovered in 1985 and a definition drilling program began in early 1986.

The definition drilling program was coincident with a metallurgical test work program, and feasibility studies that were completed in May 1987. The feasibility studies returned a positive outcome and Terra Mining commenced mining operations at Björkdal in July 1988. In 1996, Terra Mining was purchased by William Resource Ltd. (William). William continued to operate the Mine until the end of June 1999, when it was petitioned into bankruptcy. The assets were bought through public auction in June 2001 by International Gold Exploration, which operated the Mine from September 2001 until 2003 when it was acquired by Minmet plc (Minmet).

In 2006, Gold-Ore Resources Ltd. (Gold-Ore) acquired an option from Minmet to purchase the holding company for the Mine. On December 31, 2007, Gold-Ore exercised its option and acquired all the shares of Björkdalsgruvan AB. During exploration and development of the Mine, Gold-Ore generated cash flow from gold sales from the operation of the plant at the mine, fed by stockpiled material, open pit mining of new material, and underground development operations, which commenced on a full scale in mid-2008. In January 2009, Gold-Ore's management concluded that there were sufficient Mineral Reserves and Mineral Resources at the Mine for at least a five year mine life and declared commercial production.

In May 2012, Elgin Mining Inc. (Elgin) acquired all of the issued and outstanding common shares of Gold-Ore. Gold-Ore's common shares were delisted from the TSX and Elgin graduated from a TSX Venture listed company to a TSX listed company.

On June 4, 2014, Mandalay announced that it had entered into an arrangement agreement pursuant to which Mandalay would acquire all the outstanding common shares of Elgin. The transaction was completed on September 10, 2014.

6.1.2 Norrberget

The Norrberget deposit was discovered by COGEMA in 1994 and drilling occurred until 1996. In 1997, COGEMA withdrew from Sweden and disposed of all assets in the region. The exploration permits around the Björkdal dome and covering the Norrberget deposit were taken up by North Atlantic Nickel (NAN).

On September 28, 2007, Gold-Ore purchased exploration permits surrounding the Björkdal property from NAN. The property was then acquired by Elgin and subsequently passed to Mandalay through the acquisition process described above.

6.2 Previous Mineral Resource and Mineral Reserve Estimates

A detailed description of the MRMR estimates prepared by Minmet, Gold-Ore, and Elgin was presented in previous Technical Reports by RPA (2015, 2017, and 2018) and is not reproduced here. The previous year-end estimates of MRMR were prepared by RPA for Mandalay in 2014, 2016, 2017, 2018, and 2019.

A summary of the Mineral Resource estimates for the Björkdal property as of December 31, 2019 is presented in Table 6-1. A summary of the Mineral Reserve estimates for the Björkdal property as of December 31, 2019 is presented in Table 6-2. These MRMR estimates are superseded by the current estimates contained in Sections 14 and 15, respectively, of this Technical Report. MRMR estimates completed for prior years are presented in RPA (2020), RPA (2019), RPA (2018) and RPA (2017).

Table 6-1: Mineral Resources at the Björkdal Mine and Norrberget Deposit as of December 31, 2019
Mandalay Resources Corporation – Björkdal Gold Mine

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
		Indicated Mineral Resources		
Björkdal	Open Pit	3,114	2.08	208
	Underground	9,656	2.58	799
	Stockpile	2,644	0.64	54
	Sub-total	14,414	2.14	1,062
Norrberget	Open Pit	144	3.29	15
Total, Indicated		**15,558**	**2.15**	**1,077**
		Inferred Mineral Resources		
Björkdal	Open Pit	3,338	1.30	139
	Underground	2,143	2.36	163
	Subtotal	5,480	1.71	302
Norrberget	Open Pit	3	4.03	0.5
Total, Inferred		**5,483**	**1.71**	**302**

Notes:

1. Björkdal Mineral Resources are estimated using drill hole and sample data as of September 30, 2019 and depleted for production through December 31, 2019.
2. Norrberget Mineral Resources are estimated using drill hole and sample data as of September 30, 2017.
3. CIM (2014) definitions were followed for Mineral Resources.
4. Mineral Resources are inclusive of Mineral Reserves.
5. Mineral Resources are estimated using an average gold price of $1,500/oz and an exchange rate of 9.0 SEK/US$.
6. Bulk density is 2.74 t/m^3.
7. High gold assays were capped to 30 g/t Au for the Björkdal open pit mine.
8. High gold assays for the Björkdal underground mine were capped at 60 g/t Au for the first search pass and 40 g/t Au for subsequent passes.
9. High gold assays at Norrberget were capped at 24 g/t Au.
10. Interpolation was by Inverse Distance cubed utilizing diamond drill, reverse circulation, and chip channel samples.
11. Open pit Mineral Resources are estimated at a cut-off grade of 0.34 g/t Au for Björkdal and 0.35 g/t Au for Norrberget and constrained by resource pit surfaces.
12. Underground Mineral Resources are estimated at a cut-off grade of 0.80 g/t Au.
13. A nominal two metres minimum mining width was used to interpret the Björkdal veins using diamond drill, reverse circulation, and underground chip sampling.

14. Stockpile Mineral Resources are estimated at a cut-off grade of 0.40 g/t Au and are based upon surveyed volumes supplemented by production data.
15. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
16. Numbers may not add due to rounding.

Table 6-2: Mineral Reserves at the Björkdal Mine and Norrberget Deposit as of December 31, 2019
Mandalay Resources Corporation – Björkdal Gold Mine

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
		Probable Mineral Reserves		
Björkdal	Open Pit	2,875	1.23	114
	Underground	5,410	2.10	365
Norrberget	Open Pit	162	2.80	15
Stockpile	Stockpile	2,644	0.64	54
Total, Probable		**11,090**	**1.54**	**548**

Notes:

1. Mineral Reserves are estimated using drill hole and sample data as of September 30, 2019 and depleted for production through December 31, 2019.
2. Norrberget Mineral Reserves are estimated using data as of September 30, 2017.
3. CIM (2014) definitions were followed for Mineral Reserves.
4. Open Pit Mineral Reserves are based on mine designs carried out on an updated resource model, applying a block dilution of 100% at 0.0 g/t Au for blocks above 1.0 g/t and 100% at in-situ grade for blocks between 0.4 g/t and 1.0 g/t. The application of these block dilution factors is based on historical reconciliation data. A cut-off grade of 0.4 g/t Au was applied. Open Pit Mineral Reserves for Norrberget are based on 15% dilution at zero grade and 100% extraction.
5. Underground Mineral Reserves are based on mine designs carried out on an updated resource model. Minimum mining widths of 3.85 m for stopes (after dilution) and 4.35 m for development were used. Stope dilution was applied by adding 0.5 m on each side of stopes as well as an additional 10% overbreak dilution. Further dilution, ranging from 10% to 100%, was added on a stope by stope basis depending on their proximity with other stopes. An overall dilution factor of 14.5% was added to development designs. Mining extraction was assessed at 95% for contained ounces within stopes and 100% for development. A cut-off grade of 0.92 g/t Au was applied. An incremental cut-off grade of 0.4 g/t Au was used for development material.
6. Stockpile Mineral Resources are estimated at a cut-off grade of 0.40 g/t Au and are based upon surveyed volumes supplemented by production data.
7. Mineral Reserves are estimated using an average long-term gold price of US$1,300/oz, and an exchange rate of 9.0 SEK/US$.
8. Tonnes and contained gold are rounded to the nearest thousand.
9. Totals may appear different from the sum of their components due to rounding.

6.3 Past Production

6.3.1 Björkdal

Table 6-3 shows Björkdal's annual gold production since 1988.

Table 6-3: Björkdal Annual Gold Production (1988 to 2020)
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Production (kt)	Feed Grade (g/t Au)	Recovery (%)	Production (oz Au)
1988	148	2.29	89.1	9,683
1989	475	2.86	90.9	39,727
1990	613	2.56	89.9	45,350
1991	765	2.64	89.8	58,270
1992	872	2.94	89.9	74,133
1993	840	3.33	90.7	81,549
1994	877	2.62	92.0	67,980
1995	1,157	2.11	90.0	70,646
1996	1,276	2.31	91.0	86,210
1997	1,288	2.49	89.6	92,416
1998	1,317	1.77	89.7	67,227
1999	635	1.50	89.8	27,500
2000	-	-	-	-
2001	303	1.09	84.1	8,922
2002	1,190	1.02	86.4	33,723
2003	1,198	1.30	86.4	43,274
2004	1,194	0.94	85.0	30,665
2005	1,197	0.68	84.7	22,172
2006	1,210	0.61	86.8	20,591
2007	1,109	0.63	85.5	19,214
2008	1,170	0.89	87.5	29,288
2009	1,064	1.24	88.4	37,568
2010	1,155	1.23	89.0	40,729
2011	1,215	1.17	88.6	40,358
2012	1,385	1.20	87.8	46,808
2013	1,261	1.32	87.8	46,941

Year	Production (kt)	Feed Grade (g/t Au)	Recovery (%)	Production (oz Au)
2014	1,318	1.24	88.2	46,292
2015	1,303	1.22	88.1	44,920
2016	1,289	1.35	87.9	49,140
2017	1,262	1.75	89.1	63,186
2018	1,249	1.29	90.0	46,662
2019	1,289	1.43	88.8	52,514
2020	1,320	1.24	87.7	46,289
Total	**33,944**	**1.53**	**88.4**	**1,489,971**

6.3.2 Norrberget

There has been no production from the Norrberget deposit.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

The following discussion and figures were provided by Mr. Samuel Miller, Mandalay, Björkdalsgruvan Senior Exploration Geologist.

7.1 Regional Geology

The Skellefteå region consists of Paleoproterozoic-aged rocks that host several world-class volcanogenic massive sulphide (VMS) copper, zinc, and lead deposits that have been worked for nearly a century. The Skellefteå district lies within a large and ancient cratonic block named the Fennoscandian shield. The Fennoscandian shield spans much of Finland and northwestern Russia, extending further westward throughout Sweden and Norway.

Mineralization in the Skellefteå region is focused within and around a regionally extensive, west to northwest trending structural feature named the Skellefteå belt (Figure 7-1). The Skellefteå belt is 120 km long and 30 km wide and consists of deformed and metamorphosed volcanic, sedimentary, and igneous rocks that are all Paleoproterozoic in age. Deformation and metamorphism are attributed to the Paleoproterozoic-aged Svecokarelian orogeny that occurred around 1.88-1.8 Ga. Metamorphism associated with the Svecokarelian orogeny ranges in intensity from greenschist to amphibolite facies.

7.1.1 Regional Stratigraphy

The stratigraphy of the Skellefteå area consists of Paleoproterozoic-aged volcanic, volcanoclastic, and sedimentary rocks. The stratigraphy is divided into two large litho-stratigraphic groupings that are named the Skellefte Group (lower division) and the Vargfors Group (upper division) as defined by Allen et al. (1996). The Skellefte Group is dominated by extrusive volcanic successions that are interbedded/intercalated on a large scale with clastic sediments, with volcanic rock-types within the Skellefte Group classified as rhyolite, dacite, andesite, and basalt rock-types. Sedimentary lithologies consist of black coloured pyritic mudstone and shale, volcanoclastic rocks, breccia conglomerates, and minor carbonates.

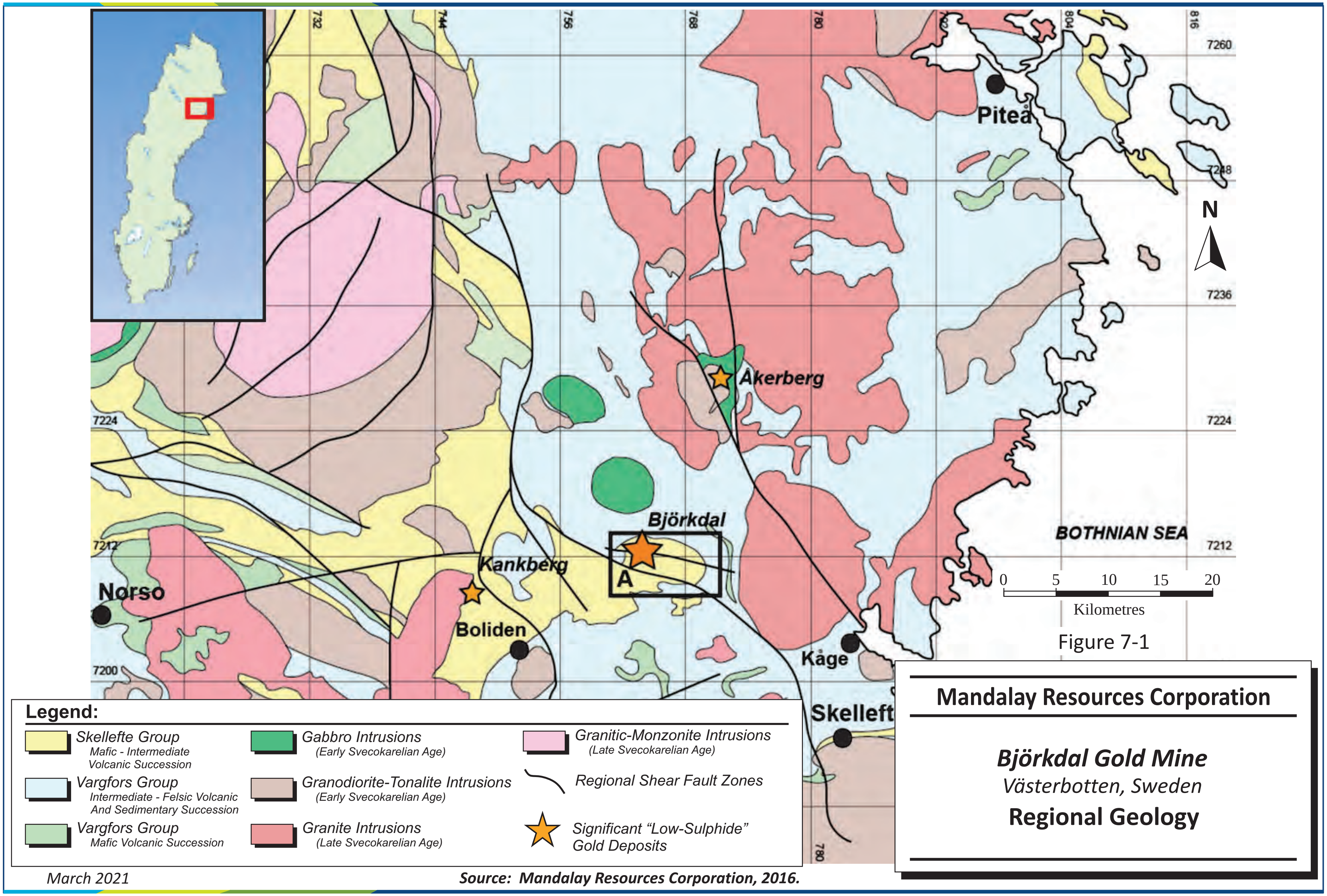


Figure 7-1

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Regional Geology

The overlying Vargfors Group is dominated by clastic sedimentary rocks with lesser mudstone and carbonates, sporadically interbedded with thin volcanic successions. The lower portions of the Vargfors Group consist of abundant conglomerate and sedimentary breccia. Locally, rare carbonate beds are observed interbedded within these conglomerates, while the finer-grained siliciclastics may contain a carbonate-rich matrix. Total stratigraphic thickness of the entire Skellefte and Vargfors groups is in the order of seven kilometres (three and four kilometres respectively; Allen et al., 1997).

The stratigraphic successions are locally intruded by igneous rocks thought to belong to the Jörn granitoid suite. Relative ages of these intrusive bodies are constrained through radiometric dating and field relationships indicate a contemporaneous emplacement age with the volcanic rocks belonging to the Skellefte Group, with lithic intrusive clasts found within the overlying Vargfors Group (Lundberg, 1980; Clauson, 1985; Wilson et al., 1987). Compositions of these intrusive rocks of the Jörn granitoid suite range considerably from felsic to mafic with end-member compositions respectively represented by gabbros and granites.

7.1.2 Regional Structure

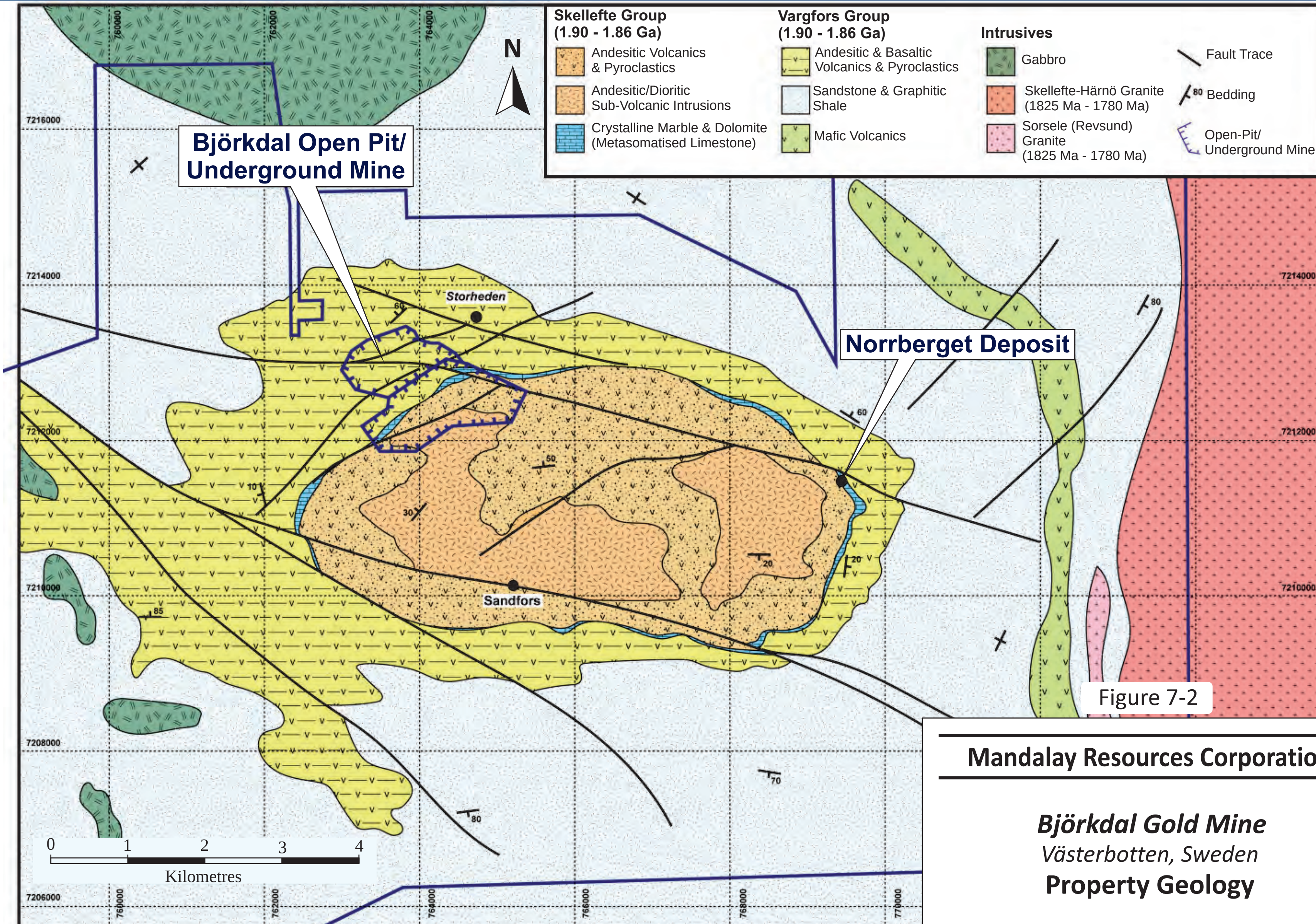
The rocks of the Skellefteå belt are observed to have undergone two major shortening events and metamorphism during the Svecokarelian orogeny. The first of the major shortening events resulted in folding and shearing; folding consists of vertical to upright isoclinal folds with east to northeast striking axial planes, while shear zones are oriented sub-parallel to the axial planes of the folds. The later shortening event produced structures mainly dominated by shearing, with only minor folding coaxially overprinting the earlier generation of folding (Weihed et al., 2003).

7.2 Project Geology

Existing literature on the geological setting of the Björkdal gold deposit describes auriferous veins hosted within the outer margin of a large quartz-monzodiorite or tonalitic intrusion that is surrounded by supra-crustal rocks. The contact between the intrusion and surrounding rocks is represented by a “major thrust duplex”, which also serves to truncate the mineralized vein-system (Bergström and Weihed *in* Kathol and Weihed, 2005, and references within). Radiometric dating of zircons extracted from the Björkdal host rocks (Lundström and Anthal, 2000) return ages of 1,905 Ma (although many zircon forming events are apparently observed) that are considered to represent the emplacement age of the intrusion. The oldest intrusive rocks within the Skellefteå district are the Jörn granitoids which are documented to post-date the Björkdal intrusive rocks dating between 1,890 and 1,870 Ma (Kathol et al., in Kathol and Weihed, 2005). The 1,905 Ma emplacement age corresponds to the reported depositional age of the Bothnian Basin sediments in which the Björkdal intrusion is hosted (Claesson and Lundqvist, 1995). Therefore, the formational interpretations of geological features in the Björkdal area (such as Björkdal dome) do not really align well with the regional chronological framework presented in literature. The property-scale geological setting is presented in Figure 7-2.

7.2.1 Local Geology

As a result of detailed litho-stratigraphic mapping, petrological observations, and geochemical analysis undertaken by Mandalay/Björkdalsgruvan AB, geologists have observed that host rock geology, metamorphism, and alteration styles are much more complex and variable than previously documented. Instead of a large, massive plutonic-type intermediate intrusion occupying the domal structure observed within the Björkdal area, a variable and complex alteration signature overprints many different rock-types including pyroclastic, volcano-sedimentary, tuffaceous, extrusive-volcanic (andesitic to basaltic compositions), sub-volcanic intrusive (andesitic compositions), and sedimentary (silici-clastics, shales and carbonates) lithologies. Common alteration and metasomatic styles include silicification, carbonatization, calc-silicate (actinolite) alteration, albitization, chloritization, potassic (biotite and K-feldspar), epidotization, pyritization, tourmalinization, with various skarn-type alteration assemblages common in areas where a calcareous host rock is present (including actinolite, tremolite, pyroxene, and minor garnet). While alteration and metasomatic zonation of these various styles is present, the spatial distribution has not clearly been defined. A major control on the alteration zonation appears to be host rock lithology (protolith composition) and proximity to major fluid driven heat sources (i.e., hydrothermal systems).



Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Property Geology

March 2021

Source: Mandalay Resources Corporation, 2020.

7.2.2 Local Stratigraphy

A litho-stratigraphic column of geologic units observed in the Björkdal area is presented in Figure 7-3. The lowest succession found at the Mine and in the surrounding area consists of a unit of volcaniclastic sandstones and conglomerates, interbedded with lavas, ignimbrites, tuffs, bedded sandstone, and mudstone/shales. A large sub-volcanic intrusion (interpreted as an andesitic laccolith) locally intrudes this volcanic succession in the south and southwestern margins of the current open pit, but has not yet been encountered elsewhere within the Mine area.

A massive unit of crystalline marble sharply overlies these lower volcanic and clastic units. Overlying the crystalline marble is a thin pyroclastic unit (characterized by abundant "fiamme" clasts), which is then abruptly overlain by a basaltic lava containing abundant amygdules (defined by actinolite and carbonate in-fill). Above this basalt, the stratigraphy appears to become increasingly marine in genesis, with the overlying units consisting of laminated and interbedded tuffs and mudstone (basaltic geochemical composition), finely laminated mudstones and siltstone, and poorly sorted sandstone. Gradationally overlying these clastic sediments is a monotonous series of graphitic and pyritic shale (pyrite is often altered to pyrrhotite), interbedded with poorly sorted siltstone and sandstone with minor course-sand/grit beds. Partial Bouma sequences are observed within the more clastic intervals of this upper shale succession.

The local stratigraphy at the Mine is related with the upper and lower portions of the Skellefte and Vargfors groups, respectively (as defined in Allen et al., 1997). The units present below the upper contact of the crystalline marble are interpreted to correlate with the upper portions of the Skellefte Group. These carbonate units are interpreted to represent the eastward, deeper-water, lateral-equivalent of Kautsky's (1957) "Menstäsk conglomerate", described as consisting of lime-cemented marine conglomerate and sedimentary breccia. As such, the upper contact of this calcareous unit is here defined as an approximate stratigraphic position of the Skellefte-Vargfors Group boundary.

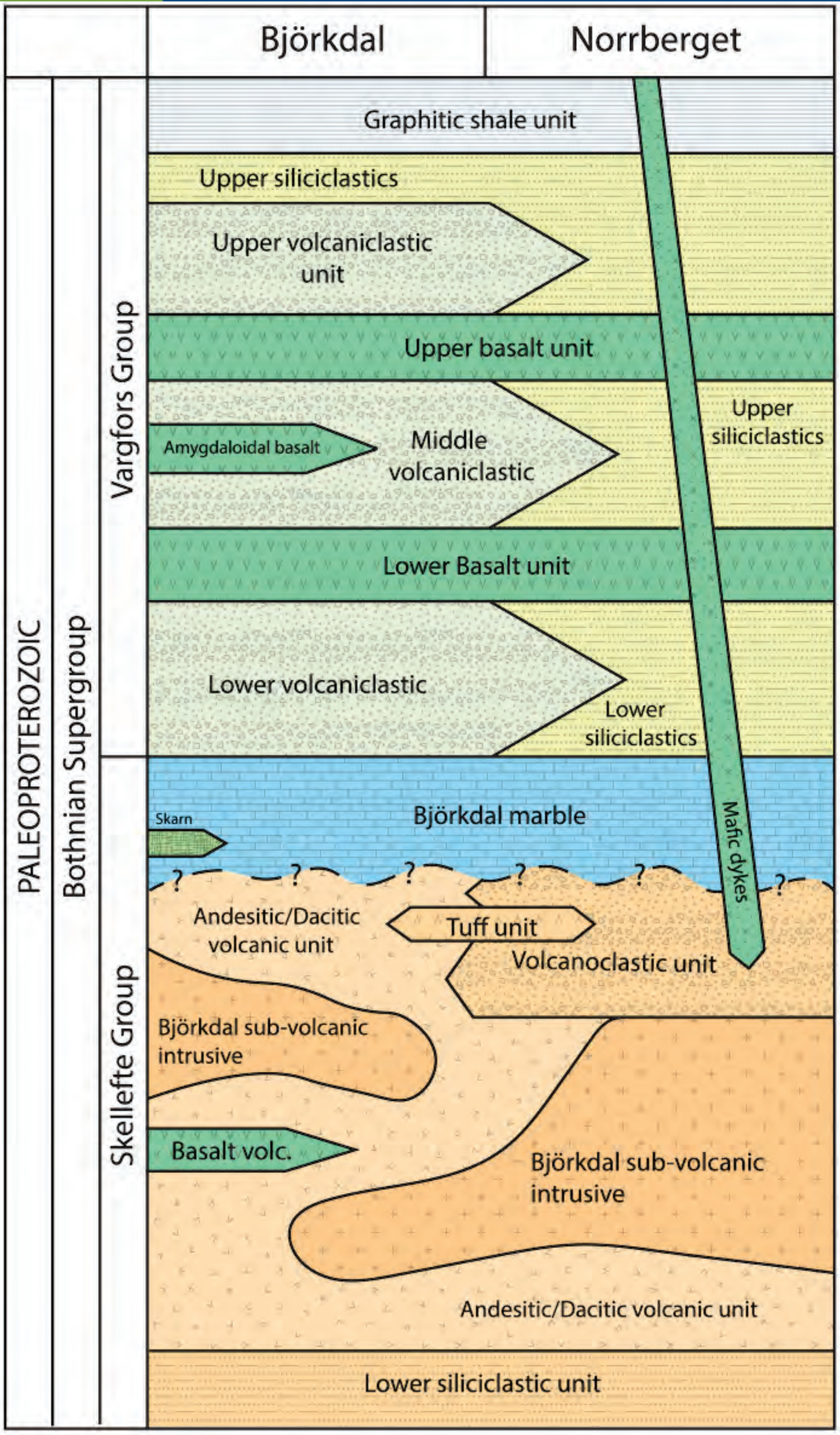


Figure 7-3

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Björkdal Stratigraphy

March 2021 ***Source: Mandalay Resources Corporation, 2016.***

7.2.3 Local Structure

The local structure of the Björkdal deposit is dominated by a number of shallow, north to northeast-dipping brittle-ductile faults and shears. The dominant structure, which can be traced along the full length of the Mine, is referred to as the Björkdal shear (Figure 7-4). The majority of the kinematic indicators identified along these structures appear to be dominantly oblique strike slip. The brittle structures consist of fault-gouge that has undergone sporadic re-healing and "cementation" by carbonate, silica, and sericite. Brittle-ductile structures consist of highly-sheared fabrics and/or rotated and boudinaged quartz veins (Figure 7-5) that may include masses of very mildly foliated biotite. This latter set of structures are sometimes significantly mineralized in gold in economic quantities. The temporal relationship between mineralized quartz veins and the structures appears to be complex, with a number of cross cutting relationships, suggesting multiple phases of deformation throughout the emplacement of the mineralization.

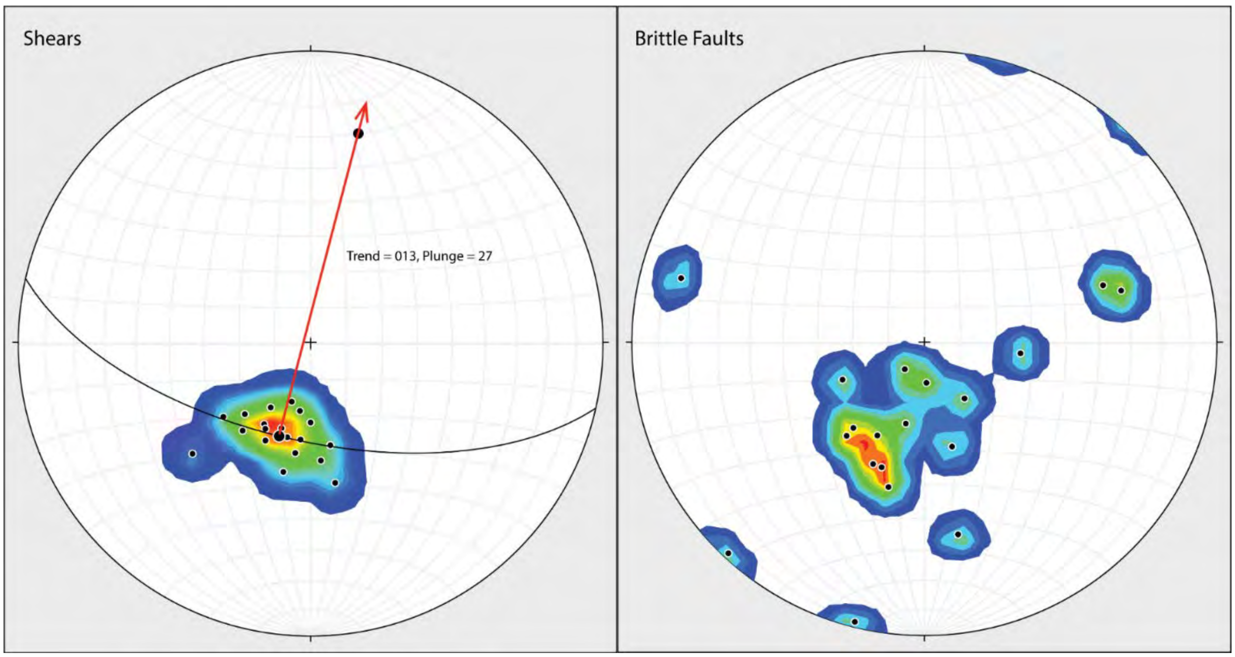


Figure 7-4: Stereonet Plots (Poles to Planes) of Shears and Brittle Faults

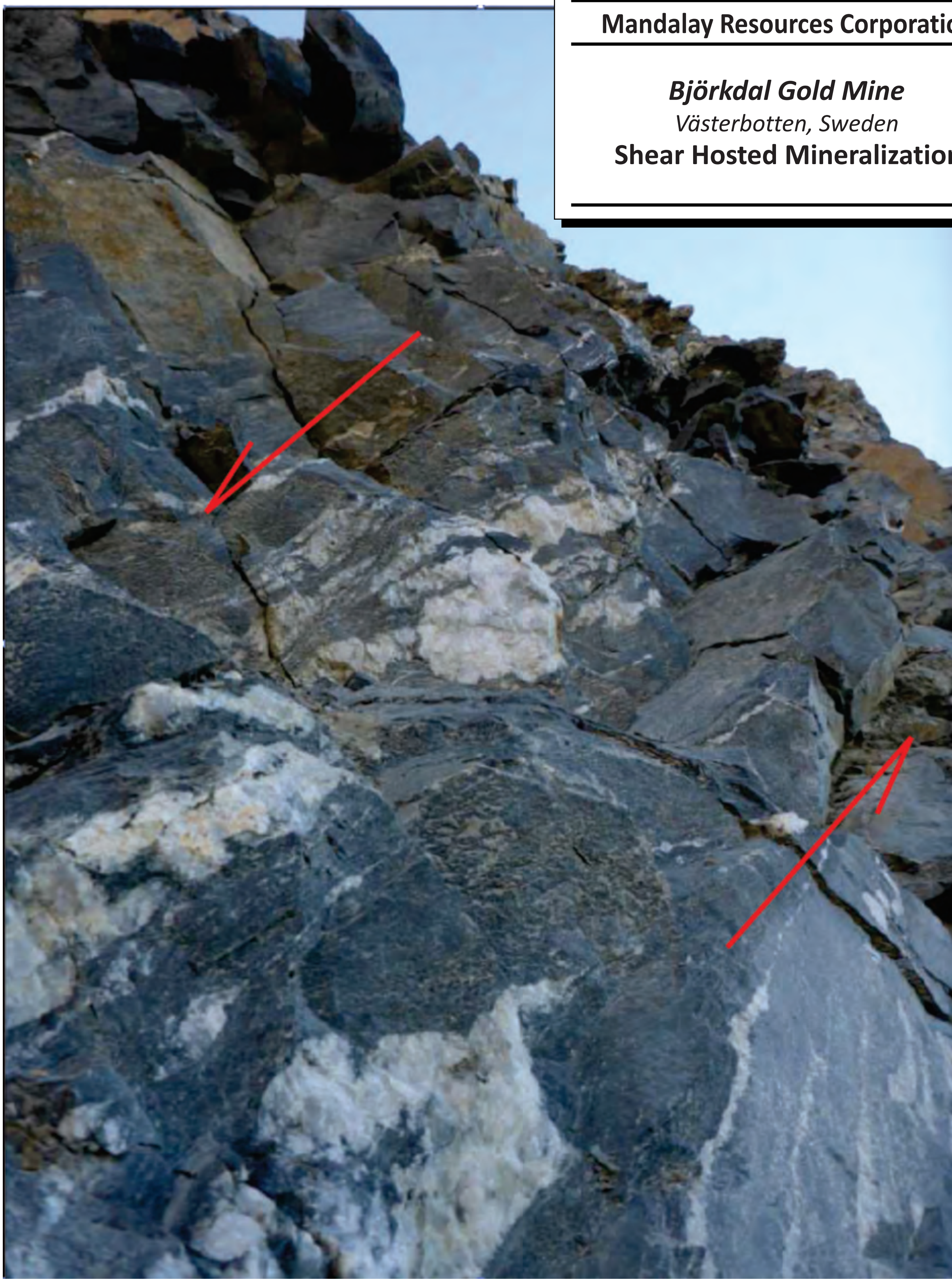
Figure 7-5

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Shear Hosted Mineralization



March 2021

Source: Mandalay Resources Corporation, 2016.

7.3 Mineralization

7.3.1 Björkdal Gold Mineralization

The Björkdal gold deposit is a lode-style, sheeted vein deposit hosted within the upper portions of the Skellefte Group sediments. Gold is found within quartz veins that range in thickness from less than a centimetre to over several decimetres. These veins are usually observed as vertical to sub-vertical dipping veins that strike between azimuth 000° and azimuth 090°, with the majority of veins striking between azimuth 030° and 060°. The veining is locally structurally complex, with many cross-veining features observed and thin mineralized quartz veinlets in the wall rocks proximal to the main quartz veins (Figure 7-6).

Gold-rich quartz veins are most often associated with the presence of minor quantities of sulphide minerals such as pyrite, pyrrhotite, marcasite, and chalcopyrite alongside more common non-sulphide minerals such as actinolite, tourmaline, and biotite. Scheelite and bismuth-telluride compounds (i.e., tellurobismuthite and tsumoite) are also commonly found within the gold-rich quartz veins and are both excellent indicators of gold mineralization.

Gold occurs dominantly as free gold, however, gold mineralization is also associated with bismuth-telluride minerals, electrum, and pyroxenes. Silver is seen as a minor by-product of the Björkdal processing plant, however, very little is known about its deportment within the deposit, although it is assumed to be associated with electrum.

7.3.2 Björkdal Skarn Mineralization

Skarnification occurs commonly within the Mine, especially in the limestone/marble unit where it occurs as discreet patches and lenses. However, similar calc-silicate alteration has taken place in areas where local shearing has affected the volcanoclastic host rock. The altered rock texture appears sheared and mottled to a varying degree; locally the rock can have a folded appearance. In places where the skarnification is the strongest, the precursor rock texture has been completely overprinted. The skarnified rock has been divided to prograde and retrograde phases based on their dominant mineralogy. Prograde skarn is light green and is dominated by clinopyroxene patching with partial to complete breakdown of the pyroxene patches to amphiboles (actinolite/tremolite), chlorite, calcite, and, to minor degree, serpentine and talc. The retrograde skarn is finer grained and darker green in colour than the prograde skarn and consists primarily of amphiboles, chlorite, and calcite (Figure 7-7). It is likely that the retrograde skarn represents patches of alteration where the calc-silicification did not progress as far as it did in the prograde skarn. The limestone can also be dolomitic and silicified as well as containing irregular quartz patches, quartz veins, and overprinting calcite veins.

Shearing is a known mechanism of skarnification. The skarnification here is most likely due to fluid influx where shears and faults interacted with the limestone/marble unit or calcite banded volcanoclastic rocks. The limestone/marble unit is predisposed to accommodate strain and be exploited by structures (both large and smaller scale) due to the rheological difference between the limestone/marble and the surrounding volcanic and volcaniclastic rocks. It is more ductile, prone to folding on varying scales and the calcium carbonate is reactive enough to interact with infiltrating fluids and more importantly, provide calcium for the calc-silicification. The large scale structures are interpreted to function as channels for the fluids that alter the host rocks in the Björkdal area. Where the Björkdal shear or its smaller conjugate faults intersect with the limestone/marble unit, the retrograde skarnification and low grade gold mineralization can occur (Figure 7-8). Where two or more structures interact with each other and the limestone/marble unit, the skarnified lenses consist of prograde skarn and carry higher grades (e.g. Lake Zone north skarn lens).

7.3.3 Norrberget

The primary mineralization at Norrberget is observed to be associated with amphibole alteration bands and veinlets, and where mafic tuffs and volcaniclastic rocks are interbedded, contrary to what is observed at Björkdal (Figure 7-9). The mineralization is preferentially emplaced where there is a structural change to the rock such as at lithological contacts, altered bands and where shearing interacts with the interbedded sequences, due to the changing in the rheological characteristics of the unit. Zones where pyrrhotite and pyrite occur and are absent appear to be lithological controlled within the volcaniclastic package which can indicate a differing redox based upon temperature change and fluid evolution.

The mineralization at Norrberget is limited spatially to 50 m stratigraphically below the lower marble contact, which is believed to be a result of the cooling and redox changes of the fluid as it passes through the units.

The gold is very fine grained and rarely visible. Where gold grains have been observed, they are found to be on the boundary or in the interstitial material between grains. High grade gold is mostly found in areas with low to no pyrite.

Figure 7-6

Mandalay Resources Corporation

Björkdal Gold Mine
Västerbotten, Sweden
Complex Veining Styles Observed Underground

March 2021

Source: Mandalay Resources Corporation, 2016.

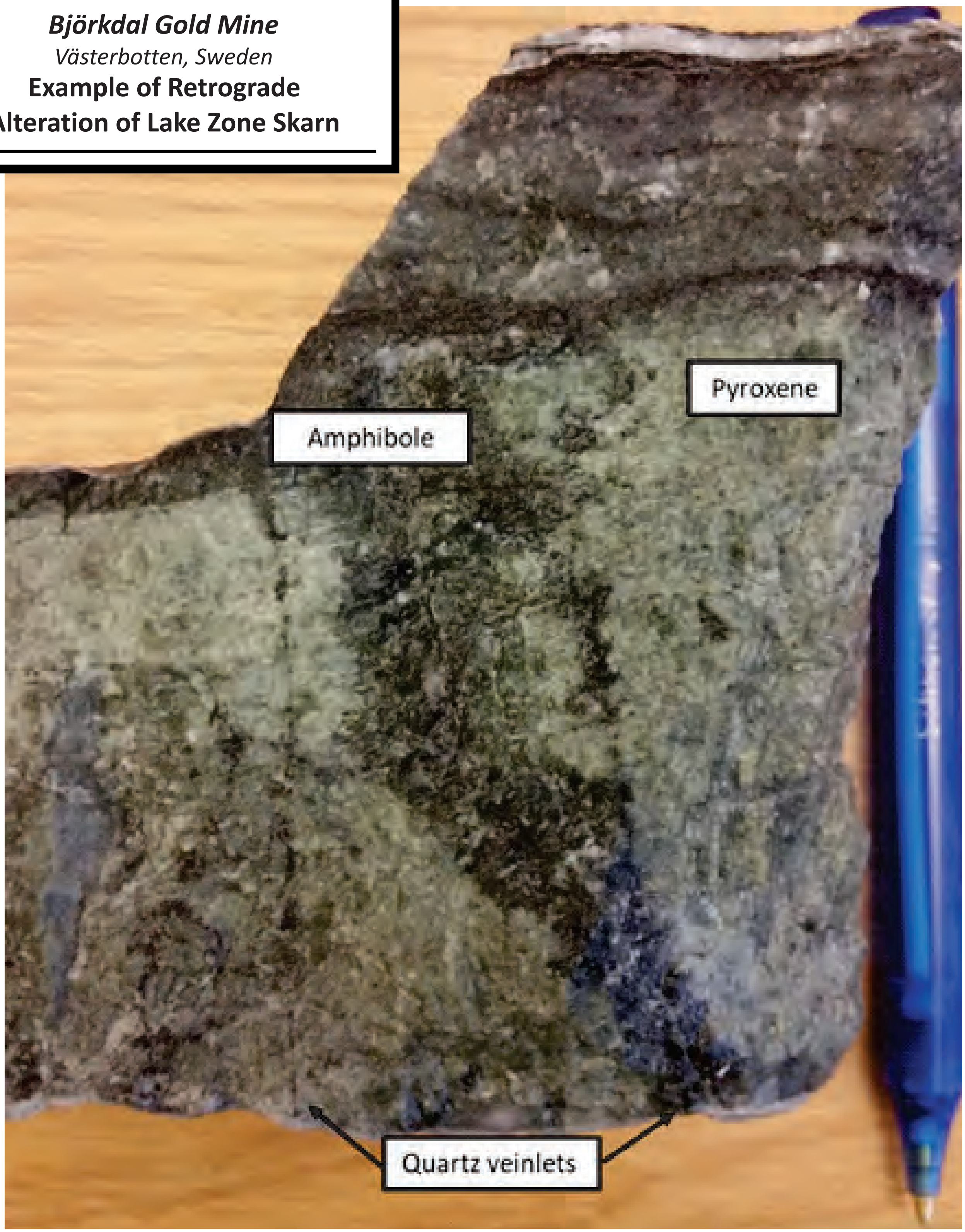
Figure 7-7

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Example of Retrograde Alteration of Lake Zone Skarn



March 2021

Source: SLR, 2019.

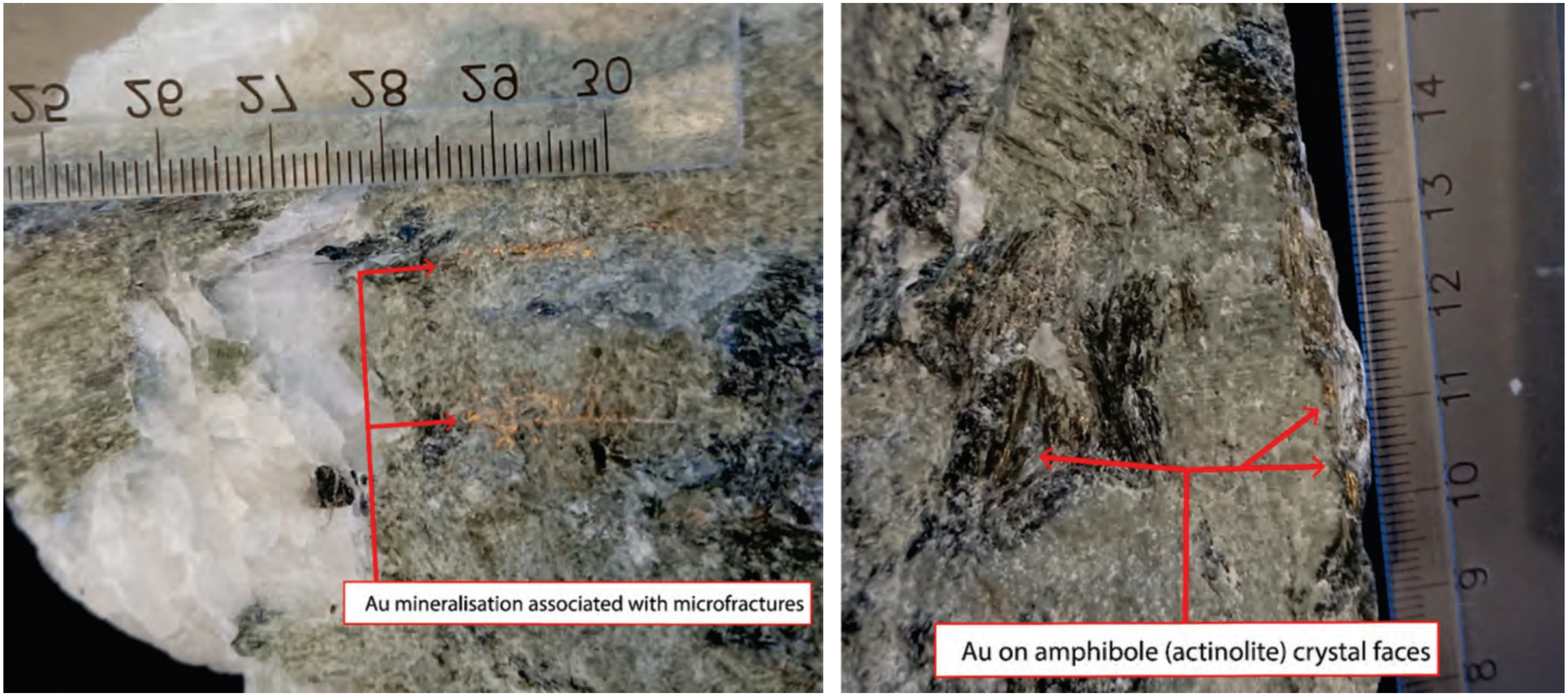


Figure 7-8

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Example of Skarn-Hosted Gold Mineralization

Source: Mandalay Resources Corporation, 2020.

Figure 7-9

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Norrberget Mineralization

Source: Mandalay Resources Corporation, 2019.

8.0 DEPOSIT TYPES

8.1 Björkdal

The most striking feature of the Björkdal Au system is the anastomosing, sheeted quartz-vein network in which the majority of gold is hosted. This epigenetic vein network appears structurally controlled, consisting of more than a thousand sub-parallel quartz veins (typically striking 030° to 090° from true-north). Such strong structural-geological influences over geometry of any quartz vein hosted mineralization clearly suggest a strong spatial and temporal relationship with orogenic/tectonic processes (i.e., mesothermal/greenstone gold systems). However, the mineralogical associations with gold mineralization, and the larger alteration signature of the Björkdal area, could also suggest that alternative depositional mechanisms are responsible for the mineralization at Björkdal as there are some similarities with skarn and/or porphyry systems.

8.1.1 Structural Development of Mineralization

The relationship between mineralized veins and the local structures appears complex; various cross cutting relationships are observed in the Mine suggesting multiple phases of deformation throughout the emplacement of the mineralization. A total of 25 major, north to northeast (true) dipping, strike-slip shears have been identified within the Björkdal deposit, with numerous, localized systems observed throughout (Figure 8-1). The majority of the significant gold grades observed within the deposit is hosted proximal (approximately 30 m) to the shear zones.

The most significant structure within the deposit is the Björkdal shear, which can be traced along the full length of the Mine and appears to be part of the larger, regional structural network. The shear is sigmoidal in nature and is observed to "kink" towards the north, allowing for the formation of a high density fracture horizon above the marble unit. This kinematic evolution, along the strike length of the shear, has caused the relationship to the mineralization to change. In the southern region of the Mine, the shear represents the hanging wall of the mineralization, whereas in the north, the shear represents the footwall of the mineralization (Figure 8-2, Mandalay, 2020b). SLR agrees with Mandalay's current view that the Björkdal shear may represent a post-mineralization structure that has offset the gold bearing quartz veins into their current orientation by distances that are on the order of 400 m to 600 m.

SLR recommends that the gold bearing potential of the host lithologies continue to be evaluated to the north of the current workings above the Björkdal shear for their potential of hosting the fault-displaced series of the quartz veins found in the Mine to-date. SLR also recommends that the host units below the Björkdal shear be evaluated for their potential of hosting new quartz veins.

A detailed kinematic study within the deposit suggests that the smaller, more localized structures are second order structures to the Björkdal shear.

Veins of the Björkdal system can generally be described as sub-vertical in dip and generally strike between 020° and 090° from true north. A minor set of veins occur that are also sub-vertical dipping, but strike in a 330° from true north orientation. All veins sets appear to carry gold mineralization to various extents, with higher grades occurring where veins of different orientations intersect one another. Slip-orientation of slickenside lineations in vein walls (030° to 090° vein set) indicate strike-slip movement, with both sinistral and dextral features present within a single vein.

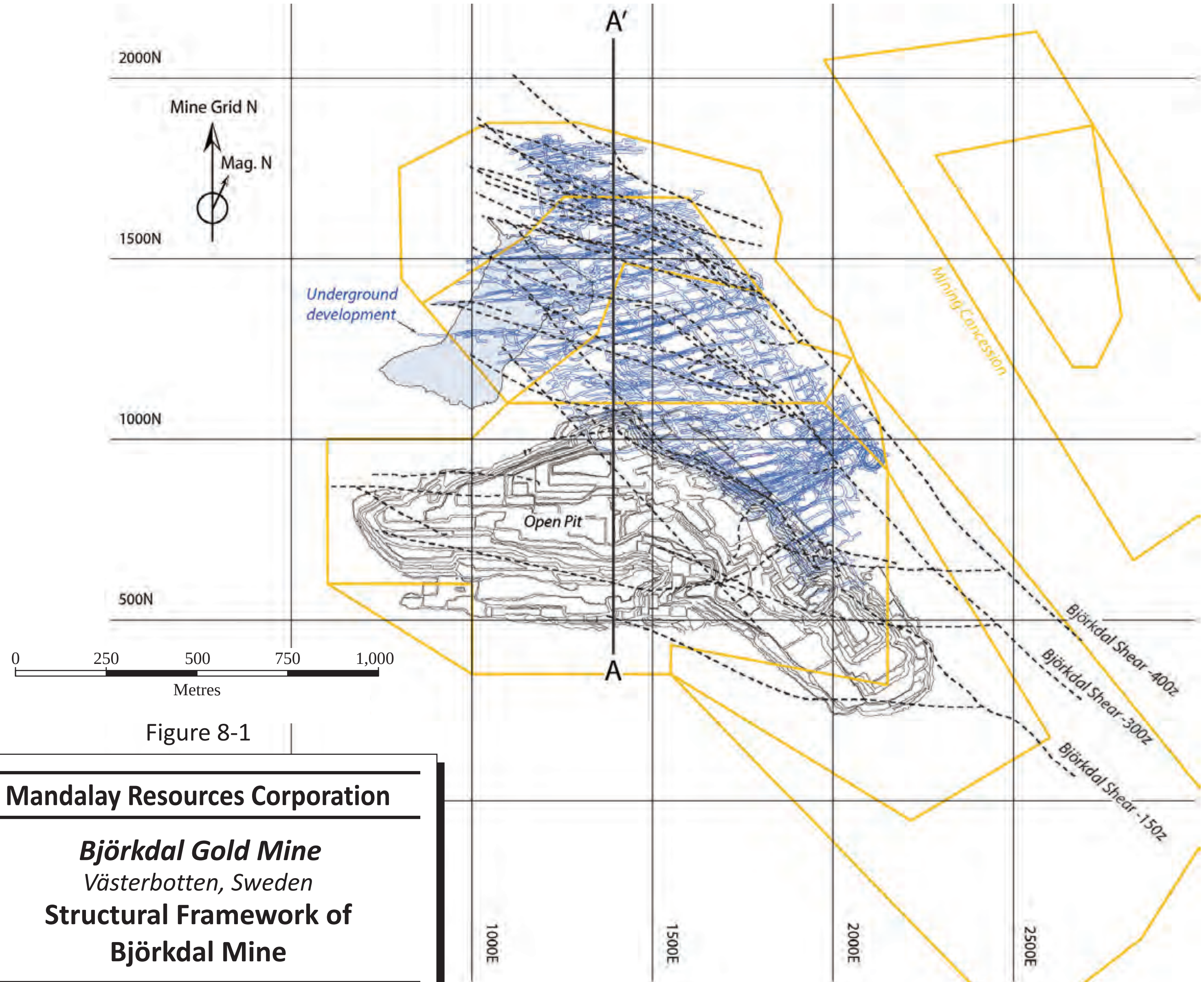


Figure 8-1

Mandalay Resources Corporation

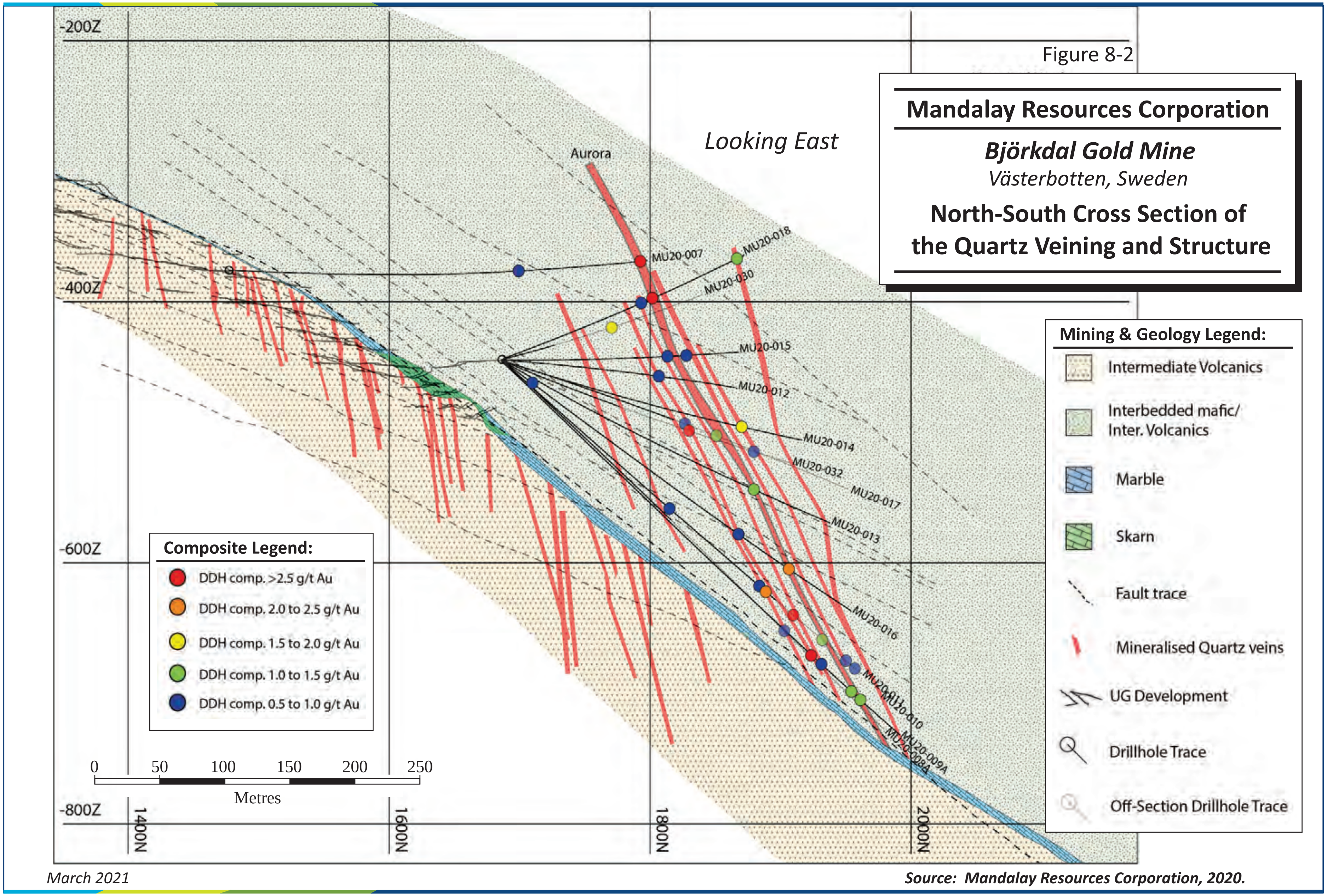
Björkdal Gold Mine

Västerbotten, Sweden

Structural Framework of Björkdal Mine

March 2021

Source: Mandalay Resources Corporation, 2020.



March 2021

Source: Mandalay Resources Corporation, 2020.

8.1.2 Alteration

Alteration assemblages at Björkdal are varied and complex with both regional and local scale alteration systems observed. The regional-scale alteration can be loosely defined in terms of certain key minerals such as albite, epidote, and K-feldspar. While silica, carbonate, actinolite, chlorite, and biotite are often more abundant than albite, epidote, and K-feldspar, they are very widespread and too common to be used to define any clear spatial zonation. As such, alteration zonation around the Björkdal structural dome can be generally described as follows: the southern portions are dominated by significant K-feldspar assemblages, the northern portion is dominated by albite, and part of the central to north-central portion of the dome contains noticeable amounts of epidote (Figure 8-3). The genetic and chronological relationships between the gold mineralization and alteration are unclear, however, known gold mineralization has much more intensive associated silicification, particularly in areas of faulting and shearing, suggesting a close relationship between alteration intensity and gold mineralization.

Alteration at Björkdal typically consists of silicification and albitization of the wall rock that extend up to one metre from the vein walls. Areas of intense silicification and albitization are observed to have completely recrystallized the wall rock in some cases. Disseminated actinolite, chlorite, sericite, and pyrite, with rarer occurrences of epidote, pyroxene, garnet, and sphene occur within these vein wall alteration halos.

In areas of the Mine where the most intense alteration is in contact with the Björkdal marble unit, strong skarnification occurs. This skarnified marble unit consists of silica, chlorite, amphibole, actinolite, hornblende, pyroxene, and clinopyroxene. Gold mineralization in these areas is related to silica-pyrrhotite-actinolite clotted disseminations of one centimetre to two centimetre diameters.

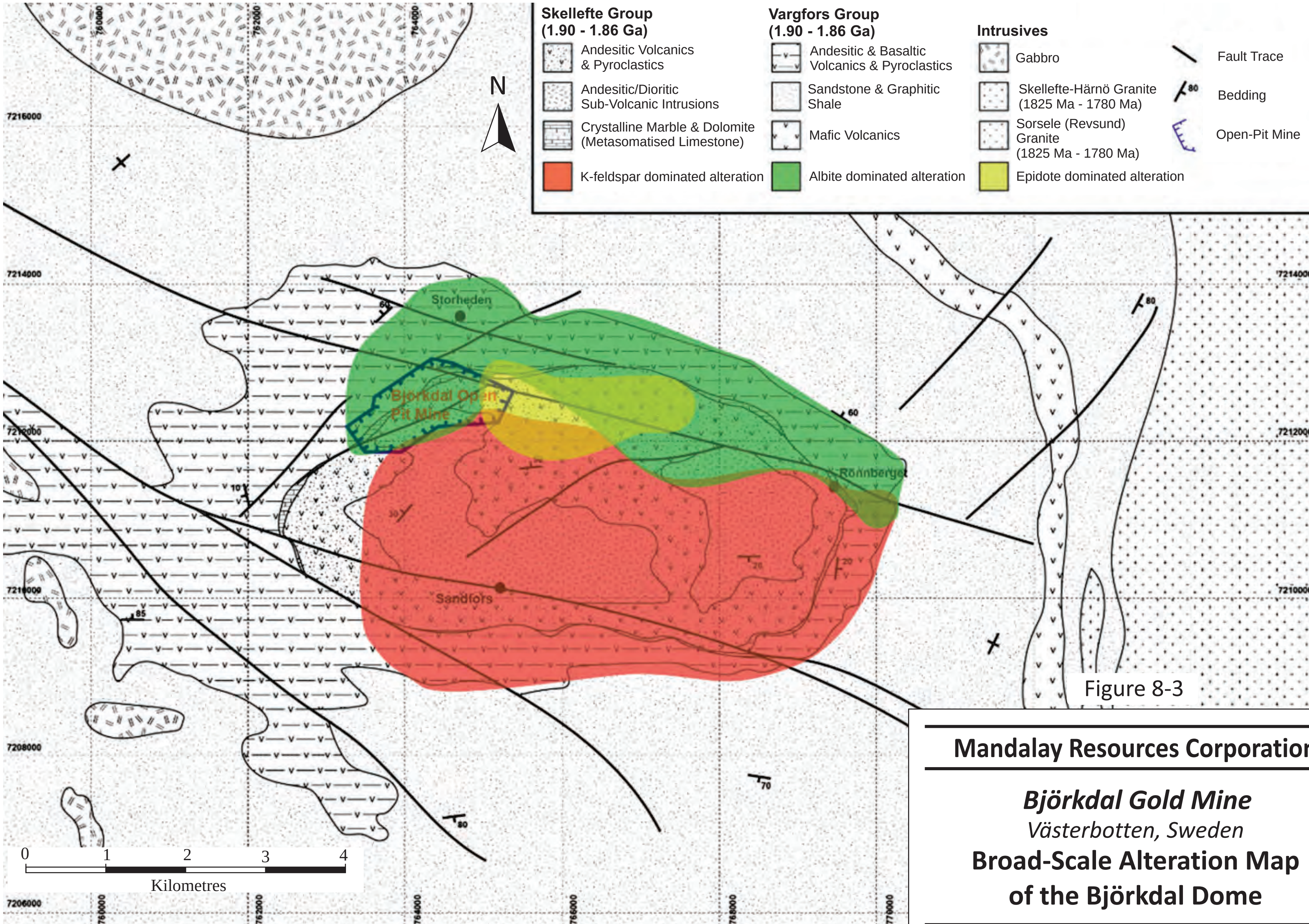


Figure 8-3

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Broad-Scale Alteration Map of the Björkdal Dome

March 2021

Source: Mandalay Resources Corporation, 2016.

8.1.3 Mineralogy

The main type of mineralization found in the Björkdal gold system is dominated by vertical to sub-vertical dipping quartz-filled veins. Common accessory minerals contained within these veins are (in approximate order of occurrence): tourmaline, calcite, biotite, pyrite, pyrrhotite, actinolite, scheelite, chalcopyrite, bismuth-tellurides (pilsenite and tsumoite), gold, and electrum. Gold mineralization is most closely related to the bismuth-telluride minerals, and is also more reliably encountered in veins with high abundances of pyrrhotite, pyrite, scheelite, and/or chalcopyrite. In general, veins of pure quartz and free of the accessory minerals listed above are generally quite poor hosts for significant quantities of gold mineralization. As such, the informal terminology of "clean veins" and "dirty veins" has been adopted at the mine site in order to quickly describe vein-fill characteristics. Structural analysis of these two distinct vein-fill types from the Main Zone -325 and -340 levels suggests that the "cleaner" veins will more often strike between 030° and 040° from true north, while the "dirty", inclusion-rich veins are more likely to strike between 050° and 090° from true north. This structural-geochemical relationship suggests that vein development in the Björkdal deposit occurred as more than a single "vein-forming" event, and that the fluids responsible for the vein-fill and mineralization were evolving with time.

8.2 Norrberget

8.2.1 Structural Development of Mineralization

The major controls on the mineralization at Norrberget include the large scale shear zone that marks the base of the marble unit, the rheological differences between different stratigraphic units, the variation in the lithological and porosity of the volcanic package, and the development of the fluid system which utilized the shear zone.

These large scale shear zones run extensively through the area along the base of the marble unit which extends beyond the Mine and across Norrberget. The mineralization occurs principally within a package of heterogeneous volcaniclastics containing interbedded ash falls, flows, and tuffs which have varying composition along with differing porosity and rheological characteristics.

Where the Norrberget volcaniclastics are not sheared, they are packaged conformably between metasedimentary rocks and mafic volcanic rocks above and medium grained subvolcanic intrusions and volcanic rocks below.

8.2.2 Alteration

The fluid system is believed to have utilized the shear contact at the base of the marble. A strongly silicified unit sits on top of the volcaniclastics which themselves are sheared throughout with a pervasive amphibole-albite-silica+carbonate alteration assemblage. The contact between the silicified and amphibole altered packages is gradual over a short distance. Lower in the package, K-feldspar/hematite and epidote can be observed, however, the underlying volcanic/subvolcanic rocks are not sheared to the same extent.

The evolution of the fluid system is believed to have first formed a pervasive silica-biotite+actinolite alteration which took advantage of the porous groundmass of the unaltered volcaniclastic package. The variable grain size and large angular fragments observed in drill core of the units below the lower marble contact resulted in a higher porosity and therefore a more substantial level of silicification. When additional shearing along with albite and actinolite alteration fluids were present at a later stage, the more robust silicified units were subjected to less shearing and alteration. This later stage of actinolite and albite alteration (where gold forms along their contacts) occurred primarily within the upper package of interbedded volcaniclastic rocks and crystalline tuffs, which is immediately below the upper pervasively silicified unit. The steeper quartz-amphibole veins, some of which contain gold and associated minerals, utilized the same association as the mineralized altered bands.

8.2.3 Veining

Although not as prevalent as at Björkdal, quartz veining occurs across Norrberget. A significant proportion of the veins occur in a similar orientation to the altered bands with quartz patches being associated with the alteration banding indicating that these are syngenetic to the alteration. A separate set of quartz veins can be observed to cross-cut the predominant fabric at a steeper dip between 65° and 85°, although with variable directions. A small proportion of these can be identified as being gold bearing with a limited selection containing very high grades. The high grade veins do not appear to have similar orientation to one another. The mineralogy of these steeper veins is similar to the shallower veins indicating that they were formed in the latter stages of the same fluid system.

8.2.4 Mineralization

The mineralization at Norrberget is stratabound within an interbedded altered volcaniclastic package that sits unconformably below a 30 m to 40 m thick marble unit. Gold mineralization has been observed up to 50 m below this contact. Gold mineralization is principally hosted in an amphibole-albite banded alteration and is also common where volcaniclastics are interbedded with crystalline tuff units. Theses alteration bands vary between one centimetre and 50 cm in thickness, are typically fine to medium grained, and appear to be sheared. Trace sulphides and minor quartz/carbonate are associated with the bands.

Gold is also associated with the amphibole veinlets with the mafic crystalline tuff associated with carbonate and minor sulphides. Lesser amounts of gold can also be found within the heavily silicified volcaniclastics where minor amphibole is observed. Where visible gold can be identified within alteration banding, it is observed to be between or on the contact of grains.

Although veining is common, gold mineralization is rarely associated with the quartz veins. Visible gold has been identified in veins consisting of grey fractured quartz along with amphibole, carbonate, silver, minor chalcopyrite, pyrrhotite, and galena. Veins consisting of quartz, carbonate, and albite with euhedral amphibole crystals can also carry gold mineralization, however, the gold grade is not consistent along them. These veins can be intermixed and individual veins can continue for up to 50 m.

9.0 EXPLORATION

9.1 Björkdal

SLR reviewed the historical exploration work and found that pre-Mandalay work programs were not well documented. In general, it would appear that no significant regional exploration had taken place since the original Terra Mining ownership (ca. 1983-1999). Since acquiring ownership, Mandalay has conducted both underground and surface diamond-core and reverse circulation (RC) drilling, both within and near the active production areas, in addition to regional prospects.

Geophysical studies have also been carried out in order to identify the "geophysical fingerprint" of Björkdal-style mineralization with the ultimate aim of developing exploration targets beneath the significant till cover that blankets the majority of the Björkdal property. Geological mapping has also been conducted on the limited surface exposure of bedrock over the property, in addition to compiling and assessing all known and relevant documentation and results from various exploration efforts by several past owners of the Mine and the surrounding exploration permits held by Mandalay through Björkdalsgruvan AB (and its subsidiary, Björkdal Exploration AB).

During the summer of 2019, an airborne magnetic survey was completed by Thomson Aviation over the full tenement package in collaboration with Boliden AB. Björkdalsgruvan AB received the raw data from the flyover and Geovista AB processed the results. Raw data consisted of a digital terrain model, levelled radiometric data, and levelled magnetic data. The survey direction was east-west with 50 m line spacing and 500 m tie line spacing. It has been established that areas of significant mineralization have detectable effects on both magnetic (ground magnetics) and electrical (chargeability) properties of the host geology. As such, these surveys are being incorporated with geochemical and structural geological data with the objective to identify highly prospective ground. The targets that have been generated will be prioritized and then systematically tested in the immediate future.

9.1.1 Underground Drilling

For the period of January 2015 to September 2020, Mandalay completed a total of approximately 168,000 m of diamond-core drilling from underground stations at the Mine. Prior to the discovery of the Aurora Zone, the drilling focussed mainly on outlining the strike and dip extensions of known mineralized vein systems (mostly in the Main, Central, and Lake zones).

In 2020, the drilling continued to focus on searching for the strike and dip limits of the Aurora Zone discovered in 2017, as well as defining the limits of the high grade skarn-hosted mineralization discovered in 2018. The drilling also focussed on the area to the north of the known mineralized zones, with the goal of searching for new vein systems that may lie proximal to the underground mine. These drilling programs have been successful in achieving their goals.

9.1.2 Surface Drilling

For the period of January 2015 to September 2020, Mandalay has drilled a total of approximately 23,270 m of exploration diamond-core drilling and 102,200 m of RC drilling from surface-based setups at the Mine. Similar to the underground exploration strategy, the surface drilling was prioritized around the margins of the current open pit mine in order to estimate Inferred and Indicated Mineral Resources in the near-mine environment and for grade control purposes. The majority of this drilling took place in the vicinity of the Quartz-Mountain, East Pit, and Nylund areas. In 2019/2020 surface drilling was focused on the extension of the West Pit Skarn and the up-dip extension of Aurora

9.2 Norrberget

The Norrberget area was extensively drilled from 1994 to 1996 by COGEMA before interest in the prospect declined under subsequent owners. After the area was purchased by Gold-Ore in 2007, some sporadic drilling campaigns were undertaken without significant discoveries being made.

After Mandalay acquired Elgin, a program of relogging and reassaying the existing core from the prospect was undertaken. This resulted in renewed interest in the area and in 2016, a 2,542 m diamond-core drilling program was completed that confirmed the historical results and extended the limits of mineralization. A 1,400 m RC drill program of in-fill and down-dip extension drilling was completed in 2017. No further exploration drilling has since been completed at the Norrberget deposit.

9.3 Regional Exploration

During the summer months of 2015, 2,492 m of diamond-core drilling was completed around the greater Björkdal region in order to test a number of geochemical and structural targets. Significant mineralization was intersected in two drill holes, DDE2015-001 and DDE2015-008, in the Storheden and Morbacken areas respectively.

The potential of Storheden area was further tested with 2,136 m of diamond-core drilling and 1,408 m of RC in 2016 and 2017. These drilling programs have confirmed the existence of a mineralized system of shear hosted quartz veins extending below the current site of the TMF.

Target generation completed in 2015 and 2016 consisted of geophysical surveys and reinterpretation of existing geophysical magnetic and electric surveys. These surveys ranged from regional scale airborne surveys to high resolution downhole electric logging and had the objective to establish some geophysical characteristics indicative of mineralized rock systems in the greater Björkdal exploration land package. It has been established that areas of significant mineralization have detectable effects on both magnetic (ground magnetics) and electrical (chargeability) properties of the host geology. As such, these surveys are being incorporated with geochemical and structural geological data with the objective to identify highly prospective ground. The targets that have been generated will be prioritized and then systematically tested in the immediate future.

In 2017, ground magnetic surveys and till sampling programs were expanded across high potential areas within the tenement package. Detailed-scale outcrop mapping and sampling was also carried out to further develop the macro-scale understanding of the property’s gold bearing potential.

In 2018, two small scale (~5 km^2) ground magnetic surveys were carried out in highly prospective areas within the tenement package. Outcrop mapping and sampling was also carried out in the northern region of the tenement package in order to build upon the continuously growing regional geological model.

During summer 2019, an airborne magnetic survey was completed by Thomson Aviation over the full tenement package in collaboration with Boliden AB. Björkdalsgruvan received the raw data from the fly over and Geovista AB processed the results. Raw data consisted of a digital terrain model, levelled radiometric data and levelled magnetic data. The survey used flight lines oriented in an east-west direction with a 50 m line spacing and a 500 m tie line spacing. In 2020, a total of 1,160 m of drilling was completed located approximately two kilometres west of the Mine. The target for this drilling was identified from airborne magnetic data. A further more extensive campaign of outcrop mapping and sampling, was carried out across the entire tenement package, along with a small till sampling program towards the East. The data obtained during this campaign has been incorporated into the regional geological model.

9.4 Exploration Potential

In SLR's opinion, the geological setting and terrains of the Björkdal area present excellent exploration potential, as a number of targets have already been identified within a five kilometre radius of the mining operation. The deposit models currently being formulated and tested by Mandalay geologists are proving successful, with near-mine exploration efforts being well rewarded of late. To date, the lateral limits of the Björkdal deposit have not been reached, with mineralization remaining open to the north, east, and west of the current mine.

Although the existing underground development layout is not ideally suited to target the various geometries of mineralized systems at Björkdal, the efficiency of exploration drilling is high, as several economic targets can be intersected in a single drill hole. Once potential in-mine targets are identified, suitable drill platforms should be designed that can be developed from existing and planned footwall access systems.

There is high likelihood of further discoveries being made in the Björkdal area, as much of the held ground remains either unexplored or under-explored.

10.0 DRILLING

10.1 Björkdal

Drilling has been carried out on a periodic basis by various operators as exploration and development progressed at the Mine. The Mineral Resource drill hole database cut-off date for the year-end 2020 MRMR update was September 30, 2020 and incorporated drill hole and channel sampling information collected by Mandalay. All holes completed before September 2014 were completed by previous owners.

10.1.1 Historical Drilling

10.1.1.1 1986 to 2004

It is reported that during the period between 1986 and 2004, a total of 1,148 holes were completed at Björkdal (Table 10-1).

Table 10-1: Summary of Historical Drilling 1986 to 2004 - Björkdal
Mandalay Resources Corporation – Björkdal Gold Mine

Drill Hole Type	Number of Drill Holes
Direct Circulation	343
Diamond Drill Hole	128
Reverse Circulation	677
Total	**1,148**

An additional 6,110 historical direct circulation (DC) grade control holes were also drilled for mine planning purposes in the open pit. However, problems were identified with downhole sampling and grade contamination issues in these drill holes. Consequently, these holes have not been used in subsequent Mineral Resource estimates.

10.1.1.2 2006 to 2014

In March 2006, Gold-Ore collared a portal for the Eastern Tunnel at Björkdal. The tunnel was designed to provide access for diamond drill rigs to test for the along-strike extension of the orebody mined in the open pit (northern extension). Drilling from the surface was considered a less attractive option as it required drilling through several hundred metres of country rock until the mineralized zones were intersected. The underground excavation also provided access for mapping, bulk sampling, and some feedstock for the processing plant.

Underground diamond drilling for exploration, development, and grade control was essentially carried out continuously from 2006 to 2014 (Table 10-2). RC drilling was initiated in the open pit in 2010 for grade control purposes.

Table 10-2: Summary of Drilling from 2006 to 2014 - Björkdal
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Drill Hole Type	Underground		Open Pit	
		No. of Drill Holes	Metres (m)	No. of Drill Holes	Metres (m)
2006	Core	91	7,954	-	-
2007	Core	109	10,454	19	3,303
2008	Core	40	2,577	-	-
2009	Core	43	5,892	9	469
2010	Core	30	5,112	37	2,756
	RC	-	-	76	2,978
2011	Core	52	10,271	15	1,325
	RC	-	-	127	3,862
2012	Core	48	8,490	34	4,685
	RC	-	-	258	9,904
2013	Core	42	9,178	14	1,631
	Core (In-fill)	43	2,812	-	-
	RC	-	-	317	10,006
2014	Core	43	9,218	-	-
	Core (In-fill)	23	2,308	-	-
	RC	-	-	225	6,982
	Core	14	3,864	3	622
Total		**578**	**78,130**	**1,134**	**48,523**

10.1.2 Mandalay Drilling 2014 to 2020

A summary of the drilling programs performed by Mandalay from September 2014 to September 2020 is provided in Table 10-3. The locations of the drill holes completed at the Björkdal in 2020 are shown in Figure 10-1.

Table 10-3: Summary of Drilling Completed from 2014 to 2020 - Björkdal
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Drill Hole Type	Underground		Open Pit	
		No. of Drill Holes	Metres (m)	No. of Drill Holes	Metres (m)
2014	Core (In-fill)	19	1,614		
	RC			65	2,103
	Core	12	3,302	5	632

Year	Drill Hole Type	Underground		Open Pit	
		No. of Drill Holes	Metres (m)	No. of Drill Holes	Metres (m)
2015	Core (In-fill)	150	11,880		
	RC			439	13,959
	Core	58	14,151	56	9,145
2016	Core (In-fill)	280	32,252		
	RC			556	28,436
	Core			14	4,087
2017	Core (In-fill)	211	23,839		
	RC			596	24,924
	Core			13	2,377
2018	Core (In-fill)	211	24,309		
	RC			621	22,138
	Core	43	9,995	36	5,904
2019	Core (In-fill)	143	17,823		
	RC			194	10,649
	Core	36	9,089	7	1,125
2020[1]	Core (In-fill)	149	15,995		
	Core	26	8,693	8	1,243
Total		**1,338**	**172,942**	**2,610**	**125,479**

Note

1. 2020 drilling includes drill holes completed to September 30, 2020.

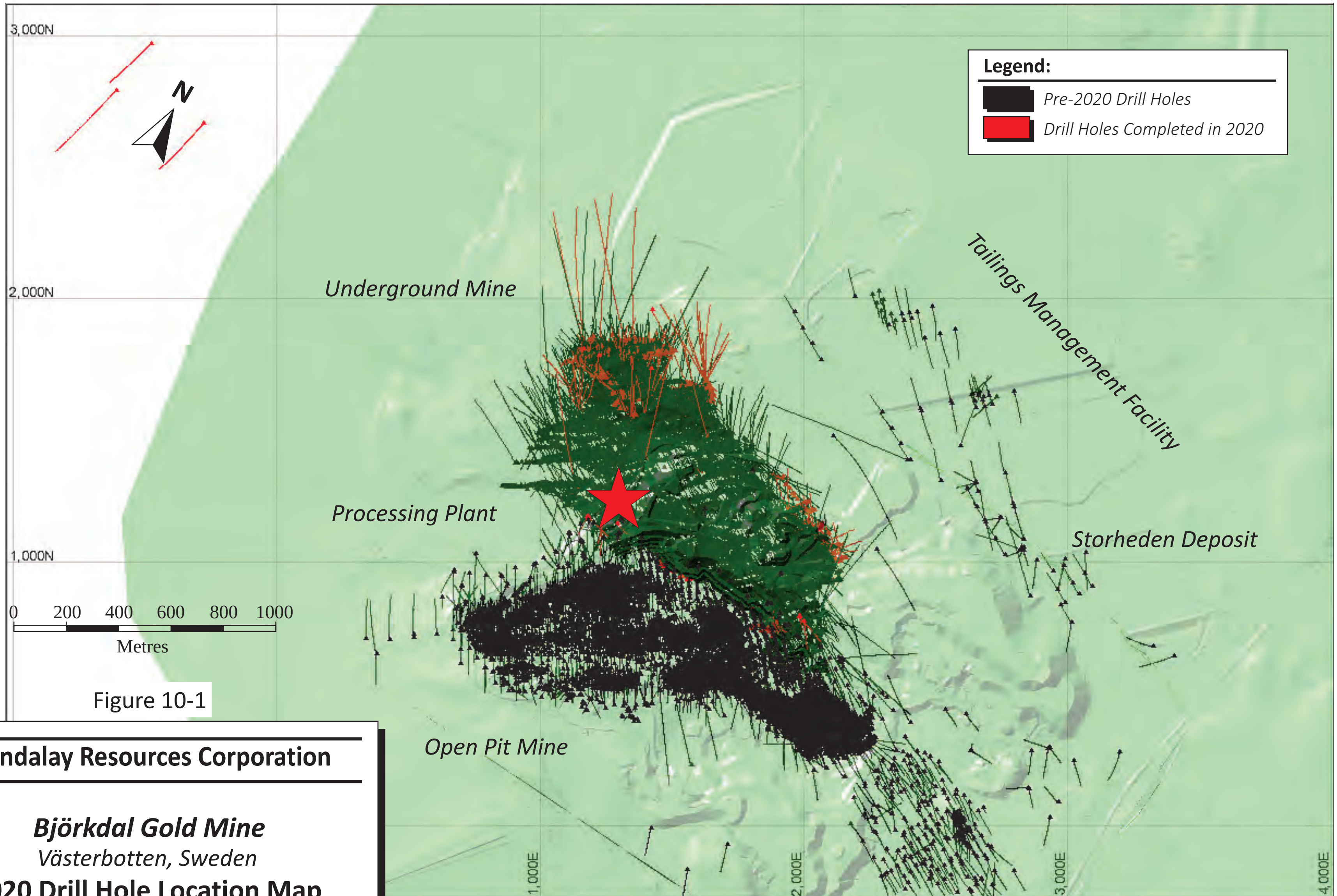


Figure 10-1

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

2020 Drill Hole Location Map

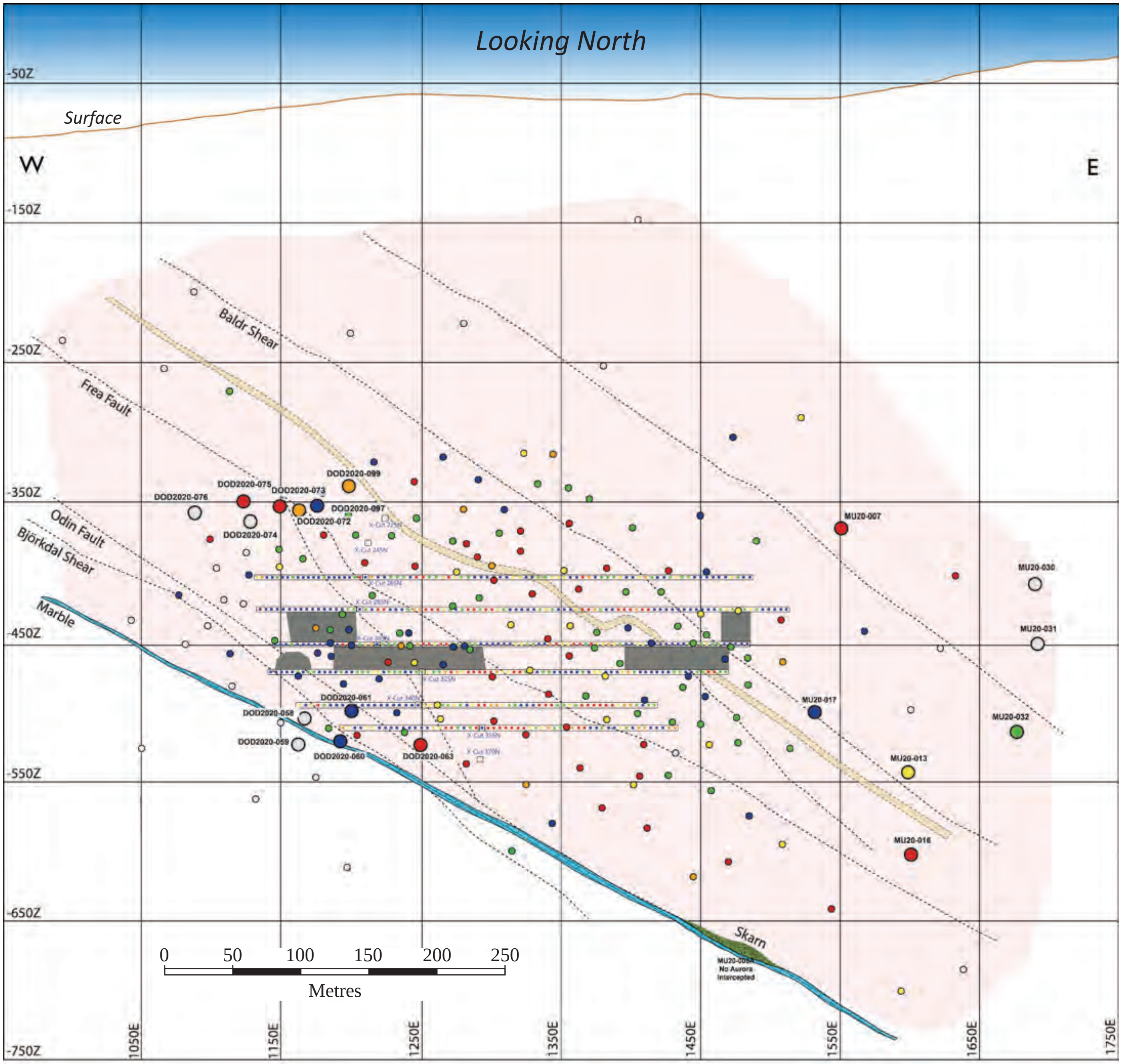
March 2021

Source: SLR, 2021.

The main focus of the drilling completed in 2020 was to continue to outline the strike and dip limits of the Aurora Zone, to define the limits of the high grade, skarn-hosted mineralization discovered in 2018, and to search for the presence of additional mineralized vein systems located in the hanging wall fault block to the north of the Aurora Zone. A small number of drill holes were also completed to test selected exploration targets located in an area located to the northwest of the Mine.

The drilling programs were successful in extending the known limits of the Aurora Zone, and for outlining the limits of the high grade, skarn hosted zones. As of September 30, 2020, the Aurora Zone has been outlined by drill hole and channel sample information along a strike length of approximately 650 m and along a dip length of approximately 400 m. As of September 30, 2020, the limits of the mineralization in the Aurora Zone have not been defined by drilling (Figure 10-2).

A selection of the significant intersections returned from the Aurora Zone is provided in Table 10-4 (Mandalay, 2020b).



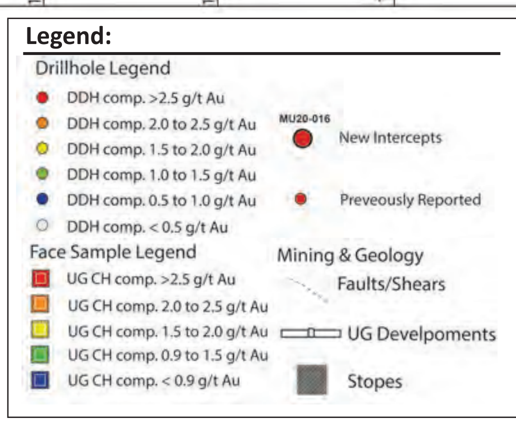


Figure 10-2

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Aurora Zone Drill Holes, January 2020

March 2021

Source: Mandalay Resources Corporation, 2020.

Table 10-4: Summary of 2020 Significant Intersections - Aurora Zone
Mandalay Resources Corporation – Björkdal Gold Mine

Drill Hole	From (m)	To (m)	Core Length (m)	Estimated True Width (m)	Grade (g/t Au)	Target
DOD2020-058	77	80.65	3.65	2.81	0.2	Western Definition
DOD2020-059	87.9	93.52	5.62	3.78	0.4	Western Definition
DOD2020-060	79.65	85	5.35	4.25	0.8	Western Definition
DOD2020-061	66.6	70.2	3.6	3.33	0.9	Western Definition
DOD2020-063	94.25	98.4	4.15	2.99	8.1	Western Definition
DOD2020-072	148.5	153.2	4.7	4.66	2.1	Western Definition
DOD2020-073	142.3	145.7	3.45	3.45	3	Western Definition
DOD2020-074	145.7	149.5	3.8	3.77	0.2	Western Definition
DOD2020-075	139.1	142.25	3.8	3.17	3	Western Definition
DOD2020-076	145.5	148.3	3.8	2.67	0.2	Western Definition
DOD2020-097	121	126.6	5.55	3.5	0.7	Western Definition
DOD2020-099	107.2	113.8	6.55	4.63	2	Western Definition
MU20-007	323.5	326.2	2.75	2.47	4.8	Eastern Extension
MU20-013	216.1	219.55	3.45	3.02	1.6	Eastern Extension
MU20-016	271.6	276.6	5	2.82	2.7	Eastern Extension
MU20-017	188.3	197.75	9.45	7.3	0.6	Eastern Extension
MU20-030	132	135.4	3.4	2.36	0.6	Eastern Extension
MU20-031	162	163.85	1.9	1.17	0.4	Eastern Extension
MU20-032	208.3	211.15	2.9	1.89	1.6	Eastern Extension
DOD2020-058	71	72.8	1.8	1.6	2.9	Foot Wall Veining
DOD2020-060	73.6	77.8	4.2	2.92	14.5	Foot Wall Veining
DOD2020-060	115	115.35	0.35	0.25	9.5	Hanging Wall Veining
DOD2020-061	52.55	60.1	7.55	6.51	2.6	Foot Wall Veining
DOD2020-061	97.3	97.7	0.4	0.31	8.9	Hanging Wall Veining
DOD2020-063	133.8	134.1	0.3	0.19	57.4	Hanging Wall Veining
DOD2020-072	83.8	84.75	0.95	0.92	9.7	Foot Wall Veining
DOD2020-072	116.1	116.5	0.4	0.31	5.9	Foot Wall Veining
DOD2020-072	157.8	158.75	1	0.78	4.8	Hanging Wall Veining
DOD2020-072	187.6	188.1	0.55	0.5	7.6	Hanging Wall Veining
DOD2020-072	191.5	192	0.5	0.49	3.8	Hanging Wall Veining

Drill Hole	From (m)	To (m)	Core Length (m)	Estimated True Width (m)	Grade (g/t Au)	Target
DOD2020-073	48.05	48.65	0.6	0.59	5.8	Foot Wall Veining
DOD2020-073	64.5	64.85	0.35	0.31	6.3	Foot Wall Veining
DOD2020-073	153.2	153.6	0.45	0.44	3.8	Hanging Wall Veining
DOD2020-073	178.1	179.65	1.6	1.59	4.9	Hanging Wall Veining
DOD2020-073	185.7	186	0.3	0.21	24.3	Hanging Wall Veining
DOD2020-074	32.7	33.3	0.6	0.59	38.7	Foot Wall Veining
DOD2020-074	132	132.35	0.4	0.39	16	Foot Wall Veining
DOD2020-074	153.7	156.1	2.4	2.15	2	Hanging Wall Veining
DOD2020-074	165.9	167.75	1.85	1.8	3.5	Hanging Wall Veining
DOD2020-074	185.6	185.95	0.35	0.34	6.1	Hanging Wall Veining
DOD2020-075	31.6	32.05	0.45	0.42	5.6	Foot Wall Veining
DOD2020-075	52.75	53.1	0.35	0.34	7.7	Foot Wall Veining
DOD2020-075	77	77.35	0.35	0.33	5.1	Foot Wall Veining
DOD2020-075	108.8	109.1	0.35	0.31	9.3	Foot Wall Veining
DOD2020-075	123.2	124.6	1.4	1.29	3.2	Foot Wall Veining
DOD2020-075	170.2	170.65	0.5	0.34	10.3	Hanging Wall Veining
DOD2020-075	180.8	181.2	0.4	0.37	31.7	Hanging Wall Veining
DOD2020-075	190.3	190.6	0.35	0.31	13.3	Hanging Wall Veining
DOD2020-076	29.88	30.25	0.37	0.27	6.1	Foot Wall Veining
DOD2020-076	51.4	52.83	1.43	1.36	1.8	Foot Wall Veining
DOD2020-076	103	103.35	0.35	0.29	7.4	Foot Wall Veining
DOD2020-076	117.3	117.65	0.35	0.27	12.4	Foot Wall Veining
DOD2020-076	126.2	126.5	0.35	0.32	6.5	Foot Wall Veining
DOD2020-076	157.2	157.7	0.5	0.31	5.6	Hanging Wall Veining
DOD2020-076	163	164.45	1.45	1.38	3.3	Hanging Wall Veining
DOD2020-076	183.4	183.7	0.35	0.31	15	Hanging Wall Veining
DOD2020-076	196.3	199.3	3	2.69	2.1	Hanging Wall Veining
DOD2020-076	201.7	202	0.35	0.31	5.1	Hanging Wall Veining
DOD2020-097	111.3	112.25	1	0.78	3.5	Foot Wall Veining
DOD2020-097	166.2	166.8	0.65	0.37	7.9	Hanging Wall Veining
DOD2020-099	112.9	113.75	0.85	0.7	4	Hanging Wall Veining
DOD2020-099	139.6	139.95	0.4	0.29	11.2	Hanging Wall Veining

Drill Hole	From (m)	To (m)	Core Length (m)	Estimated True Width (m)	Grade (g/t Au)	Target
MU20-007	229.3	230	0.7	0.61	2.7	Foot Wall Veining
MU20-008A	320.1	321.95	1.9	1.9	1.4	Foot Wall Veining
MU20-009A	327.1	329	1.95	1.07	14.5	Foot Wall Veining
MU20-009A	338.4	338.85	0.45	0.27	5.9	Foot Wall Veining
MU20-011	177.6	178.5	0.9	0.78	2.5	Foot Wall Veining
MU20-011	271.6	273	1.4	0.3	7.2	Foot Wall Veining
MU20-011	278.8	279.25	0.5	0.23	32.5	Foot Wall Veining
MU20-011	337.5	338.65	1.2	0.29	13.9	Hanging Wall Veining
MU20-011	362.2	362.75	0.55	0.26	6.2	Hanging Wall Veining
MU20-011	371.6	372	0.4	0.31	5.1	Hanging Wall Veining
MU20-012	119.7	120	0.3	0.29	6.5	Foot Wall Veining
MU20-014	191.3	192.15	0.85	0.78	6.2	Hanging Wall Veining
MU20-015	153.8	154.7	0.95	0.79	2.9	Hanging Wall Veining
MU20-016	27.9	28.6	0.7	0.7	3.4	Foot Wall Veining
MU20-016	224.4	224.75	0.35	0.2	12.5	Foot Wall Veining
MU20-017	167.7	168.15	0.5	0.34	5.6	Foot Wall Veining
MU20-018	114.2	114.65	0.45	0.44	3.7	Foot Wall Veining
MU20-018	194.4	195.25	0.85	0.78	4.5	Hanging Wall Veining
MU20-030	96.2	96.55	0.35	0.25	23.5	Foot Wall Veining
MU20-032	155.7	156.85	1.15	0.96	12.4	Foot Wall Veining

10.1.2.1 Diamond Drilling

All underground exploration drilling since September 2014 has been conducted with wireline diamond-core drilling methods by experienced Swedish drilling contractors Protek Norr AB, Styrud Arctic AB, and Drillcon Scandinavia AB. Drilling has been carried out with dedicated underground exploration drill rigs in the Hagby series WL66 and WL76 sizes (50.5 mm and 57.5 mm diameter core, respectively). All drill holes are surveyed with modern computerized gyroscopic tools at hole completion, while also being regularly check-surveyed for unexpected deviation as the drilling progresses using modern multi-shot "camera" downhole tools. Core orientation tools are used on all holes in order for geologists to measure the orientation of all geological structures identified. Contractors work two shifts per day (nine hour shift), seven days per week and average approximately 1,000 m per month.

Surface exploration since September 2014 has been carried out with wireline diamond-core drilling methods by experienced Swedish and Finnish drilling contractors Styrud Arctic AB, Protek Norr AB, Kati OY, and Arctic Drilling Company OY and experienced international drilling operator Mason & St John; based in the UK. Various drilling equipment sizes have been used depending on project needs and are as follows: WL66 (50.5 mm core diameter), NQ2 (50.7 mm core diameter), and WL76 (57.5 mm core diameter). All drill holes are surveyed with modern computerized gyroscopic tools at hole completion, while also being regularly check-surveyed for unexpected deviation as the drilling progresses using modern multi-shot “camera” downhole tools. Core orientation tools are used on all holes in order for geologists to measure the orientation of all geological structures identified. Contractors work two shifts per day (12 hour shift), seven days per week and average approximately 1,200 m per month. Drill holes that are collared in unconsolidated materials (i.e., soil and till) are cased with traditional methods with either Boart Longyear, or Hagby series casing rods and bits.

Due to the degree of silicification and alteration of the deposit and regional geology, rock quality is generally excellent, reflected in core recovery values generally in excess of 95%.

Production (POD-series) and development (DOD-series) optimization holes are primarily drilled with Mandalay-owned and operated drill rigs and drilling staff, although contractors have been used at times when extra capacity is required (Drillcon AB and Protek Norr AB). Starting in 2013, in-fill underground diamond drilling programs using WL46 drill string (28.8 mm diameter core) were implemented, the rig has been decommissioned as of May 2018. In March 2016, an Atlas Copco model Diamec U4 data rig was purchased and in April 2020, an Epiroc Diamec U6 data rig was purchased The rigs are operated by three drillers working single shifts using a WL56/39 drill string (39.0 mm diameter core). They work seven days a week, producing 27 m per shift. During 2021, a fourth shift will be added to the U4 rig. These rigs are primarily used for development optimization.

All drilling is designed and supervised by Mandalay/Björkdalsgruvan geologists. Drill hole layouts are designed with the aid of the GEOVIA Surpac 3D software.

Drill core is transported to Mandalay’s core logging facilities located on the Mine site for processing. The core is examined by trained geologists who prepare a description of the alteration, structure, and mineralization that may have been encountered by the drill hole. The information is entered directly into a computer file at the core shack, which is subsequently uploaded to the master drill hole database.

Logging of drill core is carried out according to Mandalay’s Standard Operating Procedure (SOP) GEO 20200331. Logging geologists examine the drill core and mark off any lengths of the core which are judged to hold potential for hosting significant quantities of gold mineralization. The locations of the sample intervals, along with the sample identification number are entered into the computer log of the drill hole and subsequently uploaded to the master drill hole database. The drill core is then photographed by geological technicians before samples are selected of the core for assaying using the entire drill core.

10.1.2.2 Reverse Circulation Drilling

Exploration RC drilling was undertaken during the summer of 2016 in order to quickly provide in-fill information for the Nylund surface deposit. The drilling was undertaken by an experienced international drilling operator Mason & St John based in the UK, and local Swedish drilling contractors Styrud Arctic AB. Drilling was undertaken with a multi-purpose drilling rig equipped with 5.5 in. RC diameter bit on six metre rods (Mason and St John drilling rigs) and 5.5 in. RC diameter bit on three metre rods (Styrud Arctic AB drilling rigs). The holes were surveyed at completion with modern computerized gyroscopic tools. Samples were taken every one metre of drilling where they are split directly out of the cyclone in a riffle-splitter. Two samples were collected; with one sent directly to the laboratory for analysis while the other was sieved and washed in order for geological logging to take place. A booster compressor was used on deeper holes (150 m + hole depth) to maintain dry samples when water ingress increases with depth, or water bearing fracture networks was intercepted.

RC drilling has been utilized for grade control in the open pit since 2010 to define the gold bearing quartz veins which can vary in scale from one centimetre to greater than one metre. The standard drill pattern is approximately a 7.5 m by 15 m by 18 m grid where holes are planned to intersect perpendicular to the quartz vein orientation. The number of planned drill holes also depends upon the location of historical drill holes. In the western portion of the Mine, holes are drilled 0°/180° (mine grid) with a dip of -40° and in the eastern part, 330°/150° (mine grid) with a dip of -40°. This is due to the general orientation of mineralized zones (quartz veins) in these respective areas of the surface deposit. Each grade control hole generally covers three or four benches, or approximately 20 m vertical depth for a 32 m long hole. Longer holes (up to 70 m long) are occasionally drilled in order to condemn areas by confirming that they are barren of gold mineralization. These longer holes are surveyed at hole completion in order to ascertain their deviations.

Drilling was performed by drill contractors Styrud Arctic AB utilizing a five inch RC diameter bit on three metre rods. Drill cuttings were sampled every one metre via a cyclone. RC drilling was performed year-round.

All RC drill holes were planned by Mandalay/Björkdal geologists using the GEOVIA Surpac 3D software.

10.1.2.3 Underground Chip Sampling

Each on-vein development (OVD) face has been mapped, photographed, and sampled since 2015. The geologists first mark up the area to be sampled with spray paint (Figure 10-3). The sampler then uses a hammer and bucket to collect representative samples from shoulder to knee height and across the entire face. While this methodology does not strictly follow a channel sample line, it may in fact better represent the variability within the mineralized zone.

After the sample is taken, the sample number is recorded on the face map, together with the date and name of the OVD. The sample is then placed into a plastic sample bag and closed with a sample tag inside. The bucket is either washed out if water is available or replaced with a clean one, in order to conduct the next sample. A standard and blank is inserted every 50th sample.

The samples are delivered by the sampler directly to the on-site laboratory facility located next to the core processing facility.

The chip sample location paint marks are later surveyed by the mine surveyors. Samples are entered into an Excel spreadsheet to calculate a final grade for the cut taken and later into an Access database using GeoSpark.

SLR recommends that, for the purposes of Mineral Resource estimation, efforts be continued to enter all chip sample information into the drill hole database as pseudo-drill holes that span the full width of the face of the development heading.

Source: Mandalay

Figure 10-3: Underground Chip Sampling, Aurora Zone

10.1.2.4 Underground Sludge Sampling

Sludge sampling of the development drill hole cuttings (approximately 70 holes) is carried out for every round of the OVD. Sludge samples are not used for Mineral Resource estimation but are used to assist in stope design, production grade estimates, and reconciliation exercises.

After a round is drilled off, the sampler draws a line, and using a pick axe, alongside the drilled face, fills about half a bucket with the collected material (approximately 7 kg). To be as representative as possible, the sample is collected throughout the height of the sludge pile. The sample is taken approximately one metre away from the drilled face. When rounds are drilled at +17% gradient, the drill cuttings usually flow away from the face, and when rounds are drilled at a -17% gradient, the drill cuttings flow towards the face. On such occasions, the sampler seeks to find the place where the drill cuttings are "constant" all the way from side to side. Rocks greater than five centimetres in diameter are removed before the cuttings are put in the bucket.

After the sample is taken, the bucket number is recorded, together with the date and name of the drive, on a patch in the bucket. The bucket is transported up from the underground by the sampler and taken to the on-site laboratory.

While the underground sludge sampling is generally not useful due to reliability of the sample collection methods, the results do in fact appear to identify the presence of elevated gold values in the next round.

10.1.3 Surveys

10.1.3.1 Survey Grids

The coordinate system used for daily production operations at Björkdal is the Mine Grid which is in SI units. The Mine Grid is rotated 29.67° west of true north. The 0 RL elevation was based upon the highest point in the vicinity of the Mine ("Quartz Mountain"), an area which is now mined out. All drill hole and channel sample information is collected and entered into the database using the Mine Grid coordinate system.

10.1.3.2 Diamond Drilling

Currently, all diamond drill hole collars are surveyed using either Total Station surveying equipment for underground-based drill holes or digital Global Positioning System (GPS) surveying equipment. Downhole surveys are also carried out to record hole azimuth and dip of holes. Exploration drill holes are orientated and single shot surveyed with the Reflex EZ Shot tool as they are being drilled. These are then re-surveyed every three metres with a Gyro Smart downhole surveying tool once the drill hole has been completed.

Prior to 2010, only limited numbers of drill holes were surveyed for their down-hole deviation using a Maxibor instrument. Since 2015, downhole surveys have been carried out using a Reflex Gyro Smart tool surveying every three metres upon completion of the hole. This surveying unit initializes its orientation using a surface-references MEMS-Gyroscope prior to acquiring data measurements.

10.1.3.3 Reverse Circulation Drilling

All RC drill hole collars are surveyed. No downhole surveys are taken for grade control holes less than 70 m in length. All exploration drill holes are surveyed along their full length on completion of drilling.

The open pit grade control technician uses spray paint as well as wooden sticks to mark planned hole locations. The technician adjusts the X and Y positions as there will be differences in planned Z-coordinate and actual ground level. To ensure the correct azimuth, a marked wooden stick is placed approximately seven metres in front of the collar.

Upon completion of drilling, the technician measures the collar and direction of the drill hole with a Trimble TSC3 GPS controller unit. Unannounced visits to the drilling rigs were randomly performed by the supervising geologist during drilling operations to ensure that the dip and azimuth of the drill hole is correct. The azimuth is measured with total station and the reported measured deviations have not been greater than ±1°.

10.1.4 Underground Chip Sampling

All underground channel chip samples are based on surveyed points in relation to the Mine Grid. The Mine Geologist paints up sample locations based on the observed geological or structural features present in the face. The chip sample locations are then turned into pseudo-drill holes for entry into the drilling and sampling database using a pseudo-collar location and calculated azimuth, dip, and length.

Underground surveying is also used to map the trace of vein contacts along the face and back of the sill drifts. This data is incorporated in geological mapping and vein wireframing and is captured in full three-dimensional space into the GEOVIA Surpac software system.

10.2 Norrberget

Drilling at Norrberget has been carried out across three distinct periods in line with the priorities of the previous holders of the exploration concessions. The Mineral Resource drill hole database cut-off date was September 30, 2017. All holes completed before September 2014 were drilled by previous owners.

10.2.1 Historical Drilling

10.2.1.1 1994 to 1996 Drilling

The Norrberget deposit was first drilled by COGEMA in 1994 as part of a program investigating the margins of the Björkdal dome and assess the potential for further significant gold deposits in the area. Further diamond drilling campaigns were carried out in 1995 and 1996 to define and extend the potential resource in this area (Table 10-5).

Table 10-5: Summary of Historical Drilling Completed from 1994 to 1996 – Norrberget Deposit Mandalay Resources Corporation – Björkdal Gold Mine

Year	Drill Hole Type	Number of Drill Holes	Metres
1994	Core	16	3,324
1995	Core	32	4,480
1996	Core	35	3,333
Total		**83**	**11,137**

10.2.1.2 2009 to 2014 Drilling

A hiatus in drilling occurred while the exploration concessions were under the ownership of NAN, no significant work was carried out on the deposit between 1997 and 2009. After the regional tenement package was purchased by Gold-Ore, there was renewed interest in the area surrounding Björkdal. Several small diamond drilling campaigns were carried out at Norrberget and the immediate surrounds by Gold-Ore and their successors Elgin between 2009 and 2014 (Table 10-6).

Table 10-6: Summary of Historical Drilling Completed from 2009 to 2014 – Norrberget Deposit Mandalay Resources Corporation – Björkdal Gold Mine

Year	Drill Hole Type	Number of Drill Holes	Metres
2009	Core	11	1,028
2010	Core	1	200
2011	Core	6	1,391
2014	Core	6	1,757
Total		**24**	**4,376**

10.2.1.3 Mandalay 2015-2017 Drilling

After the 2014 acquisition of the property by Mandalay, much of the core from previous drilling campaigns was relogged and re-assayed to confirm the accuracy of historical results and test the geological model for the area. In 2016, a diamond drilling program was undertaken to confirm the historical drilling and extend the resource. A small RC drilling campaign took place in the summer of 2017 to in-fill the known mineralization.

A summary of the drilling programs performed by Mandalay from 2015 to September 2017 is provided in Table 10-7.

Table 10-7: Summary of Mandalay Drilling Completed from 2016 to 2017 – Norrberget Deposit
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Drill Hole Type	Open Pit	
		Number of Drill Holes	Metres
2016	Core	24	2,542
2017	RC	12	1,400
Total		**36**	**3,942**

10.2.1.4 Diamond Drilling

Diamond drilling at Norrberget since 2016 has been carried out with wireline diamond-core drilling methods by experienced Finnish drilling contractors Oy Kati AB. Drilling equipment has been appropriate to produce core to the WL76 (57.5 mm core diameter) standard. All drill holes were surveyed with modern computerized gyroscopic tools at hole completion, while also being regularly check-surveyed for unexpected deviation as the drilling progresses using modern multi-shot “camera” downhole tools. Core orientation tools were used on all holes in order for geologists to measure the orientation of all geological structures identified. Drill holes that are collared in unconsolidated materials (i.e., soil and till) were cased with traditional methods with either Boart-Longyear, or Hagby series casing rods and bits.

All drilling completed by Mandalay was designed and supervised by Mandalay/Björkdal geologists. Drill hole layouts are designed with the aid of the Surpac 3D software.

10.2.1.5 Reverse Circulation Drilling

Exploration RC drilling was undertaken at Norrberget during the summer of 2017 in order to quickly provide in-fill information for the deposit. The drilling was undertaken by an experienced international drilling operator, Mason & St John, based in the UK. Drilling was undertaken with a multi-purpose drilling rig equipped with 5.5 in. RC diameter bit on six metre rods. The holes were surveyed at completion with modern computerized gyroscopic tools. Samples were taken every one metre of drilling where they are split directly out of the cyclone in a riffle-splitter. Two samples were collected; with one sent directly to the laboratory for analysis while the other is sieved and washed in order for geological logging to take place. A booster compressor was used on deeper holes (150 m + hole depth) to maintain dry samples when water ingress increases with depth, or water bearing fracture networks were intercepted.

All RC drill holes are planned by Mandalay/Björkdal geologists using Surpac 3D software.

10.2.2 Surveys

10.2.2.1 Survey Grids

The coordinate system used at Norrberget is SWEREF99.

10.2.2.2 Diamond Drilling

All diamond drill hole collars were surveyed using digital GPS surveying equipment. Downhole surveys were also carried out to record hole azimuth and dip of holes. Exploration drill holes were orientated using a Reflex EZ Shot tool. Their down-hole deviations were determined using the EZ Shot single shot survey tool as they were being drilled. Their final down-hole deviations were measured every three metres using a Gyro Smart downhole surveying tool.

Prior to 2010, only limited numbers of drill holes were downhole surveyed using a Maxibor instrument. From 2015 onwards, downhole surveys were carried out using a Gyro Smart surveying tool at a spacing of every three metres upon completion of the hole.

10.2.2.3 Reverse Circulation Drilling

All RC drill hole collars are surveyed. All holes are surveyed along the full length of hole, at completion with modern computerized gyroscopic tools.

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Samples from Björkdal and Norrberget were prepared and analyzed at CRS Laboratories Oy (CRS), an independent laboratory located in Kempele, Finland and with a subsidiary laboratory on-site at Björkdal. CRS is certified according to ISO 9001:2008 and accredited by FINAS Finnish Accreditation Service, ISO 17025:2017 (T342) and is independent of Mandalay. Samples were also analyzed by ALS Minerals, an independent, ISO-accredited laboratory located in Piteå, Sweden, which also is independent of Mandalay. Whole core samples and RC samples were sent directly to the laboratories for sample preparation and assaying. Assaying was conducted utilizing the PAL1000 test machine and the LeachWELL process. Quality assurance and quality control (QA/QC) included the use of standard reference samples, blanks, duplicates, repeats, and internal laboratory quality assurance procedures.

Underground chip and sludge samples were collected by geological technicians and delivered directly to the on-site laboratory. The on-site laboratory with a PAL1000 unit was established in June 2016 and was run by Minlab AB, a subsidiary of CRS, until April 2018. From May 2018 until April 2020 the on-site laboratory was run by ALS Minerals. Since May 2020, the on-site laboratory has been run by Minlab AB. While the gold contents of mine sludge samples are measured for production planning purposes, these results have not been used for the Mineral Resource estimation.

Mandalay procedures and standards are applied to both Björkdal and Norrberget sample preparation, analyses, and security.

11.1 Diamond Drill Core Sampling

The standard Björkdal sampling procedure is documented in Mandalay's SOP GEO 20200527. This SOP requires diamond drill rig personnel to place the recovered drill core into wooden trays labelled at the drill site with the drill hole number and meterage values. End-of-run meterage markers are placed in the core tray between the end and start of each recovered drill run. For underground drilling, the core trays are placed on a pallet containing up to 24 boxes, strapped, and then brought up to surface where they are delivered to the Björkdal on-site core processing facility. During surface drilling operations, the core is delivered each day to the Björkdal on-site core processing facility by the drilling company.

Upon receipt, the boxes are sorted out sequentially by hole number and the core is oriented in the box. Then the core is cleaned with fresh water, measured to check meterage and each core box gets marked with meterage values. Any discrepancies are reported back to the drill foreman for confirmation.

The geologist generally logs twelve boxes at a time. The core is visually inspected, logged for rock quality designation (RQD), structure, lithology, alteration, and sampling, where samples are separated and bounded by geological contact such as lithological, alteration, and veining contacts. Criteria for sampling include:

- All veins (for example, quartz, carbonate, sulphides, tourmaline, calc-silicates, etc.). Sampling intervals of either side of veined material are taken based on geology and are between 0.15 m and one metre in length.
- Lithological and alteration contacts.
- All faults.
- Highly fractured or altered segments and other interesting areas such as abundant sulphides.

Core logging data captured is entered directly into a local GeoSpark master database. Geological data collected includes:

Lithology:

- Rock code grain size, foliation, texture name and texture intensity fields, and general description.

Alteration:

- Types and degree of alteration.

Veining:

- Descriptions of visible minerals observed (i.e., sulphides, visible gold, tsumoite, tourmaline, etc.) are made only for quartz veins ≥ 5 cm in width as well as the number of veins in the interval. For veins less than 5 cm in width, this information is captured by an entry in the structural table using a zero width.

Structures:

- Type of structure (for example, bedding, foliation, fault, vein, etc.).
- Measuring data from oriented core.

Geotechnical:

- Calculation of RQD for a maximum length of one metre.

After every table of boxes is logged, digital photographs of wet drill core are taken. These are stored on the Björkdal file server.

Sample tags are placed in the boxes before taking a photograph to make sure they do not move before sampling. The minimum sample length varies from 15 cm for WL66 and NQ2 core to 30 cm for WL46 (drill rig decommissioned in 2018) and WL 56 core to ensure reasonable minimum sample weights. The maximum sample length is 1.2 m.

A geological technician samples the whole core (unless the drill core is WL76 in which case it is halved and then sampled), carefully breaking the core with a hammer at the sample locations. The samples are placed into plastic bags with a sample tag and sample number written on each bag with a permanent marker pen. The plastic bags are twisted closed and sealed with a zip tie. The sample is then placed into a wooden palletized box which contains a Fabrene bailer bag for transport to a laboratory.

The Björkdal analytical quality control program includes insertion of blanks and standards into the sample stream. The protocol calls for blanks to be inserted in the sample stream at a rate of approximately one in 20 samples and after every sample containing visible gold. Blank material is obtained from a dimension stone outlet (Granitti Natursten AB of Piteå, Sweden) that sourced the rock from a granite quarry in Finland. A 500 g blank sample is used. Björkdal inserts 100 g certified reference material (CRM) samples at a rate of one in a 20 sample batch. Björkdal purchased the bulk CRMs from Geostats Pty Ltd, Western Australia. The geological technician weighs and bags CRM at the sample preparation laboratory (SPL). The blanks and CRMs are inserted into the bailer bags stream prior to shipment. Once full, the bailer bag is tied shut with security tags, and thick plastic is then draped and stapled shut over the top of the box in order to protect it from the elements during loading and transport.

11.2 Diamond Drill Core Sample Preparation and Analysis

Prior to April 2018, the majority of the samples have been assayed by CRS in Kempele, Finland, which is independent of Mandalay. CRS is certified according to ISO 9001:2008 and accredited by FINAS Finnish Accreditation Service, ISO 17025:2017 (T342). CRS collaborates with MSALABS in Canada and acts as their representative in Finland. MSALABS are certified according to ISO 9001:2008 and their laboratory in Vancouver, Canada is also accredited by IAS according to ISO 17025:2017 (TL-736). CRS' main laboratory is located in Kempele, Finland, directly east of Björkdal across the Baltic Sea (or approximately 410 miles by road).

In April 2018, ALS Minerals took over operation of the on-site laboratory in Björkdal from Minlab AB (CRS) and carried out analyses until May 2020. Since May 2020 operation of the Björkdal on-site laboratory has been carried out by Minlab AB (CRS). The on-site laboratory mainly analyses grade control samples such as chip samples and sludge samples, but also drill core samples from development and production optimization drilling.

Samples collected from exploration drilling programs are analyzed by CRS at their laboratory facilities located in Kempele, Finland.

11.2.1 Sample Preparation

11.2.1.1 CRS Procedures

- Drying of wet samples in drying ovens.
- Weighing (received weight) and listing preparation of received samples.
- Crushing of samples until >80% < 2 mm. The crusher is cleaned with pressurized air after every sample and run through with blank stones between batches.
- Splitting to 500 g subsample with rotating sample divider for PAL1000. The sampler divider is cleaned with pressurized air between every sample. There are two duplicate split samples in a PAL1000 pulverization run.

11.2.1.2 ALS Procedures

ALS Piteå is an accredited laboratory in accordance with the International Standard ISO/IEC 17025:2005. The ALS sample preparation facility in Piteå has internal standard procedures and quality controls for sample preparation in place to ensure that samples are prepared in compliance with industry standards. The laboratory also has a digital Laboratory Information Management System (LIMS).

The sample preparation procedures carried out on Björkdal's diamond drill core samples at the Piteå facility consisted of the following:

- Logging each sample upon arrival in the LIMS system and attaching a bar code label.
- Drying of wet samples in drying ovens.
- Fine crushing of samples to better than 70% of the sample passing two millimetres.
- Splitting sample using rotary splitter.
- Pulverizing a sample split of up to 1,500 g to better than 85% of the sample passing 75 µm.

11.2.2 Sample Analysis

11.2.2.1 CRS

Most drill core was analyzed at the CRS laboratory in Kempele, Finland using PAL1000 with an AAS finish. The analysis method has a lower limit of 0.05 g/t Au and an upper limit of 300 g/t Au, or a lower limit of 0.01 g/t Au if the gold from the sample solution is extracted into Di-isobutyl Ketone (DIBK) prior to AAS-measurement (usual method for exploration drill-core). The PAL1000 machine contains 52 steel pots, each having the maximum capacity of 1,000 g sample, 1,000 mL water, and grinding media (steel balls). Samples are completely pulverized (typically to better than 90% < 75 µm) and simultaneously leached with cyanide. The solution is analyzed for gold by AAS (1).

Check assaying is done to evaluate the level of precision, accuracy, and analytical errors that may be present at the primary assay laboratory.

Samples are re-analyzed if the results of the quality control for a batch are deemed unsatisfactory (i.e., more than three standard deviations from the expected value).

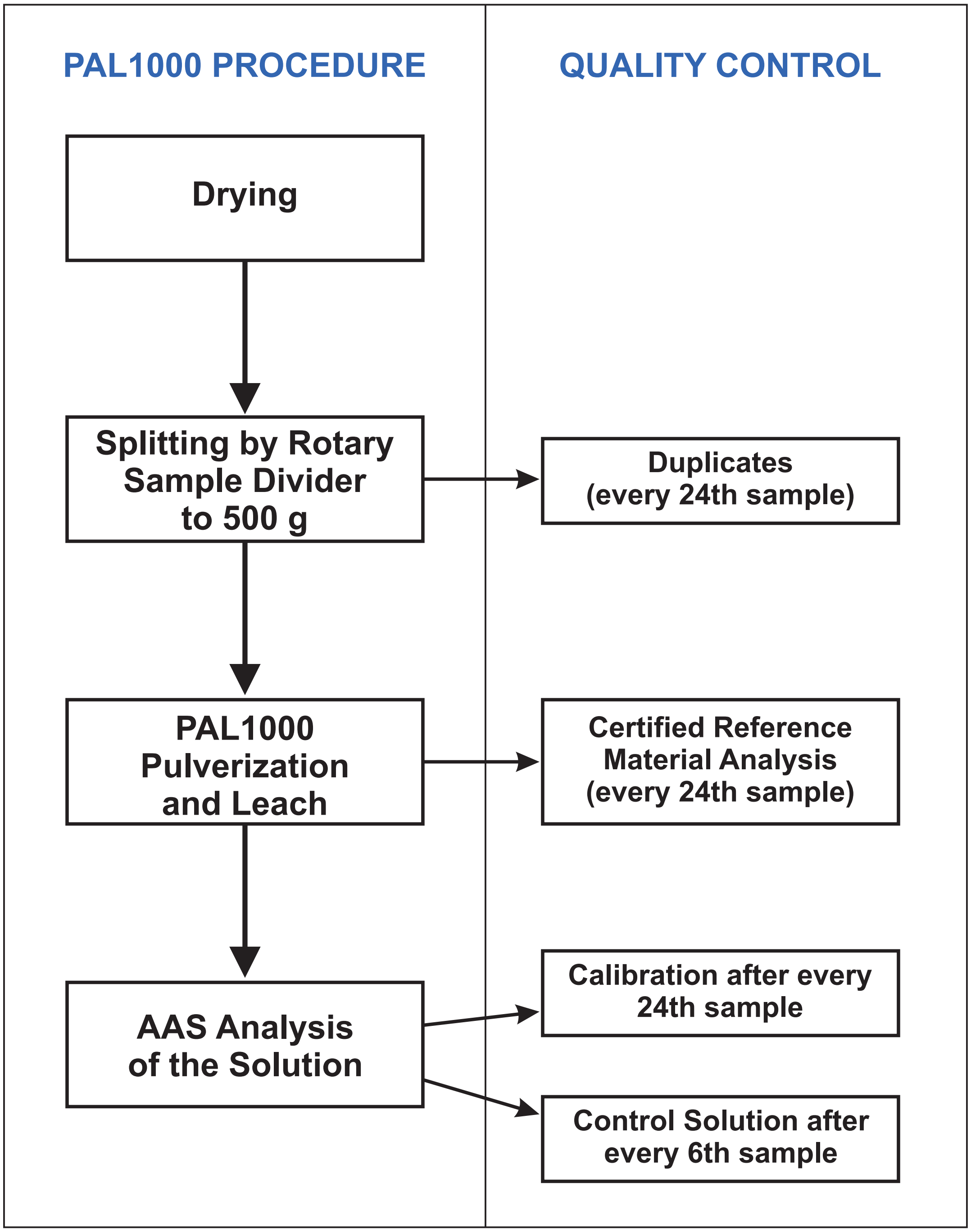


Figure 11-1

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

CRS Sample Preparation Flowchart

March 2021

Source: CRS, 2015.

11.3 Reverse Circulation Sample Preparation and Analysis

11.3.1 Sample Preparation

Exploration RC drilling consists of 5.5 in. diameter RC holes that are sampled every metre. Drill cuttings are dropped out of the cyclone though a large riffle splitter at the completion of a one metre drilling interval. Two samples are collected, one sample of approximately three to four kilograms in a single calico bag, and a further sample of 20 kg or more collected in a large green nylon bag. Both bags have sample numbers written on them, and a ticket number is placed inside each bag. The calico bag samples are placed within a boxed pallet for transport directly to the laboratory, while the larger nylon bags are neatly placed in an ordered row for later chip sampling from a site geologist. These chips are sieved, washed, and placed in chip-trays for later lithological, alteration, and mineralogy (i.e., quartz, carbonate, sulphide, etc.) logging. Data from logging is entered directly into the GeoSpark master database program. Standards and blanks are alternately inserted approximately every 20 samples into small sealed plastic bags, and then within numbered calico bags (with their corresponding numbered sample tag) and inserted among the samples that are placed within the boxed pallet.

RC grade control drilling in the open pit consists of five inch diameter holes with one metre samples on approximately 15 m spacing with 7.5 m in-fill spacing where possible. Drill cuttings are divided by a rotary splitter and collected in calico bags and a sample tag is added after removal from the drilling rig. The amount of sample collected is approximately three to four kilograms. The drillers then take a further sample, sieve it so the fine content is removed, and place it in an RC Lithology Sample Tray. The RC chips are then logged in the same way as the exploration RC samples. No RC-drilling has taken place in the open pit since August 2019.

Samples that are placed in a large boxed pallet are transported to the on-site laboratory. At the on-site laboratory, the RC samples are poured on a metal tray and dried at 90°C until the samples are dry (approximately 24 hours). The samples are then placed in numbered plastic bags. The blanks and CRMs are inserted into the bailer bags prior to shipment at a rate of one standard and one blank sample for each hole. Once full, the bailer bag is secured with a security zip tie.

11.3.2 Sample Analysis

Historically, RC samples were sent to ALS Piteå for LeachWELL assaying. In 2014, Björkdal sent a limited number of RC samples to the Svartliden Mine Laboratory (Svartliden), located approximately 200 km west of Björkdal. Between 2015 and 2019, RC samples from grade control drilling were assayed at the on-site laboratory using PAL1000 equipment. No RC-drilling has taken place since August 2019.

The PAL1000 machine contains 52 steel pots, each having the maximum capacity of 1,000 g sample, 1,000 mL water, and grinding media (steel balls). Samples are completely pulverized (typically to greater than 90% < 75 µm) and simultaneously leached with cyanide. The solution is analyzed for gold by AAS. Assay limits range from a lower method detection limit of 0.05 g/t Au to an upper method detection limit of 300 g/t Au.

Check assaying is conducted to evaluate the level of precision, accuracy, and analytical errors that may be present at the primary assay laboratory.

Samples are reanalyzed if the results of the quality control for a batch is deemed unsatisfactory (i.e., more than three standard deviations from the expected value). All RC rejects are stored for one year after all assays have been received, checked, and inserted into the master database (GeoSpark Source) by the database geologist. After one year, 90% of the rejects are discarded.

All RC data is reviewed and then stored in the secure network GeoSpark drill hole database system. SLR recommends that standard protocols and written procedures for QA/QC review be implemented by a designated Database Manager.

11.4 Chip and Sludge Sample Preparation Procedures

11.4.1 Chip Sample Preparation

The in-mine chip samples are prepared and analyzed at the Björkdal on-site assay laboratory. Chip samples are generally approximately five kilograms in weight, are poured onto a tray and dried at 100°C until the sample is dry (approximately three hours). The entire sample is then crushed in a jaw crusher until 70% of the material is less than two millimetres. The jaw crusher is cleaned with blank stones and pressurized air after every sample. The sample is then split into a 500 g subsample with a rotary splitter and the leftover amount of sample is archived. After one year, 90% of the rejects are discarded. The rotary splitter is cleaned with pressurized air after every sample. The samples are placed into numbered plastic pints and moved over to the laboratory.

11.4.2 Sludge Sample Preparation

The in-mine sludge samples are prepared and analyzed at the Björkdal on-site assay laboratory. The collected drill cutting sample is poured on a tray and dried at 100°C until the sample is dry (approximately six hours). While the gold contents of mine sludge samples is measured for production planning purposes, these results are not used for Mineral Resource estimation.

The sample is split into a 500 g subsample with a rotary splitter and the left over sample is archived. After one year, 90% of the rejects are discarded. The rotary splitter bins are cleaned with compressed air after each sample. Samples are then placed into numbered plastic bags and moved over to the laboratory.

11.4.3 Chip and Sludge Sample Analysis

Assaying of the in-mine chip and sludge samples are conducted at the Björkdal on-site laboratory using the PAL1000 method. Samples are completely pulverized (typically to better than 90% < 75 µm) and simultaneously leached with cyanide. The solution is analyzed for gold by AAS. Assay limits range from a lower method detection limit of 0.05 g/t Au to an upper method detection limit of 300 g/t Au.

Check assaying is done to evaluate the level of precision, accuracy, and analytical errors that may be present at the primary assay laboratory.

Samples are reanalyzed if the results of the quality control for a batch are deemed unsatisfactory (i.e., more than three standard deviations from the expected value). The samples are assayed using PAL1000 cyanide leaching and the jars are cleaned with quartz sand and water after every run. Two CRMs, two duplicates, and a blank sample are inserted in every run.

The following standard procedures are undertaken for mine chip and sludge samples at the Björkdal on-site laboratory:

1. The 500 g sample is placed in a numbered plastic sample pint.

2. The sample is inserted into the PAL1000 machine jars together with a cyanide pill and 500 mL of water.
3. The jars are sealed and machine is run for 1.5 hours.
4. 10 mL of fluid is extracted from the jars with an auto-pipette into a numbered single-use test-tube in a rack. The tip on the autopipette is changed regularly and always cleaned with water.
5. The rack with the test-tubes is moved to the AAS-machine.
6. Analysis of the solution is performed by AAS.

Blank tests are run daily throughout the process in order to rule out the possibility of contamination in any of the various analysis steps. The AAS analysis is calibrated before each measurement with standard solutions containing known gold grades. Once all the QA/QC has passed and the assays have been reported, the PAL machine is thoroughly cleaned with water.

11.5 Quality Assurance and Quality Control

No QA/QC data is available for historical drilling prior to 2004. RC drilling for grade control purposes carried out from 2006 to 2013 and assayed at ALS did not include any QA/QC insertions into the sample stream. From 2013 to 2014, standard and blank samples were inserted into the sample stream with one blank and one standard sample inserted per RC drill hole. In 2014, RC samples were sent to the uncertified CRS and Svartliden laboratories.

A full description of the details and results of the QA/QC programs carried out prior to Mandalay's acquisition of the Mine in 2014 can be found in RPA (2015).

Following Mandalay's acquisition of the Mine in 2014, the QA/QC protocols were updated to include the regular insertion of blanks and multiple standards within each 30 sample batch. A blank sample was also inserted after every sample containing visible gold. All samples collected from the regional exploration programs, the underground and near-mine surface-based exploration programs, and the grade control sampling during 2015 and January to September 2016 were included in the QA/QC program. A summary of the QA/QC samples taken from 2015 to September 30, 2020 is provided in Table 11-1.

Table 11-1: Summary of QA/QC Sampling
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Blanks	Standards	Other	Total
2015	114	538	-	652
2016	1,832	2,456	233	4,521
2017	1,936	2,525	222	4,683
2018	1,992	2,724	243	4,959
2019	2,392	2,348	167	4,907
2020[1]	2,412	2,293	-	4,705

Note:
1. Statistics for 2020 are up to September 30.

Mandalay manages the results of the QA/QC program by compiling all of the results from the blank samples and CRMs into an Excel spreadsheet where the grades of the sample in question are compared to the second and third standard deviation results.

Starting in 2016, control charts are also prepared by the laboratory on a routine basis during the normal course reporting of the analytical results from the LeachWELL assays. As the LeachWELL process reports the recovered portion of the gold within any given sample, a comparison of the LeachWELL results with the stated recommended value of a CRM is not valid. Rather, the control charts for the CRMs are slightly modified to report and compare the cyanide-leachable portion of a CRM to the stated value of the certified standard (Figure 11-2). The results from the blank samples are graphically presented using conventional scatter plots (Figure 11-3). SLR examined the results of the CRM and blank samples processed in 2020 and found no material issues.

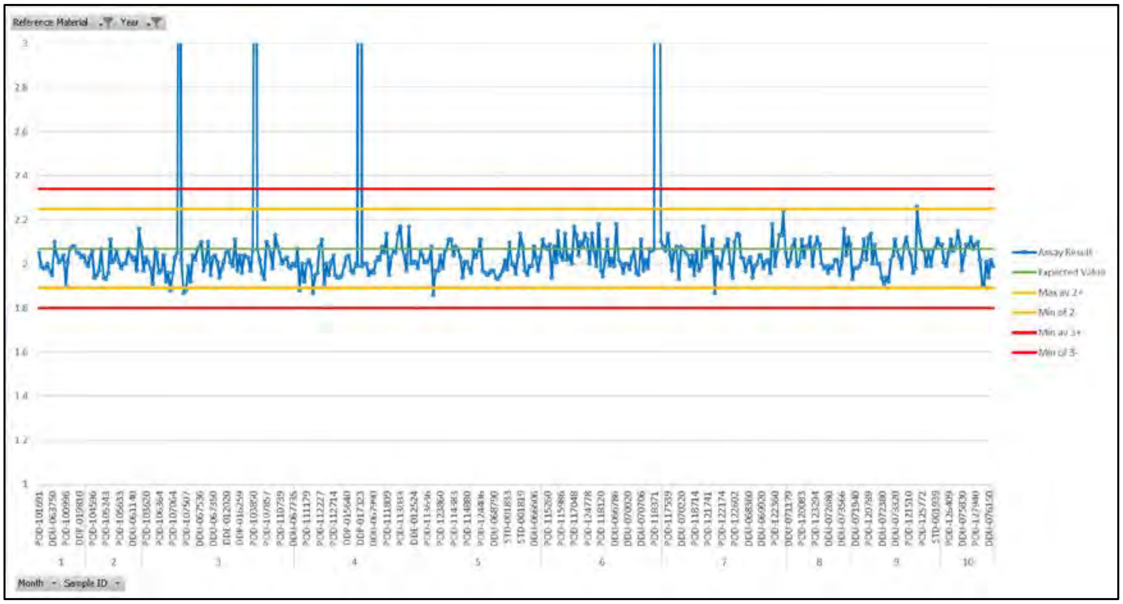


Figure 11-2: Sample Control Chart for Certified Reference Standard G313-2, January to September 2020

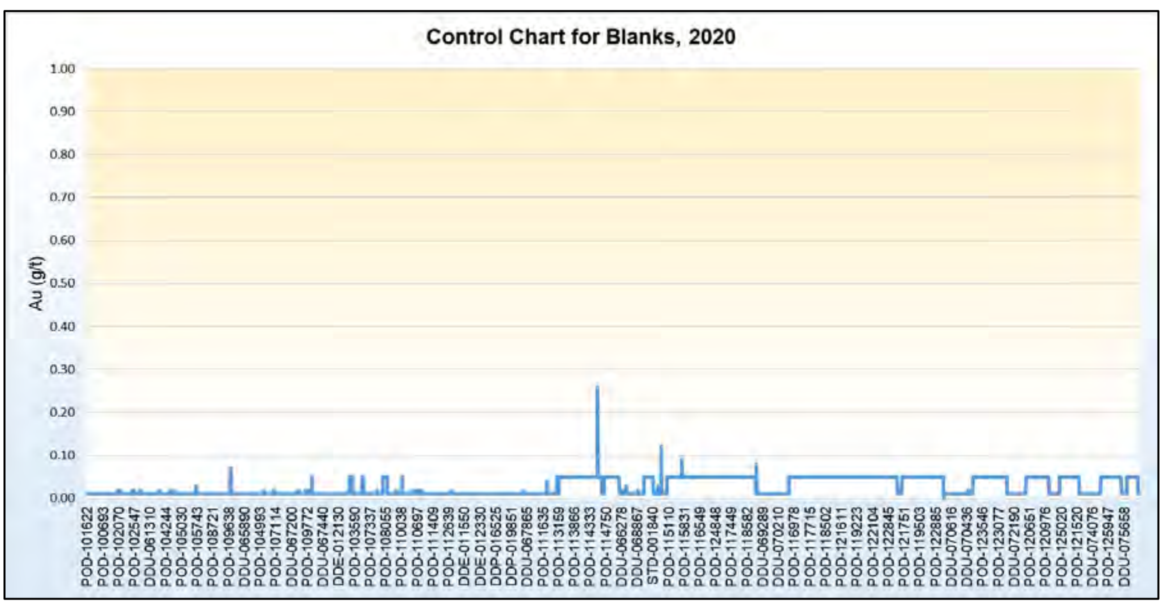


Figure 11-3: Sample Control Chart for Blanks, January to September 2020

11.6 Security

The Mine site has not experienced any major security issues. Access to the mine area, which is fenced, is restricted to authorized personnel that have received the Standard Solution Group (SSG) general safety training course, the SSG Björkdal local training course, and have been given access to pass through the gates with their personal key card.

Björkdal drill and mine samples, as well as Norrberget exploration samples, are transported from the site to the Björkdal on-site core logging and sample preparation facility, which is located within a secure area. All diamond drill core is logged into laptop versions of the GeoSpark drill hole database system. The stand-alone logging laptop computers are typically backed up on a daily basis. The GeoSpark database is located on the Björkdal server, with daily backups and access restrictions based on user level.

Only persons permitted by Björkdal are allowed to handle the samples.

Commercial freight companies are used to transport the samples to the appropriate independent sampling and assaying laboratories. Sample shipment lists are emailed to the assay laboratory.

11.7 Discussion and Recommendations

In the QP's opinion, the sample preparation, analysis, and security procedures at Björkdal and Norrberget are adequate for use in the estimation of Mineral Resources.

Björkdal utilizes the PAL1000, or LeachWELL, cyanide leach assaying technique for all samples. SLR agrees that PAL1000 is suitable on large samples (>500 g) for deposits with coarse or particulate gold and, in Björkdal's case, should provide a reduction in sampling errors over FA techniques. SLR notes that PAL1000 assays report cyanide recoverable gold, and not necessarily total gold.

SLR recommends that Mandalay conduct a study that determines the gold grades of the assays obtained from the on-site PAL1000 residues (tailings). The results from such a study may be useful in reducing the variances observed between the Mineral Resource block models and the plant production data.

In the QP's opinion, the QA/QC program as designed and implemented by Mandalay is adequate and the assay results within the database are suitable for use in a Mineral Resource estimate.

In 2016 and 2017, Mandalay undertook a program of collecting field duplicate samples and assaying both samples to extinction. This program has highlighted that variability is present both within a single sample and between field duplicates.

12.0 DATA VERIFICATION

12.1 Björkdal

SLR carried out a program of validating the assay tables in the drill hole databases by means of spot checking a selection of drill holes completed in 2020. SLR proceeded to carry out its drill hole database validation exercise by comparing the information contained within the assay tables of the digital database against the assays presented in the original laboratory certificates. No material discrepancies were noted.

Additional checks included a comparison of the drill hole collar locations with the digital models of the topographic surfaces and excavation models as well as a visual inspection of the downhole survey information. A small number of drill hole and channel samples were identified for which the survey locations were not accurate. The locations of these were corrected prior to commencement of the Mineral Resource estimation work flow.

SLR recommends that the validation procedures for the drill hole management protocol be reviewed and updated as appropriate.

The QP is of the opinion that the Björkdal drill hole and chip sample data are adequate for the purposes of Mineral Resource estimation.

12.2 Norrberget

SLR carried out a site visit to the Norrberget site on September 24, 2017. SLR reviewed the drill program and inspected the drill rig and pad setup. No drilling was underway at Norrberget during the site visit, although active drilling was observed at Björkdal.

SLR received the Norrberget dataset in July 2017 as an Access database that contained all drilling up until the completion of the 2016 exploration program. Additional drilling was completed in 2017 and appended to the drill hole database later that year. The cut-off date for the drilling is September 30, 2017.

SLR validated the database using standard software tools to check for errors within the database. One sample (un-mineralized) was observed as having an identical From and To value. This sample was reviewed by Björkdal staff and edited to reflect the true intercept width from neighbouring samples.

SLR also compared a selection of the values within the database assay table to the original certificates.

A check was undertaken to ensure that the drill hole elevation was comparable with the digital terrain model (DTM) surface. No material discrepancies were observed.

The QP is of the opinion that the Norrberget drill hole data are adequate for the purposes of Mineral Resource estimation.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Björkdal

The mineral processing plant at Björkdal commenced operation in 1989. Since that time, it has processed approximately 33.9 Mt of ore from open pit and underground sources and produced approximately 1.49 million ounces of gold (Moz Au).

The original plant design was based on pilot plant data that was generated in 1987. Since then, numerous studies and metallurgical test programs have been carried out by mine staff, third party consultants, and Ph.D. students from the Mineral Engineering department at the University of Luleå. This work has included mineralogical characterization studies of the tailings, work index and abrasion index studies, and numerous internal studies on grinding/liberation/recovery relationships.

Since the plant has been operating for an extended period of time processing ore from both the open pit and the underground mines, in SLR's opinion, the historical data provides the best estimates of the anticipated plant performance in the future. Figure 13-1 provides an overview of the plant recovery data for the gravity, flotation, and total plant recovery starting in 2002.

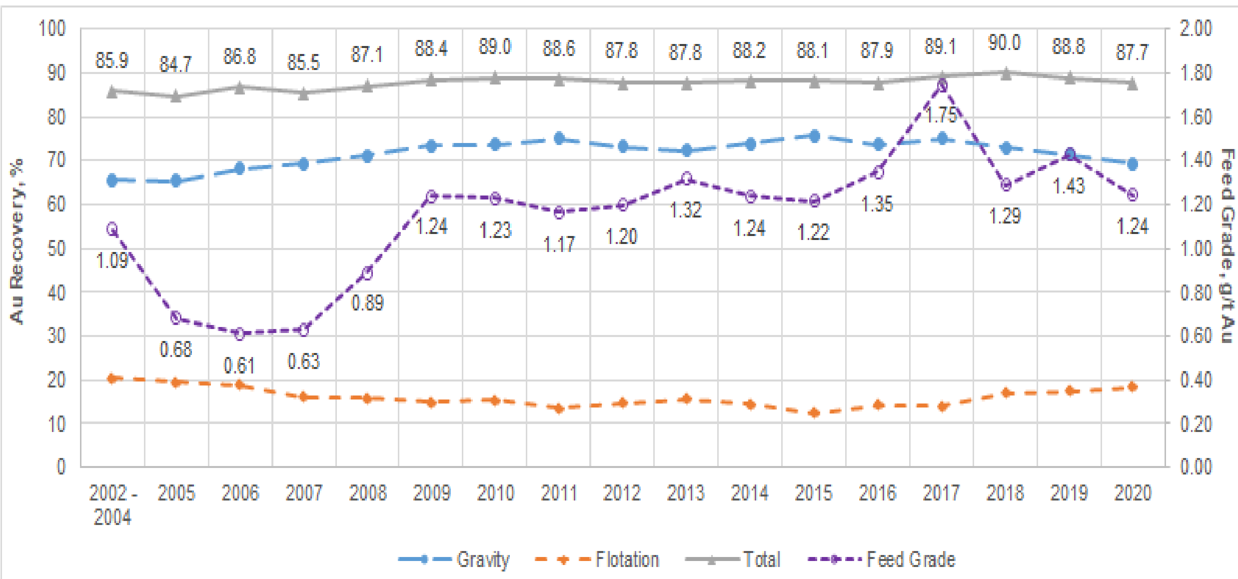


Figure 13-1: Plant Recovery and Feed Grade Data 2002 to 2020

Table 13-1 summarizes the plant production data from 2011 through 2020.

Table 13-1: Plant Production Data
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Throughput (kt)	Feed Grade (g/t Au)	Gravity Recovery (% of Total Au)	Flotation Recovery (% of Total Au)	Plant Recovery (% of Total Au)	Tailings (g/t Au)	Tailings (kg Au)	Production (oz Au)
2011	1,215	1.17	75.0	13.6	88.6	0.131	161	40,358
2012	1,385	1.20	73.2	14.6	87.8	0.146	202	46,808
2013	1,261	1.32	72.3	15.5	87.8	0.161	203	46,941
2014	1,318	1.24	73.8	14.4	88.2	0.145	192	46,292
2015	1,303	1.22	75.7	12.4	88.1	0.144	188	44,920
2016	1,289	1.35	73.6	14.3	87.9	0.164	211	49,140
2017	1,262	1.75	75.2	13.9	89.1	0.190	240	63,186
2018	1,249	1.29	73.1	17.0	90.0	0.129	161	46,662
2019	1,289	1.43	71.4	17.4	88.8	0.159	205	52,514
2020	1,320	1.24	69.3	18.4	87.7	0.153	202	46,289
Total	12,891						1,964	483,134
Average	**1,289**	**1.32**	**73.3**	**15.2**	**88.4**	**0.152**	**196**	**48,313**

A new plant project designed to increase rougher flotation retention and to install a second stage of cleaner flotation was completed in 2017. In 2018, an Expert Process Control System was installed. A graph demonstrating the relationship between feed grade and recovery (i.e., 1988 through 2020) is provided as Figure 13-2. The recovery estimates based on feed grade for 2016, 2017, 2018, and 2019 and using the formula generated from historical data fall on the trend line, as well as the actual recoveries, whereas the actual recovery for 2018 is much higher than the estimate. Using this equation and the estimated feed grade for 2021, the estimated gold recovery for 2021 is 88.7%.

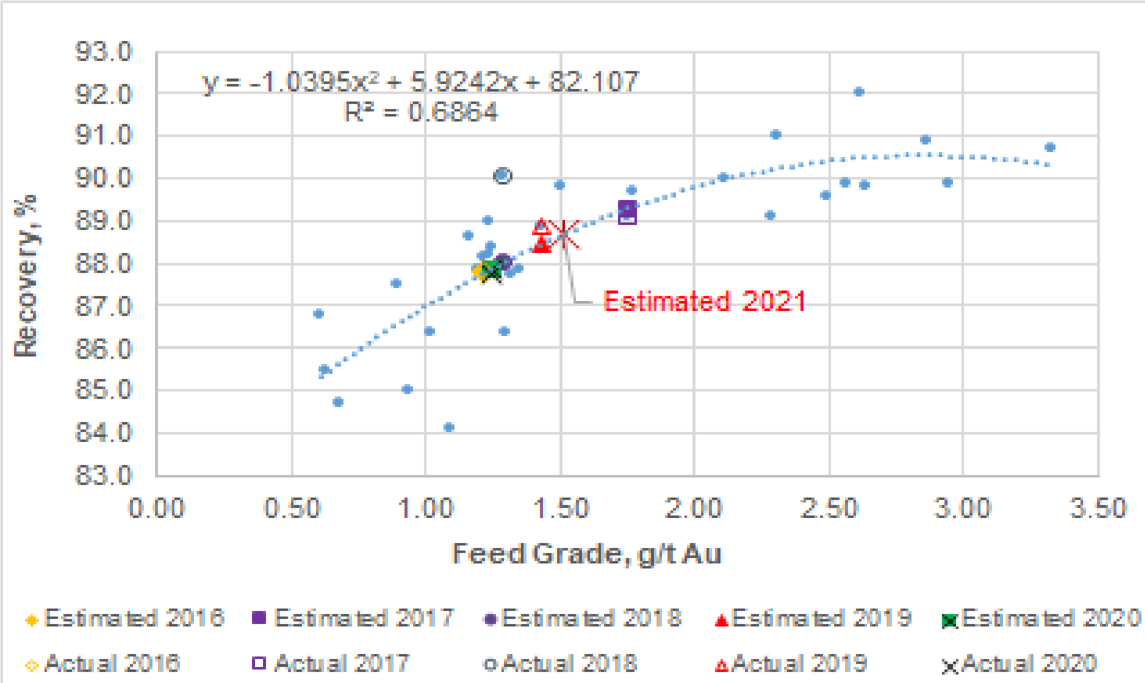


Figure 13-2: Historical Plant Grade-Recovery Data

The correlations between feed grade and tailings grade for the total plant recovery are shown in Figure 13-3. Using the relationship between feed grade and tailings grade and the budgeted feed grade for 2021, SLR estimates gold recovery of 88.9%.

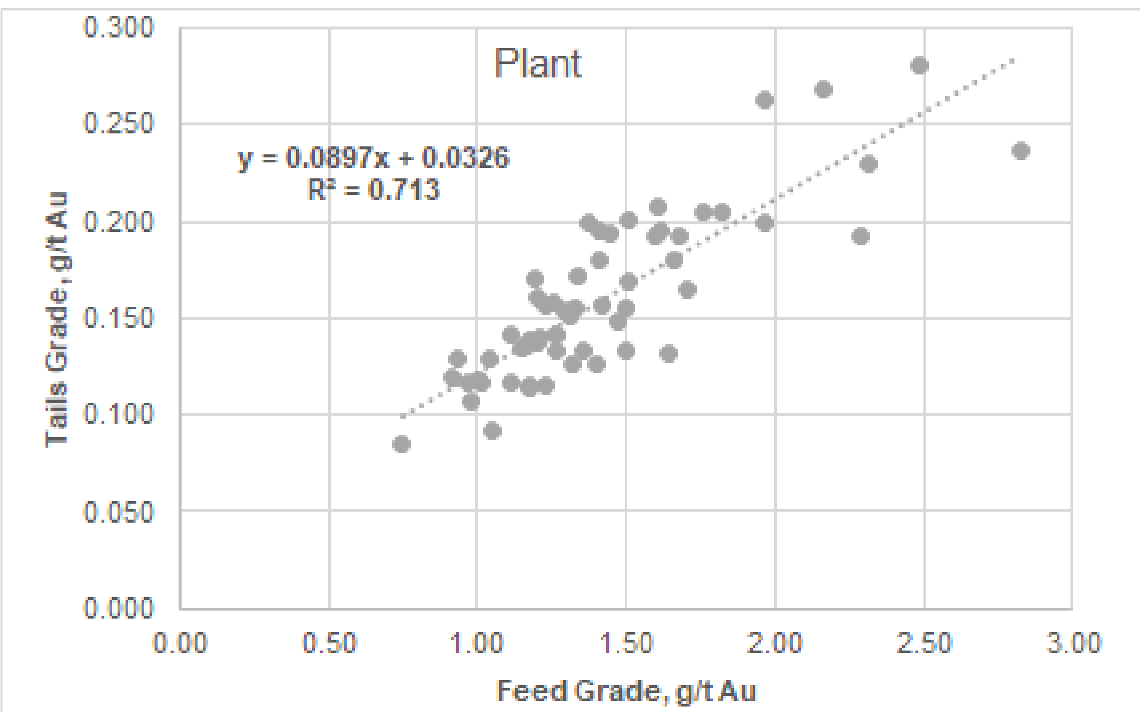


Figure 13-3: 2016 to 2020 Grade Tailings Grade Relationships

Figure 13-4 provides the monthly average tonnages and feed grades for 2016, 2017, 2018, 2019, and 2020.

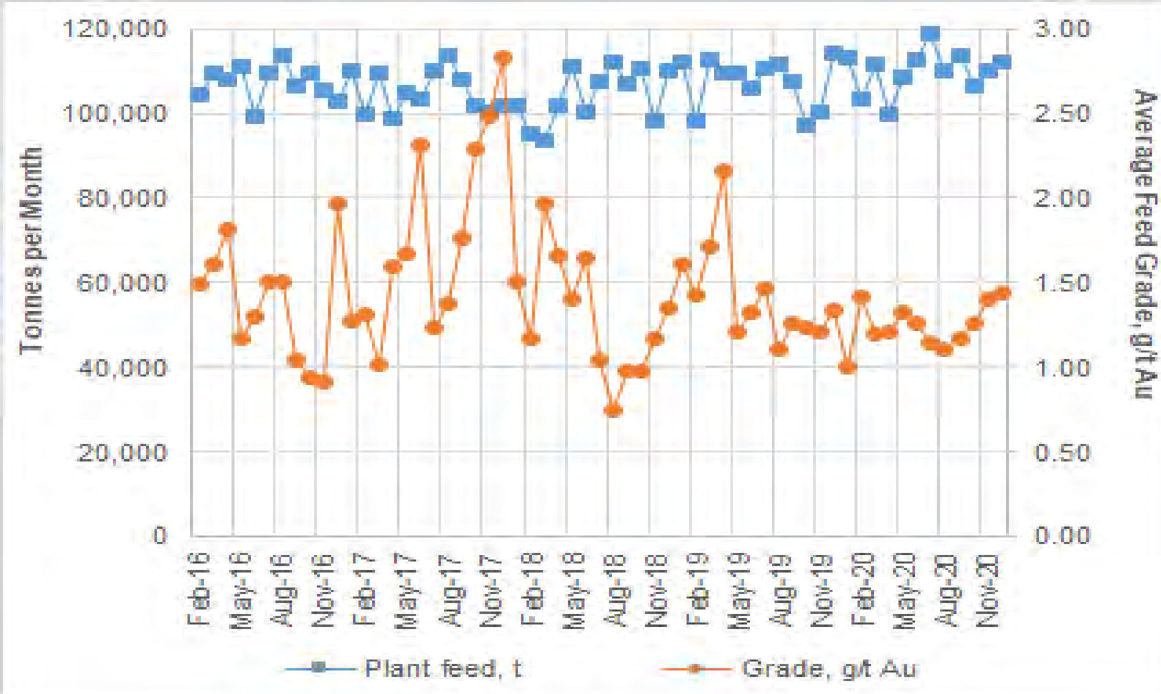


Figure 13-4: 2016 to 2020 Operating Data

Figure 13-5 compares the 2019 recoveries for the various products with the 2020 LOM budget. Based on this data, the budgeted recovery should be possible.

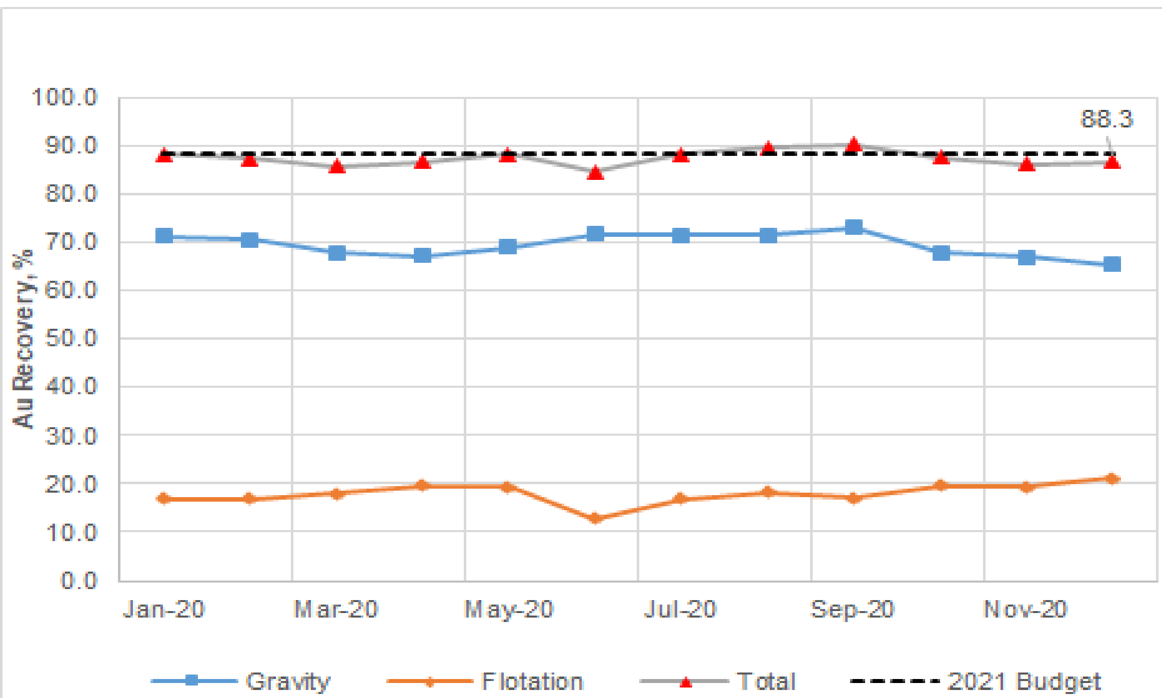


Figure 13-5: 2020 Gold Recovery Data

Figure 13-6 compares the 2021 budget to the 2020 averages for tonnage and grade. The average budgeted tonnage for 2021 is approximately 108,339 tonnes per month compared to an average of 109,968 tonnes per month in 2020. The average budgeted head grade in 2021 is 1.51 g/t Au compared to an average of 1.24 g/t Au in 2020.

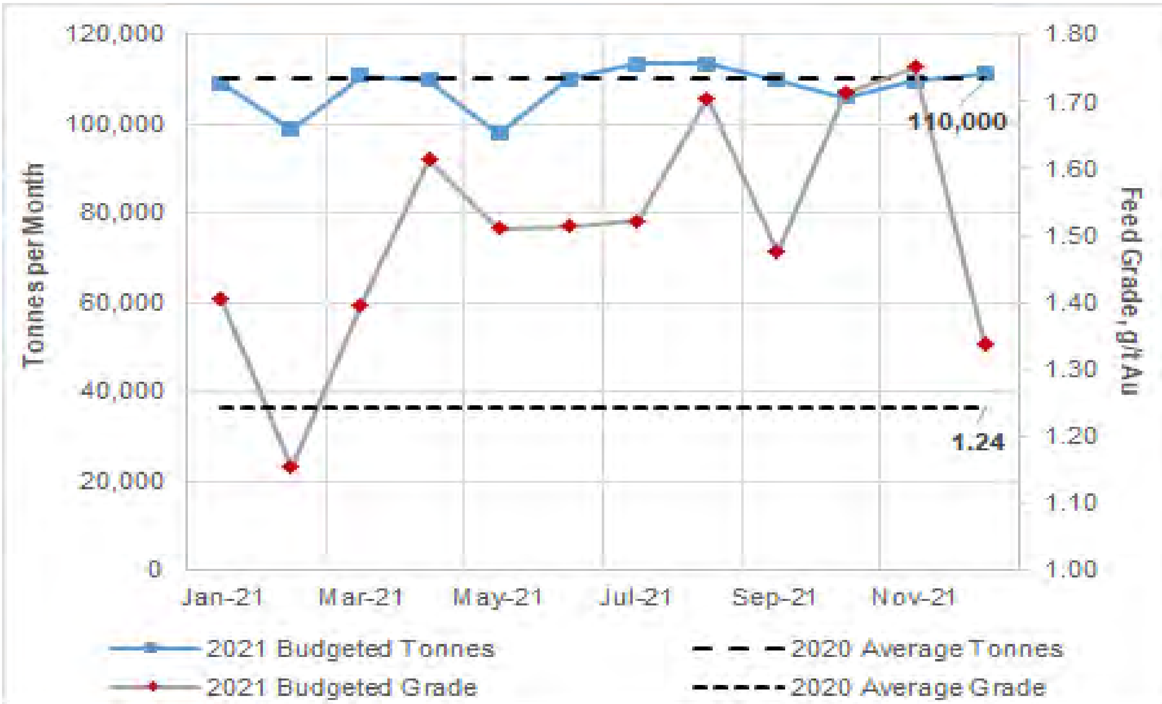


Figure 13-6: 2021 Budget Compared to 2020 Averages

In the QP's opinion, the budgeted tonnages and recoveries for 2021 appear to be reasonable based on historical operating data.

The QP is of the opinion that utilizing historical data to predict future performance in the processing plant is appropriate.

The QP is not aware of any processing factors or deleterious elements that could have a significant effect on economic extraction.

13.2 Norrberget Metallurgical Test Program

ALS Kamloops was commissioned in September 2017 to conduct a pre-feasibility level metallurgical testing program to support the Norrberget MRMR estimates for this Technical Report.

During the September 2017 site visit, SLR (RPA at the time), selected samples to complete the testing program using available quarter drill core. It was hoped that additional sample material would be available from the RC holes that were being drilled at the time of the site visit, however, upon review of the drill hole locations, it was determined that they fell outside of the areas that are expected to be mined. SLR selected material for three samples based on the grade distribution of the assay data base for samples above the cut-off grade, as shown in Figure 13-7, however, some of the material was below the cut-off grade because the intervals of lower grade material were small and it is anticipated that it will be mined since it is surrounded by higher grade material.

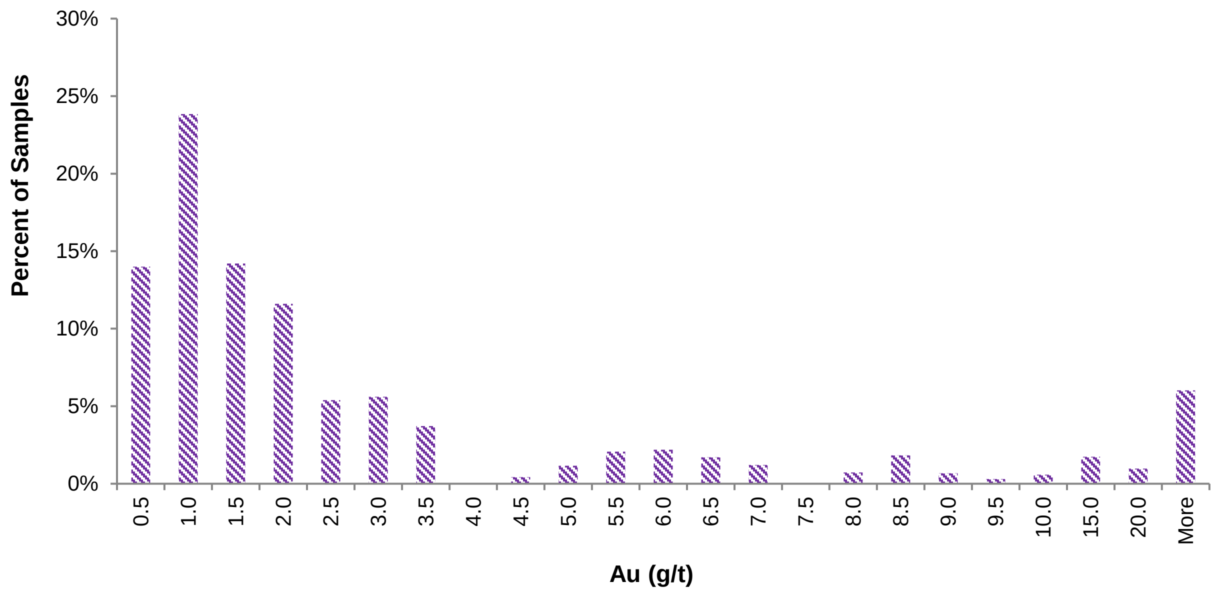


Figure 13-7: Norrberget Deposit Grade Distribution Data

The samples selected included a Master Composite sample that was estimated to be approximately the average grade of the deposit (i.e., 2.0 g/t Au), a Low Grade sample that was estimated to be near the cut-off grade for the Mineral Resource (i.e., 0.5 g/t Au), and a High Grade sample that was estimated to be approximately 5.0 g/t Au.

The locations of the drill holes are shown in Figure 13-8.

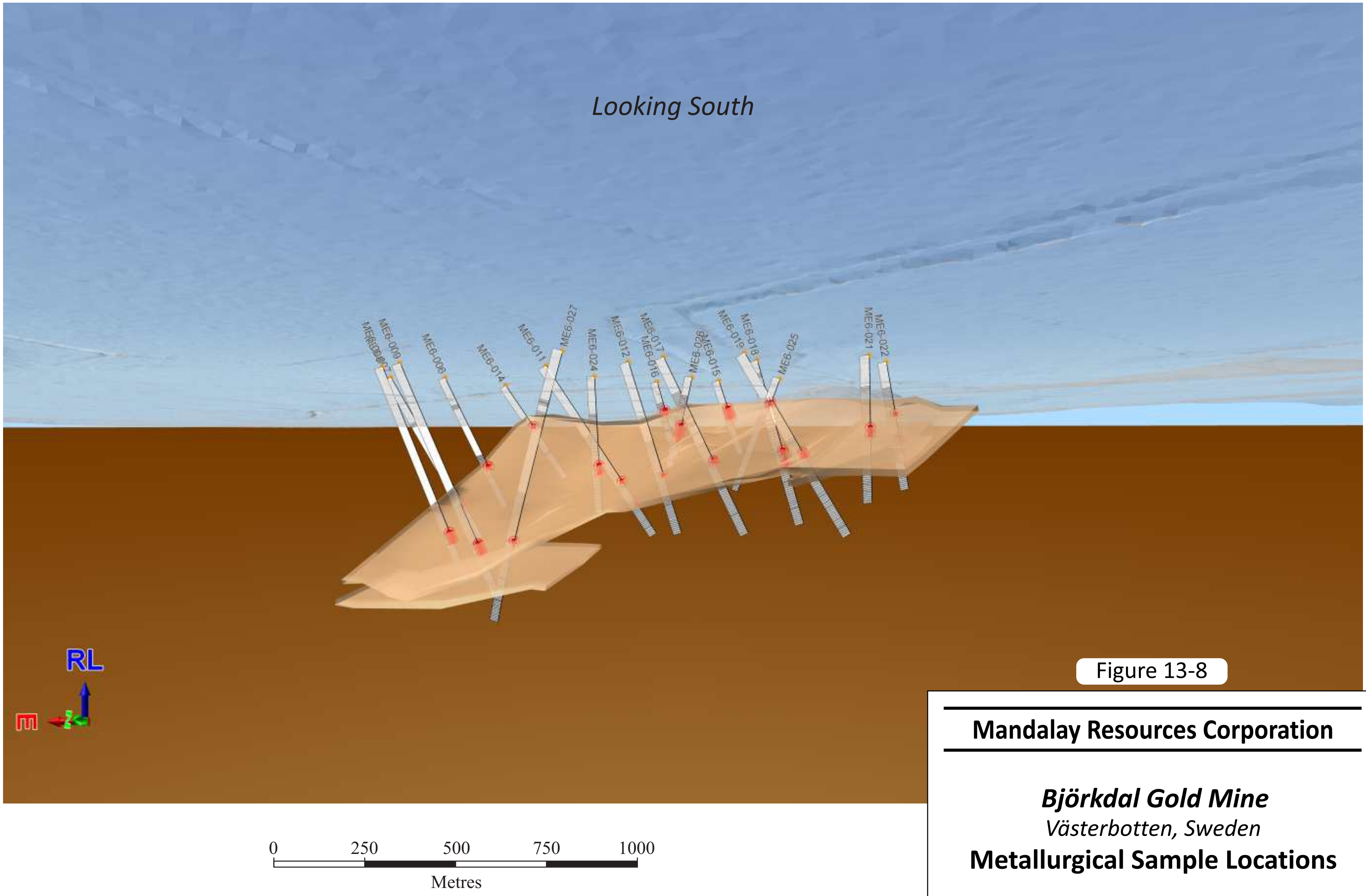


Figure 13-8

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Metallurgical Sample Locations

March 2021

Source: SLR, 2018.

13.2.1 Head Grades

The composite samples were assayed by fire assay. The results are shown in Table 13-2.

Table 13-2: ALS Composite Sample Assays
Mandalay Resources Corporation – Björkdal Gold Mine

Sample	Au (g/t)	Fe (%)	S (%)
Master	6.17	1.90	0.08
Low Grade	0.79	1.77	0.07
High Grade	6.22	2.70	0.07

The Master Composite gold grade was three times higher than estimated from the geological data for the drill core intervals that were used. Since material from Björkdal is consistently difficult to assay due to the presence of coarse gold, it is anticipated that the calculated head grades from the metallurgical tests will be more accurate. Table 13-3 compares the assay data with the calculated head grades from the tests that have been completed at the date of this Technical Report.

Table 13-3: ALS Master Composite Head Grade Comparisons
Mandalay Resources Corporation – Björkdal Gold Mine

Data Source	Au (g/t)
Estimated	1.93
Assayed	6.17
KM5489-01	5.36
KM5489-02	5.17
KM5489-03	5.18
KM5489-04A	5.01
KM5489-05A	5.21
KM5489-06B	7.77
KM5489-07B	5.19
KM5489-08A	4.80
KM5489-09A	5.28
KM5489-12A	5.67
KM5489-20A	4.75
KM5489-21A	5.16
Assayed by Size Fraction	6.52

The calculated head grades are somewhat lower than the assayed head grades but still significantly higher than the estimated head grade. The assay procedure used by the Björkdal geological staff for drill-hole assays is the Cyanide Extractable Gold Using LeachWELL accelerant on 500 g samples, which has historically been more accurate than traditional fire assays due to the larger sample size. In order to evaluate whether the large difference between estimated grade and actual grade of the Master Composite was a sample preparation problem or an analytical problem, splits of the sample were sent to CRS and ALS in Piteå Sweden for analysis using the LeachWELL procedure. CRS completed the geological assays for Norrberget. The results are shown in Table 13-4.

Table 13-4: Master Composite Head Grade Analysis using LeachWELL
Mandalay Resources Corporation – Björkdal Gold Mine

Laboratory	Au (g/t)
CRS	6.95
ALS Piteå	5.61
ALS Piteå QC	5.58

13.2.2 Bond Ball Mill Work Index

One Bond ball mill work index test was completed using the Master Composite sample. The result is 12.2 kWh/t, which is similar to the Björkdal ore that is currently being processed.

13.2.3 Gravity Gold Recovery

Gravity gold recovery tests were completed using three grind sizes to determine whether there is any relationship to gravity gold recovery and grind size. The results of the three tests and a fourth test that was used to prepare feed for a flotation test are provided in Table 13-5.

Table 13-5: ALS Master Composite Gravity Gold Recovery Data
Mandalay Resources Corporation – Björkdal Gold Mine

Test	K_{80} (µm)	Calculated Head (g/t Au)	Recovery (%)
KM5489-01	244	5.36	48.2
KM5489-02	180	5.17	50.5
KM5489-03	172	5.18	51.1
KM5489-04A	193	5.01	51.3

The gravity gold recovery is approximately 50% and appears to be independent of the particle size. Based on these results, the decision was made to conduct further tests at the standard Björkdal particle size of 80% passing (K_{80}) 206 µm. Due to some discrepancies with the grind calibrations, this was subsequently changed to K_{80} 193 µm.

13.2.4 Flotation Tests

A series of flotation tests was conducted using the Master Composite sample in order to evaluate optimum flotation conditions for the Norrberget material. Four gravity plus rougher flotation tests and five gravity plus rougher-cleaner flotation tests were conducted. Following the optimization phase of the test program, one gravity plus rougher flotation test and one gravity plus cleaner flotation test was conducted using the High Grade sample and the Low Grade sample. The results are shown in Table 13-6. The selected conditions were used for tests KM5489-12A and KM5489-20A.

Table 13-6: ALS Flotation Test Data
Mandalay Resources Corporation – Björkdal Gold Mine

Test	K_{80}, (µm)	Gravity			Rougher Flotation Recovery (%)	Cleaner Flotation Recovery (%)	Concentrate Grade (g/t Au)	Total Recovery (%)
		Calculated Head (g/t Au)	Recovery (%)	Con Grade (g/t Au)				
Master Composite								
KM5489-04A	193	5.0	51.3	167.2	23.8		57.2	75.0
KM5489-05A	193	5.2	51.2	185.7	24.8		34.7	76.0
KM5489-06B	90	7.8	60.6	320.0	25.1		66.8	85.7
KM5489-07B	140	5.2	53.0	204.9	26.6		43.5	79.6
KM5489-08A	193	4.8	47.2	158.0		27.1	64.2	74.3
KM5489-09A	193	5.3	63.2	221.3		8.00	62.1	71.2
KM5489-12A	193	5.7	52.4	199.7		25.3	40.6	77.7
KM5489-20A	193	4.7	42.2	153.7		32.6	29.6	74.8
KM5489-21A	47	5.2	54.6	183.1		37.1	20.7	91.8
Average		**5.4**						
Low Grade								
KM5489-11A	214	0.57	38.2	14.8	29.5		5.4	67.7
KM5489-13A	214	0.66	41.1	17.5		26.1	4.7	67.2
Average		**0.62**						
High Grade								
KM5489-10A	189	5.9	37.7	140.7	25.2		52.6	62.9
KM5489-18A	189	6.9	37.6	157.0		37.7	52.3	75.3
Average		**6.4**						

13.2.5 Estimated Recovery

The Norrberget deposit has a metallurgical response that is different from the Björkdal ore. In order to realize a gold recovery that was consistent with Björkdal ore, it will be necessary to grind to a particle size K_{80} of approximately 47 µm. Due to the small size of the Norrberget deposit, it is not anticipated that it would be cost effective to modify the grinding circuit to achieve this recovery. Since it is expected that there is a relationship between grade and recovery, SLR analyzed the limited data that is available to estimate the recovery at the average grade that will be processed over the LOM (i.e., 2.8 g/t Au). The data used to estimate is provided in Table 13-7. SLR chose the results from KM5469-12A for the Master Composite and did not use the results from KM5489-20A because the calculated head grade was much lower than the calculated head grades for the majority of the tests.

Table 13-7: Test Data Used to Estimate Recovery
Mandalay Resources Corporation – Björkdal Gold Mine

Sample	Au (g/t)	Recovery (%)	Gravity (%)	Flotation (%)
Master	5.7	77.7	52.4	25.3
Low Grade	0.66	67.2	41.1	26.1
High Grade	6.9	75.3	37.6	37.7

Figure 13-9 shows the graphical results of the recovery estimate.

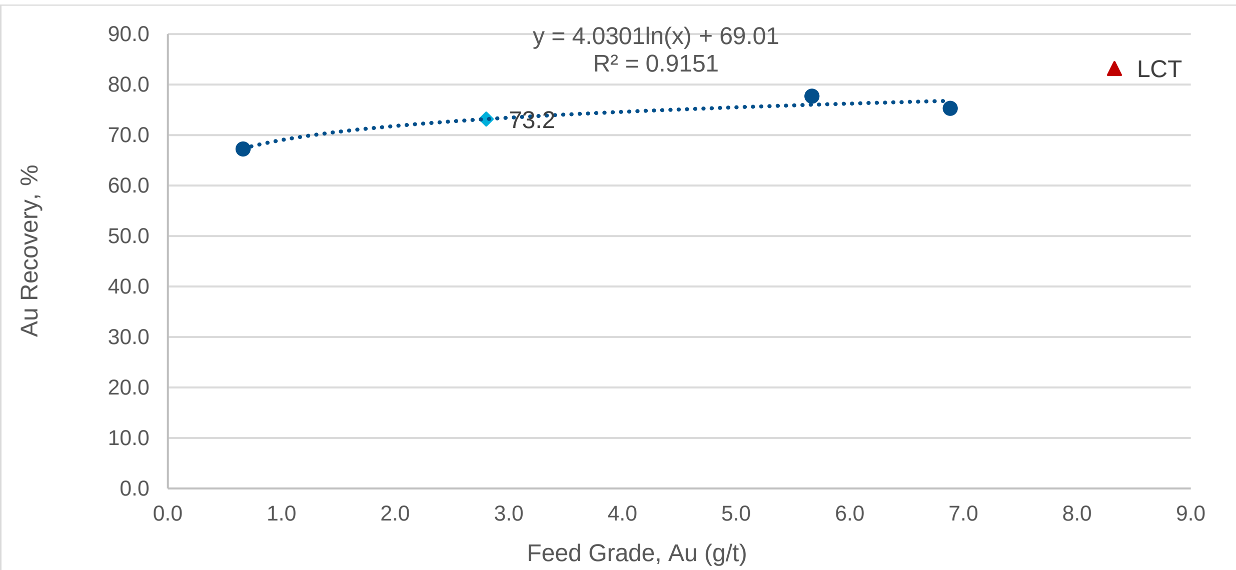


Figure 13-9: Recovery Estimate for Norrberget

As shown in Figure 13-9, a locked cycle test (LCT) using the Master Composite sample was also conducted by ALS. In general, LCT data is more accurate in estimating plant performance than the open circuit flotation tests and LCT recoveries are somewhat higher than recoveries from open circuit tests. In this case, the calculated head grade was excessively high, which, in SLR's opinion, skews the data. Based on the evaluation using limited data, SLR estimates that the average gold recovery will be a total of approximately 75% with approximately 45% of the gold recovered in the gravity circuit and the remaining 30% recovered in the flotation circuit.

13.2.6 QEMSCAN and Diagnostic Leach

In order to evaluate the differences in the mineralogy between Björkdal and Norrberget, diagnostic leach tests and QEMSCAN bulk mineral analysis (BMA) and trace mineral search (TMS) were completed using the bulk concentrate from test 20.

The diagnostic leach tests showed that the majority of the gold was cyanide leachable, which indicates that it was exposed. Very little of the gold was encapsulated in silicates. It is theorized that the particles may be too small to be recovered by flotation.

The mineral composition from the BMA is provided in Table 13-8 and the sulphide deportment is provided in Table 13-9.

Table 13-8: ALS Mineral Composition of Bulk Concentrate
Mandalay Resources Corporation – Björkdal Gold Mine

Mineral	Mineral Content (wt. %)
Chalcopyrite	1.4
Molybdenite	0.1
Sphalerite	0.1
Galena	<0.1
Pyrrhotite	17.3
Pyrite	2.0
Iron Oxides	0.3
Feldspars	32.5
Amphibole	19.4
Quartz	9.1
Micas	6.2
Carbonates	3.9
Chlorite	1.8
Epidote	2.3
Sphene (Titanite)	1.7
Apatite	0.6
Bismuth Telluride	0.4
Others	0.8
Total	**100**

Notes:

1. Chalcopyrite includes trace amounts of Bornite, Chalcocite/Covellite and Tennantite/Enargite.
2. Iron Oxides includes Magnetite, Hematite and Goethite/Limonite.
3. Feldspars includes Feldspar Albite, Plagioclase Feldspar and K Feldspar.
4. Micas includes Biotite/Phlogopite and trace amounts of Muscovite.
5. Carbonates includes Calcite and trace amounts of Ankerite.
6. Others includes Nickel Iron Sulphide, Cobaltite(?), Gold/Electrum and unresolved mineral species.
7. A Particle Mineral Analysis was used for the data.

Table 13-9: ALS Sulphur Deportment of Bulk Concentrate
Mandalay Resources Corporation – Björkdal Gold Mine

Mineral	Test 20 Bulk Concentrate (%)
Chalcopyrite	6.2
Molybdenite	0.6
Sphalerite	0.3
Galena	0.1
Pyrrhotite	79.6
Pyrite	12.9
Other Sulphur Bearing Minerals	0.5
Total	**100**

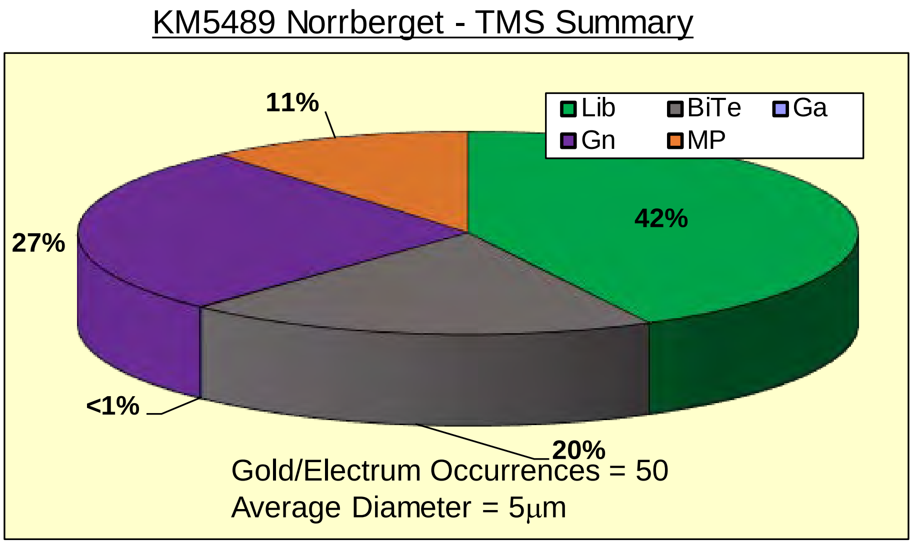
Notes:

1. Chalcopyrite includes trace amounts of Bornite, Chalcocite/Covellite and Tennantite/Enargite.
2. Other Sulphur Bearing Minerals includes Nickel Iron Sulphide and Cobaltite(?).

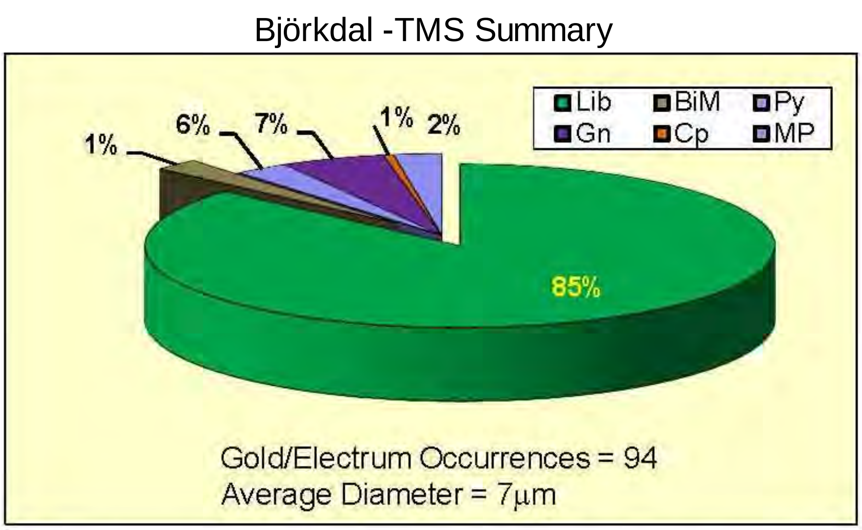
Figure 13-10 compares the results of the TMS for Norrberget with results from an earlier Björkdal study.

Fifty gold bearing particles were assessed. The electrum particles measured on average > 80% gold per the x-ray spectra. From the figure it can be seen that the gold/electrum occurrences identified for the Norrberget bulk concentrate appear to be more complex. A lower percentage of the gold surface area was identified as liberated gold/electrum particles, whereas a higher percentage was associated with either bismuth-telluride particles, non-sulphide gangue particles, or in multiphase form. The average mean projected diameter of gold bearing particles was also somewhat finer than that for the Björkdal bulk concentrate, at 5 µm versus 7 µm.

SLR is not aware of any processing factors or deleterious elements that could have a significant effect on potential economic extraction.



Note: Lib - Liberated Gold particle; BiTe - Gold particle with Bismuth-Telluride;
Ga - Gold particle with Galena; Gn - Gold particle with Non-sulphide Gangue;
MP - Gold particle in Multiphase.
Data above is shown on an adjusted gold particle surface area basis, where particles greater than 50 percent area are considered liberated.



Note: Lib - Liberated Gold particle; Cp - Gold particle with Chalcopyrite;
Py - Gold particle with Pyrite; Gn - Gold particle with Non-sulphide Gangue;
FeOx - Gold particle with Iron Oxides; MP - Gold particle in Multiphase.
Data above is shown on an adjusted gold particle surface area basis, where particles greater than 50 percent area are considered liberated.

Figure 13-10: QEMSCAN TMS Results for Norrberget and Björkdal

14.0 MINERAL RESOURCE ESTIMATE

14.1 Summary

Other than the normal-course updating of the mineralization wireframes to account for new drilling and sampling information, the workflow and estimation parameters used to prepare the year-end 2020 Björkdal long-term block model were largely unchanged from the previous years. Modifications included the addition of a clipping surface to act as a spatial boundary for gold grades, use of reporting panels as constraints for preparing the Mineral Resource statement for the Aurora Zone, and slight modifications to the Mineral Resource cut-off grades to reflect the higher gold prices used to prepare the Mineral Resource estimate.

Table 14-1 presents a summary of Björkdal and Norrberget Mineral Resources as of December 31, 2020.

Table 14-1: Mineral Resources at the Björkdal Mine and Norrberget Deposit as of December 31, 2020
Mandalay Resources Corporation – Björkdal Gold Mine

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
		Indicated Mineral Resources		
Björkdal	Open Pit	2,383	2.10	161
	Underground	11,482	2.32	858
	Stockpile	2,551	0.64	53
	Subtotal	16,416	2.03	1,072
Norrberget	Open Pit	144	3.29	15
Total Indicated		**16,560**	**2.04**	**1,087**
		Inferred Mineral Resources		
Björkdal	Open Pit	3,515	1.44	163
	Underground	2,322	2.06	154
	Subtotal	5,837	1.69	317
Norrberget	Open Pit	3	4.03	0.5
Total Inferred		**5,840**	**1.69**	**318**

Notes:

1. Björkdal Mineral Resources are estimated using drill hole and sample data as of September 30, 2020 and account for production to December 31, 2020.
2. Norrberget Mineral Resources are estimates using drill hole and sample data as of September 30, 2017.
3. CIM (2014) definitions were followed for Mineral Resources.
4. Mineral Resources are inclusive of Mineral Reserves.
5. Mineral Resources are estimated using an average gold price of US$1,700/oz for Björkdal, US$1,500/oz for Norrberget, and an exchange rate of 9.0 SEK/US$.
6. High gold assays were capped to 30 g/t Au for the open pit mine.

7. High gold assays for the underground mine were capped at 60 g/t Au for the first search pass and 40 g/t Au for subsequent passes.
8. High gold assays at Norrberget were capped at 24 g/t Au.
9. Interpolation was by inverse distance cubed utilizing diamond drill, reverse circulation, and chip channel samples.
10. Open pit Mineral Resources are constrained by open pit shells and estimated at a cut-off grade of 0.28 g/t Au for Björkdal and 0.35 g/t Au for Norrberget.
11. Underground Mineral Resources are estimated at a cut-off grade of 0.77 g/t Au.
12. A nominal two metres minimum mining width was used to interpret veins using diamond drill, reverse circulation, and underground chip sampling.
13. Stockpile Mineral Resources are estimated at a cut-off grade of 0.32 g/t Au and are based upon surveyed volumes supplemented by production data.
14. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
15. Numbers may not add due to rounding.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

14.2 Björkdal

14.2.1 Topography and Excavation Models

Mandalay carried out a LiDAR survey in July 2016 to provide a digital surface for rendering onto an aerial photograph that was taken at the same time (Figure 14-1). The digital surface created from that survey was edited by Mandalay to incorporate the topographic surface of the open pit mine following cessation of mining activities in the open pit on August 1, 2019. No changes were made to the surface as of December 31, 2020. The resulting integrated model of the topographic surfaces was provided to SLR in a digital format that was suitable for use in coding the block models and estimating the Mineral Resources.

Access to the underground workings is by means of two adits that are located in the north wall of the open pit mine. Due to the shallow plunge of the mineralized vein system, each new level is accessed by means of ramp only. Excavation of the gold bearing material is carried out using a blast hole sub-level retreat method.

0 250 500 750 1000
Metres

Figure 14-1

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Plan View of the LIDAR Topographic Surface as at September 30, 2016

March 2021

Source: Mandalay Resources Corporation, 2016.

The excavated volume of development headings is determined by Mandalay staff on a weekly basis using a reflectorless total station unit that is able to measure the excavated volume of a given advance using reference survey spads that have been placed into the walls of a drive. The resulting digital data is downloaded into the Surpac software package which is then used to construct a three-dimensional model of the excavated volume of the development heading. This three-dimensional model is then merged with the existing excavation volume. The resulting solid volume is checked for validity and is ultimately used to code the block model for the excavated material. The block model is coded for the development excavations using the stated sub-block resolution.

An area of uncontrolled subsidence has occurred in the upper reaches of the underground mine such that access to this area is no longer possible. A simple generalized wireframe model was created to encompass this area. All blocks within this volume were coded as depleted volumes for the long-term block model. As the mine staff consider that any mineralized wireframes within this volume have the potential for being recovered by means of open pit mining methods, this subsidence area was not considered as excavated for the open pit mining surface.

Mandalay is modifying the procedures by which the excavated volume of the stoped out material is determined. Under the new protocols, the excavated volume of a given stope is measured using a cavity monitoring system (CMS) survey once mining of the stope has terminated. The raw digital data that is produced from the initial survey is processed using the software package that accompanies the CMS unit to produce a reasonable three-dimensional digital shape of the mined-out volume. This data is then converted into the Surpac file format for use in estimating the amount of unplanned dilution (also referred to as overbreak) and mining losses (also referred to as underbreak).

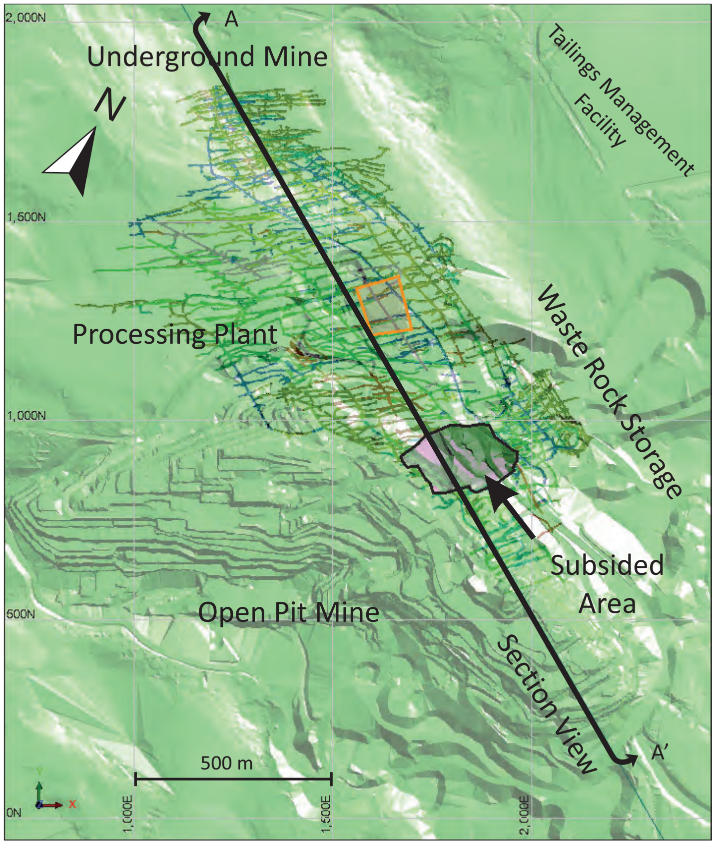
For the year-end 2020 Mineral Resource estimate, all parent blocks and sub-blocks that are either completely within or abutting a given stope excavation model are considered to have been excavated, and the block model is coded accordingly. For the 2020 Mineral Resource estimate, the digital models of the development headings to December 31, 2020 were used to code the model, while digital models of the excavated stopes completed from January through October were used to code the model. Due to the delay in carrying out the survey pickups and completing the post-processing steps, the designed shapes of the stopes were used to code the block model rather than the three-dimensional shapes determined from the CMS surveys for stopes completed in November and December 2020.

SLR recommends that efforts continue to use the actual as-mined volumes of the stopes as determined from the CMS surveys to code the block model rather than the design shapes. Use of the actual excavated volumes will improve the block model reconciliation results for those stopes which are accessed by means of a bottom drive only (i.e., the “blind” stopes).

As of December 31, 2020, the development had reached an elevation of approximately 500 m (approximately 400 m vertically from surface, Figure 14-2).

Topographic surveys of the 2020 active stockpile areas were conducted towards the end of 2020 using drone-mounted LiDAR surveying methods. An example of the results obtained from the drone-mounted LiDAR stockpile surveys carried out in 2019 is presented in Figure 14-3. The bases of the stockpiles were taken from earlier topographic surfaces that were completed prior to the commencement of building these piles. The volumes of the stockpiles were reported from the resulting merged surfaces and the tonnages were estimated using a bulk density of 1.80 t/m^3, representing a swell factor of approximately 50%. The resulting tonnages were reconciled against the stockpile material flows for 2019. The stockpiles were depleted for 2020 activity by means of subtraction of the tonnes fed to the processing plant.

Plan View



Section A-A' View

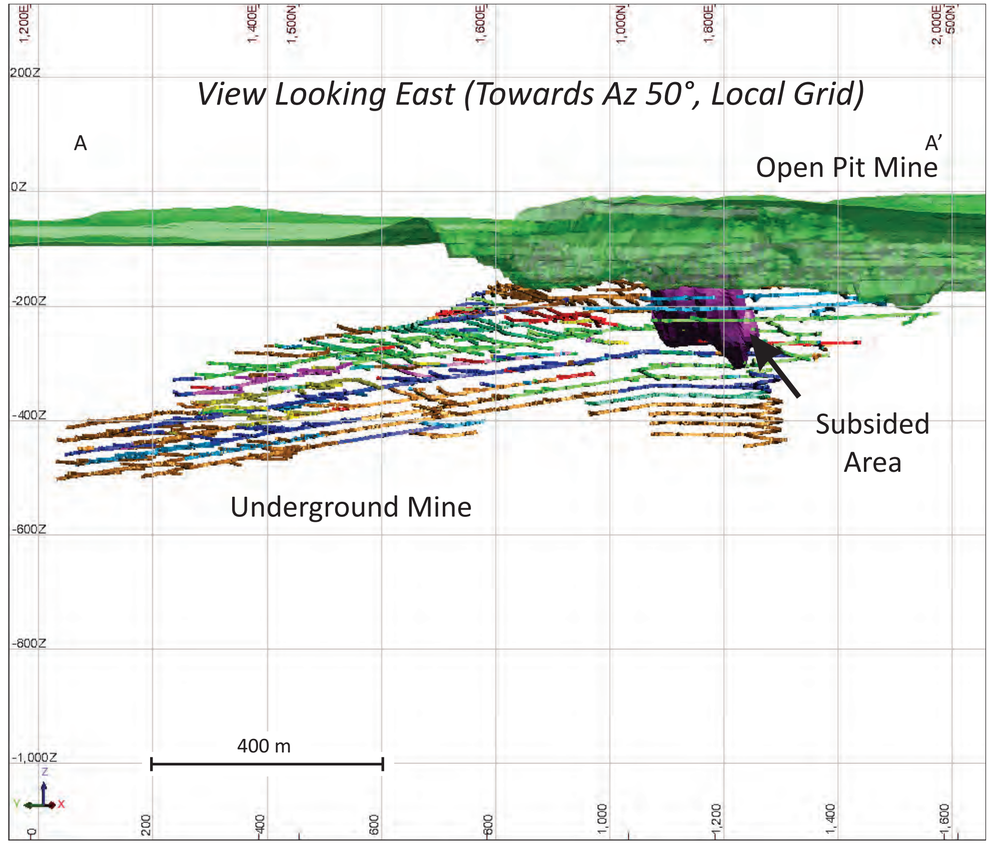


Figure 14-2

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Plan and Section View of the Björkdal Mine Workings as at December 31, 2020

March 2021

Source: SLR, 2021.

Looking Northwest

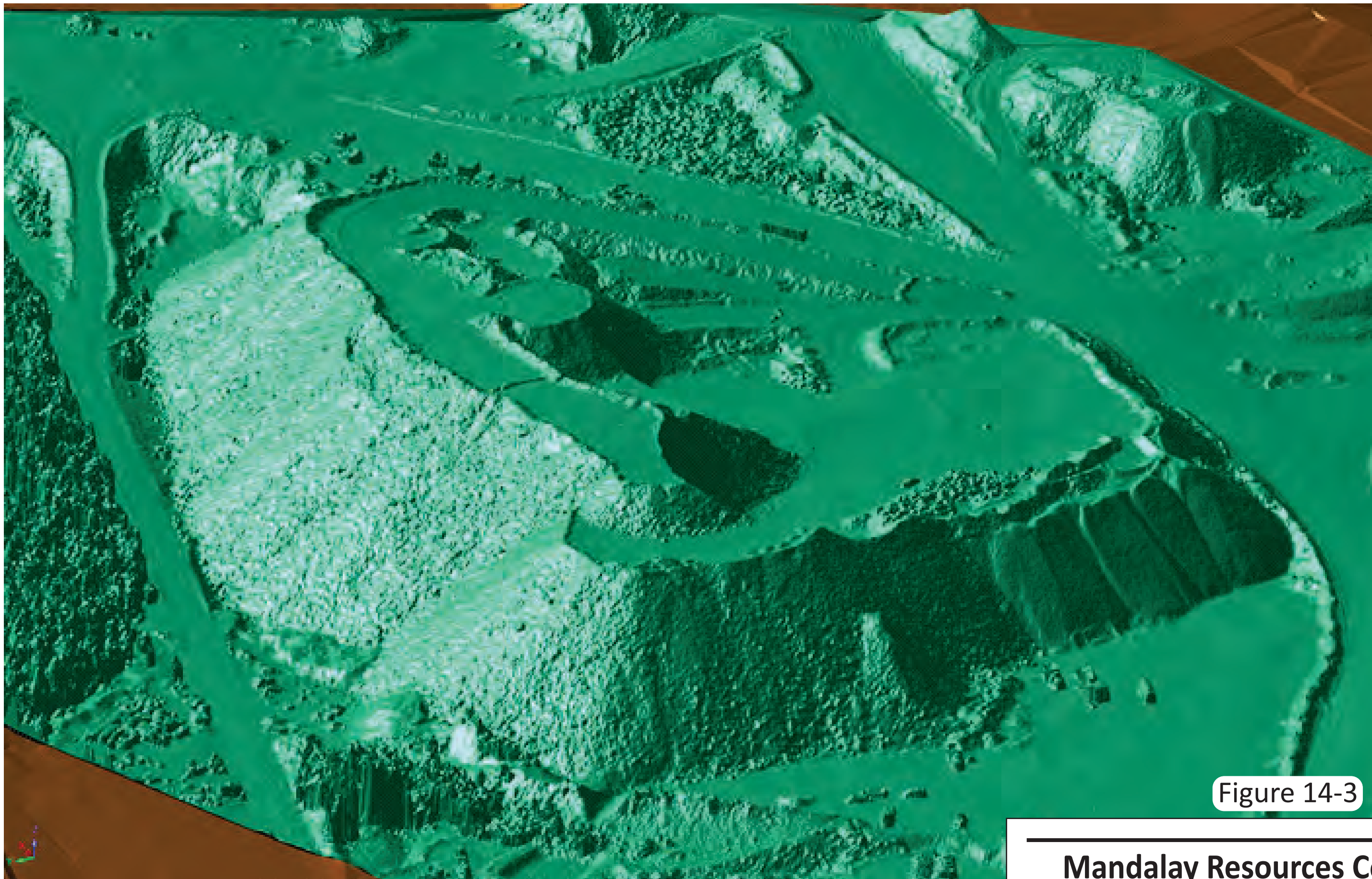


Figure 14-3

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Inclined View of the Norra Stockpile as at December 3, 2019

Not to Scale

March 2021

Source: SLR, 2020.

14.2.2 Description of the Databases

The presence and distribution of the gold mineralization found at the Mine is defined by means of diamond drill holes (DDH), RC drill holes located in the open pit mine, chip/channel samples taken from underground faces, and channel samples taken of blasted rock (GP)in the open pit mine for grade control purposes. Samples of the sludge created from development drilling are also collected for production planning purposes but are not used for preparation of Mineral Resource estimates. All information is entered into the GeoSpark geological database management system. Information from the chip sampling programs is entered into the master database system as pseudo-drill holes to facilitate their use in the Mineral Resource estimation process.

The Mine operates on a metric local grid coordinate system wherein the local grid north is 29.67° west of true north (i.e., local grid north is approximately towards azimuth 330° true). All drill hole and sampling information is entered into the GeoSpark master database using this local grid coordinate system.

Subsets from this master database are extracted and used for estimations on an as-needed basis. For the preparation of the 2020 Mineral Resource estimate for the Mine, all of the drill holes contained within the master database were used to prepare the estimate. All of the drill hole data are in the MS Access database format and were modified for use by the GEOVIA Surpac 2020 mine modelling software package. Additional fields to store such information as the composited assay values and wireframe flags were created as required during preparation of the Mineral Resource estimate. A value of 0.01 g/t Au was inserted into the database by means of a computer script for any unsampled intervals at the outset of the Mineral Resource estimation workflow.

A search of the database revealed a number of samples with very short lengths. These were viewed as representing grab samples collected for information purposes and their confidence intervals were edited to the zero category in the database. A total of 131 samples were edited during this process. The drill hole database maintains a field representing the degree of confidence assigned to the various types of samples entered by various operators over the Mine's production history. A confidence value of zero denotes that no weight will be applied to these samples during the estimation process. A description of the remaining confidence interval codes is provided below.

The cut-off date for the drill hole database is September 30, 2020. The location of the drill holes which were used to prepare the 2020 Mineral Resource estimate were shown in Figure 10-1. A summary of the database is provided in Table 14-2.

Table 14-2: Summary of the Björkdal Drill Hole Database as of September 30, 2020
Mandalay Resources Corporation – Björkdal Gold Mine

Hole Type	No. of Holes	Total Length (m)
	Surface	
CH	527	289.3
DDH	421	62,301.5
GP	7,257	6,546.4
RC	4,451	232,355.4
Total, Surface	**12,656**	**301,492.6**

Hole Type	No. of Holes	Total Length (m)
	Underground	
CH	24,238	34690.7
DDH	1,870	241,699.5
Total, Underground	**26,108**	**276,390.2**
Grand Total	**38,764**	**577,882.8**

Note:

1. Ch=Channel samples
2. DDH=Drill holes
3. GP=Grade control channel samples, open pit
4. RC=Reverse circulation.

14.2.3 Lithology and Mineralization Wireframes

Wireframe models of the mineralized veins were utilized in geological and grade continuity studies and to constrain the block model interpolation. Wireframe models of the Björkdal veins were constructed by Mandalay and reviewed by SLR. SLR notes that the vein models reflect the grades relating to a targeted vein only and do not include any potentially significant gold bearing samples that may be present between the veins. Additional samples are present which contain gold values in potentially economic concentrations. Observations made from the geological mapping programs suggest that these potentially significant gold bearing samples can represent gold bearing veins that occur as pods and pockets with limited spatial continuity, tabular, sheet-like veins with limited areal extents, or veins with spatial continuities in orientations that are not currently well understood.

The majority of the past known mineralization at the Mine has been structurally controlled and hosted within a single homogenous host rock (the footwall intermediate volcanic unit), hence construction of a lithological model had historically been judged to be unnecessary other than creation of a surface of the bottom of the marble unit which had been the upper limit of the known veins in the past.

As a result of the additional exploration and development work carried out in 2020, the understanding of the relationship of the gold bearing mineralization with the host rocks and structural features continues to evolve (Figure 14-4). The newly acquired information suggests that the lower limits of the mineralized veins in the Aurora Zone are defined by the Björkdal fault zone which appears to closely follow the marble unit. This fault zone also serves to truncate the upper limits of the quartz veins in the upper portion of the Mine. As a result, the current view is that a significant degree of displacement may have occurred that is on the order of several hundred metres in distance. The sense of movement along the fault is not clearly understood, as limited stratigraphic marker units are present in the Mine with which to gauge the magnitude and sense of movement across this fault. The initial interpretations are of oblique, strike-slip faulting with a sinistral sense of movement.

SLR agrees with Mandalay's view that this current understanding presents significant exploration potential for the Mine. A key item for this activity is the ability to clearly identify the sense of movement across the fault and the magnitude of the displacement. SLR recommends a full three-dimensional digital model of the distribution of the host rocks in the vicinity of the Mine be constructed. SLR is of the opinion that the use of immobile element geochemical signatures (e.g., Ti vs Zr plots) may be useful in discriminating between the footwall intermediate volcanic and the hanging wall mafic volcanic units.

SLR agrees with Mandalay's view that exploration activities should be carried out to search for the fault-displaced continuations of the quartz veins located in the upper portions of the Mine above the Björkdal shear (Figure 14-5). In addition, SLR is of the opinion that exploration activities to search for the fault-displaced continuity of the Aurora Zone below the Björkdal shear are also warranted.

A three-dimensional model of the marble unit was constructed from available drill hole and geological mapping information, using the knowledge and understanding gained during 2018, 2019, and 2020. This three-dimensional volume was then used to code the block model. Three-dimensional digital models of the known fault surfaces were prepared by the Mine geological team and were used as guides in preparation of the mineralization wireframes.

Mandalay built individual mineralized wireframes separately for open pit and underground domains using both the GEOVIA Surpac and Leapfrog software packages. Due to the structural controls on the orientations of the quartz veins at Björkdal, a number of vein wireframe models intersected and cross-cut each other, which introduced an additional consideration to be addressed in the Mineral Resource estimation workflow. In the interests of efficiency, SLR recommends that clipped wireframe models be created for cross-cutting veins prior to their use in preparing Mineral Resource estimates. This can be easily achieved using the native functions in the Leapfrog software package.

For ease of use, the individual vein wireframes were grouped according to their spatial locations. A total of 12 wireframe domains were created for the year-end 2020 Mineral Resource estimate. The open pit wireframes were based on a nominal 0.3 g/t Au cut-off value over a minimum of two metres. The underground wireframes were based on a nominal two metre minimum width at a cut-off value of 0.5 g/t Au.

New tables were created in the database for each vein group and were coded with the intersection information for the individual mineralized wireframes in the open pit and underground mines by exploiting the macro/scripting functionality of the GEOVIA Surpac software package.

Section 1400 E Looking West

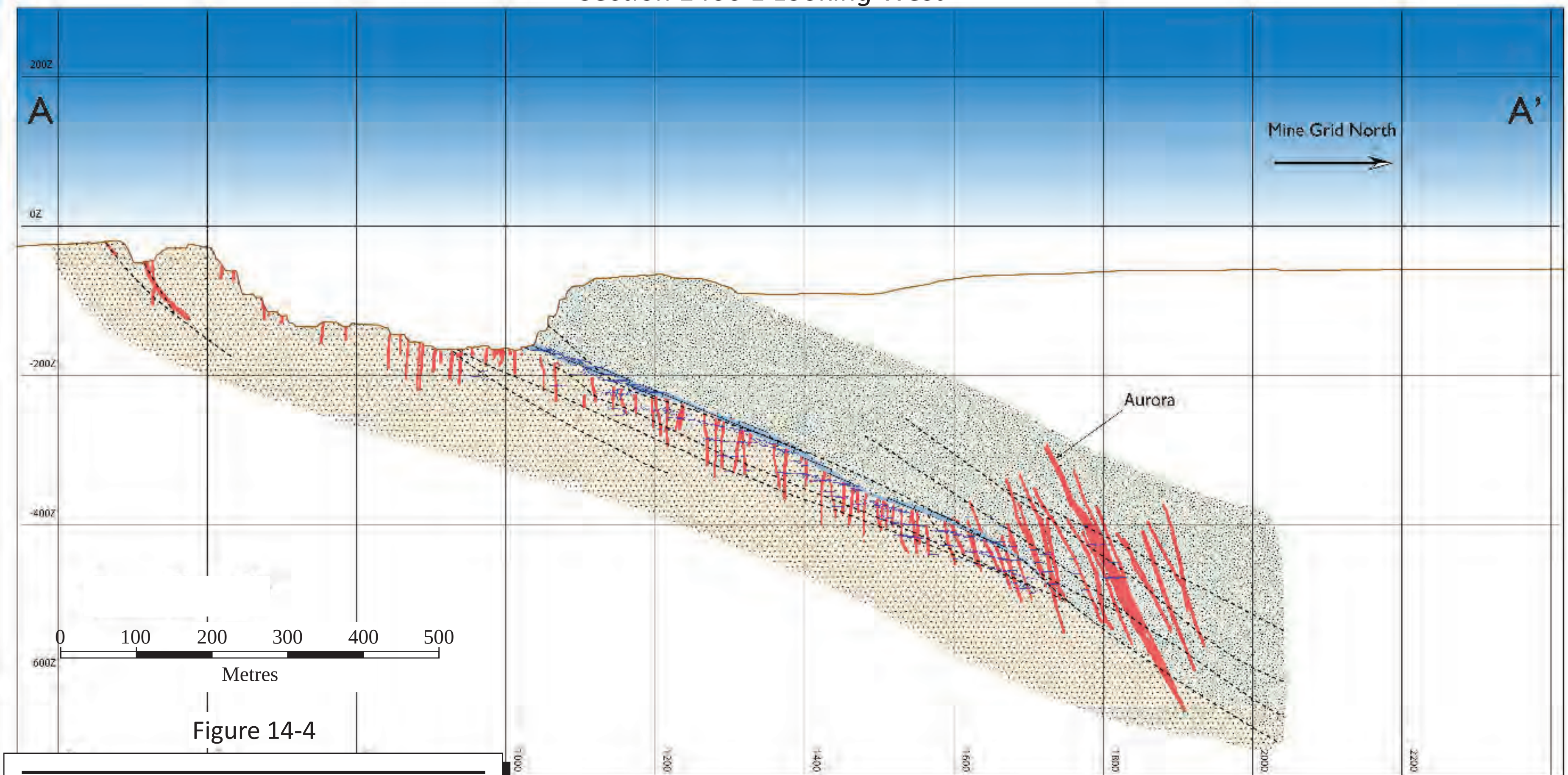


Figure 14-4

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Cross Sectional View of the Björkdal Mineralization

March 2021

Source: Mandalay Resources Corporation, 2020.

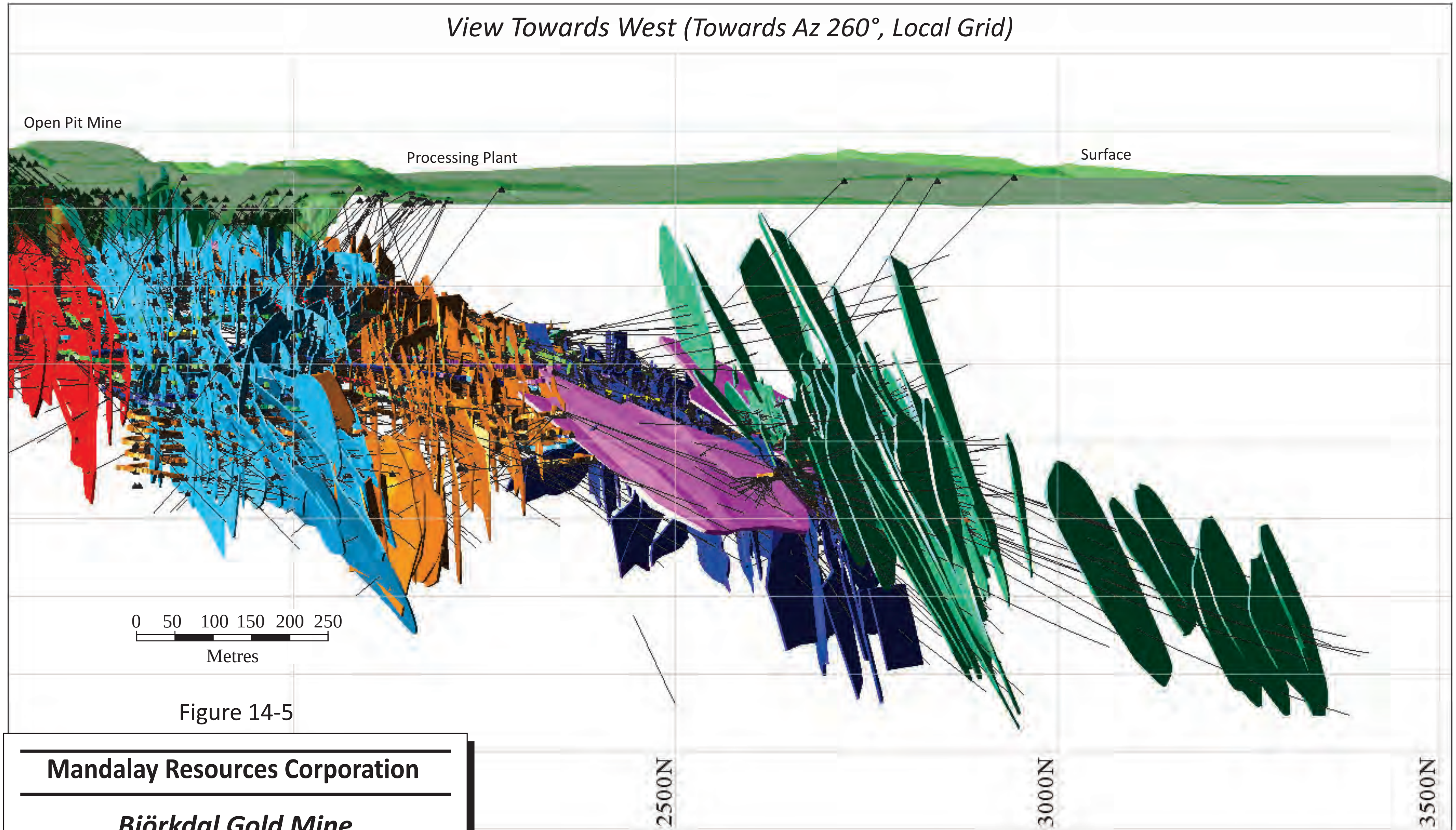


Figure 14-5

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

View of Potential Exploration Targets in the Björkdal Mine

March 2021

Source: SLR, 2021.

14.2.3.1 Open Pit Vein Models

The open pit mineralized wireframe models were grouped into five separate areas as follows: East Pit (EP), West Pit (WP), Quartz Mountain (QM), Skarn-Hosted (SKS-Op), Shear-Hosted (SHS) and Nylund. In total, 453 individual wireframe models were created for the open pit mine (Figure 14-6).

The interpretation for the open pit mineralized wireframes was guided by mapped quartz veins on various benches in the pit and by knowledge gained from grade control drilling programs. An improved understanding of the distribution and extent of the quartz veining in the open pit resulted in an extensive reinterpretation of the mineralized wireframes for the EP area using Leapfrog wireframe modelling functions. The wireframes were created to a minimum width of two metres and were projected to a nominal distance of 30 m away from the last drill hole intercept horizontally, and to a nominal 15 m vertically. The wireframes were driven to mid-distance when barren holes were encountered at the lateral limit of a vein, while occasionally the veins were driven through barren holes to preserve the continuity of the vein.

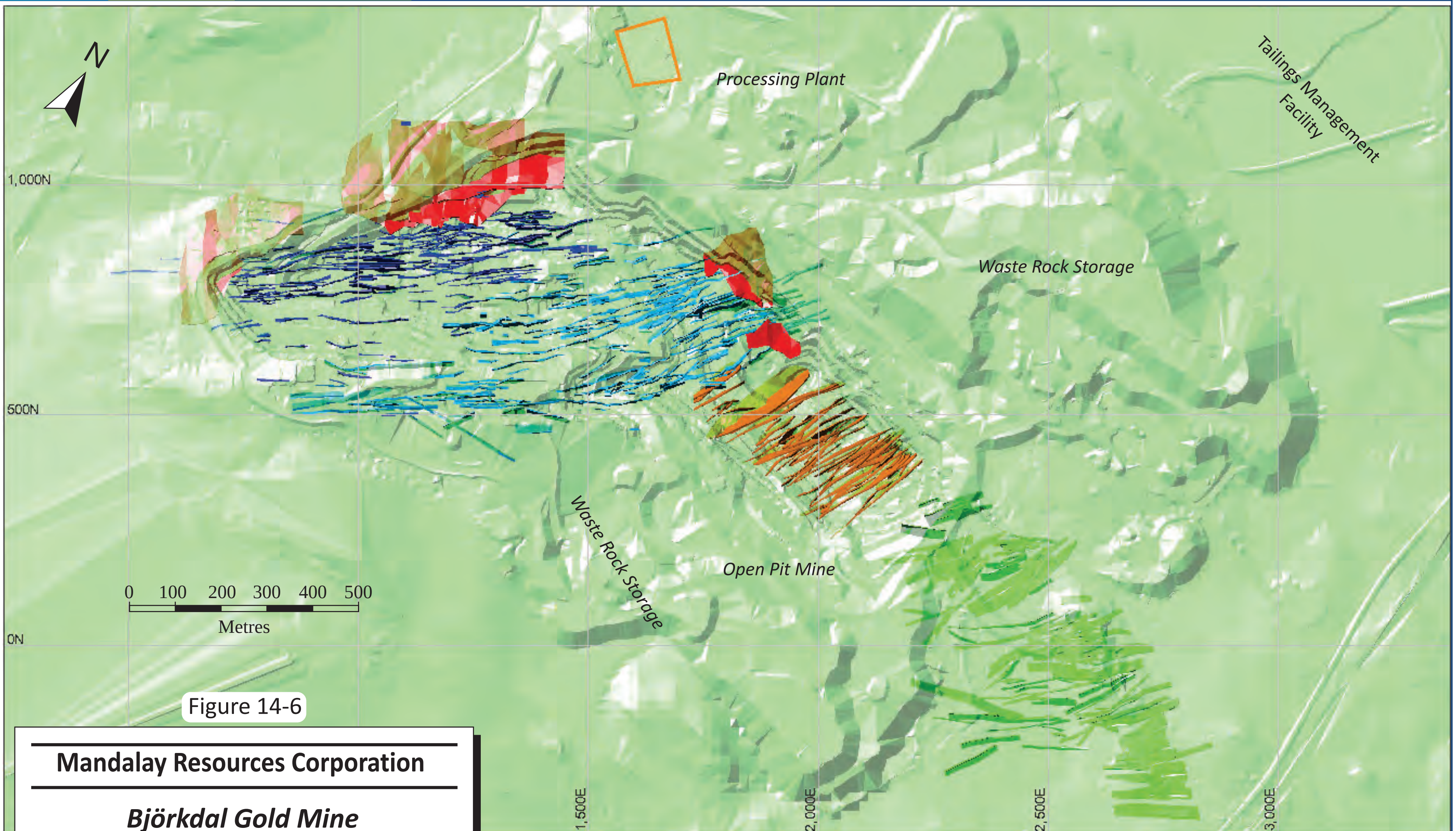


Figure 14-6

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Location of the Year-End 2020 Open Pit Mineralized Wireframes

March 2021

Source: SLR, 2021.

14.2.3.2 Underground Vein Models

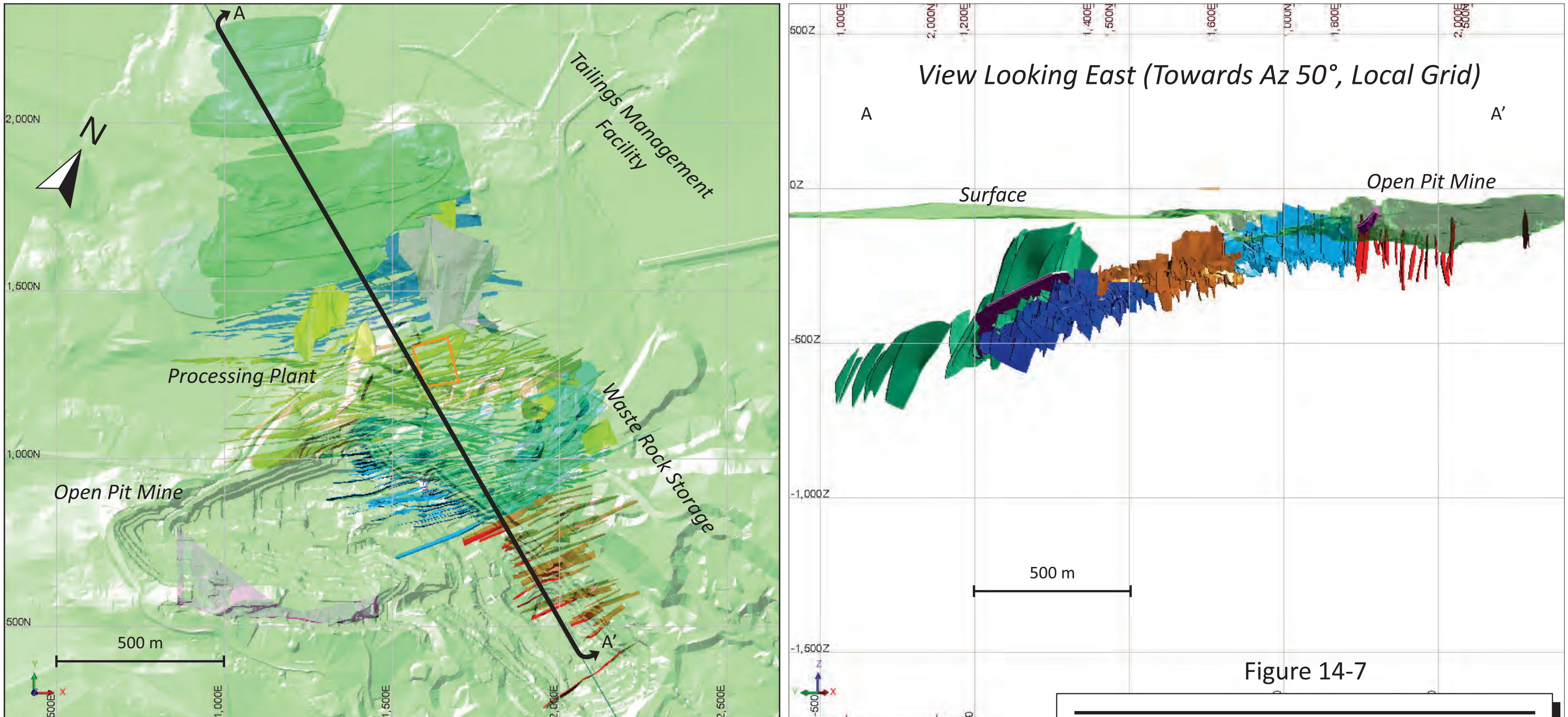
The construction of the underground vein wireframes was guided by quartz veins mapped in the underground developments, face and wall chip samples, as well as existing underground stopes. Vein shapes from previous years interpretation efforts were retained where no additional information was collected; new interpretations were created for those veins where additional information and knowledge was collected during 2020. The wireframes for the vertically dipping veins were constructed to a minimum width of two metres and were projected up to 30 m away from the last drill hole intercept horizontally, and up to 15 m vertically. The veins were driven through lower grade intercepts or occasionally through barren holes to preserve vein continuity. In many cases, the widths of the mineralized wireframes were drawn larger than the widths of the above cut-off grade assays so as to achieve the minimum width criteria. The wireframes were extended to drill hole mid-distance when barren holes were encountered at the lateral limit of a vein. Similar interpretation parameters were applied for the Shear & Skarn hosted (SHS & SKS) mineralization.

SLR recommends that the two metre minimum width criteria used to create the vein interpretations be examined in light of the reconciliation information being collected for the excavated stopes. Consideration may be given to modifying this minimum width to better reflect the thinnest openings that are being achieved on a day-to-day operational basis.

The underground mineralized wireframe models were grouped into seven separate areas as follows: Central Zone (CZ), Lake Zone (LZ), Lake Zone-Aurora (LZA), Main Zone (MZ), Skarn (SKS-Ug), Shear Zone (SHS), and South Zone (SZ). A total of 566 individual wireframe models were created for the underground mine (Figure 14-7).

The goal of the underground wireframes was to create continuous models of the mineralized lenses, hence sometimes slight departures from local or general trends might be observed. The general structural fabric of the deposit is characterized by several dominant directions, as shown by the mapped underground veins. These veins show anastomosing, splaying or cross cutting relationships, rendering interpretation and construction of individual wireframes difficult at times, due to occasional multiple interpretation options. The underground chip sampling along any given vein shows marked grade variations, with occasional grouping of higher grades forming ore shoots locally. Information collected from grade control mapping and sampling indicates that some of the veins have formed during progressive periods of strain and brittle movement along fault and shear planes (Figure 14-8). A typical cross section is provided in Figure 14-9.

Plan View | Section View



Legend:

LZA Zone	*Lake Zone*	*Central Zone*	*Skarns*
Main Zone	*South Zone*	*Shears*	

March 2021 **Source: SLR, 2021.**

Figure 14-7

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Location of the Underground Mineralized Wireframes

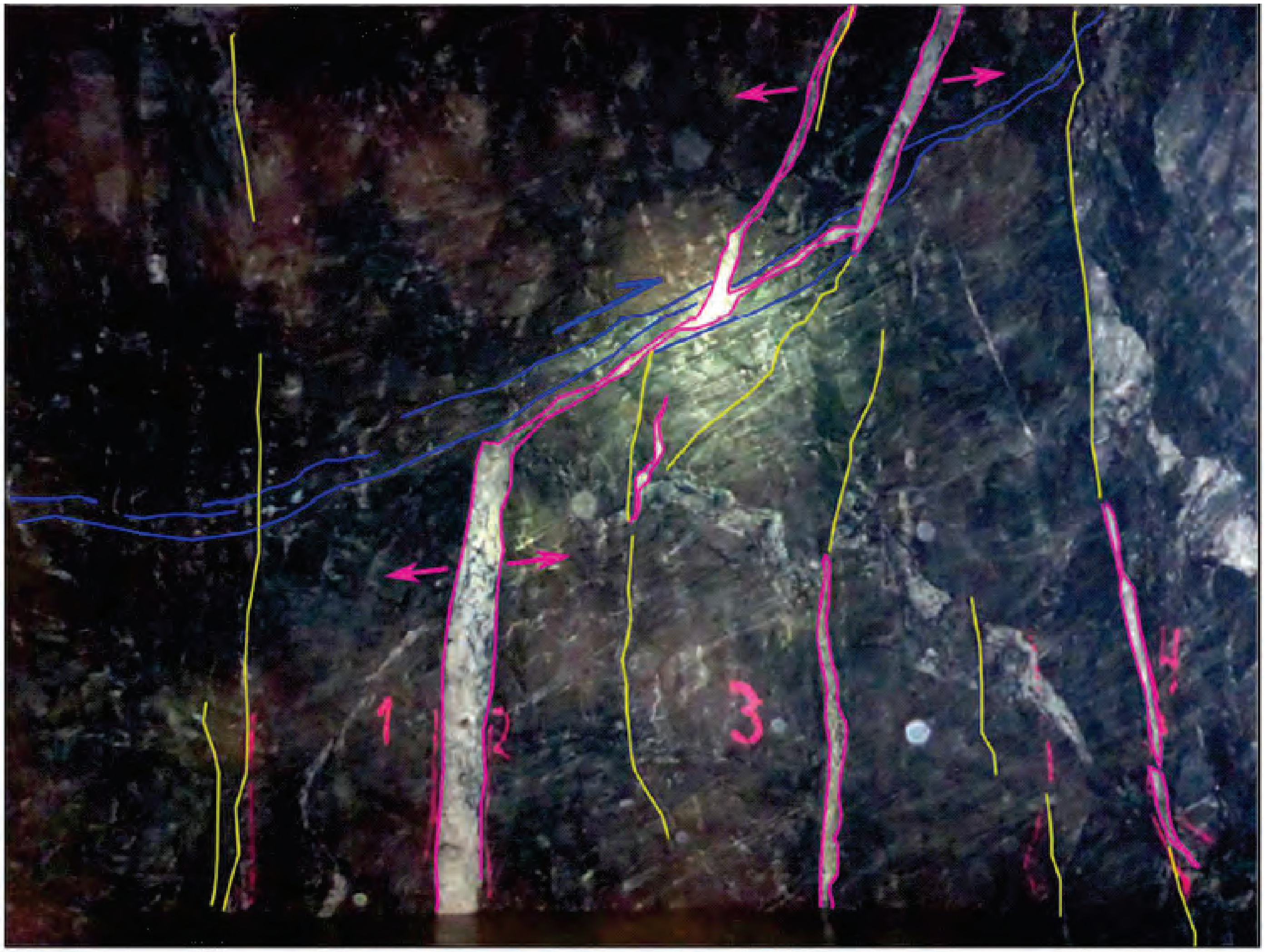


Figure 14-8

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Quartz Vein Paragenetic Example, Aurora Zone

March 2021 ***Source: Mandalay Resources Corporation, 2020.***

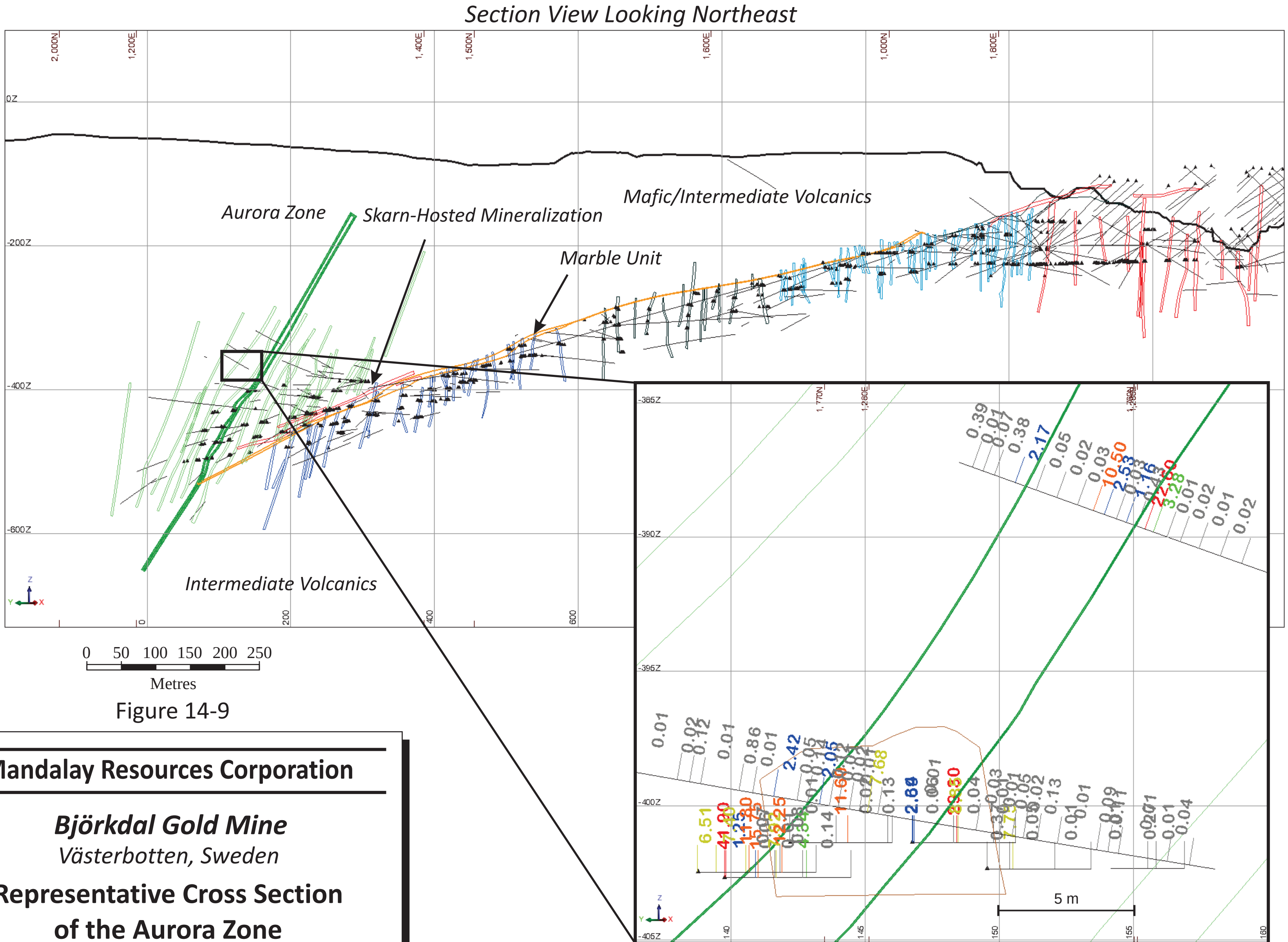


Figure 14-9

Mandalay Resources Corporation

Björkdal Gold Mine
Västerbotten, Sweden

Representative Cross Section of the Aurora Zone

March 2021

Source: SLR, 2020.

14.2.4 Compositing Methods and Grade Capping

14.2.4.1 Underground Mine

Chip Sample Data

The chip sample information for the underground mine has been classified by Mandalay according to the degree of confidence based on the date at which the sample was collected. Those chip samples collected prior to Mandalay's purchase of the Björkdal operations have been assigned a confidence level code of either 10 or 20 in an attempt to recognize the limitations of the sample collection procedures at the time. Those samples collected subsequent to Mandalay's purchase are assigned a confidence level code of 30 or 40 to acknowledge the revised sample collection procedures whereby chip samples are collected across the full width of a given face. Many of the chip samples collected prior to Mandalay's purchase were taken of vein material only, with no sample being collected of either of the walls of the vein.

For those chip samples with a confidence level code of either 10 or 20, the grade of the resulting composited, capped sample grade was mathematically diluted to a nominal width of 2.5 m by using the length of the given chip sample as a weighting factor prior to use in estimating the block model grades. The gold grades for chip samples collected by previous operators were capped to 40 g/t Au prior to applying a dilution factor to achieve an equivalent minimum width gold grade. The composited gold grades for chip samples collected by Mandalay are capped to 40 g/t Au.

Diamond Drill Holes and RC Drill Holes

Visual examination of the assay tables related to the diamond drill hole data revealed the presence of a large number of un-sampled intervals within and abutting the boundaries of the interpreted mineralization wireframes. Zero values are regularly entered for all such intervals of null values by means of a computer script prior to creation of composited assays. The resulting edited sample information for the diamond drill holes and RC holes was composited into nominal equal lengths of one metre using the best-fit compositing algorithm of the Surpac mine modelling software package. An example of the distribution of the drill hole and channel sample lengths prior to compositing is provided in Figure 14-. Composited assay values were created on an individual, vein-by-vein basis. Similarly, the assay results in the chip sample databases were composited into nominal equal lengths of one metre using the best-fit composting function. Both the drill hole and RC samples were assigned a confidence level code of 50 in recognition that these samples are taken on a fully diluted, full-length basis.

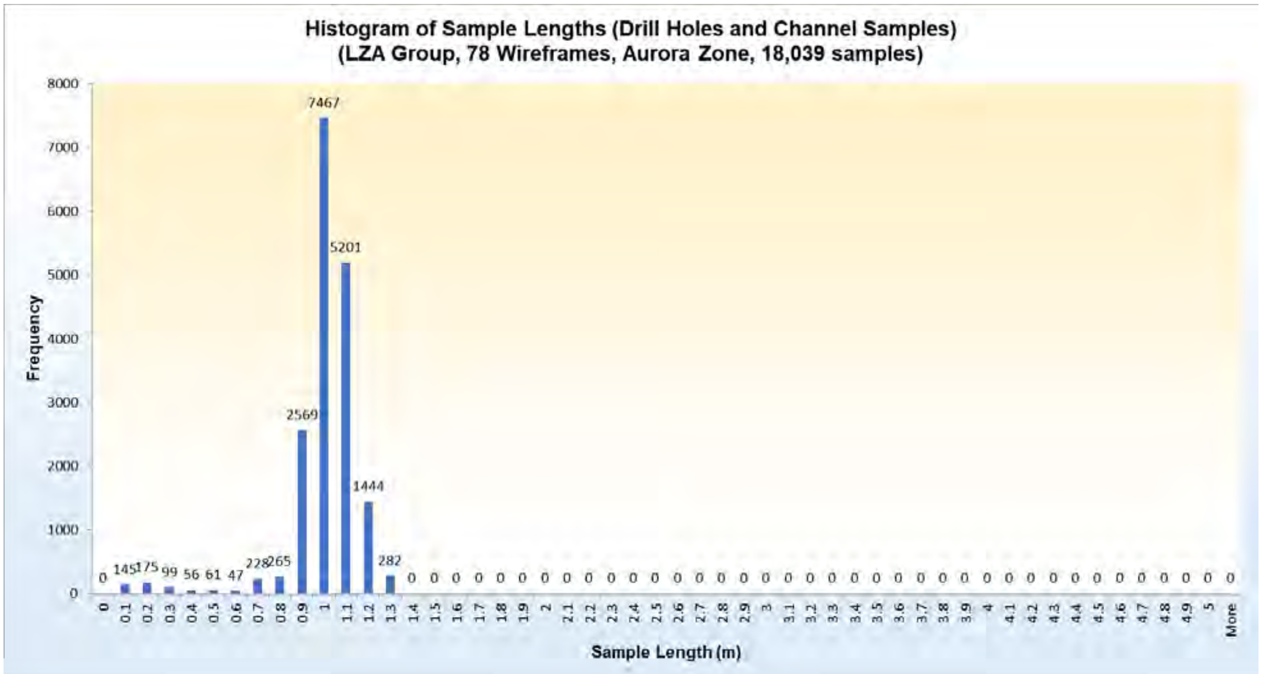


Figure 14-10: Histogram of Sample Lengths, LZA Group, Aurora Zone

Capping Values

The composited assay information for the various versions of chip samples, underground diamond drill holes and the RC drill holes were examined in detail on an individual basis for the year-end 2018 Mineral Resource estimate by means of frequency histograms, decile analyses and probability plots to determine whether capping values are best applied according to the sample type (RPA, 2019). The results of this analysis showed no material difference in the statistics for the three sample types and that applying the same capping levels to all three sample types was reasonable.

Considering that the capping strategy used to prepare the previous long-term Mineral Resource block models has been yielding acceptable reconciliation results with the short-term grade control models, Mandalay elected to maintain the dual capping value approach for estimation of the gold grades contained within the mineralized wireframe models in the underground mine as was used for the previous estimates of the underground Mineral Resources. In this approach, the composited assays for diamond drill holes and RC drill holes are capped to values of 60 g/t Au and 40 g/t Au. Two different areas of influence are then used when estimating the block grades for each mineralized wireframe. The higher grade capped composites are used within a first pass search ellipse with a 15 m radius while the lower grade capped composites are used for subsequent estimation passes. The summary statistics of the composited, capped assay values for the underground samples that were used to prepare the estimated block model grades are provided in Table 14-3. It is important to note that given the large number of individual vein wireframes that comprise this Mineral Resource estimate, rather than reflecting the specific statistics for each sample type for each vein, these statistics include all composites used to estimate the individual veins within each of these wireframe groups. Consequently, the resulting statistics should be reviewed as being indicative only, rather than being definitive.

Table 14-3: Summary Statistics of the Composited, Capped Samples by Zone - Underground Mine
Mandalay Resources Corporation – Björkdal Gold Mine

Central Zone (CZ)

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	11,929	11,929	11,929
Minimum value	0.00	0.00	0.00
Maximum value	1,701.54	60.00	40.00
Mean	3.02	1.42	1.34
Median	0.12	0.01	0.01
Variance	286.95	24.00	17.53
Standard deviation	16.94	4.90	4.19
Coefficient of variation	5.60	3.46	3.12

Lake Zone (LZ)

Variable	Uncapped g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	17,092	17,092	17,092
Minimum value	0.00	0.00	0.00
Maximum value	918.58	60.00	40.00
Mean	2.57	1.37	1.30
Median	0.07	0.03	0.03
Variance	258.89	24.67	19.12
Standard deviation	16.09	4.97	4.37
Coefficient of variation	6.25	3.64	3.36

Lake Zone Aurora (LZA)

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	18,039	18,039	18,039
Minimum value	0.00	0.00	0.00
Maximum value	1,020.00	60.00	40.00
Mean	1.31	1.11	1.09
Median	0.07	0.07	0.07

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Variance	32.83	13.89	12.42
Standard deviation	5.73	3.72	3.52
Coefficient of variation	4.37	3.36	3.22

Main Zone (MZ)

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	24,362	24,362	24,362
Minimum value	0.00	0.00	0.00
Maximum value	4,105.46	60.00	40.00
Mean	3.95	1.75	1.63
Median	0.13	0.08	0.08
Variance	1,042.02	35,73	24.91
Standard deviation	32.28	5.98	4.99
Coefficient of variation	8.17	3.40	3.06

South Zone (SZ)

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	6,206	6,206	6,206
Minimum value	0.00	0.00	0.00
Maximum value	1,230.92	60.00	40.00
Mean	3.23	1.56	1.08
Median	0.09	0.08	0.08
Variance	1,516.97	23.43	16.88
Standard deviation	38.95	4.84	4.11
Coefficient of variation	12.05	4.19	3.80

Skarn Zones (SKS-UG)

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	1,923	1,923	1,923
Minimum value	0.00	0.00	0.00
Maximum value	300.00	60.00	40.00
Mean	3.51	2.48	2.33

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Median	0.24	0.23	0.23
Variance	286.90	59.80	46.67
Standard deviation	16.94	7.73	6.83
Coefficient of variation	4.83	3.12	2.93

Shear Zones (SHS)

Variable	Uncapped (g/t Au)	Cap 60 (g/t Au)	Cap 40 (g/t Au)
Weighting Variable	Length	Length	Length
Number of samples	4,969	4,969	4,969
Minimum value	0.00	0.00	0.00
Maximum value	655.23	41.32	40.00
Mean	0.68	0.51	0.51
Median	0.02	0.05	0.05
Variance	76.29	5.61	5.59
Standard deviation	8.73	2.37	2.37
Coefficient of variation	12.91	4.60	4.59

14.2.4.2 Open Pit Mine

Mineralized Wireframe Models

As for the drill holes intersecting wireframes for the underground mine, zero values were entered for all such intervals of null values in the open pit drill hole database prior to creation of composited assays. The resulting edited sample information for the diamond drill holes and RC holes was composited into nominal equal lengths of one metre using the best-fit compositing algorithm of the Surpac mine modelling software package. Composited assay values were created on an individual, vein-by-vein basis. The open pit sub-set of composite samples included a number of grade control shovel samples that were taken along the width of the observable veins only. These shovel samples were assigned a confidence code of 10 or 20. As with samples from the underground mine, all samples were composited into nominal equal lengths of one metre using the best-fit composting function.

The composited assay information for the open pit samples were examined in detail on an individual basis for the year-end 2018 Mineral Resource update by means of frequency histograms, decile analyses, and probability plots to confirm that applying the same capping levels to all three sample types was reasonable (RPA, 2019).

Considering that the capping strategy used to prepare the previous long-term Mineral Resource block models has been yielding acceptable reconciliation results with the production data, Mandalay elected to maintain the capping value approach for estimation of the gold grades contained within the mineralized wireframe models in the open pit mine as was used for the previous estimates of the open pit Mineral Resources. In this approach, a single capping value of 30 g/t Au has been maintained for the diamond drill hole, RC drill hole, and chip samples contained with the open pit wireframes. The summary statistics of the composited, capped assay values used to prepare the estimated block model grades are provided in Table 14-4.

Table 14-4: Summary Statistics of the Composited, Capped Samples by Zone - Open Pit Mine
Mandalay Resources Corporation – Björkdal Gold Mine

East Pit (EP)

Variable	Uncapped (g/t Au)	Cap_30 (g/t Au)
Weighting Variable	Length	Length
Number of samples	11,094	11,094
Minimum value	0.00	0.00
Maximum value	390.00	30.00
Mean	1.20	0.68
Median	0.10	0.08
Variance	59.78	5.64
Standard Deviation	7.73	2.37
Coefficient of variation	6.45	3.47

West Pit (WP)

Variable	Uncapped (g/t Au)	Cap_30 (g/t Au)
Weighting Variable	Length	Length
Number of samples	11,017	11,017
Minimum value	0.00	0.00
Maximum value	901.00	30.00
Mean	1.84	0.82
Median	0.08	0.08
Variance	273.95	8.30
Standard Deviation	16.55	2.88
Coefficient of variation	8.99	3.52

Quartz Mountain (QM)

Variable	Uncapped (g/t Au)	Cap_30 (g/t Au)
Weighting Variable	Length	Length
Number of samples	15,232	15,232
Minimum value	0.00	0.00
Maximum value	3155.00	30.00
Mean	2.33	0.93

Variable	Uncapped (g/t Au)	Cap_30 (g/t Au)
Median	0.08	0.08
Variance	793.87	10.21
Standard Deviation	28.17	3.20
Coefficient of variation	12.07	3.44
Nylund (Nyl)		
Variable	**Uncapped (g/t Au)**	**Cap_30 (g/t Au)**
Weighting Variable	Length	Length
Number of samples	2,789	2,789
Minimum value	0.00	0.00
Maximum value	80.77	30.00
Mean	0.60	0.55
Median	0.08	0.08
Variance	8.66	4.75
Standard Deviation	2.94	2.18
Coefficient of variation	4.93	3.93
Skarn Zones (SKS-OP)		
Variable	**Uncapped (g/t Au)**	**Cap_30 (g/t Au)**
Weighting Variable	Length	Length
Number of samples	1,418	1,418
Minimum value	0.00	0.00
Maximum value	161.07	30.00
Mean	0.99	0.73
Median	0.08	0.08
Variance	14.65	7.78
Standard Deviation	3.83	2.79
Coefficient of variation	3.88	3.84

Dilution Model

Examination of the distribution of the gold grades for the portion of the Björkdal deposit located within the open pit mine reveals the presence of a significant number of above cut-off grade assay values that are located outside of the limits of the mineralized wireframe models. The current view for these samples is that they represent other occurrences of gold mineralization that are not hosted by a regular series of narrow, steeply dipping quartz veins as represented by the wireframe models. Examples of these types of occurrences could be breccia and/or stockwork styles of quartz veins, vertically dipping quartz veins with limited vertical or lateral extent, or narrow quartz veins that have dips that are not vertical (Figure

14-11). Operational experience from the grade control program supports this view, as a significant amount of additional mineralization is located within the open pit mine each year outside of the modelled zones as a result of sampling at a detailed scale.

All diamond drill hole and RC drill hole samples that are located outside of the mineralized wireframe models were flagged and composited to nominal equal lengths of one metre using the best-fit compositing algorithm of the Surpac mine modelling software package.

The composited assay information for the open pit diamond drill holes and the RC drill holes located outside of the mineralized wireframe models was examined by means of a frequency histogram to determine an appropriate capping value. A capping value of 30 g/t Au has been selected for the diamond drill hole and RC drill hole samples contained with the dilution model.

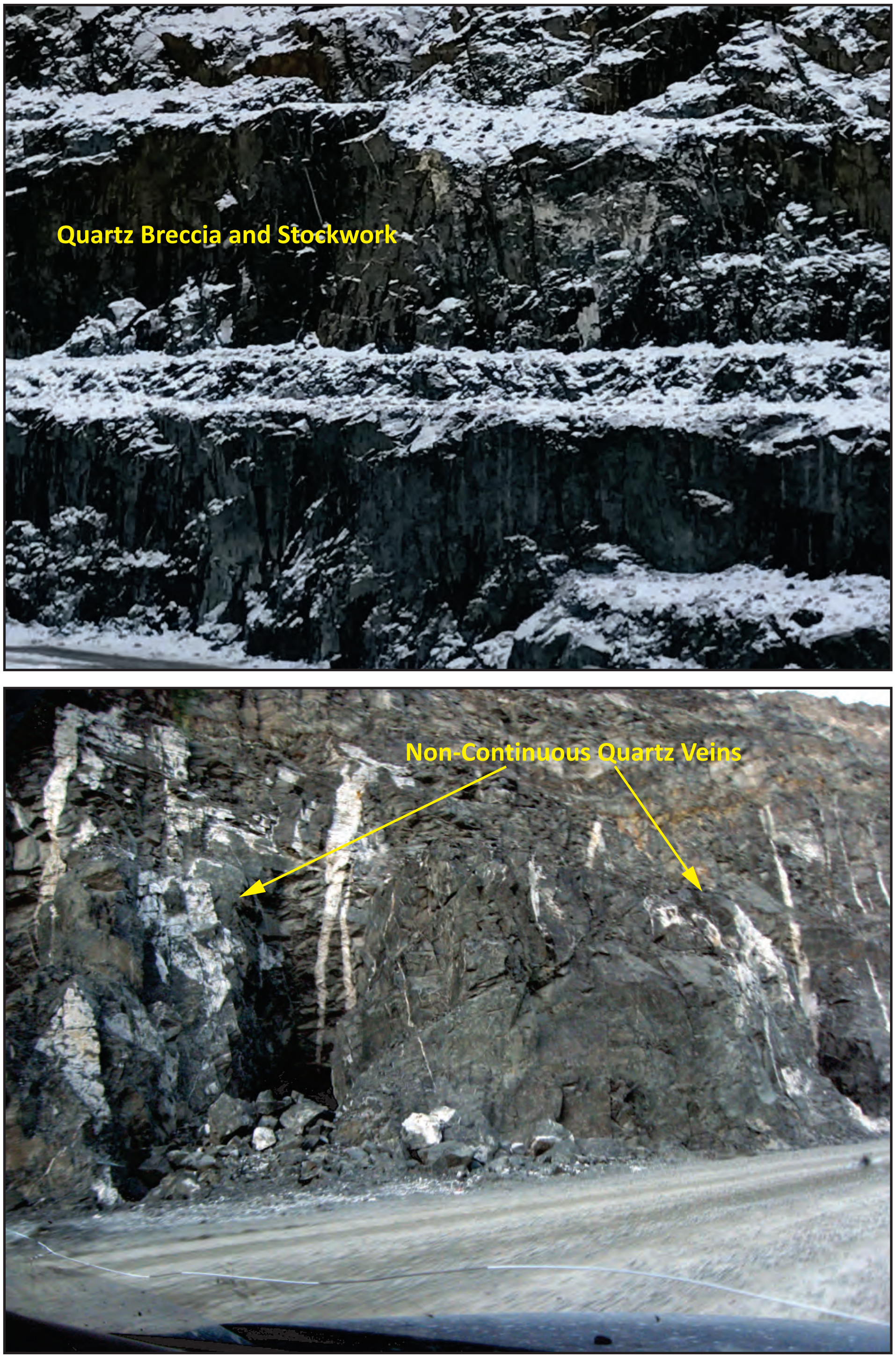


Figure 14-11

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Quartz Vein Breccia and Stockwork, Open Pit Mine

March 2021 ***Source: SLR, 2016.***

14.2.5 Bulk Density

Since 2013 Björkdal has been collecting bulk density information on the major lithologic units and mineralization that has been encountered in the Mine. An additional 20 samples were collected in 2020 from select exploration drill holes. These samples were sent to CRS Kempele for specific gravity analysis, whereby the specific gravity was determined by a simple water immersion technique on whole core samples.

A total of 167 density measurements have been collected as of December 31, 2020. A summary of all results is shown graphically in Figure 14-13. Table 14-5 presents the summary statistics with the two granodiorite outliers removed.

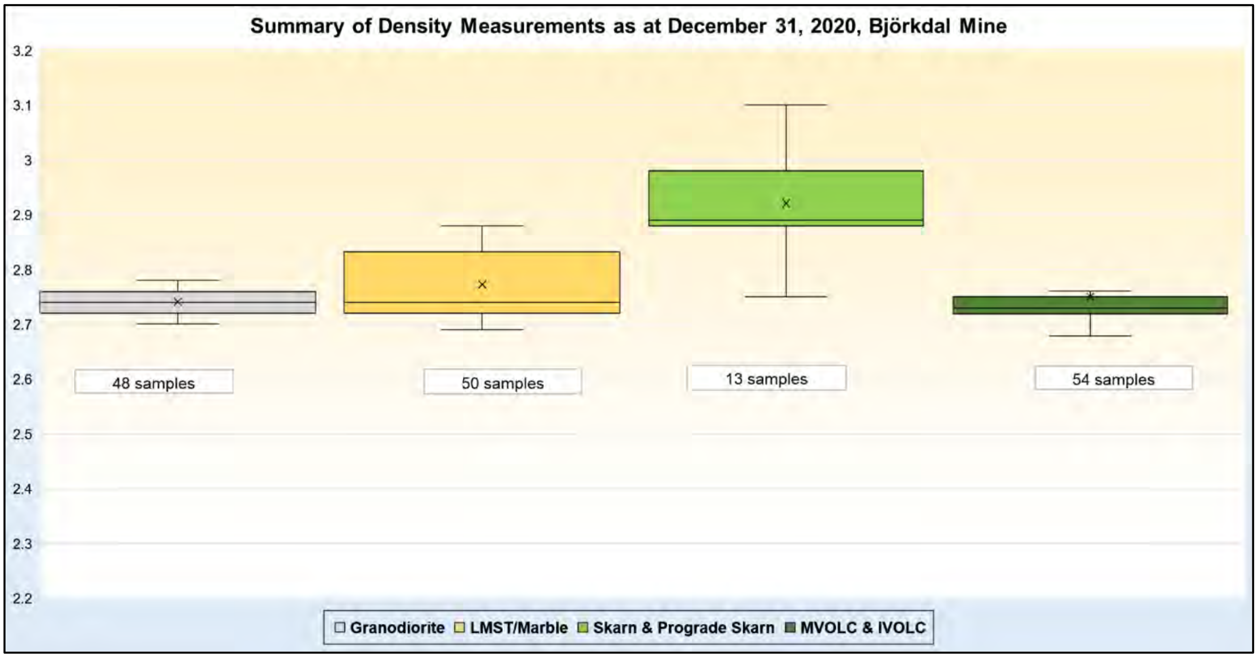


Figure 14-12: Box and Whisker Plot of Björkdal Specific Gravity Measurements as at December 31, 2020

Table 14-5: Summary Statistics for Björkdal Bulk Densities as at December 31, 2020
Mandalay Resources Corporation – Björkdal Gold Mine

Item/Lithology	Granodiorite	Limestone/ Marble	Skarn & Prograde Skarn	MVOLC & IVOLC
Mean (t/m^3)	2.74	2.77	2.92	2.75
Median (t/m^3)	2.74	2.74	2.89	2.73
Mode (t/m^3)	2.74	2.72	2.88	2.72
Standard Deviation	0.11	0.08	0.09	0.07
Sample Variance	0.01	0.01	0.01	0.01
Minimum (t/m^3)	2.24	2.69	2.75	2.62
Maximum (t/m^3)	3.32	3.13	3.10	2.94
Count	48	50	13	54

The global bulk density of 2.74 t/m^3 for the footwall mafic and hanging wall intermediate volcanic rocks used for previous Mineral Resource estimates was retained for the current estimate. An average bulk density of 2.77 t/m^3 was assigned to blocks located within the marble unit. An average bulk density of 2.92 t/m^3 was assigned to blocks located within the skarn wireframes.

SLR recommends that additional samples for density measurements continue to be collected from select exploration drill holes for density measurements.

14.2.6 Trend Analysis

14.2.6.1 Mineralized Wireframes

The distribution of the gold grades was examined in detail for the LZA1 wireframe only (Aurora Zone). For this exercise, a data file containing the average gold grade across the entire width of the mineralized wireframe model was created. Contours of the average gold grades were then constructed using the contouring function contained within the Surpac software package. The results are presented as a longitudinal projection (Figure 14-13, Figure 14-14, and Figure 14-15). Additional longitudinal projections for other select veins have been presented in RPA (2017, 2018, 2019, and 2020).

A review of the distribution of the gold grades in the longitudinal projections for the Aurora Zone wireframe (LZA1) suggest the following conclusions:

The gold mineralization in the LZA1 mineralized wireframe seems to occur with two separate characteristics.

Where the gold grades occur in high grade pockets, detailed chip sampling shows that these occur along short strike lengths (generally less that 10 m to 20 m) but seem to have better vertical continuity. Continuation of the current grade control sampling protocols is clearly necessary for accurate estimates of the gold distribution at the local scale.

Mineralized intercepts with average grades above approximately 2.00 g/t Au seem to show better continuities at scales ranging from 10 m to 100 m. Higher grade intersections exhibit more limited spatial continuity.

The up-dip limits of the Aurora Zone along its western limits have not been defined by the current drilling pattern. The area between the upper limits of the Aurora Zone drilling and the topographic surface should be tested for its potential of hosting economic gold mineralization, as a weakly developed alignment of gold values is suggesting the presence of an east-plunging rake.

A westerly plunging shoot in the gold grades is suggested to be present along the western limit of the mineralized wireframe. The up-dip limits of this moderately-plunging shoot has not been defined by drilling.

On the basis of the knowledge learned from this trend analysis exercise, SLR recommends that efforts continue to examine the distribution of the gold contents within the mineralized wireframes by contouring the gold grades on longitudinal projections on a regular basis. The results will be useful in short term planning and will improve the targeting of exploration and in-fill drilling programs.

SLR recommends that the up-dip projection of the moderately plunging shoot located on the western limit of the Aurora zone mineralization be tested by drilling.

For mineralized wireframe interpretations that are wider than the width of the development headings, SLR recommends that Mandalay continue collecting information regarding the distribution of the gold grades in the walls of the development headings by means of the POD-series drill holes. SLR recommends that studies be carried out to examine the impact of the spacing of the POD-series drill holes on the accuracy of the local grade estimate.

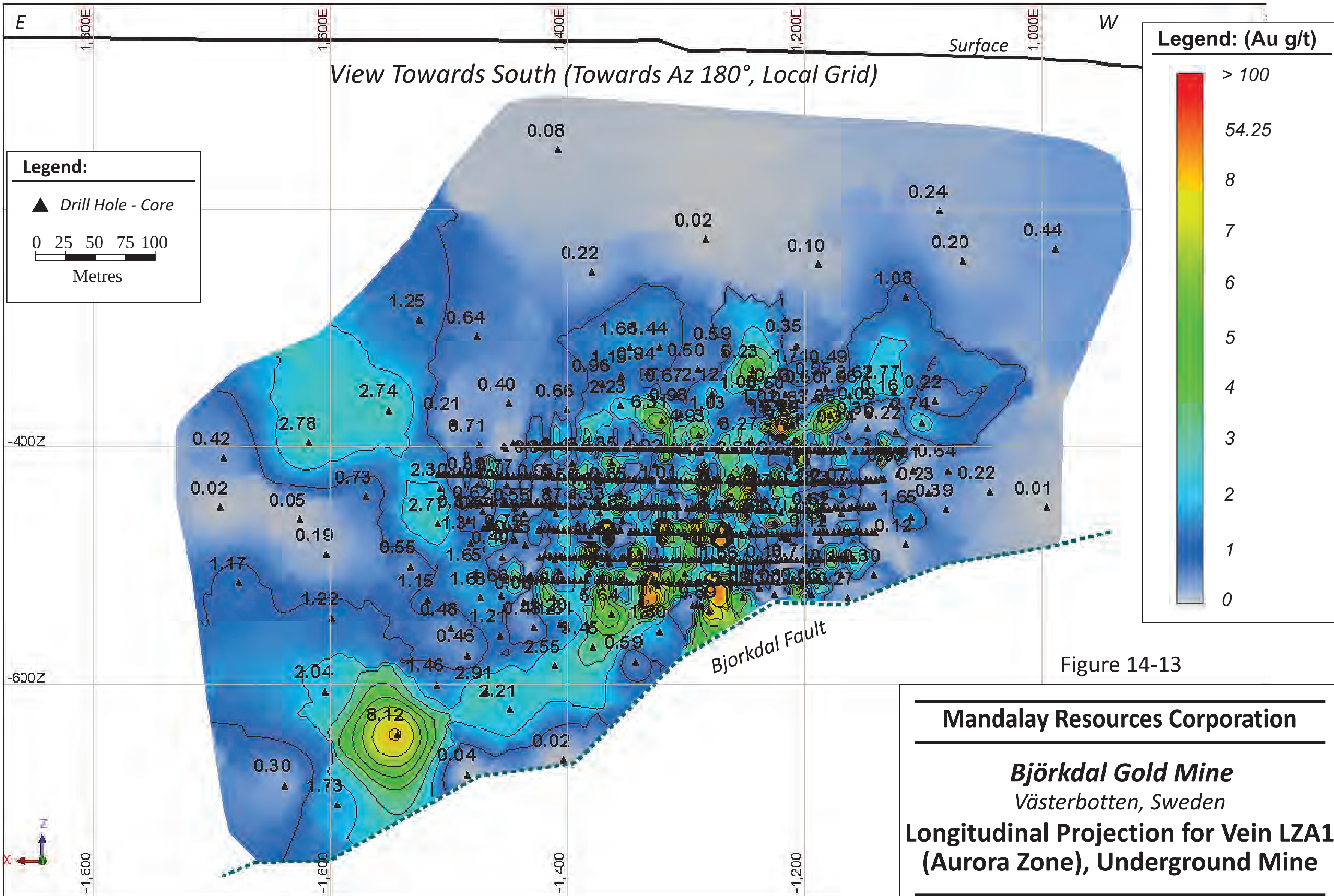


Figure 14-13

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Longitudinal Projection for Vein LZA1 (Aurora Zone), Underground Mine

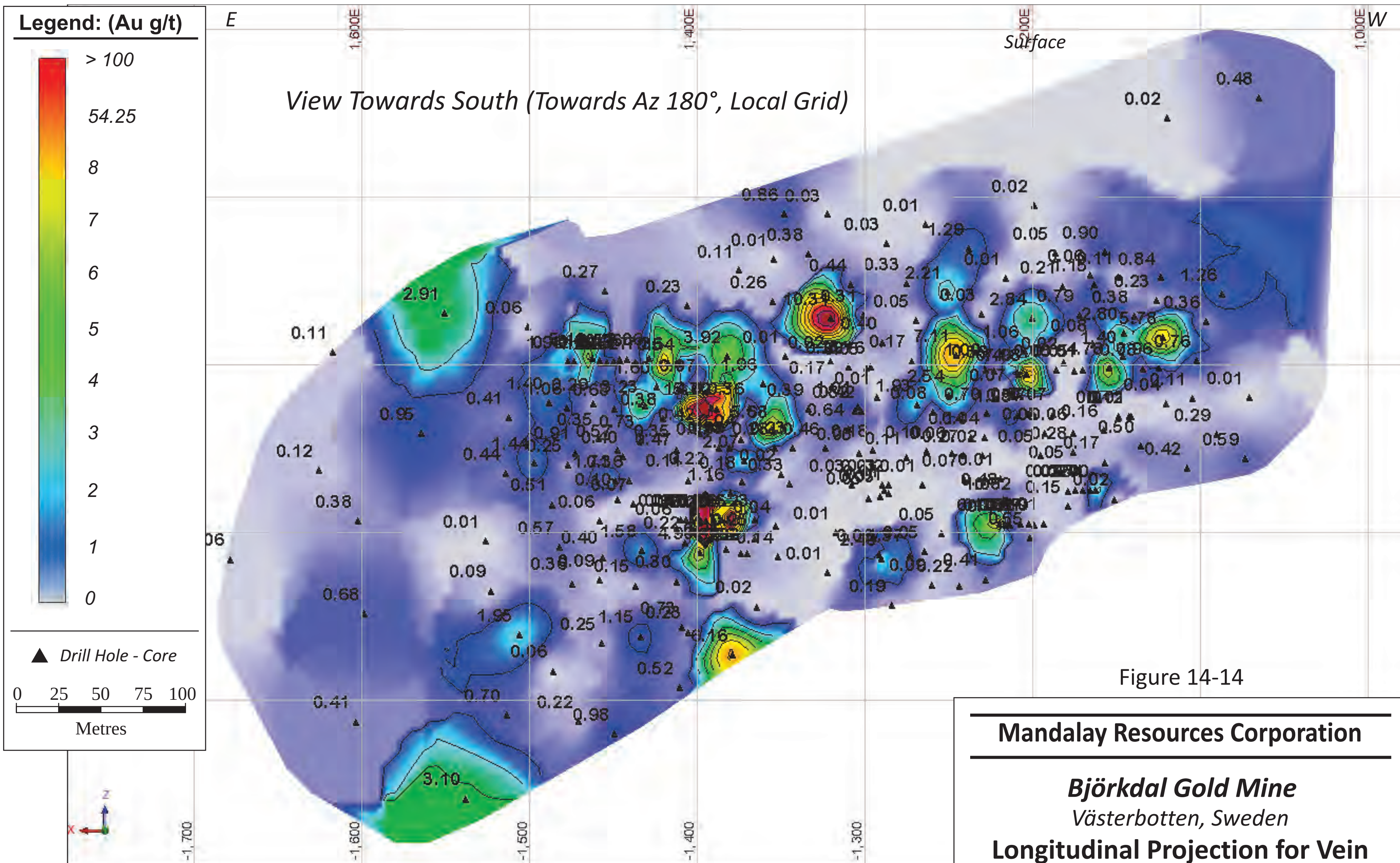


Figure 14-14

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Longitudinal Projection for Vein LZA43, Underground Mine

March 2021

Source: SLR, 2021.

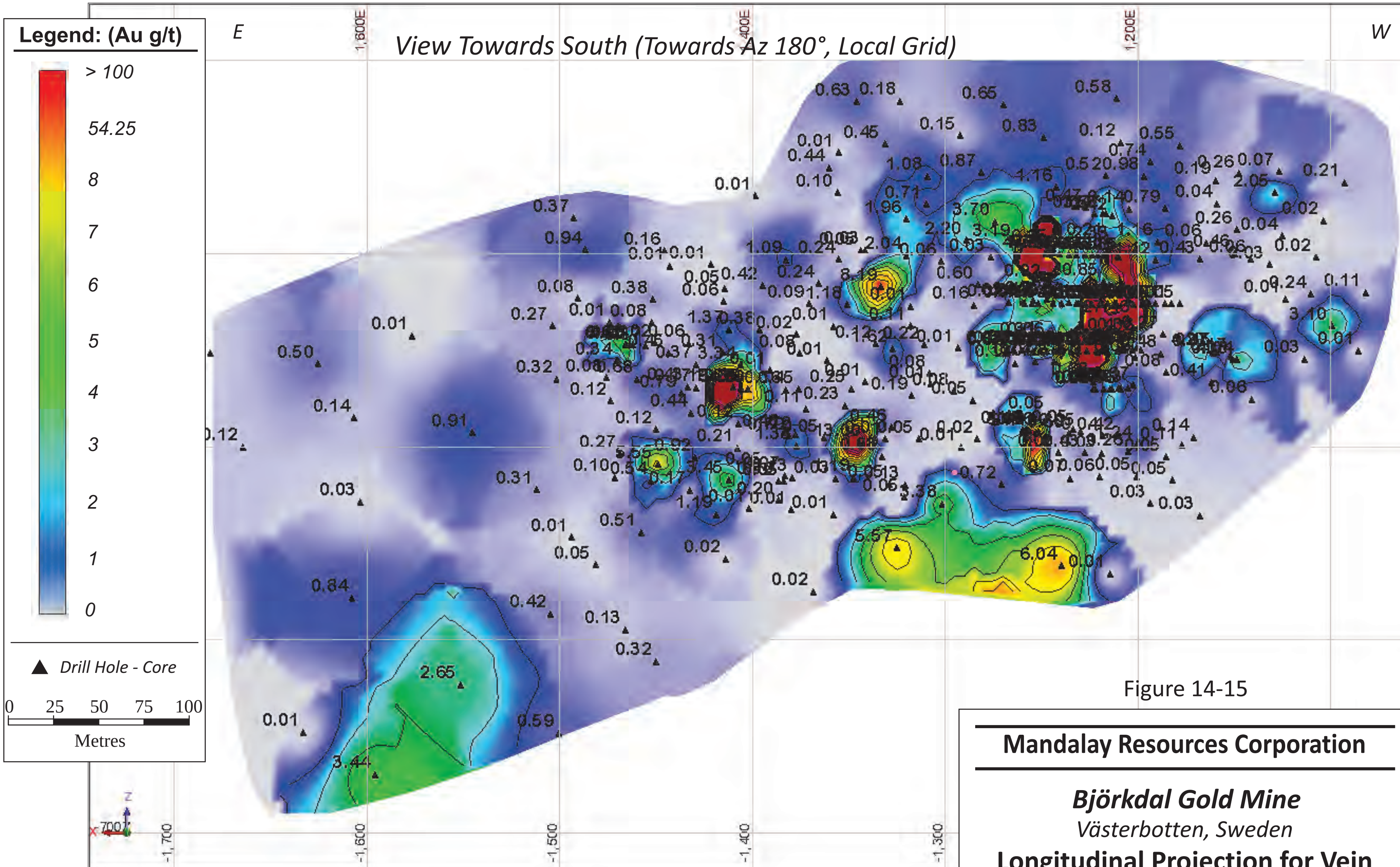


Figure 14-15

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Longitudinal Projection for Vein LZA53, Underground Mine

March 2021

Source: SLR, 2021.

14.2.7 Variography

The results of the variography studies presented in RPA (2017) were adopted for use in preparation of the current Mineral Resource estimate. These variography studies were conducted on a small number of selected mineralized wireframes for the open pit and underground mines.

A variography study was also carried out in 2020 for the mineralization contained within the principal mineralized zone for the Aurora Zone (Wireframe number LZA1). The results indicated that the mineralization contained within this mineralized zone bears similar variographic characteristics to the mineralization contained within the other mineralized wireframes found within the underground mine (RPA, 2020).

14.2.8 Block Model Construction

An upright, non-rotated block model was constructed to model the mineralization in the underground and open pit mines together.

The block model was constructed using the Surpac version 2020 software package and comprised an array of 3 m x 3 m x 5 m (Y, X, and Z) sized blocks using one level of sub-blocking to a minimum size of 1.5 m x 1.5 m x 2.5 m. The model was oriented parallel to the local grid coordinate system (i.e., no rotation or tilt). The selection of the block sizes for this model was based upon experience gained by the mine staff and remained unchanged from previous block models. A number of attributes were created to store such information as rock code, material densities, estimated gold grades, mineral resource classification, mined out material and the like. The block model origin, dimensions, and attributes are provided in Table 14-6 and Table 14-7.

SLR recommends that the across-strike dimensions (i.e., the northing, or Y-direction) of the blocks be harmonized with the minimum widths selected for preparation of the mineralized wireframes to reduce the amount of dilution being introduced into the block model.

Table 14-6: Summary of Björkdal Block Model Origins and Block Sizes
Mandalay Resources Corporation – Björkdal Gold Mine

Type	Y (Northing)	X (Easting)	Z (Elevation)
Minimum Coordinates (m)	-500	290	-860
Maximum Coordinates (m)	2,491	3,002	50
User Block Size (m)	3	3	5
Min. Block Size (m)	1.5	1.5	2.5
Rotation	0.000	0.000	0.000

Table 14-7: Summary of Björkdal Block Model Attributes
Mandalay Resources Corporation – Björkdal Gold Mine

Attribute Name	Type	Decimals	Background	Description
au4whit	Real	2	0	Grade values for Whittle
au_id3	Float	2	0	Estimated gold grade
avg_dist_true	Float	0	-99	Average distance of informing samples
class_final	Integer	-	0	Final classification
class_org	Integer	-	0	Original classification
density	Real	2	2.74	Density
depleted	Integer	-	0	1=development, 2=stope whole blocks, 3=stope
litho	Char.	-	mafic	mafic or marble
material	Char.	-	WAST	Material type for Whittle
nearest_true	Float	0	-99	Distance to nearest informing sample
no_samples	Integer	-	-99	Number of informing samples
nr_dh	Integer	-	-99	
op_shell	Integer	-	0	Flag for resource pit shell
pass	Integer	-	0	Estimation pass
pp_depleted	Real	0	0	Partial percentage for depletion coding
vein	Char.	-	0	Vein number
vein_group	Char.	-	0	Vein group (lza, lz, mz, cz, etc)
waste_domain	Integer	-	0	Pit waste domain

Gold grades were estimated into the blocks by means of ID^3 interpolation algorithm for each vein wireframe individually using the scripting functions of the Surpac software package. A total of three interpolation passes were carried out to estimate the grades in the underground block model. The first pass employed composite samples that had been capped to a maximum of 60 g/t Au and used a search radius of 15 m. The second and third passes used composite samples that were capped to 40 g/t Au and used longer search radii of 35 m and 70 m, respectively.

A two-pass search strategy was applied when estimating the grades for the blocks contained within the mineralized wireframes contained within the open pit mine.

When estimating the grades of the mineralized wireframes, "hard" domain boundaries were used along the contacts of the mineralized wireframe models. Only those composite samples contained within the respective wireframe model were allowed to be used to estimate the grades of the blocks within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates. When estimating the grades for the dilution domain, "soft" domain boundaries were applied to minimize any artifacts at the dilution domain boundaries. A summary of the search strategies employed to estimate the grades into the block model is presented in Table 14-8 and remain unchanged from previous estimates.

Table 14-8: Summary of Search Strategies at Björkdal
Mandalay Resources Corporation – Björkdal Gold Mine

Underground Mine

Item	Pass 1	Pass 2	Pass 3
Boundary Conditions-Data	Hard	Hard	Hard
Boundary Conditions-Blocks	Write to wireframe only	Write to wireframe only	Write to wireframe only
Major Axis	Isotropic	Isotropic	Isotropic
Major Axis Direction	Isotropic	Isotropic	Isotropic
Semi-Major Axis	Isotropic	Isotropic	Isotropic
Semi-Major Direction	Isotropic	Isotropic	Isotropic
Minor Axis	Isotropic	Isotropic	Isotropic
Minor Direction	Isotropic	Isotropic	Isotropic
Major/Semi-Major Ratio	1.01	1.01	1.01
Major/Minor Ratio	1.02	1.02	1.02
Length of Major Axis (m)	15	35	70
Minimum Number of Drill Holes	2	2	2
Weight by Sample Length	Y	Y	Y
Minimum Number of Samples	4	4	4
Maximum Number of Samples	20	20	20
Max No. of Samples/Hole	20	20	20
Search Ellipse Type	Ellipsoid	Ellipsoid	Ellipsoid
Estimation Algorithm	ID^3	ID^3	ID^3

Open Pit Mine, Mineralized Wireframes

Item	Pass 1	Pass 2
Boundary Conditions-Data	Hard	Hard
Boundary Conditions-Blocks	Write to wireframe only	Write to wireframe only
Major Axis	Isotropic	Isotropic
Major Axis Direction	Isotropic	Isotropic
Semi-Major Axis	Isotropic	Isotropic
Semi-Major Direction	Isotropic	Isotropic
Minor Axis	Isotropic	Isotropic
Minor Direction	Isotropic	Isotropic
Major/Semi-Major Ratio	1.01	1.01
Major/Minor Ratio	1.02	1.02

Item	Pass 1	Pass 2
Length of Major Axis (m)	35	70
Minimum Number of Drill Holes	2	2
Weight by Sample Length	Y	Y
Minimum Number of Samples	5	5
Maximum Number of Samples	15	15
Max Number of Samples/Hole	15	15
Search Ellipse Type	Ellipsoid	Ellipsoid
Estimation Algorithm	ID^3	ID^3

Open Pit Mine, Dilution Domain

Item	Waste Domain 1	Waste Domain 2
Boundary Conditions-Data	Soft	Soft
Boundary Conditions-Blocks	Write to Domain 1 only	Write to Domain 2 only
Major Axis	Along Strike (60 m)	Down Dip (80 m)
Major Axis Direction	0°@110°	0°@040°
Semi-Major Axis	Down Dip	Northeast
Semi-Major Direction	-90°@020°	0°@130°
Minor Axis	Across Strike	Southeast
Minor Direction	0°@020	-90°@130
Major/Semi-Major Ratio	1.3	1.01
Major/Minor Ratio	1.7	1.2
Length of Major Axis (m)	60	60
Weight by Sample Length	Y	Y
Minimum Number of Samples	5	5
Maximum Number of Samples	15	15
Max Number of Samples/Hole	15	15
Search Ellipse Type	Ellipsoid	Ellipsoid

14.2.9 Block Model Validation

14.2.9.1 Comparison of Composite Samples to Block Model

Block model validation efforts began with a comparison of the average classified block grades with the averages of the informing composite samples for a selection of the ten largest veins as measured by the estimated contained gold. The purpose of the comparison is to perform a high-level check as to whether any data-related errors may have occurred during the estimation process and to provide a general basis for the overall accuracy of the estimated block model grades.

The exercise is slightly complicated for the underground block model due to the variable capping strategy that was used to estimate the block grades. The reported block model average grades then are the blended grades that were estimated using two capping values, which makes a direct comparison with composite data difficult. Considering that the large majority of the blocks were estimated using a capping value of 40 g/t Au, SLR elected to use the average composite grades using that capping value as a base for comparison (Table 14-9). A comparison of the wireframe volumes to the block model volumes is presented in Table 14-10.

Table 14-9: Comparison of Block Model Estimated Grades to Composite Samples - Björkdal
Mandalay Resources Corporation – Björkdal Gold Mine

Wireframe	LZA1	LZA43	MZ53	MZ51	CZ1
Composite Mean (g/t Au)	1.89	0.74	1.12	3.77	1.71
Classified Block Model Average (g/t Au)	1.21	0.70	0.79	3.36	1.49

Wireframe	CZ62	LZA23	MZ5	SHS1	LZ101
Composite Mean	1.50	1.15	2.33	0.66	2.49
Classified Block Model Average	1.68	0.86	2.41	0.41	1.37

Table 14-10: Comparison of Block Model Volumes to Wireframes - Björkdal
Mandalay Resources Corporation – Björkdal Gold Mine

Wireframe Group	Number of Wireframes	Wireframe Volume (m^3)	Block Volume (m^3)	Difference (BM-Wf) (m^3)	Differences (%)
Central Zone (CZ)	134	3,132,526	3,080,773	-51,753	-2%
Main Zone (MZ)	160	4,478,832	4,370,102	-108,730	-2%
Lake Zone (LZ)	148	3,812,919	3,731,867	-81,052	-2%
Lake Zone-Aurora (LZA)	78	10,002,672	9,864,776	-137,896	-1%
South Zone (SZ)	39	2,115,968	2,094,941	-21,027	-1%
East Pit (EP)	57	1,800,289	1,755,883	-44,406	-2%
West Pit (WP)	137	1,733,707	1,707,002	-26,705	-2%
Quartz Mountain (QP)	150	3,106,742	3,076,965	-29,777	-1%
Nylund (NYL)	93	3,222,800	3,222,591	-209	0%
Shear	6	1,707,777	1,706,372	-1,405	0%
Skarns – Open Pit	10	887,623	883,661	3,962	-1%
Skarns - Underground	7	326,566	326,936	+370	0%

14.2.9.2 Visual Comparisons

In order to gauge the accuracy of the local estimate, visual comparisons were carried out that compared the contoured grade distributions prepared during the trend analysis exercise described above with the estimated block grades (Figure 14-16, Figure 14-17, and Figure 14-18). Overall, reasonable spatial correlations were observed, however, estimation artifacts were noted on occasion which SLR suspects is a result of the search strategies employed for estimation of the block grades.

SLR recommends that studies be carried out to review alternate parameters for the search strategies that would help reduce the presence of estimation artifacts and improve the accuracy of the local estimate.

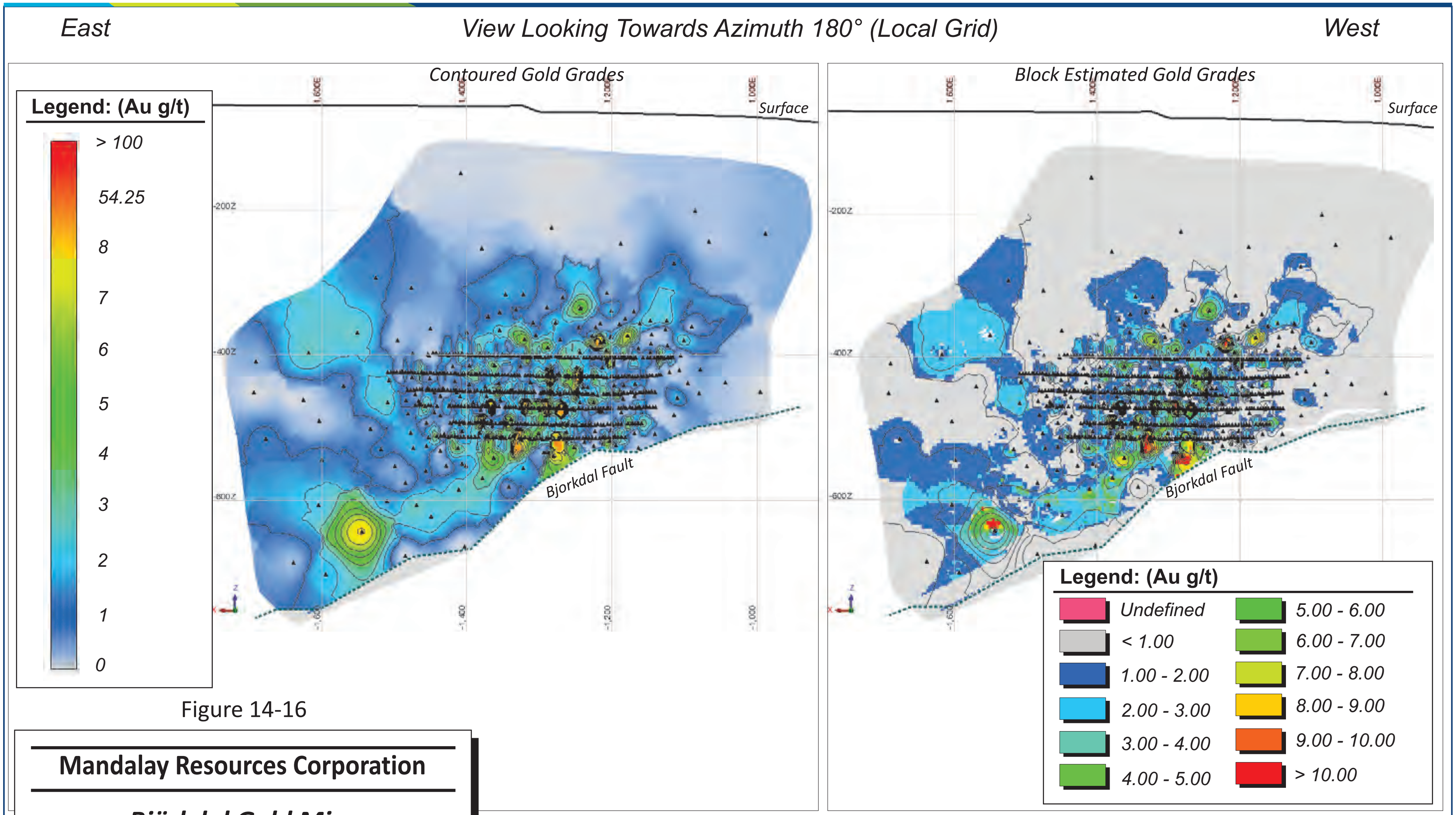


Figure 14-16

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Comparison of Block Model Grades versus Contoured Grades, Vein LZA1

March 2021

Source: SLR, 2021.

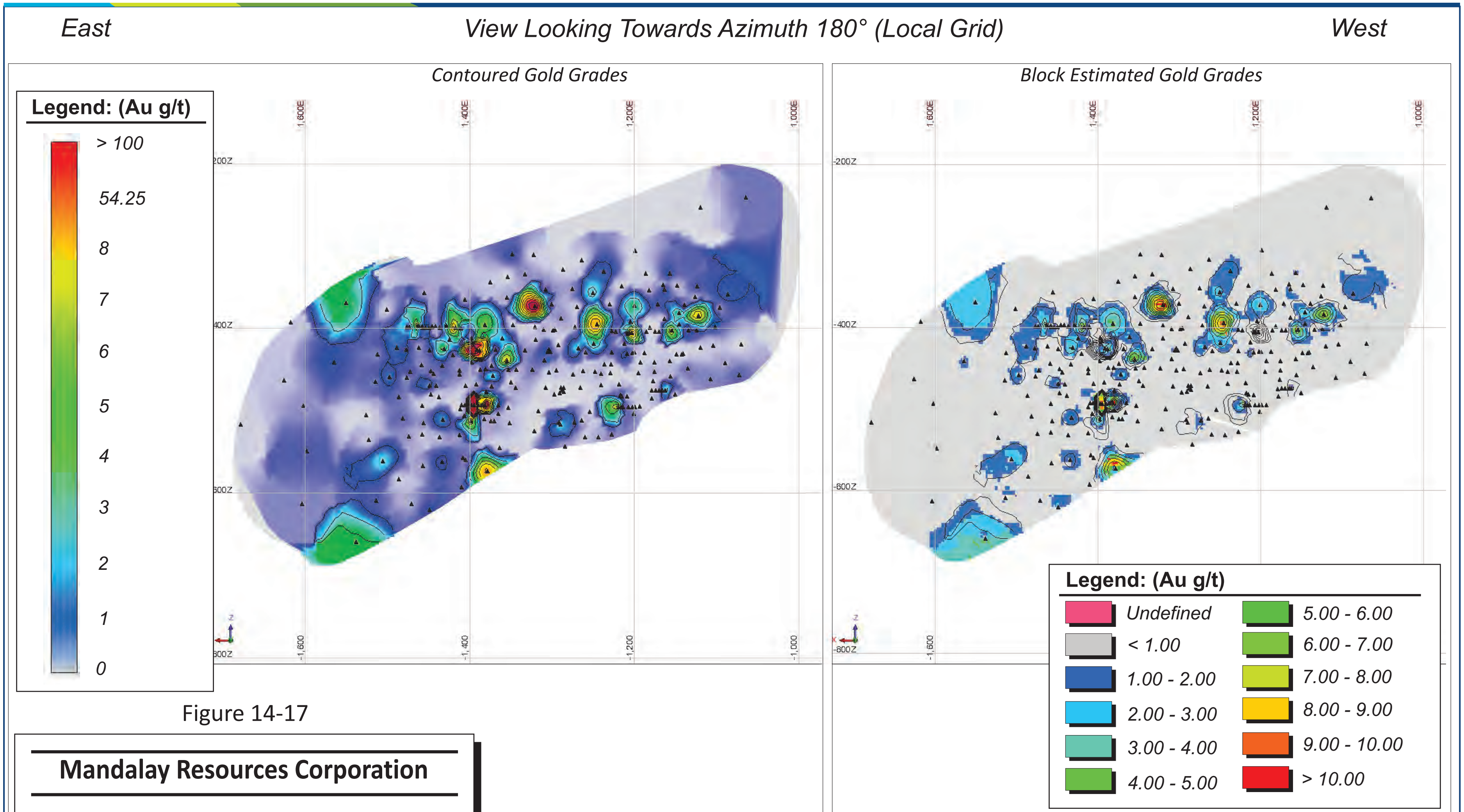


Figure 14-17

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Comparison of Block Model Grades versus Contoured Grades, Vein LZA43

March 2021

Source: SLR, 2021.

East

View Looking Towards Azimuth 180° (Local Grid)

West

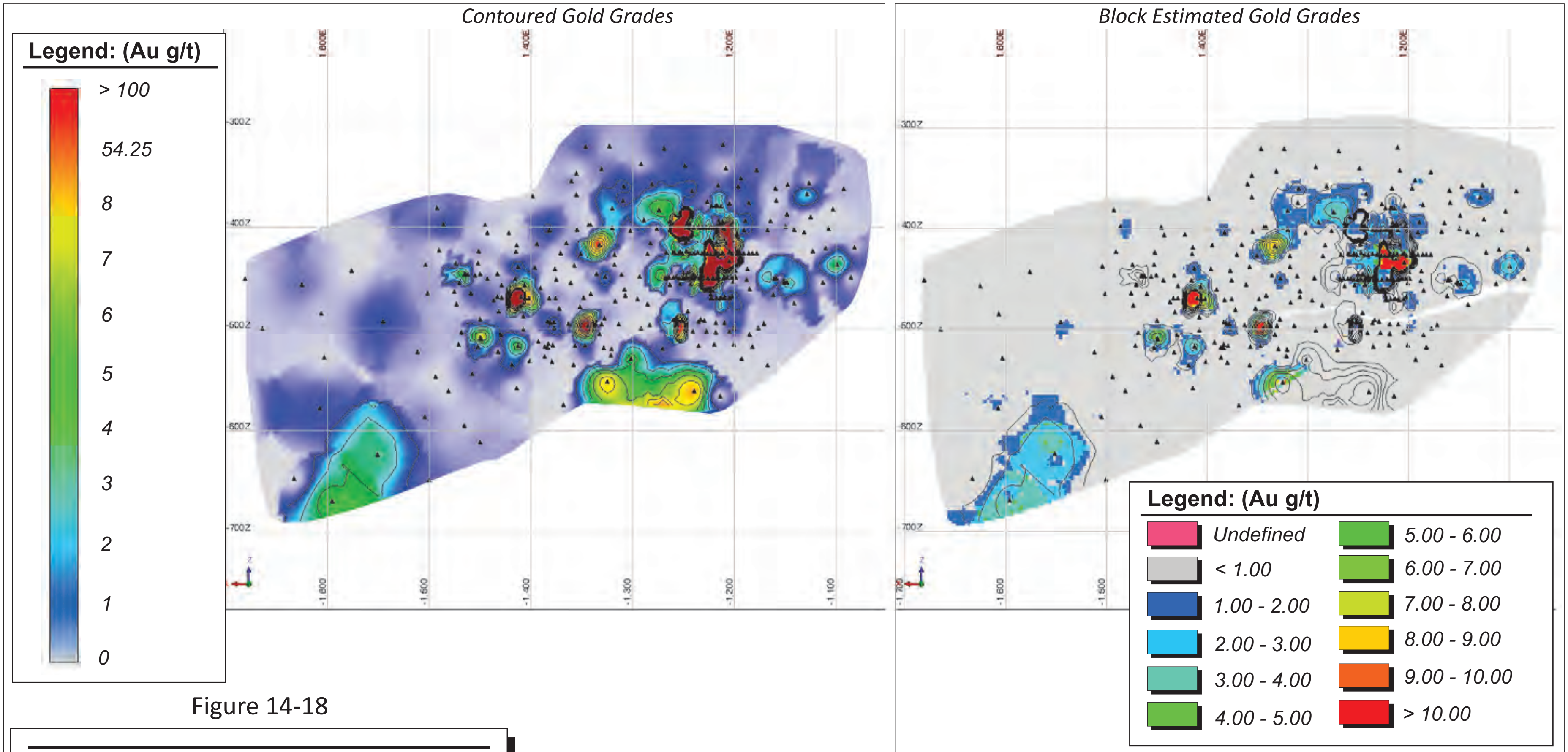


Figure 14-18

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Comparison of Block Model Grades versus Contoured Grades, Vein LZA53

Legend:

▲ Drill Hole - Core

0 50 100 150 200

Metres

March 2021

Source: SLR, 2021.

14.2.9.3 Swath Plots

Similarly, SLR created swath plots for selected wireframes from the underground mine (Figure 14-19, Figure 14-20, and Figure 14-21). While some local variations were observed between the composite average grades and the block average grades, no material discrepancies were noted.

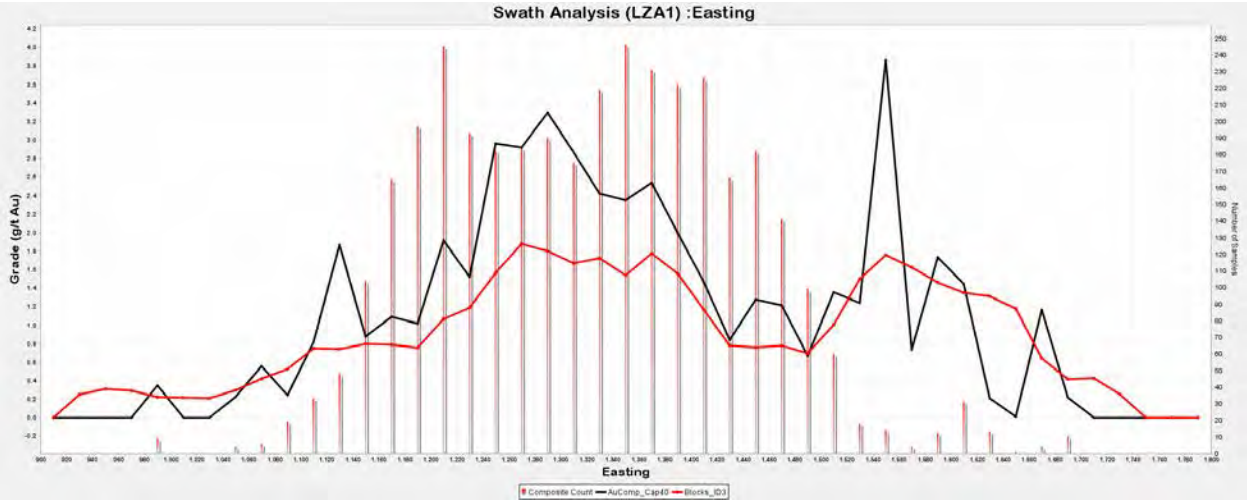


Figure 14-19: Swath Plot by Easting, Vein LZA1 (Aurora)

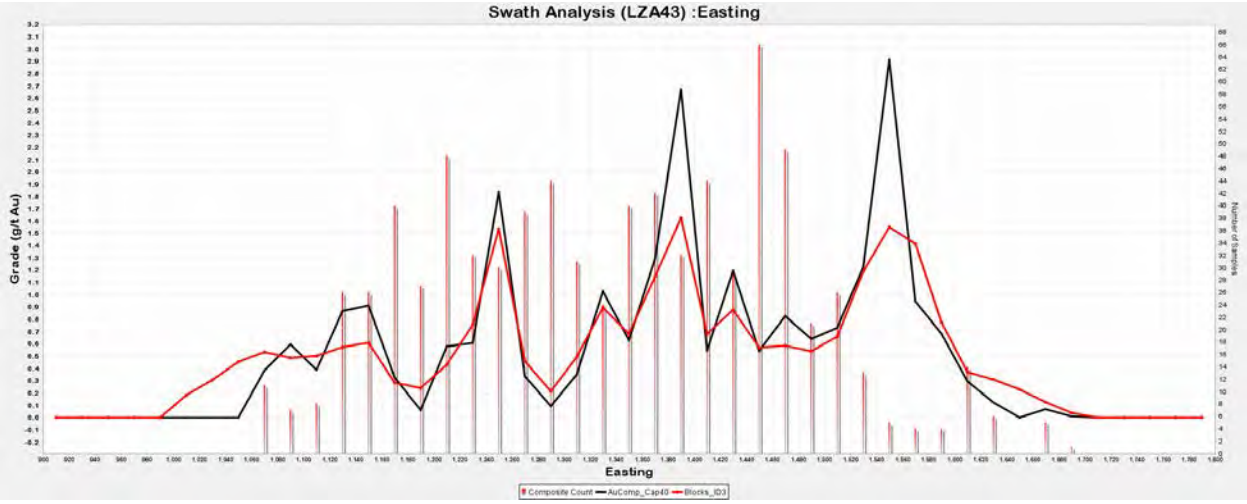


Figure 14-20: Swath Plot by Easting, Vein LZA43

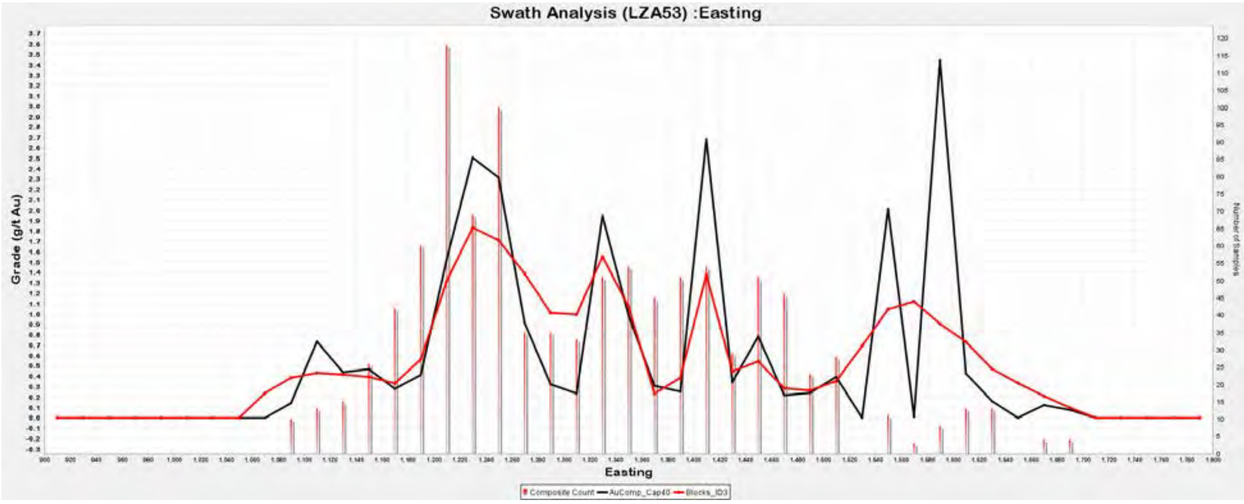


Figure 14-21: Swath Plot by Easting, Vein LZA53

14.2.10 Reconciliation to Production Statistics

Reconciliation activities were conducted which compared the predicted tonnages, grades, and contained metal from the long-term block model prepared as at year-end 2019 against the short-term (ST) grade control block models updated throughout 2019 and quarterly plant production data for 2020. In addition to a comparison of the long-term model predicted values with the ST model actual values, the reconciliation procedures included a measurement of the amount of mineralization that was initially included in the mine schedule but ultimately not excavated, as well as additional mineralized material that was not predicted by the long-term model but was discovered as a result of the grade control sampling program as the on-vein development drives were excavated. The identification and quantification of the non-recovered material as well as the additional mineralized material mined is important to achieve a correct reconciliation with the plant production data.

14.2.10.1 Description of the Material Flows

All of the material extracted from the underground stopes is placed directly onto the designated pile at the plant stockpile area. Material from development drives on the veins is taken to surface and is initially placed in a designated laydown area in the open pit while waiting for assay results. Once the grade of a given advance has been determined, material having grades over 0.32 g/t Au is then transported to one designated pile in the plant stockpile area. The remaining mineralized waste material is placed onto either the North or South long-term stockpile.

In the open pit mine, after blasting, the ore was mined in three flitches of 2.5 m in height. Detailed observations made from the grade control programs demonstrates that while the quartz veins are the predominant host material, gold can persist for a short distance along vein extensions into the host rocks without a quartz host. In these cases, the host material provided an excellent visual clue for guiding of detailed sampling and for excavation. Detailed sampling was carried out on the top of each blast using a hand shovel to collect a sample at approximately a five metre interval along the strike of the vein. Results were then used to prepare dig plans.

During operations, material from the open pit mine having grades greater than 1.00 g/t Au is classified as "A-ore" and is placed directly onto a designated pile at the plant stockpile area. Material in the open pit that has been determined to have gold grades between 0.32 g/t Au and 1.00 g/t Au is classified as "B-ore". The tonnages of the ore excavated from the open pit mine are determined from truck counts. The grade of the ore in the open pit mine is determined on an in-situ basis from the detailed channel samples taken on each flitch.

Material from the North and South long-term stockpiles is fed to the plant when sufficient capacity is available. The stockpile volumes are determined on a six month basis using drone-based laser topology equipment and an average density of 1.8 t/m^3. The plant maintains a monthly record of the amount of feed received from the stockpiles on a combined basis. A short-term stockpile of crushed ore (nominal -8 mm in size) is maintained in close proximity to the plant fine ore bin to maintain the plant throughput in the event of unforeseen shortages in feed. This fine ore stockpile has also been used to feed the plant on a batch basis.

A daily sampling procedure is followed to calculate the provisional gold content in connection with the sale of concentrates and also for determining the daily average feed grade. Samples are taken from the high grade gravity concentrate containing approximately 60% Au, the middlings concentrate containing approximately 1,500 g/t Au, the Knelson concentrate containing approximately 300 g/t Au, and the flotation concentrate containing approximately 100 g/t Au. The tailings stream containing approximately 0.16 g/t Au is sampled every 20 minutes and the results are compiled and reported on a shift composite basis. The tailings densities are determined using Marcy scales and the tailings flow rate is measured with a flow meter. Daily feed grades are calculated using the gold content in the four concentrates, the tailings stream, and the total daily tonnage throughput. The daily tonnage is determined using three calibrated weightometers located ahead of the primary grinding circuit.

The material flows at the Björkdal Mine are summarized in Figure 14-22.

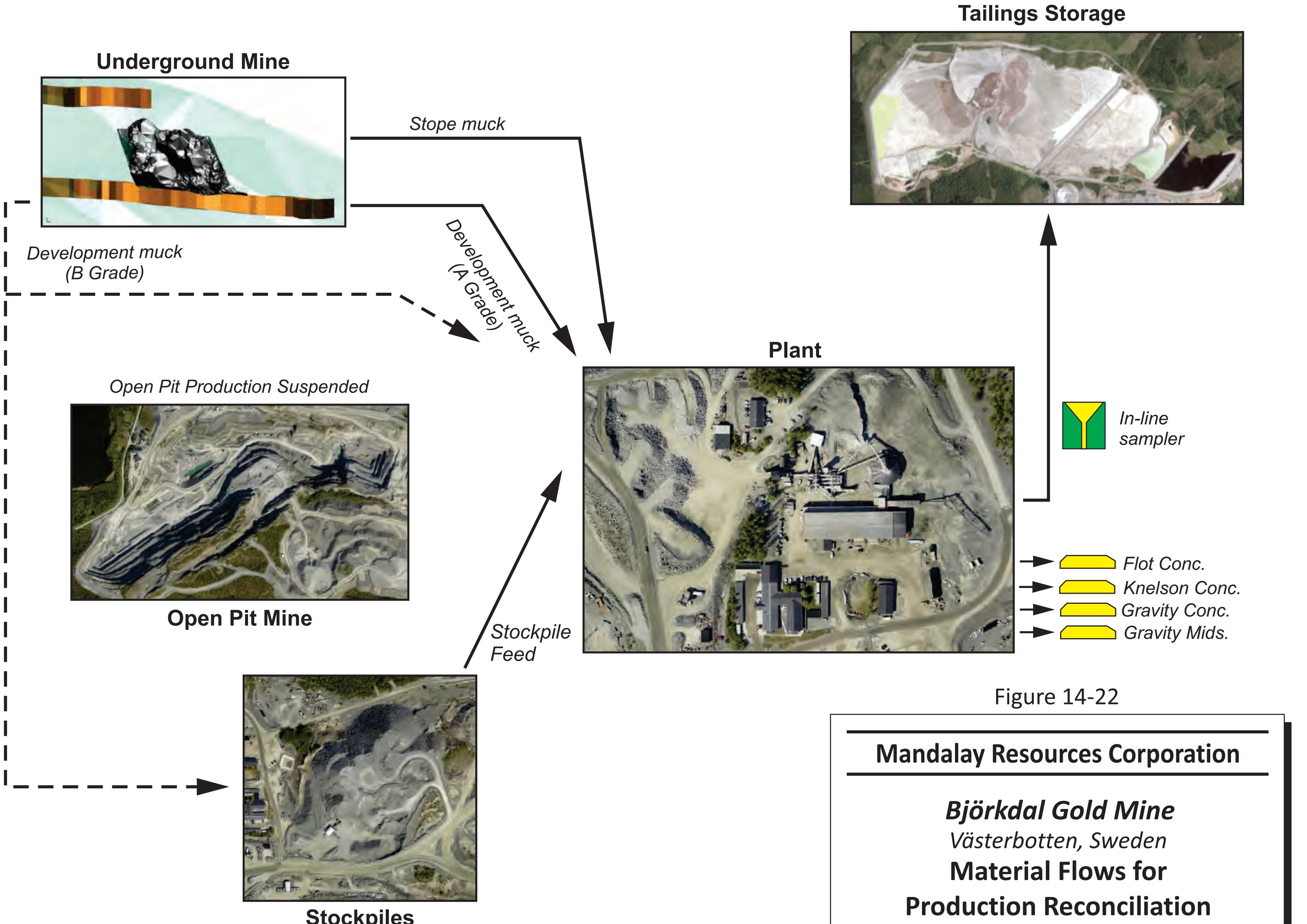


Figure 14-22

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Material Flows for Production Reconciliation

March 2021

Source: SLR, 2016.

14.2.10.2 Model-to-Mill Reconciliation, Underground Mine

A comparison of the predicted tonnage, grade, and contained gold between the year-end 2019 long-term model and the 2020 grade control model (constructed using the same parameters as the long-term model and updated more frequently as additional sample information became available) to plant production statistics was carried out for January to December 2020 for both stopes and for development material (Table 14-11 and Table 14-12).

For the stope material, valid CMS scans were not always available due to equipment failure and the implementation of new protocols around the scanning of stope voids. For stopes where valid scans were not available, the designed excavation was used, along with an expansion factor applied to account for likely overbreak.

For development material, the surveyed monthly drive solids were used to report the predicted tonnes, grade, and contained gold for these areas. It is important to note that not all development material is milled. Material that the grade control program identifies as waste or very low grade (generally less than 0.35 g/t Au) is rejected and sent to the appropriate waste or low grade stockpiles. No cut-off grade was applied to the model for the underground reconciliation reports, as digital models of the excavated voids were used to report all tonnes within the excavation volume. The impact of the various material types on the reconciliation results are shown in Figure 14-23 and Figure 14-24.

Table 14-11: 2020 Stope Reconciliation Data - Underground Mine
Mandalay Resources Corporation – Björkdal Gold Mine

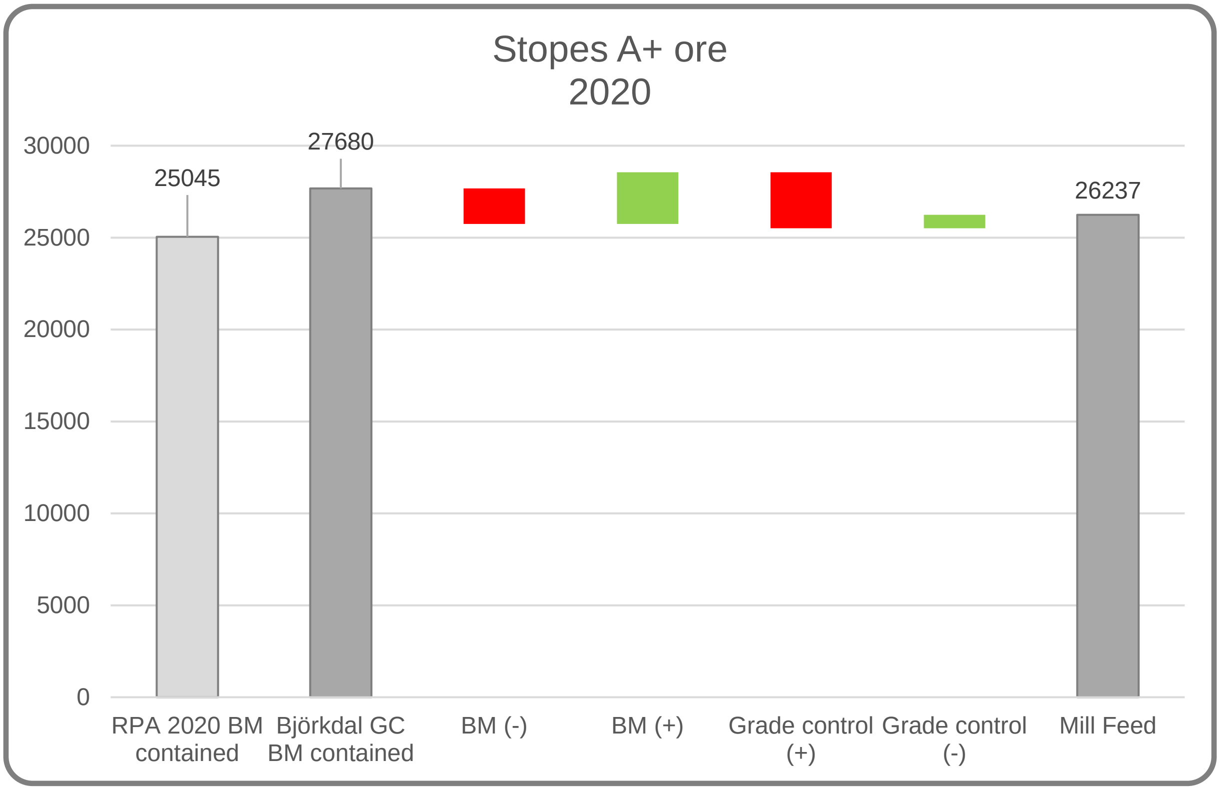
Underground: Stopes

Quarter	Long-Term Model (December 31, 2019)			Grade Control Model (2020)			Trucked Material (2020)			2020 Milled		
	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)
Q1	123,043	1.69	6,681	124,504	1.79	7,148	129,636	1.64	6,818	113,892	1.58	5,781
Q2	132,358	1.35	5,754	132,44	1.45	6,169	144,950	1.54	7,197	137,090	1.47	6,471
Q3	122,993	1.54	6,073	122,345	1.73	6,788	149,994	1.42	6,832	149,251	1.30	6,244
Q4	143,489	1.42	6,536	142,951	1.65	7,575	164,957	1.45	7,711	167,227	1.44	7,742
Totals	**521,883**	**1.49**	**25,045**	**522,241**	**1.65**	**27,680**	**589,537**	**1.51**	**28,557**	**567,459**	**1.44**	**26,237**

Table 14-12: 2020 Development Reconciliation Data - Underground Mine
Mandalay Resources Corporation – Björkdal Gold Mine

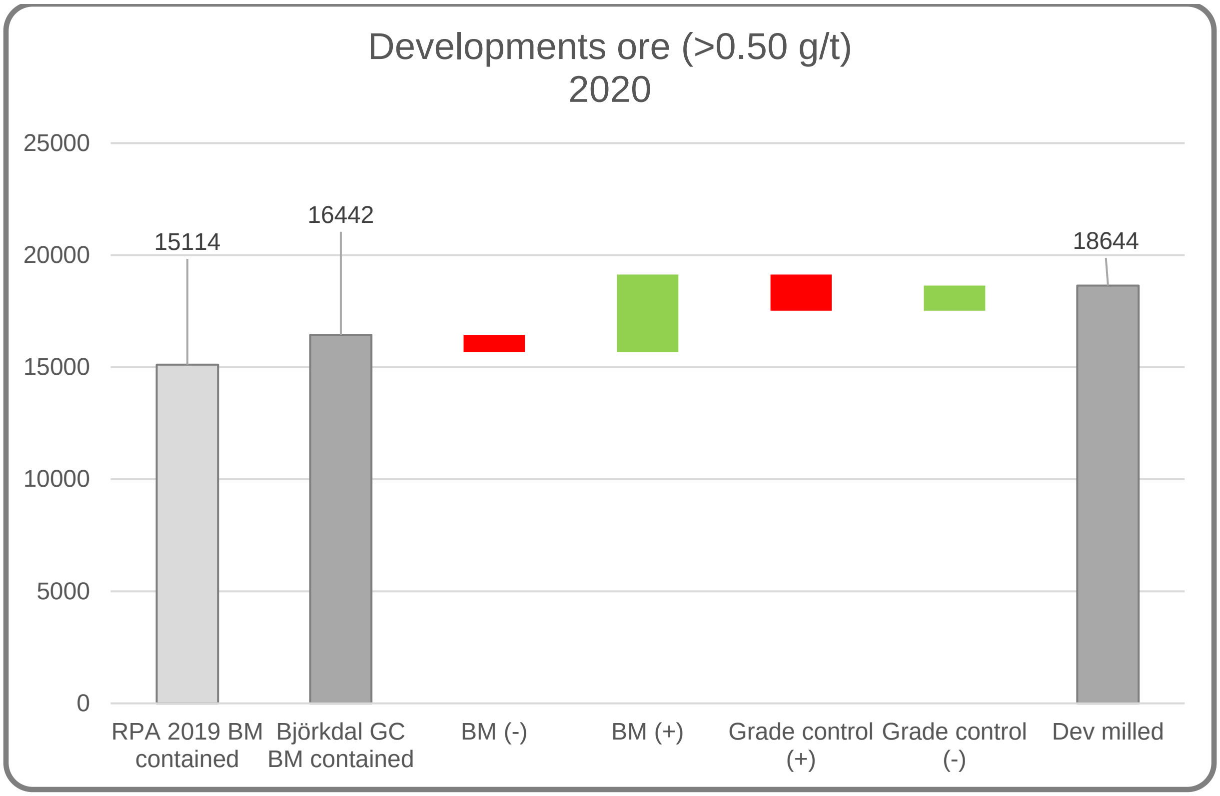
Underground: Development

Quarter	Long-Term Model December 31, 2019)			Grade Control Model (2020)			Mined Material (2020)			2020 Milled		
	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)	Tonnes (t)	Grade (g/t Au)	Contained Metal (oz Au)
Q1	162,018	0.58	2,998	163,077	0.75	3,932	145,768	0.87	4,101	81,764	1.65	4,324
Q2	181,269	0.83	4,859	181,546	0.84	4,911	172,372	0.86	4,777	101,287	1.47	4,787
Q3	181,119	0.48	2,815	181,066	0.47	2,724	155,731	0.91	4,535	79,566	1.49	3,814
Q4	186,724	0.74	4,441	189,055	0.80	4,876	179,425	0.99	5,720	111,292	1.60	5,719
Totals	**711,130**	**0.66**	**15,114**	**714,744**	**0.72**	**16,442**	**653,297**	**0.91**	**19,133**	**373,908**	**1.55**	**18,644**



Source: Mandalay

Figure 14-23: Waterfall Chart for the Underground Stopes, 2020



Source: Mandalay

Figure 14-24: Waterfall Chart for the Underground Development, 2020

It can be seen that the tonnages, grades, and contained metal are all in good agreement between the year-end 2019 long-term block model and the 2020 grade control model for both the stope muck and development muck from the underground mine. Overall, the grade control block models continue to discover additional ounces as compared with the long-term model. Experience gained by the Mine staff suggests that additional ounces contained within the grade control models are a result of additional gold bearing mineralization that is discovered as development and detailed sampling progresses. This additional material can be the result of additional strike or dip extensions of the actual veins as compared with the wireframe interpretation, or as a result of new mineralization that is discovered which is smaller in size than the current drill hole spacing.

Considering that the current year-end 2020 long-term model was prepared using the same work flows and estimation parameters as were used to prepare the year-end 2019 long-term model, it is reasonable to assume that the year-end 2020 long-term block model may yield similar results going forward.

Examination of the reconciliation results shows that the year-end 2019 long-term block model predicted that approximately 40,100 oz Au may be present on an in-situ basis between the development muck and stope muck sources. The data show that the plant produced a total of approximately 44, 900 oz Au on a recovered basis in 2020.

As discussed, a potential source of the additional gold produced by the plant includes additional gold mineralization discovered as a result of detailed mapping and sampling results. An additional source of the positive variance includes gold recovered as a result of processing material from the stockpiles. SLR notes that the gold grades used to estimate the grades in the long-term model represent the cyanide-leachable portion of the gold in a given sample, while the processing plant recovers all gold that may be present, as the process flow sheet does not include a cyanide leaching circuit. A component of the positive variance may be due to any non-cyanide leachable gold that is recovered by the plant.

SLR recommends that Mandalay continue to collect high quality scans of all stope voids on a regular and timely basis. This information should then be integrated into the material tracking and metal accounting systems to permit comparisons to be made for the block model versus the mine actual production and then the mill output. The information will also be useful in evaluating the accuracy of the excavation voids against the designed excavations.

SLR also recommends that consideration be given to expanding the time period for the reconciliation studies. The current reconciliation studies evaluate the predictive accuracy of the year-end 2019 long-term block model over the most recent 12-month production period for 2020. Use of previous years' block models for comparison with the production data through to 2020 will enable the quantification of the accuracy of the estimation procedures and parameters over longer periods and thus provide an indication as to the future accuracy of the current block model as a function of time.

14.2.11 Mineral Resources Classification Criteria

The definitions for resource categories used in this Technical Report are consistent with CIM (2014) definitions and adopted by NI 43-101.

In respect of the block model for the veins in the underground mine, all blocks that were located within a mineralization wireframe whose grades were estimated in either the first or second estimation passes were assigned a preliminary classification of Indicated Mineral Resources. Those blocks whose grades were estimated in the third estimation pass were assigned a preliminary classification of Inferred Mineral Resources. No Measured Mineral Resources were assigned.

Similarly, with respect to the block model for the open pit mine, all blocks that were located within a mineralization wireframe whose grades were estimated in the first estimation pass were assigned a preliminary classification of Indicated Mineral Resources. Those blocks whose grades were estimated in the second estimation pass were assigned a preliminary classification of Inferred Mineral Resources. No Measured Mineral Resources were assigned.

The initial classifications within both the underground and open pit mines were reviewed and manually adjusted so as to ensure that the material in the Indicated category possessed spatial continuity that was defined by at least two drill holes.

Finally, all blocks that received an estimated grade within the waste domain were assigned a preliminary classification of Inferred Mineral Resources.

14.2.12 Responsibility for the Estimate

The estimate of the Mineral Resources for Björkdal presented in this Technical Report was prepared by Mr. Reno Pressacco, M.Sc.(A), P.Geo., who is a Qualified Person as defined in NI 43-101 and is independent of Mandalay.

14.2.13 Cut-Off Grade and Resource Reporting Criteria

Separate cut-off grades were developed for reporting of the underground and open pit Mineral Resources. Each cut-off grade was developed using the January to September 2020 actual cost information along with a gold price of US$1,700 per ounce and an exchange rate of 9.0 SEK/US$. The cut-off grade for reporting of Mineral Resources was determined to be 0.77 g/t Au within the underground mine and 0.28 g/t Au for the open pit mine.

Metal prices used for reserves are based on consensus, long-term forecasts from banks, financial institutions, and other sources. For resources, metal prices used are slightly higher than those for reserves.

To fulfill the CIM (2014) definitions requirement of "reasonable prospects for eventual economic extraction" with respect to the open pit Mineral Resources, Mandalay prepared a preliminary open pit resource shell using the Whittle parameters reported in Section 15 and based on a US$1,700/oz gold price.

The criteria used to report the Mineral Resources within the open pit mine included:

- All blocks located above the resource pit surface
- Not depleted for mining;
- Not including loose or backfill material;
- Within either a mineralized wireframe model, the mineralized waste domain model, or the failure zone;
- Having estimated block grades greater than 0.28 g/t Au, and
- Having a Mineral Resource category of either Indicated or Inferred.

The criteria used to report the Mineral Resources within the underground mine included:

- All blocks within a mineralized wireframe;
- Located below the open pit reporting shell;
- Not depleted for mining or the subsidence area;
- Having estimated block grades greater than 0.77 g/t Au; and
- Having a Mineral Resource category of either Indicated or Inferred.

To fulfill the CIM (2014) definitions requirement of "reasonable prospects for eventual economic extraction" with respect to the underground Mineral Resources, SLR carried out an exercise for selected veins which compared the results of applying a block cut-off grade for preparing a Mineral Resource statement with an equivalent clipping polygon that considered the spatial continuity of the above cut-off grade blocks along with any blocks that might be contained within the clipping polygon whose grades were lower than the cut-off grade. The study concluded that, apart for the LZA1 vein, the use of a block cut-off grade was of sufficient accuracy for preparing Mineral Resource statements for all veins examined.

The Mineral Resource statement for the LZA1 vein was prepared using the criteria described above, along with a series of constraining volumes that were prepared using the native functions of the Deswik (Auto Stope Designer) software package. The use of reporting panels as constraints in preparing Mineral Resource statements ensures that any blocks with grades below the cut-off grade that are intimately intermixed with the above cut-off grade blocks are included. The reporting panels also ensure that any blocks with estimated grades above the cut-off grade with limited or no spatial continuity are excluded from the Mineral Resource statement (Figure 14-25 and Figure 14-26). The reporting panels were created using a minimum width criteria of 2.5 m with allowances for 0.5 m of dilution on each side, plus an additional 10% dilution. These criteria result in a final target width of 3.85 m for the reporting panels.

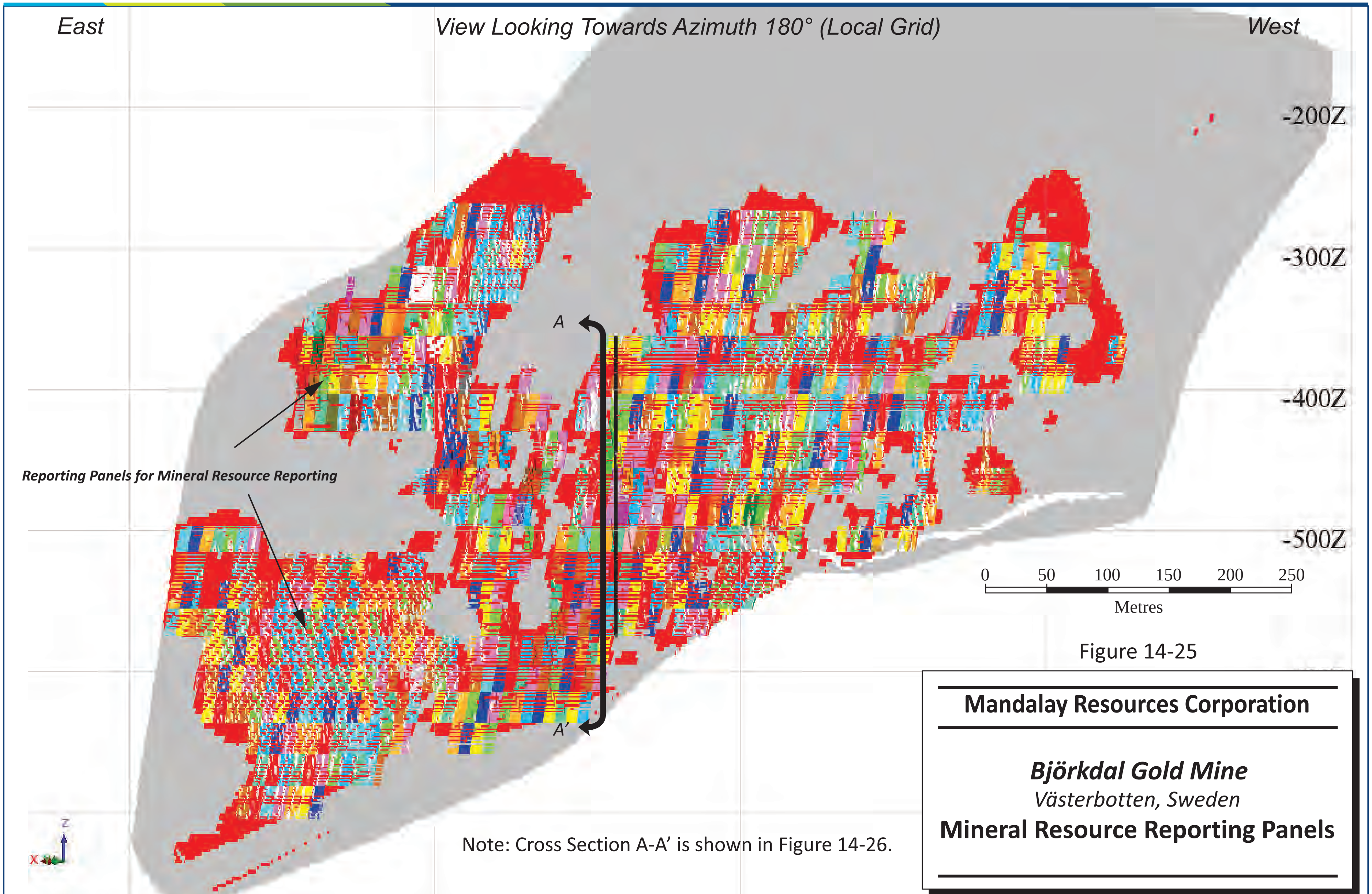


Figure 14-25

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Mineral Resource Reporting Panels

March 2021

Source: SLR, 2021.

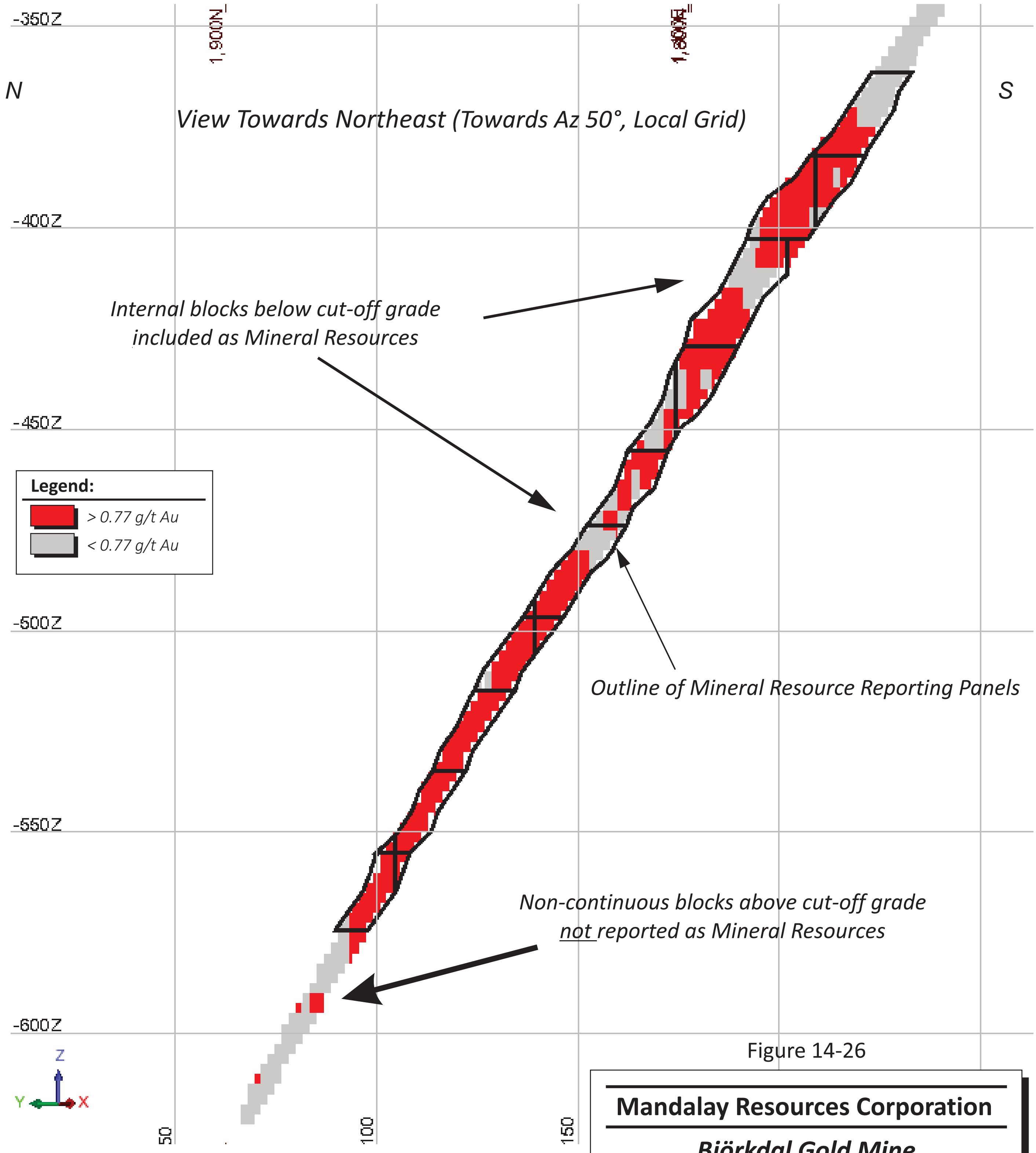


Figure 14-26

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Sample Cross Section of the Mineral Resource Reporting Panels, Vein LZA1

March 2021 **Source: SLR, 2021.**

14.2.14 Björkdal Mine Mineral Resource Estimate

The Mineral Resources are inclusive of Mineral Reserves. The Mineral Resources are reported using excavation volumes and surfaces current as of December 31, 2020 (Table 14-13).

Table 14-13: Summary of Björkdal Mineral Resources as of December 31, 2020
Mandalay Resources Corporation – Björkdal Gold Mine

Category	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
Indicated	Open Pit	2,383	2.10	161
	Underground	11,482	2.32	858
	Stockpile	2,551	0.64	53
Total Indicated		**16,416**	**2.03**	**1,072**
Inferred	Open Pit	3,515	1.44	163
	Underground	2,322	2.06	154
Total Inferred		**5,840**	**1.69**	**318**

Notes:

1. Björkdal Mineral Resources are estimated using drill hole and sample data as of September 30, 2020 and account for production to December 31, 2020.
2. CIM (2014) definitions were followed for Mineral Resources.
3. Mineral Resources are inclusive of Mineral Reserves.
4. Mineral Resources are estimated using an average gold price of US$1,700/oz and an exchange rate of 9.0 SEK/US$.
5. High gold assays were capped to 30 g/t Au for the open pit mine.
6. High gold assays for the underground mine were capped at 60 g/t Au for the first search pass and 40 g/t Au for subsequent passes.
7. Interpolation was by inverse distance cubed utilizing diamond drill, reverse circulation and chip channel samples.
8. Open pit Mineral Resources are constrained by open pit shells and estimated at a cut-off grade of 0.28 g/t Au.
9. Underground Mineral Resources are estimated at a block cut-off grade of 0.77 g/t Au.
10. A nominal two metres minimum mining width was used to interpret veins using diamond drill, reverse circulation, and underground chip sampling.
11. Stockpile Mineral Resources are estimated at a cut-off grade of 0.32 g/t Au and are based upon surveyed volumes supplemented by production data.
12. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
13. Numbers may not add due to rounding.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

14.3 Norrberget

The following description for Norrberget was taken from the 2018 Technical Report (RPA, 2018). No changes have been made to the Mineral Resource estimate since the underlying assumptions have not changed materially.

14.3.1 Topography Model

A DTM generated from Surpac software was provided to clip the block model. The drill hole collars within the resource database were checked against the DTM elevation and all were within 0.03 m difference except drill hole 2009610, which was less than 0.30 m.

14.3.2 Description of the Database

RPA received the Norrberget dataset in July 2017 as an Access database that contained all drilling up until the completion of the 2016 exploration program. Additional drilling was completed in 2017 and appended to the drill hole database later this year. The cut-off grade of the database is September 30, 2017, and no drilling has been carried out since that date.

The database was imported into Micromine v 2016.1 (SP 2) geological modelling software for data validation and modelling. The database contained 167 drill holes, however, 107 of these drill holes were flagged as occurring significantly outside the licence area of Norrberget 300. The remaining 72 drill holes were used for the resource database and block model interpolation.

A summary of the resource database is provided in Table 14-14.

Table 14-14: Summary of Norrberget Mineral Resource Database
Mandalay Resources Corporation – Björkdal Gold Mine

Item	Record Count/Details
Drill Holes	72
Total Length (m)	6,972.10
Downhole Survey	1,607
Lithology	480
Assay Values	5,526
Assay Length (m)	5,385.10

The imported data was validated to check for issues such as duplicate drill holes, survey issues, typos, samples beyond end of hole, etc. One assay sample was identified as being invalid as a result of the From and To depths being the same value. This sample was well below cut-off grade and the depths were corrected to match the neighbouring intercepts. Nine drill holes did not have a collar survey, however, the first downhole survey measurement was taken at a three metre depth.

The resource database is considered by SLR to be sufficiently reliable for grade modelling and Mineral Resource estimation.

14.3.3 Lithology and Mineralization Wireframes

The Norrberget mineralization occurs within bands of veinlets and alteration containing amphibole in a package of interbedded mafic tuffs and volcaniclastics. RPA, now SLR, reviewed the geological logging and was not able to differentiate suitably the grade from waste rock using the lithology and alteration logging. RPA reviewed the assay data statistically and spatially and observed a second gold grade population at approximately 0.4 g/t Au. RPA's wireframes were built based on an approximately 0.4 g/t Au wireframe cut-off grade. The raw gold assay histogram is shown in Figure 14-.

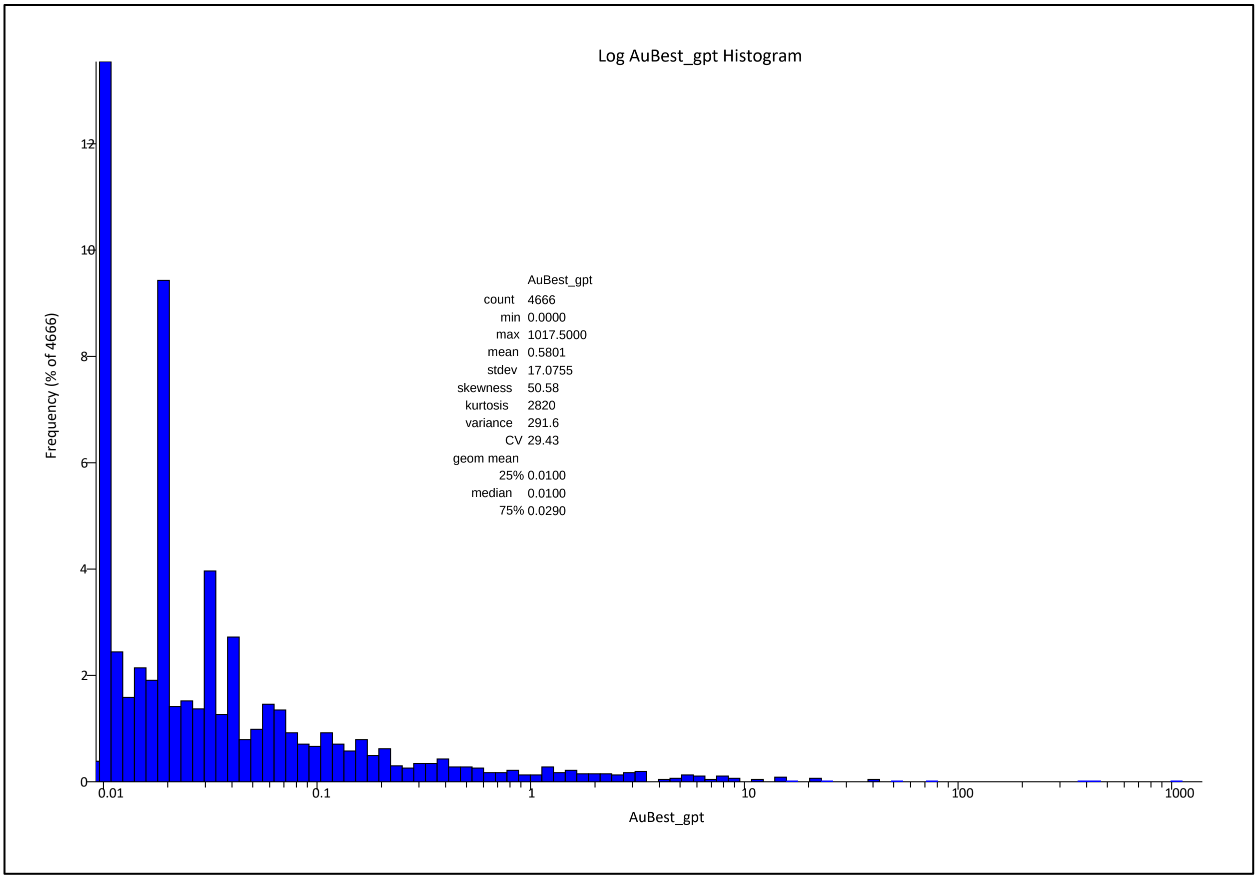


Figure 14-27: Raw Au Data Histogram

Fourteen cross sections were created on a 20° azimuth across the strike of the deposit to match the main direction of drilling. As the drill hole spacing and direction was not a constant, these sections were created between 6 m and 40 m apart, although most were between 20 m and 25 m apart. Due to the variable cross section spacing, each cross-sections window of view extended half the distance to the next cross section to cover the entire deposit.

Polylines were generated around the mineralization and as the mineralization has been observed to be fairly continuous these shapes were extrapolated. A two metre minimum mining width was applied which had the result of bringing in some waste material into the model in small intercepts. Some mineralization below the 0.4 g/t Au cut-off grade was included within the model to allow for geological continuity.

The sectional polylines were joined together in three dimensions to form valid and closed wireframes that contained the mineralization along the length of the deposit. In total three mineralization wireframes were created, one main wireframe that ran the length of the deposit, and two small footwall wireframes that occur at either end. Other above cut-off intercepts occurred in both the hanging and footwall, however these could not be traced to adjacent sections without significant waste material being incorporated and were therefore rejected.

A bedrock surface was generated from contouring the depth of the first bedrock intercept downhole and creating a DTM of the contours. The bedrock surface was used to clip the top of the mineralization wireframes. The final volumes of the mineralization wireframes are:

- Min_1 = 187,642 m^3
- Min_2 = 11,909 m^3
- Min_3 = 14,733 m^3

Figure 14-28 illustrates an orthogonal view of the mineralization wireframes (Pink = Min_1, Orange = Min_2, Red = Min_3) below the topographic surface (brown) supplied by Mandalay.

Additional surfaces were generated through contouring the boundary intercept between the volcanics and mafics and the volcanics and limestone for the purposes of flagging density values to the block model.

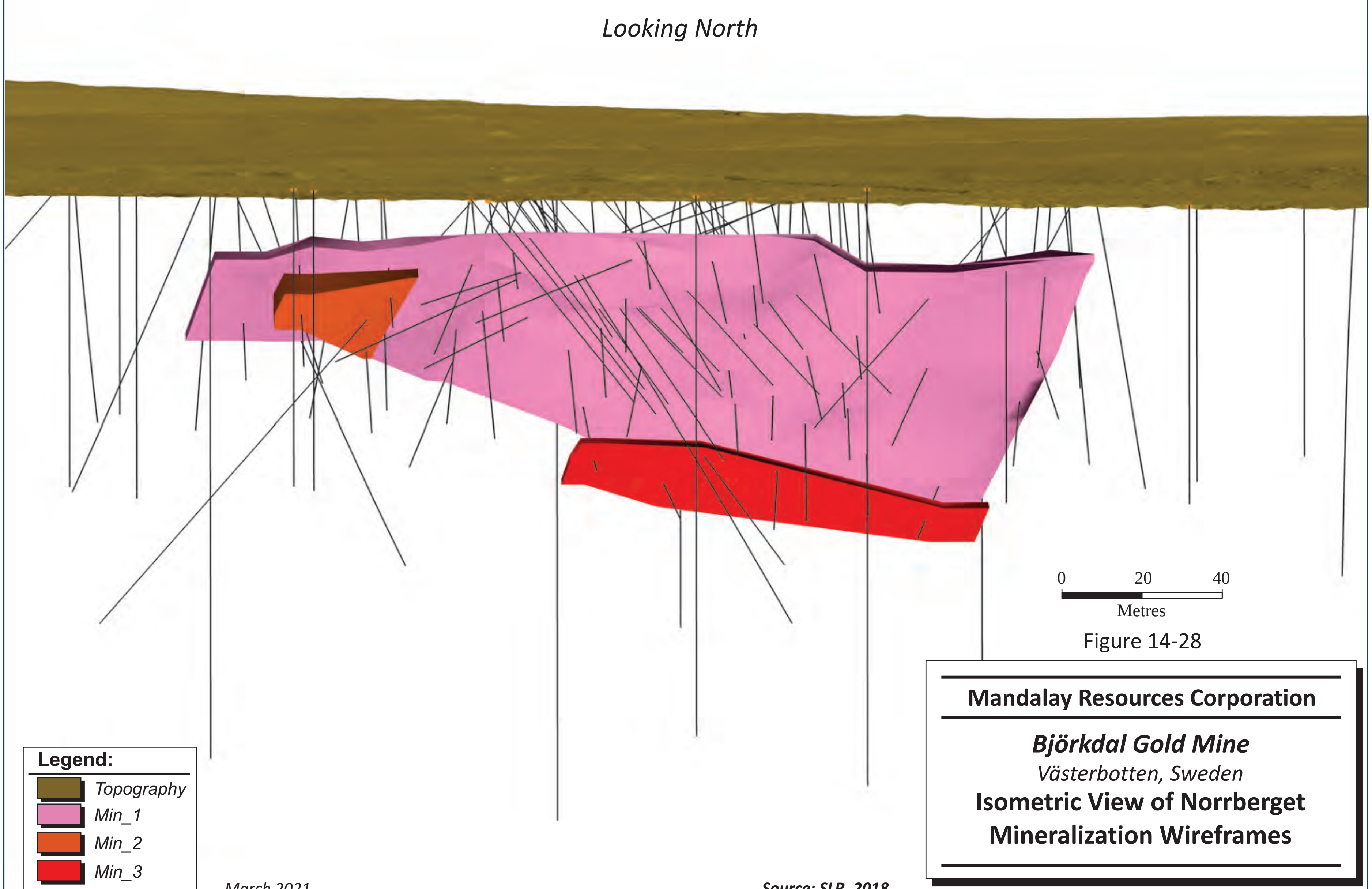


Figure 14-28

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Isometric View of Norrberget Mineralization Wireframes

March 2021

Source: SLR, 2018.

14.3.4 Compositing Methods and Grade Capping

Samples within the domain wireframes were flagged with the domain name. Statistics for samples in the entire dataset and within the domain only are presented in Table 14-15.

Table 14-15: Summary of Norrberget Sample Statistics
Mandalay Resources Corporation – Björkdal Gold Mine

Data	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	Var. (g/t Au)	StDev. (g/t Au)	CV (g/t Au)
All	8,519	0.00	1,017.50	0.36	167.21	12.93	35.79
Within Domains	327	0.00	1,017.50	7.75	4,115.79	64.15	8.28

14.3.5 Grade Capping

Gold projects are often susceptible to nugget effect where anomalous high grades can be encountered during assay analysis. Erratic high grade values can be over-represented during block model interpolation, resulting in significant over-estimation of the local gold grade. Gold values were observed as high as 1,017.5 g/t Au within the Norrberget resource dataset. To remove the influence of these high grade samples, a top-cut (capping) level is applied where the grade is observed to become erratic. Histograms, probability plots, and decile analysis were reviewed for all gold samples contained within the combined mineralization wireframes. The domains were not analyzed separately due to the small sample numbers in domains Min_2 and Min_3. The gold capping analysis is illustrated in Figure 14-.

Table 14-16 outlines the capping values and statistics for the combined mineralized domain.

Table 14-16: Summary of Norrberget Gold Capping
Mandalay Resources Corporation – Björkdal Gold Mine

Metal	Unit	Dataset	Cap	No. of Samples	Min	Max	Mean	StDev	CV	No. of Caps	Metal Loss
Au	g/t	Uncapped	24	311	0.00	1,017.50	7.38	65.55	8.88	7	74%
		Capped			0.00	24.00	1.95	4.66	2.39		

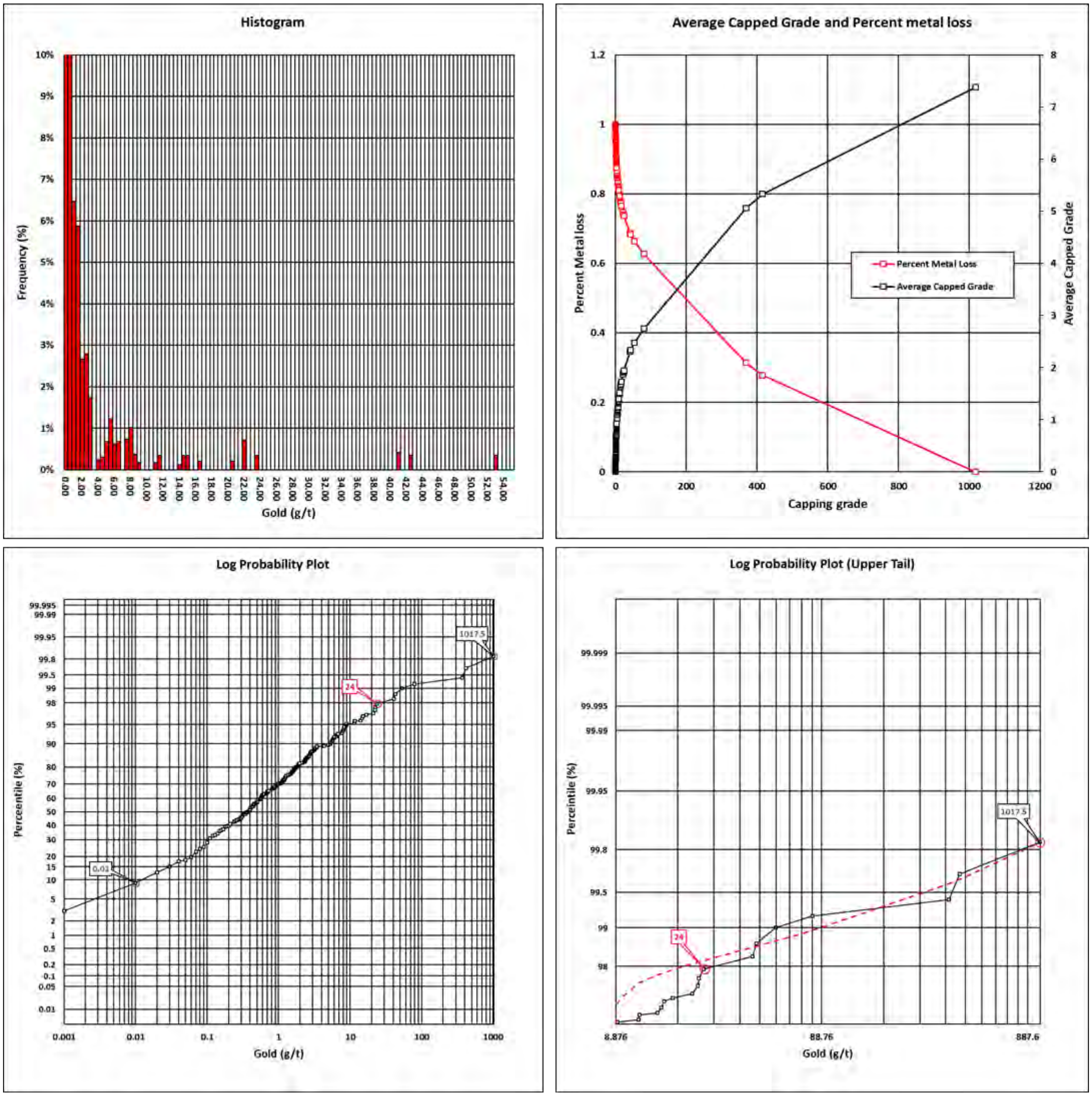


Figure 14-29: Capping Analysis of Gold within Vein Domains, Norrberget

14.3.6 Compositing

Sample lengths within the mineralized domains ranged between 0.35 m and 1.86 m, with over 50% occurring at 1.00 m ± 0.05 m (Figure 14-30). The samples within the mineralized domain wireframes were composited on a one metre interval. Intercepts that were less than 0.50 m after compositing were removed from the estimation database to ensure that they did not overly influence the resource estimation.

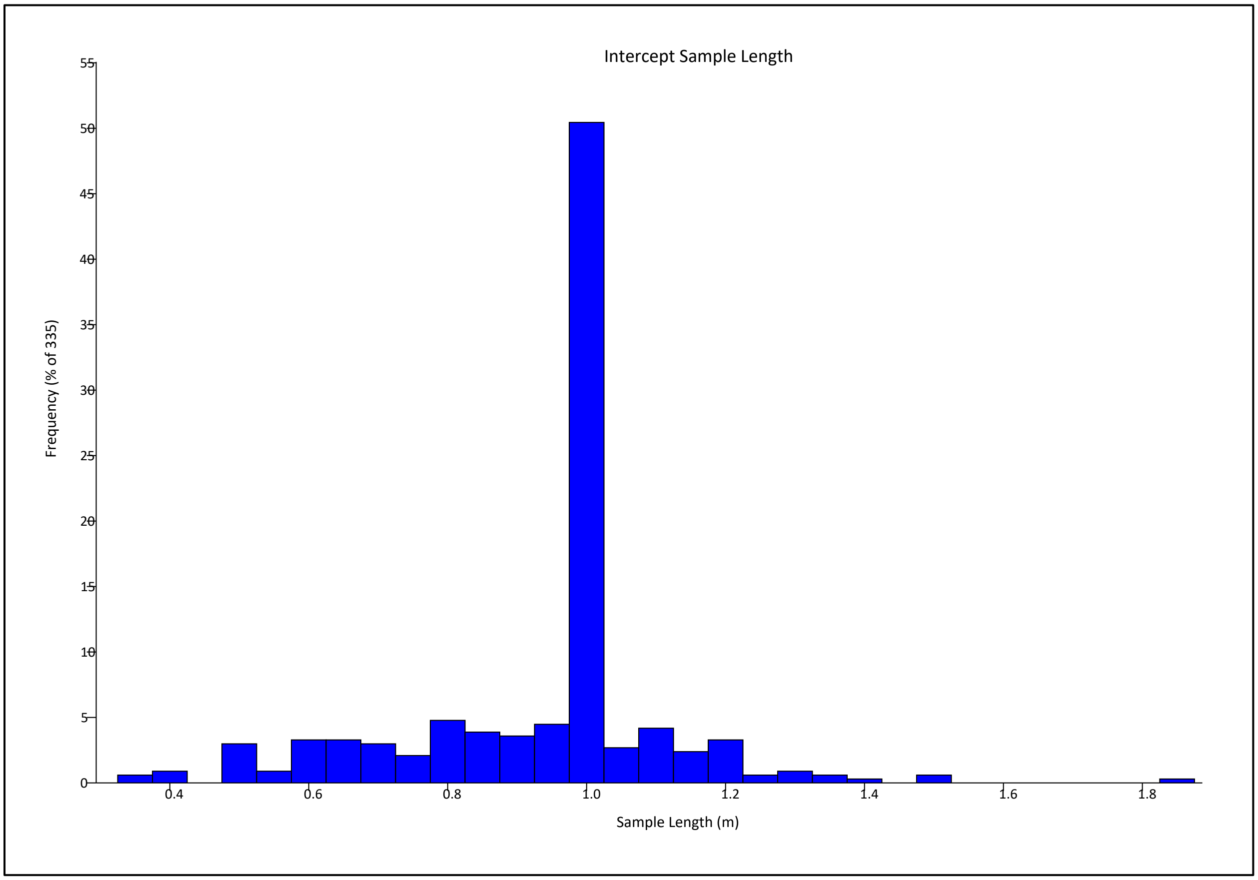


Figure 14-30: Histogram of Sample Lengths within Vein Domains, Norrberget

14.3.7 Bulk Density

Density measurements were taken during a previous exploration program that collected 358 samples from four diamond drill holes. Sample densities were calculated using Archimedean principles of measuring a sample in air and immersed in water. An average bulk density for each lithology is presented in Table 14-17.

Table 14-17: Norrberget Mean Bulk Density by Lithology
Mandalay Resources Corporation – Björkdal Gold Mine

Lithology	Density (g/cm^3)
Overburden	1.80
Mafic Tuff	2.78
Mineralization	2.78
Mafic Volcaniclastic	2.72
Limestone	2.76

14.3.8 Variography

The capped and composited intercepts were loaded into Snowden Supervisor v8.6 for continuity analysis and semi-variogram modelling. Due to the low sample numbers present within the wireframed domains it was not possible to model meaningful semi-variograms.

To review the continuity analysis, the data was loaded into Leapfrog Geo and the gold grade values contoured, which defined a trend for the high grade zone that matched a trend observed in Snowden Supervisor. These trends were used to inform the interpolation parameters.

14.3.9 Block Model Construction

An empty block model was created of sufficient size to encompass the three mineralized domains and allow suitable waste for a pit shape that would be required to constrain the Mineral Resource. A parent block size of 6 m by 4 m by 4 m in the X, Y, and Z directions was used, providing 85 blocks in the X direction, 80 blocks in the Y direction, and 34 blocks in the Z direction. The blocks were rotated by 105° from north to match the strike of the mineralization. The block model has been clipped below the DTM surface supplied by Mandalay. In total, the block model contains 240,291 blocks.

Sub-blocking was applied along the boundaries of the mineralized domains to a minimum of 2.0 m in all directions. The blocks were flagged with each mineralized domain separately so that a hard boundary could be applied. A summary of the block model dimensions is provided in Table 14-18.

Table 14-18: Norrberget Block Model Dimensions
Mandalay Resources Corporation – Björkdal Gold Mine

Origin			Block Model Length (m)			Parent Block Dimension (m)			Minimum Sub Block Size (m)	Block Model Rotation (°)
X	Y	Z	X	Y	Z	X	Y	Z	X, Y or Z	
768,900	7,211,600	0	470	350	130	6.0	4.0	4.0	2.0	105

The block model attributes are outlined in Table 14-19.

Table 14-19: Norrberget Block Model Attributes
Mandalay Resources Corporation – Björkdal Gold Mine

Variables	Default	Type	Description
EAST	0	Real	X Position
NORTH	0	Real	Y Position
RL	0	Real	Z Position
_EAST	0	Float	X Block Size
_NORTH	0	Float	Y Block Size
_RL	0	Float	Z Block Size
SG	0	Real	Specific Gravity
Run	0	Character	Search Pass Number
Class	0	Character	Block Classification
Domain	0	Character	Mineralisation Domain Name
RPA_Cap_Au	0	Real	Capped Au Grade
AuBest_gpt	0	Real	Uncapped Au grade
POINTS	0	Short	Number of Samples Used
STD_DEV	0	Real	Standard Deviation
Hole Count	0	Short	Number of Drill Holes Used
AVERAGE DISTANCE	0	Float	Average Distance of Samples
CLOSEST DISTANCE	0	Float	Closest Sample Distance
NN_RPA_Cap_Au	0	Real	Nearest Neighbour Au Grade

The block model was flagged using ID^3 for the blocks as no meaningful variograms could be modelled. A simultaneous Nearest Neighbour (NN) interpolation was undertaken using the same parameters to provide a check against the ID^3 model.

The orientation and radius of the search ellipse were calculated using the parameters observed during the continuity analysis. The continuity analysis highlighted a perceived strong 15° plunge to the deposit.

Three passes of a search ellipsoid were undertaken during interpolation, each run having an increasing search radius and a decreasing minimum number of interpolants to ensure that all blocks were interpolated with an estimated grade. All domains were estimated using a hard boundary. The parameters used for the ID^3 interpolation are outlined in Table 14-20.

Table 14-20: Norrberget Block Model Interpolation Parameters
Mandalay Resources Corporation – Björkdal Gold Mine

Run	Axis 1 Radius (m)	Axis 2 Radius (m)	Axis 3 Radius (m)	Max Samples	Max Samples Per Hole	Min Points (Total)	Min Holes	Search Ellipse		
								Azi (°)	Plunge (°)	Dip (°)
1	33.3	16.6	16.6	12	2	3	3	5	15	5
2	50	25	25	8	2	3	2	5	15	5
3	100	25	25	8	2	1	1	5	15	5

14.3.10 Block Model Validation

SLR reviewed the interpolated block model to ensure that it is representative of the input data. This validation used the following methodologies:

- Volumetric comparison between domain wireframes and flagged block model.
- Visual comparison of composite grade to interpolated block grades in plan and long/cross section.
- Statistical comparison between raw, composite, and interpolated block grades.
- Swath plots comparing the interpolated block grades (ID^3 and NN) against composite sample grades.

14.3.10.1 Comparison of Composite Samples to Block Model

A comparison between the wireframe volume and the resultant flagged block model volume is presented in Table 14-21.

Table 14-21: Norrberget Wireframe Volumes versus Block Model Volumes
Mandalay Resources Corporation – Björkdal Gold Mine

Domain	Wireframe Volume (m^3)	Block Model Volume (m^3)	Difference	
			(m^3)	(%)
Min_1	187,643	186,272	-1,371	-0.73%
Min_2	11,909	12,128	219	1.84%
Min_3	14,734	16,088	1,354	9.19%
Total	**214,286**	**214,488**	**202**	**0.09%**

The results show that although there are some significant differences between the wireframe volumes in Min_2 and Min-3, most likely a result of the limited volume of these domains resulting in a higher chance that the centroid of the block will occur near the edges of the wireframe. The main mineralized domain (Min_1), however, has a much smaller volume difference (-0.73%). When compared overall, the difference between the wireframe volumes and the block model volumes are negligible. This indicates that the trade-off between the block size and minimum practical block size for Mineral Resource estimation purposes is at an acceptable level.

Table 14-22 summarizes the statistical properties of the ID^3 Norrberget block model.

Table 14-22: Norrberget Block Model Statistics
Mandalay Resources Corporation – Björkdal Gold Mine

Domain	Count	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	Variance	StDev	CV
Min_1	7,740	0.00	18.01	1.50	3.63	1.91	1.27
Min_2	358	0.00	4.23	0.80	1.33	1.15	1.44
Min_3	910	0.03	3.32	0.96	0.78	0.88	0.92

Table 14-23 outlines the minimum, maximum, and mean grade for the capped assays, composited intervals and the block model.

Table 14-23: Comparison of Norrberget Au Statistics
Mandalay Resources Corporation – Björkdal Gold Mine

Domain	Capped Assay (g/t Au)			Composites (g/t Au)			Block Model (g/t Au)		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Min_1	0.00	24.00	2.09	0.00	24.00	2.03	0.00	18.01	1.50
Min_2	0.00	5.62	0.64	0.00	5.62	0.67	0.00	4.23	0.80
Min_3	0.02	5.05	1.34	0.02	5.05	1.34	0.03	3.32	0.96

14.3.10.2 Visual Comparisons

Figure 14-31 and Figure 14-32 illustrate a visual comparison of the block grade versus the composite grade in section and plan, respectively. These images show that the block grade is appropriate to the local scale composite grade and that it does not appear that the block model is over smoothed. The intersection appears significantly smaller than the blocks in Figure 14-31 as a result of the steep drill hole angle and relatively shallow domain relative to the plan view.

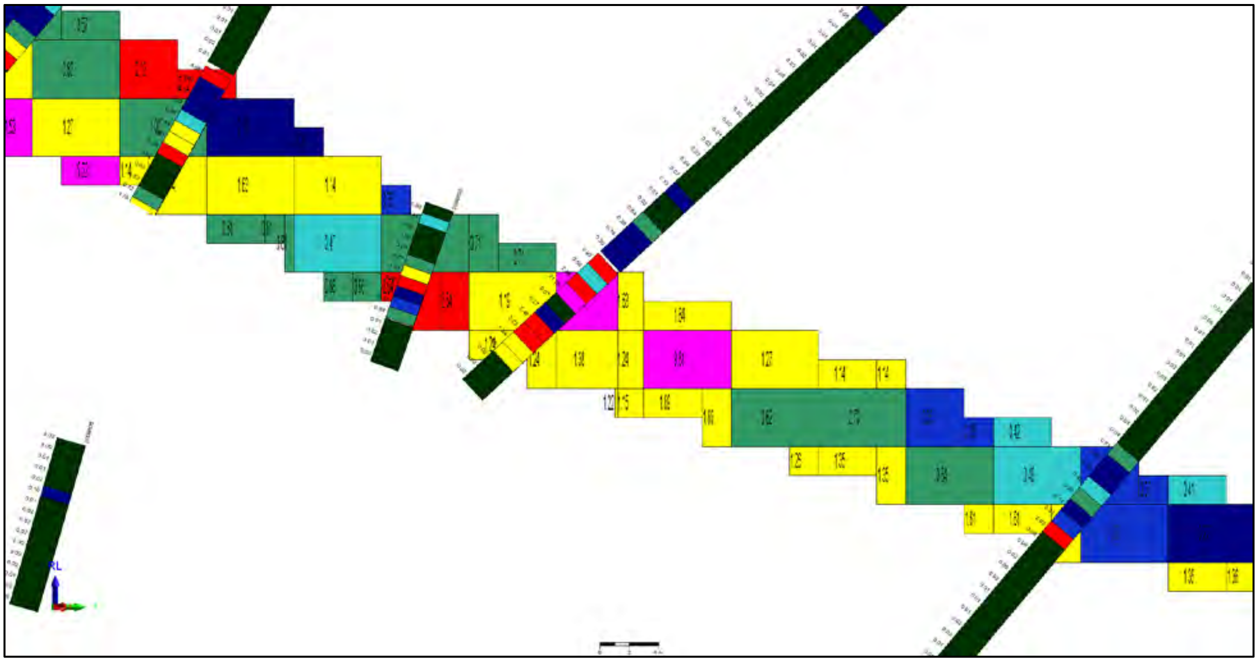


Figure 14-31: Norrberget Cross Section of Block Grade versus Composite Grade

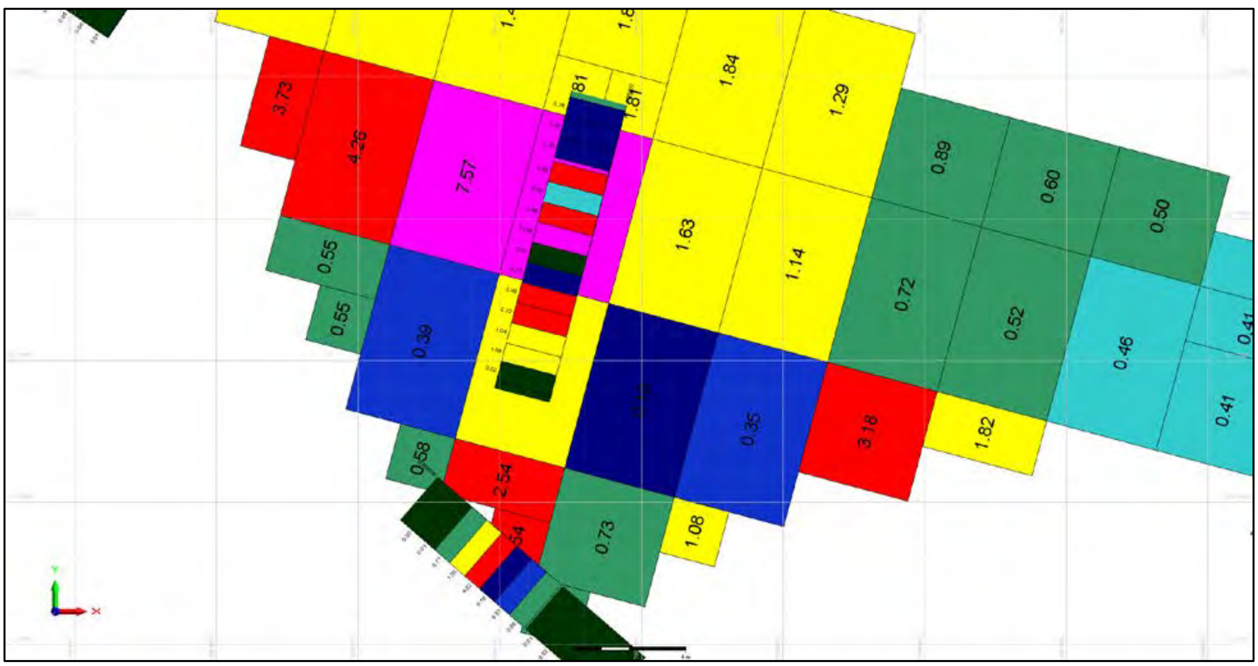


Figure 14-32: Norrberget Plan of Block Grade versus Composite Grade

14.3.10.3 Swath Plots

The trend (swath) plots presented in Figure 14-33 to Figure 14-35 compare the capped composite grades against the ID^3 and NN interpolations along a particular orientation. These plots indicate that the ID^3 block model is supported by the underlying data and that the grade is not overly smoothed.

These results indicate that the block model grade is reflective of the input capped and composited sample grades.

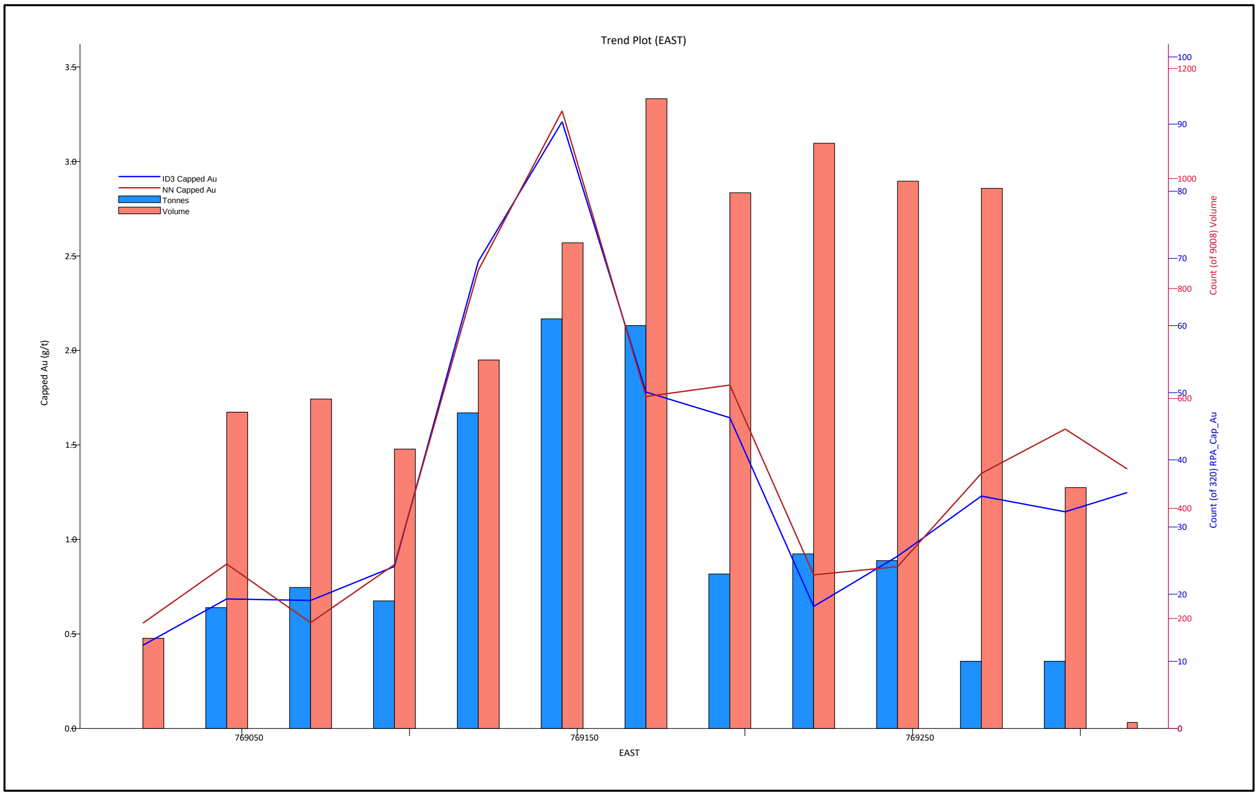


Figure 14-33: Trend Plot (East) Analysis of ID^3 and NN Analysis Versus Composite Samples, Norrberget

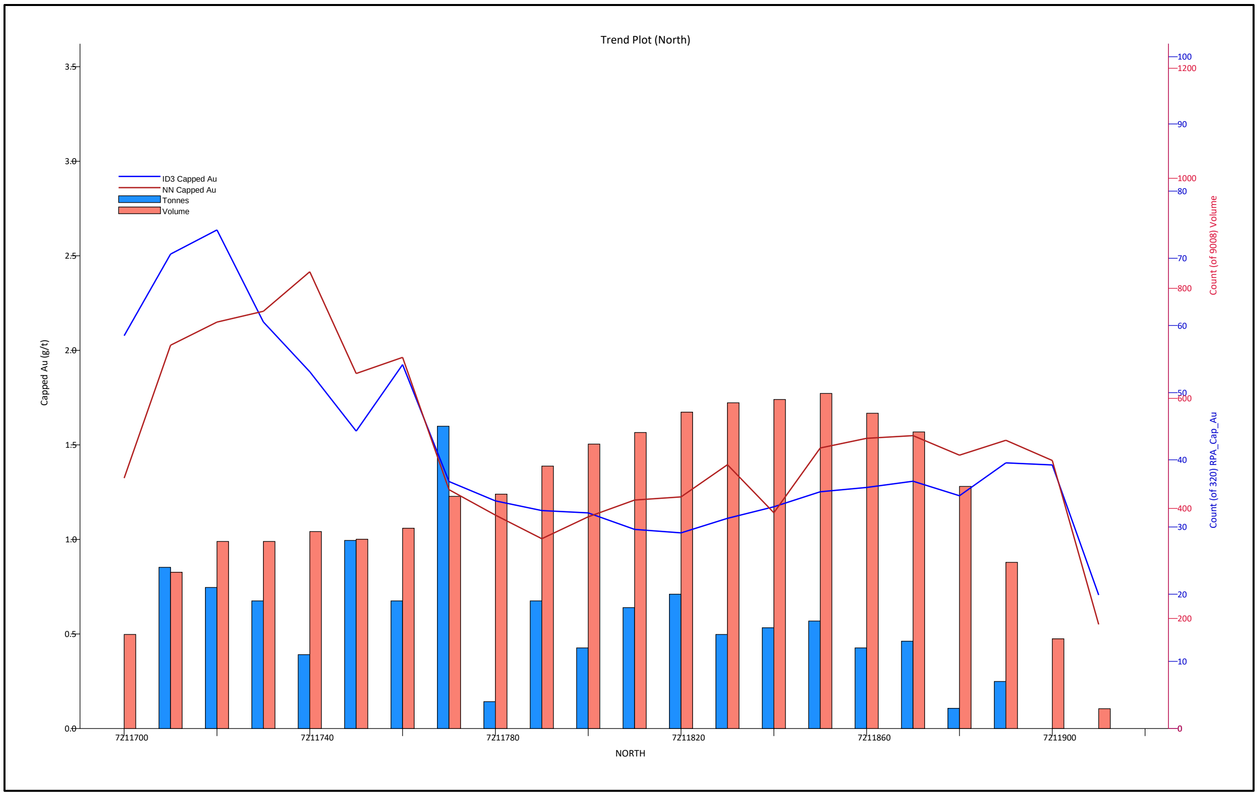


Figure 14-34: Trend Plot (North) Analysis of ID³ and NN Analysis Versus Composite Samples, Norrberget

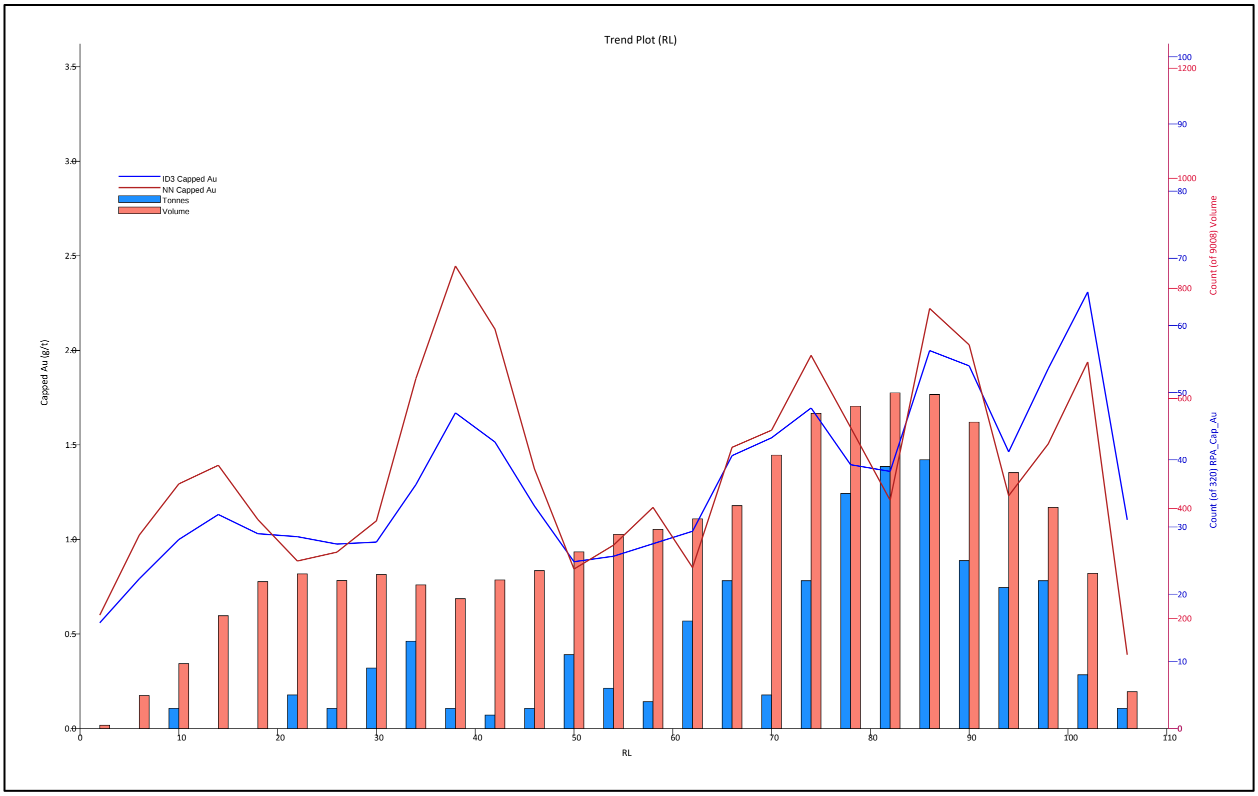


Figure 14-35: Trend Plot (Elevation) Analysis of ID³ and NN Analysis Versus Composite Samples, Norrberget

14.3.11 Mineral Resources Classification Criteria

Definitions for resource categories used in this Technical Report are consistent with CIM (2014) definitions and adopted by NI 43-101.

It has previously been reported by Geovista in March 2017 that no drill holes prior to 2004 have QA/QC data available for them. This was taken into account when classifying the Mineral Resource. Wireframes were created to surround areas of potential similar classification to ensure that the classification was contiguous and no spotted dog classification was applied. Some blocks were included within the classification wireframes that may not meet the criteria for the purposes of continuity.

Indicated blocks were those which was interpolated by drill holes that had an average spacing of less than 40 m for drill holes completed since 2004, interpolated primarily within pass one or two and are within domain Min_1.

Inferred blocks were blocks that did not meet the classification parameters for Indicated and all blocks within the two smaller domains (Min_2 and Min_3) due to their limited number of interpolants. Inferred material included blocks that were primarily interpolated using pre-2004 drill holes.

14.3.12 Responsibility for the Estimate

The estimate of the Mineral Resources for Norrberget presented in this Technical Report was prepared by Mr. Jack Lunnon, CGeol, under the supervision of Reno Pressacco, P.Geo., both of whom are Qualified Persons as defined in NI 43-101, and is independent of Mandalay.

14.3.13 Cut-Off Grade and Resource Reporting Criteria

The cut-off grade for the Norrberget deposit was developed using the January to September 2017 actual cost information along with a gold price of US$1,400 per ounce and an exchange rate of 9.0 SEK/US$. The cut-off grade for reporting of Mineral Resources was determined to be 0.35 g/t Au.

To fulfill the NI 43-101 requirement of "reasonable prospects for eventual economic extraction", Mandalay prepared a preliminary open pit resource shell using the Whittle parameters used in Section 15 and based on a gold price of US$1,400 per ounce.

The criteria used to report the Mineral Resources at Norrberget included:

- All blocks located above the resource pit surface.
- All blocks with a grade above 0.35 g/t Au.
- A Mineral Resource category of either Indicated or Inferred.

14.3.14 Norrberget Deposit Mineral Resource Estimate

Table 14-24 presents the Norrberget Mineral Resource estimate as of September 30, 2017.

Table 14-24: Summary of Norrberget Mineral Resources as of September 30, 2017
Mandalay Resources Corporation – Björkdal Gold Mine

Category	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
Measured	-	-	-
Indicated	144	3.29	15
Total Measured + Indicated	**144**	**3.29**	**15**
Inferred	3	4.03	0.5

Notes:

1. Norrberget Mineral Resources are estimated using drill hole and sample data as of September 30, 2017.
2. CIM (2014) definitions were followed for Mineral Resources.
3. Mineral Resources are inclusive of Mineral Reserves.
4. For Norrberget, a nominal two metres minimum mining width was used to interpret veins using diamond drill and reverse circulation drill samples.
5. Bulk density is 2.74 t/m^3.
6. High gold assays at Norrberget were capped at 24 g/t Au.
7. Interpolation was by inverse distance cubed.
8. Open pit Mineral Resources are estimated at a cut-off grade of 0.35 g/t Au and constrained by a resource pit shell.
9. Mineral Resources are estimated using an average gold price of US$1,400/oz and an exchange rate of 9.0 SEK/US$.
10. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
11. Numbers may not add due to rounding.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

15.0 MINERAL RESERVE ESTIMATE

15.1 Summary

The Mineral Reserves estimated by Mandalay, with an effective date of December 31, 2020, are listed in Table 15-1. The total Mineral Reserve estimate for the Björkdal Mine and Norrberget deposit is 11.49 Mt at a grade of 1.47 g/t Au, for a total of 544,000 oz Au. The Mineral Reserve estimate for Norrberget is 162,000 tonnes at a grade of 2.80 g/t Au, for a total of 15,000 oz Au.

Table 15-1: Summary of Mineral Reserves at the Björkdal Mine and Norrberget Deposit as of December 31, 2019
Mandalay Resources Corporation – Björkdal Gold Mine

Location	Area	Tonnage (kt)	Grade (g/t Au)	Contained Au (koz)
		Probable Mineral Reserves		
Björkdal	Open Pit	3,157	1.05	106
	Underground	5,623	2.05	371
Norrberget	Open Pit	162	2.80	15
Stockpiles	Stockpiles	2,551	0.64	53
Total Probable Mineral Reserve		**11,493**	**1.47**	**544**

Notes:

1. Björkdal Mineral Reserves are estimated using drill hole and sample data as of September 30, 2020 and depleted for production through December 31, 2020.
2. Norrberget Mineral Reserves are based on a data cut-off date of September 30, 2017.
3. CIM definitions (2014) were followed for Mineral Reserves.
4. Open Pit Mineral Reserves are based on mine designs carried out on an updated resource model, applying a block dilution of 100% at 0.0 g/t Au for blocks above 1.0 g/t and 100% at in-situ grade for blocks below 1.0 g/t, but above a cut-off grade of 0.32 g/t Au. The application of these block dilution factors is based on historical reconciliation data. A marginal cut-off grade of 0.32 g/t Au was applied to estimate open pit Mineral Reserves.
5. Underground Mineral Reserves are based on mine designs carried out on an updated resource model. Minimum mining widths of 3.85 m for stopes (after dilution) and 4.35 m for development (after dilution) were used. Stope dilution was applied by adding 0.5 m on each side of stopes as well as an additional 10% over break dilution. Further dilution, ranging from 5% to 50%, was added on a stope-by-stope basis depending on their proximity to other stopes. An overall dilution factor of 25% was added to development designs. Mining extraction was assessed at 95% for contained ounces within stopes and 100% for development. A cut-off grade of 0.87 g/t Au was applied to material mined within stopes. An incremental cut-off grade of 0.32 g/t Au was used for development material.
6. Stockpile Mineral Reserves are estimated at a cut-off grade of 0.32 g/t Au and are based upon surveyed volumes supplemented by production data.
7. Mineral Reserves are estimated using an average long-term gold price of US$1,500/oz for Björkdal, US$1,300/oz for Norrberget, and an exchange rate of 9.0 SEK/US$.
8. Tonnes and contained gold are rounded to the nearest thousand.
9. Totals may not sum due to rounding.

The QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

15.2 Björkdal

15.2.1 Open Pit Optimization

Potential pits were evaluated using the Deswik software package, which employs the Pseudoflow pit optimization algorithm. The parameters used to derive the selected pit optimization are presented in Table 15-2. The pit optimization was completed in 2020. As the open pit mining was stopped in 2019 and deferred to 2024, the economic parameters will need to be updated again at a later stage.

Overall pit slopes of 45° and 50° were determined using actual pit slope angles achieved in the main pit. The overall pit slopes for Nylunds were approximately 42° after accounting for ramps which had a larger impact on overall slope angles since the Nylund pits are much smaller than the main pit. Operating costs and mill recovery are based on actual operating data from 2019 and 2020.

Dilution and extraction factors are based on a reconciliation data exercise and are discussed in detail in Section 14 of this Technical Report.

A selective mining unit (SMU) of 5 m x 3 m x 3 m was used in the block model but was re-blocked in Deswik to 10 m x 6 m x 6 m to improve processing time.

Table 15-2: Björkdal Reserve Pit Optimisation Parameters
Mandalay Resources Corporation – Björkdal Gold Mine

Parameter	Unit	Input
Pit Slopes (Main Pit)	degrees	45 to 50
Pit Slopes (Nylunds)	degrees	42
Pit Slopes (Overburden)	degrees	18
Mining Cost (Rock)	SEK/t	24.00
	US$/t	2.67
Process and General & Administrative Cost	SEK/t	137.30
	US$/t	15.26
Process Recovery	%	88.3
Mining Extraction	%	100
Mining Dilution	%	100
Base Gold Price	US$/oz Au	1,500
Exchange Rate	SEK/$US	9.0
Block Size	m	5x3x3
Block Size (re-blocked)	m	10x6x6

Several pit shells were run and the results show that the majority of ore tonnage in the pit optimization is located in the crown pillar along the north wall of the pit. This pillar contains the two main portal accesses to the underground operation and associated infrastructure and mine services.

15.2.2 Dilution and Extraction

15.2.2.1 Open Pit

Historically, the mining parameters and loading equipment allowed for reasonably good selectivity, however, dilution levels are much higher than typical open pit parameters given the thin veined nature of the Björkdal deposit.

The open pit contains "A-ore", which is ore with a grade greater than 1.0 g/t Au, while "B-ore" has a grade of 0.32 g/t Au to 1.0 g/t Au. Historically, the bulk of the lower grade ore was stockpiled, which led to the creation of a large stockpile, which is now being processed.

More than a year (2018 to 2019) of reconciled open-pit A-ore production was compared against the modelled tonnes and grade on a blast by blast basis. While the contained ounces of the A-ore reconciles well with the model, the tonnage is significantly understated. This is because the tonnes were previously reported using a block cut-off grade rather than a mining shape. The compiled data supports the use of a block dilution of 100% at zero grade for blocks above 1.0 g/t Au.

Based on the historical reconciliation data, a tonnage dilution factor of 100% at the estimated grade was applied to all blocks between 0.32 g/t Au and 1.0 g/t Au. As a result, a significant amount of low grade dilution, as well as additional tonnes of low-grade material that was not in the reserve estimate, was mined.

SLR recommends an improved reconciliation process be implemented when open pit production recommences, that compares the block model, grade control model, and declared ore mined (mill data). Following this process, the minimum selective mining widths, and the anticipated planned and unplanned dilution forecasts, should be updated together with, if possible, an estimate of the additional low-grade material that will likely be mined.

15.2.2.2 Underground

A detailed underground reconciliation exercise was completed in 2018, 2019, and 2020 which compared design against actual production from a large number of stopes, with estimates for dilution and underbreak. The 2020 reconciliation indicated that the long-term diluted forecast underestimated the tonnes by 13% and the gold content by 14%. These values average a wide range of underbreak and dilution across the stopes. In general, the planned and unplanned dilution is just under 50%. This is in line with the factors used in the mine design. Losses from both ore tonnes and ounces as a result of underbreak are fully accounted for.

For the long-term design, dilution was applied in the Deswik software package and was assigned to the stope shapes as 0.5 m in the footwall and 0.5 m in the hanging wall. The minimum mining width is 2.5 m, which results in a final minimum width of 3.5 m after dilution is applied. Additionally, general dilution of 10% was added to each stope. Further dilution, ranging from 5% to 50%, was added on a stope-by-stope basis depending on a stope's proximity to other stopes.

A mining recovery rate of 95% was applied to stope ore tonnes. No losses were applied to development ore.

15.2.3 Cut-Off Grade

15.2.3.1 Open Pit

Based on the reconciliation exercise between the 2018 block model and the 2018 mill data explained in Section 14, an additional block dilution factor of 100% was applied in Deswik during optimization, which accounts for both planned and unplanned dilution. The inclusion of dilution in the optimization process increases the effective cut-off grade and results in a smaller pit shell since ore blocks will have to carry a higher grade to offset the additional dilution material that would be processed.

In the December 31, 2020 Mineral Reserve estimate, a final pit design was carried out based on the selected optimised shell, revenue factor (RF) = 0.94.

Mining solids were created from the final pit designs and the resource block model was used to report tonnes and grade for all blocks above the in-situ 0.32 g/t Au cut-off grade. The in-situ cut-off grade is calculated as a pit discard cut-off using processing, and part of the overhead costs (G&A, Maintenance, TCRC), for the operating costs. It is assumed that once the material is mined, it will either be sent to the mill or the LOM stockpile for processing at the end of the operation. The blocks above the cut-off grade were then reported as Mineral Reserves and form the basis of the LOM plan.

15.2.3.2 Underground

The cut-off grade for underground mining was calculated based on several criteria. Consideration was given to the type of mining activity on which the cut-off parameter would be applied. The cut-off grades apply to the run-of-mine (ROM) head grade and are not in-situ grades as they include dilution and losses. For stopes, a cut-off grade of 0.87 g/t Au was derived, while for development, a lower cut-off grade of 0.32 g/t Au was calculated. SLR notes that the reduced development cut-off grade is lower than the 2019 value of 0.39 g/t Au due in large part to the increase in gold price during 2020. Both of these grades are marginal cut-off grades.

The stoping cut-off grade is based on the direct stoping cost average from 2019 and 2020, and excludes all development, making it a marginal cut-off grade. Based on the inclusion of the full cost of mining in 2020, a full cost cut-off grade is approximately 1.19 g/t Au.

Underground optimisation was carried out in three stages:

- Individual stope optimisation.
- Stope and access development combined.
- Optimisation on an area basis.

All development cost has thus been accounted for in the various cut-off grade calculations.

The 0.32 g/t Au cut-off grade is the grade at which processing the development material becomes economically viable. As this material will be mined anyway to access the stopes, the only costs to consider when determining whether it should be processed or discarded are the processing costs.

The 0.32 g/t Au cut-off grade for development material is consistent with the pit discard calculation for open pit mining. The cut-off grade calculation is shown in Table 15-3.

Table 15-3: Björkdal Underground Cut-off Grade Calculation
Mandalay Resources Corporation – Björkdal Gold Mine

Parameter	Unit	Value
Metal Price	US$/oz	1,500
Exchange Rate	SEK/US$	9.0
Process Recovery	%	88.3
Net Payable	%	98.3
Stoping Cost	US$/t	16.95
Process Cost	US$/t	8.06
G&A Cost	US$/t	6.43
Maintenance Cost	US$/t	3.73
Transport and Refining Cost	US$/t	1.09
Cut-Off Grade Cost	US$/t	36.26
Cut-Off Grade	g/t Au	0.87
Incremental Cut-Off Grade	g/t Au	0.32

Costs were based on Björkdal's actual stoping and other costs for 2019 and 2020. As production is forecast to increase slightly from underground during 2021, in SLR's opinion, these costs are likely to be conservative.

Metal prices used for Mineral Reserves are based on consensus, long-term forecasts from banks, financial institutions, and other sources. For Mineral Resources, metal prices used are slightly higher than those for Mineral Reserves.

15.3 Norrberget

15.3.1 Open Pit Optimization

The following description for Norrberget was taken from the 2018 Technical Report (RPA, 2018). No changes have been made to the Mineral Reserve estimate since the underlying assumptions have not materially changed with the exception of the exchange rate (Table 15-4).

Table 15-4: Norrberget Reserve Pit Optimisation Parameters
Mandalay Resources Corporation – Björkdal Gold Mine

Parameter	Unit	Input
Pit Slopes (South West Wall)	degrees	36
Pit Slopes (North West and North East Walls)	degrees	52

Parameter	Unit	Input
Pit Slopes (Overburden)	degrees	25
Mining Cost (Overburden)	US$/t	1.55
Mining Cost (Solid Waste)	US$/t	2.50
Mining Cost (Ore)	US$/t	2.97
Process Cost	US$/t	7.63
General and Administrative Cost	US$/t	6.65
Process Recovery	%	75
Mining Extraction	%	100
Mining Dilution	%	15
Base Gold Price	US$/oz Au	1,200
Block Size	m	6x4x4

Pit slopes were determined based on a geotechnical assessment carried out by SRK Consulting (SRK) in October 2017 (Di Giovinazzo, 2017). The northwest and northeastern wall sectors have slope angles of 52° while the southwest (footwall) sector has a slope angle of 36°.

A dilution factor of 15% and extraction factor of 100% was added based on reconciled production data from mining shallow dipping structures at Björkdal.

The pit optimization was carried out at the parent block size of 6 m x 4 m x 4 m.

Mining costs were based on actual 2017 mining costs at Björkdal, the higher cost of mining ore (increase of approximately 19%) is due to the longer trucking distance to the Björkdal Mill. An overall gold recovery of 75% was used at the time.

15.3.2 Dilution and Extraction

As no production has taken place at Norrberget, a reconciled dilution and extraction factor cannot be obtained. A dilution factor of 15% and extraction factor of 100% has previously been drawn out of reconciled production data from mining shallow dipping structures at the Björkdal open pit, and therefore it is reasonable to assume that the similar conditions at Norrberget will yield similar results.

15.3.3 Cut-Off Grade

After the pit optimization was completed, a final pit design was carried out based on the selected optimised shell. Mining solids were created from the final pit design shells and the resource block model was used to report tonnes and grade for all blocks above the in-situ 0.4 g/t Au cut-off grade for Björkdal. The in-situ cut-off grade is calculated as a pit discard cut-off using only the processing and G&A costs as operating costs, since it is assumed that once the material is mined, it will either be sent to the mill or the waste dump. The blocks above the cut-off grade were then reported as Mineral Reserves and form the basis of the LOM plan.

SLR recommends that the Norrberget pit be re-optimised based upon any additional drilling information prior to the planned commencement of mining operations in 2028. Additionally, hauling marginal ore from Norrberget to the Björkdal Mill, will be expensive and it is recommended that the Norrberget marginal cut-off grade be re-evaluated.

16.0 MINING METHODS

The current environmental permit limits the total Björkdal production capacity to 1.70 Mtpa. In 2020, 1.32 Mt of ore was processed and 1.30 Mtpa is planned for 2021. Prior to 2020, production was split between the underground mine and the open pit. In 2019, mining of the open pit was stopped for economic reasons and this production was replaced with ore from the low grade stockpile and an increase in underground production. The remaining open pit material remains economically viable, however, the low grade stockpile realizes more value, so open pit mining has been deferred for several years until the stockpile is run-down and open pit production is needed to offset reducing underground production.

During 2020, 1,071,000 tonnes of ore were mined from underground, all of which were processed. Additional mill feed tonnage came from the stockpile, (249,000 tonnes), for a total mill throughput of 1,320,000 tonnes. The open pit did not produce any ore during 2020.

The current production strategy is to maximize the underground extraction with the remaining ore coming from stockpiles. Underground production for 2021 is planned to be 960,000 tonnes which is derived from the updated Resource Model and Mineral Reserves. The current 2021 Mining Budget includes additional material and was derived from the previous Resource Model. No production from the open pit is planned in 2021. Instead, 340,000 tonnes of ore will be drawn from the stockpile to make up the balance of the mill feed.

As presently envisaged in the LOM plan, open pit pre-stripping and production will be restarted in 2024 to supplement the decrease in production from the underground mine.

16.1 Björkdal

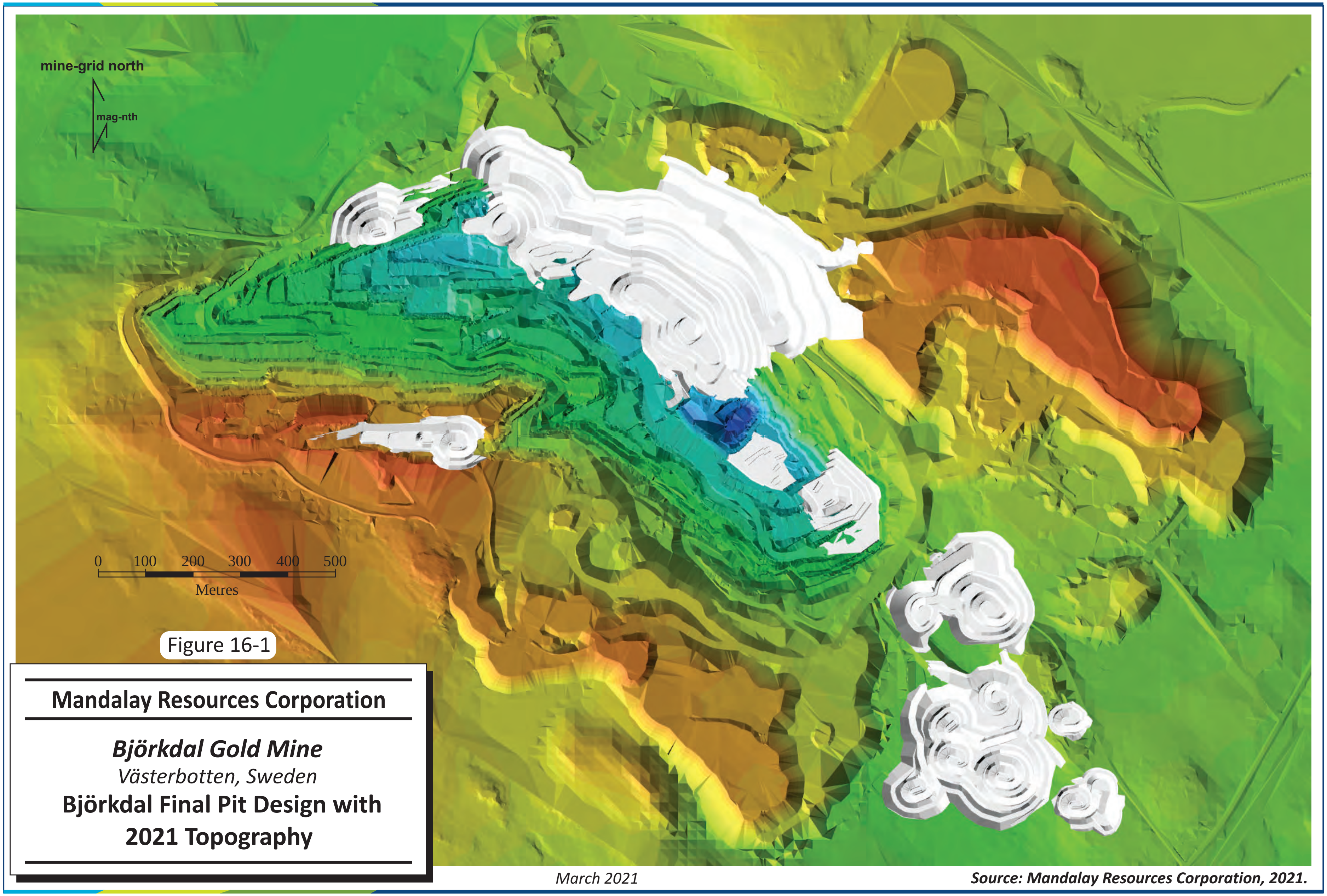
16.1.1 Mine Design

16.1.1.1 Open Pit

During 2020, potential for expanding the current open pit at Björkdal was re-evaluated using the Deswik software. The parameters used to derive the selected pit optimization have been presented in Table 15-2. Several pit optimisations were run and the results demonstrate that the majority of ore tonnage is located in the crown pillar along the north/east wall of the pit. A final pit design was carried out based on the selected optimised shell.

Mining solids were created from the final pit designs and the resource block model was used to report tonnes and grade for all blocks above the in-situ 0.32 g/t Au cut-off grade. The in-situ cut-off grade is calculated as a pit discard cut-off using processing, and part of the overhead costs (G&A, Maintenance, Refining charges), for the operating costs. It is assumed that once the material is mined, it will either be sent to the mill or LOM stockpile for processing at the end of the operation. The blocks above the cut-off grade were then reported as Mineral Reserves and form the basis of the LOM plan.

A pit design was generated from the selected optimisation shell produced from the use of Deswik mine planning software. The final pit outline, along with the mid-2019 final topography, when open pit mining was halted, is presented in Figure 16-1.


mine-grid north
mag-nth
0 100 200 300 400 500
Metres
Figure 16-1
Mandalay Resources Corporation
Björkdal Gold Mine
Västerbotten, Sweden
Björkdal Final Pit Design with 2021 Topography
March 2021
Source: Mandalay Resources Corporation, 2021.

The final pit bottom in the crown pillar area is at the -215 level. Single ramps, with widths of 15 m, are used in the first series of benches to access ore at the bottom of the crown pillar area. These single ramps converge into a double ramp at the -140 level pit and finish at the northeast side of the pit rim. The pit is designed slightly wider than the optimised shell in order to achieve a reasonable mining width to operate the equipment. While there is currently no fleet in operation, SLR considers the 30 m to 40 m minimum mining width to be reasonable for the size of mining fleet envisaged.

Benches are 5 m high, and are taken in groups of two to four with an 8 m to 10 m wide berm every 10 m to 20 m. A 72° to 85° bench face angle (BFA) is used to give an overall wall slope of 42° to 52°.

The pit design parameters used are shown in Table 16-1.

Table 16-1: Björkdal Pit Design Parameters
Mandalay Resources Corporation – Björkdal Gold Mine

Parameter	Unit	Input
Overall Slope Angle	degrees	42-52
Bench Face Angle	degrees	72-85
Berm Width	m	8-10
Bench Height	m	5
Benches per Berm	#	2-4
Double Ramp Width	m	24
Single Ramp Width	m	15
Ramp Slope	%	10

16.1.1.2 Underground

Indicated Mineral Resource blocks greater than 0.75 g/t Au were used as a basis for initial stope designs generated by Auto Stope Designer, an automated layout function that is part of Deswik software. Stope design parameters are presented in Table 16-2.

Table 16-2: Björkdal Underground Stope Design Parameters
Mandalay Resources Corporation – Björkdal Gold Mine

Parameter	Unit	Input
On-Vein Development Size	m	3.8 m wide x 4.9 m high
Maximum Stope Height	m	25
Undiluted Minimum Mining Width	m	2.5
Allowance for Overbreak	m	0.5 x 2
Diluted Minimum Mining Width	m	3.5
Maximum Mining Width	m	12
Minimum Inter-Vein Pillar Width	m	5
Stope Mining Extraction	%	95

Parameter	Unit	Input
On-Vein Mining Extraction	%	100
Block Size	m	5 x 3 x 5
Design Cut-off Grade Based on US$1,500/oz Au	g/t Au	0.87

The resulting stopes were evaluated manually and adjustments were made where necessary. Stopes were evaluated based on size, grade, and relative distance to existing development. Stopes that were not economically viable were removed from reserves. Most stopes that were within five metres of each other were combined into larger stopes and dilution was applied based on the additional internal waste captured in the new stope. The five metre pillar requirement is based on actual mining conditions experienced at Björkdal. The current long-term stope designs do not incorporate localized geotechnical and geological considerations including detailed knowledge of hanging wall and footwall contacts, fault zones, and structural features such as folding.

16.1.2 Mining Method

16.1.2.1 Open Pit

The open pit has currently been halted and is planned to be restarted in 2024, however this could be delayed further in the event of additional underground reserves being identified. The planned method is standard truck and shovel mining, as done historically. Details will be redefined closer to the restart date.

16.1.2.2 Underground

The known Björkdal underground deposit lies within a footprint of approximately 1,600 m x 600 m and has a vertical extent of approximately 400 m. Descriptions of the geology and styles of mineralization have been provided in Sections 7 and 14.

The long-term LOM underground production rate is planned to average 975,000 tpa up until 2023, and 775,000 tpa thereafter until production tails off in 2027. On vein development (OVD) will be carried out over approximately three years and stope production will be carried out over approximately seven years. A decrease in production is planned after 2023, when underground output reduces, with the balance being made up with open pit and stockpile tonnes.

Primary access to the underground operation is via ramp systems originating from two portals located in the wall of the existing open pit. Open pit mining and removal of the crown pillar in the north/east wall will disrupt this access as well as the supply of other services such as emergency egress, electrical, ventilation, and mine drainage systems. Open pit ore mining will therefore commence at Nylunds initially until underground operations cease, with limited pre-stripping only above the underground access and infrastructure in the crown pillar area.

A study is still to be undertaken to investigate the economic viability of constructing an additional portal before open pit mining makes the old portals inaccessible, thus ensuring continuity of the supply of all necessary services. This would allow mining of the crown pillar to commence at an earlier date, although the current strategy is to extend the underground mine life as far as possible in preference to bringing lower grade open pit ore tonnes further forward in the LOM plan.

The underground mining method used at the Mine is longhole stoping with a sub-level spacing of 15 m to 20 m, depending on the zone. Cross-cuts are established perpendicular to the vein system. Veins are then developed by drifting on each sub-level from the cross-cut. All pre-production vein, cross-cut, and ramp development is drilled and blasted using conventional trackless mining equipment.

The underground mine design is presented in Figure 16-2.

Stoping blocks are currently drilled with approximately 15 m long 70 mm diameter up-holes connecting to the bottom of the overlying stope using Epiroc Simba drill rigs. When production drilling is completed, initial slot raises are developed and drill lines blasted in groups of three to five rings using a burden of 1.5 m and retreating towards the hanging wall. The material is removed between blasts, which also allows a void for the following blast. Remotely operated scoops are used to muck the stopes to nearby re-handle areas or directly into trucks.

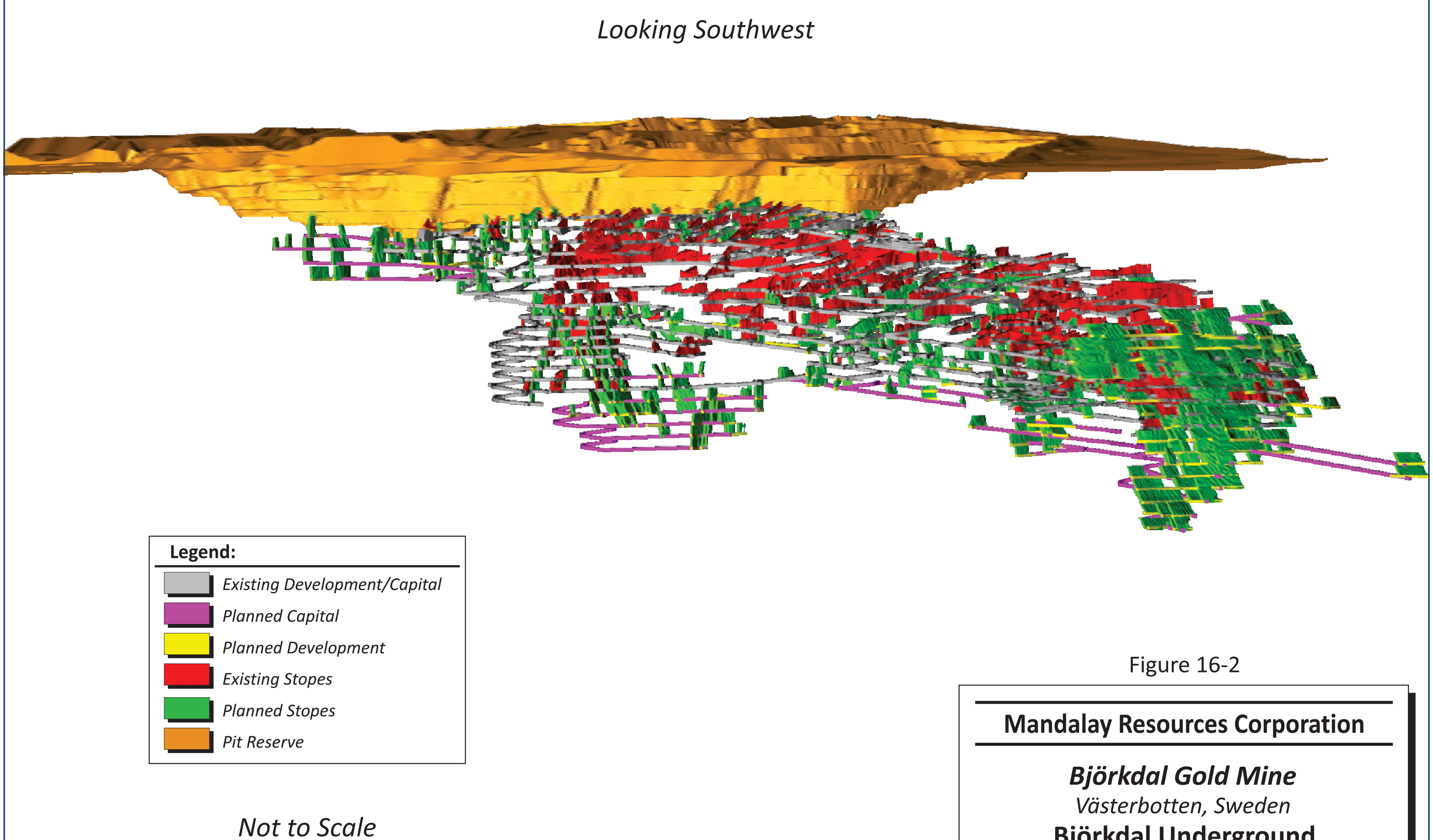


Figure 16-2

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Björkdal Underground Mine Layout

March 2021

Source: Mandalay Resources Corporation, 2021.

The majority of the waste mined underground from capital development is placed directly into voids as unconsolidated backfill. If insufficient voids are available underground, waste is occasionally hauled to surface for temporary storage and backhauled underground at a later date for placement as fill. Generally, more waste is required for fill placement than is produced from development underground and therefore, suitable additional material is sourced from surface and transported underground by trucks returning from hauling ore to surface.

All underground material is loaded by Volvo L180 front end loaders (FELs) or Sandvik 514 load-haul-dumpers (LHDs), and hauled to surface by a contractor using 26t Scania R520 XT highway tipper trucks. The objective of the current materials handling strategy is as follows:

- Development material from cross-cuts and ramps above a grade of 0.32 g/t Au is hauled to a B-ore stockpile at the mill.
- OVD material is either hauled to the OVD production ROM stockpile where it is classified as waste or ore and sent to the appropriate location.
- All stope production, regardless of grade, is hauled to the stope production stockpile.

In consideration of the variable vein geometry and existing equipment configuration, 3.5 m has been measured as the average minimum mining width. This includes a base 2.5 m minimum width plus an allowance for 0.5 m of overbreak on both the hanging wall and footwall sides of the stope. An additional 10% dilution is added for planning purposes.

Most of the mined out stopes are left open without any backfill, however the relatively new Aurora Zone will have stopes that will be both wider, longer, and higher than in other areas. In these areas, the stopes are planned to be mined and backfilled with unconsolidated fill. This will allow pillars to be reduced and will increase the extraction ratio. A prefeasibility study to determine the mining method of this area was completed by Itasca Consultants AB (Itasca) in late 2019, which recommended a mining method, stope and pillar dimensions, as well as future support. Rill (or Avoca) mining with unconsolidated fill was determined to be the most cost effective option. Given that mining is already taking place in the Aurora Zone, these results are considered by SLR to be appropriate. This requires a revised mining sequence and waste filling. Neither of these procedures is considered to be risky or onerous.

The current top-down footwall to hanging wall retreat system results in the placement of ramp development outside the marble contact, while cross-cut pillars are within the ore zone.

A portion of remnant above cut-off grade material adjacent to previously mined out stopes is excluded from the underground Mineral Reserves, however, the extraction of these remnants warrants further evaluation. Some recovery of ore contained in pillar areas is planned at the end of the mine life, however, this is also excluded from the current Mineral Reserve estimate.

Stope grades are evaluated using an internal grade control model and the sludge grades from OVD are used to cross reference the grade control model. Stope tonnages are estimated from the stope design volume and are tracked by equipment bucket and truck count. A CMS is used to compare actual stope volumes.

The nature of the mining method is such that OVD comprises not more than 30% of the total underground tonnage production. Currently, the separation in OVD between what is considered ore and waste is 0.32 g/t Au, which is consistent with the open pit cut-off grade. All OVD is mined, hauled to a surface ROM stockpile, and sent to processing if sample data confirms a grade of over 0.32 g/t Au. While efforts are made to identify areas of waste development, a portion of cross-cut and ramp material is combined and hauled to a low-grade surface stockpile and processed as B-ore.

16.1.2.3 Low Grade Stockpiles

Selective open pit mining at Björkdal commenced in 2009 with ore greater than 1.0 g/t Au being separated and milled as A-ore and material between 0.3 g/t Au and 1.0 g/t Au being stockpiled as B-ore.

Batch milling experience from these stockpiles has indicated that mill feed averages 0.65 g/t Au. Approximately 2.5 Mt of B-ore has been classified as an Indicated Mineral Resource at a grade of approximately 0.64 g/t Au.

Stockpile ore will be fed continuously throughout the LOM to make up shortfalls in mill feed from the underground operations, and later, the open pit mines.

Rehandling will be carried out with a small equipment fleet. Assuming a rehandling cost for stockpiled material results in a cut-off grade between 0.3 g/t Au and 0.4 g/t Au.

16.1.3 Geotechnical and Slope Stability

16.1.3.1 Open Pit

A structural and kinematic inter-ramp slope stability analysis for the Mine was carried out by SRK in October 2012 (Saiang, 2012). The proposed inter-ramp slope angle of 70º and an inter-ramp height of 40 m were validated and showed a minimum factor of safety of 1.48. Water or pore pressure was not accounted for and required monitoring to see if it might become a concern.

Structural analysis showed that the dominant joint sets have similar orientations to the gold bearing quartz veins and dip steeply either parallel or sub-parallel to quartz veins. As a result, the hanging wall side is less prone to any major instability because the intersections of joints do not daylight at the slope face. This is clearly evident at Björkdal where the hanging wall side of the pit is very stable even though slope angles are near vertical. On the footwall side, however, potential instabilities are observed. Structural and kinematic analyses show that there is no major threat for the footwall slopes or pit walls.

The rock mass at Björkdal is of very high quality. Test work carried out at Björkdal has shown that Geological Strength Index (GSI) is estimated to be between 70 and 80, and intact strength exceeds 200 MPa. This data is supported by the fact that approximately 50% of the entire underground development excavations are unsupported, neither with shotcrete nor rock bolts. A visual observation of the open pit slopes indicates near-vertical to vertical benches and narrow stable berms.

In 2016, SRK carried out an additional slope design review (Di Giovinazzo, 2016). The outcome of the review highlighted the opportunity for the potential of 25 m high benches (5 m benches in sets of five) with the potential to maintain the BFAs at 75°, and reduce the berm width to eight to ten metres. The 2017 pit design incorporated these changes. The review also highlighted the differing geotechnical character of various geographical and geological sectors of the mine. These geotechnical sectors have been used to assign varying BFAs (from 70° to 85°), bench heights (from 10 m to 20 m), and localized face azimuths to avoid planar failure in specific areas.

16.1.3.2 Underground

Rock mechanic consultants have made several visits to the Björkdal underground mine since start of its operation in 2009 and, in general, consider the rock quality and ground conditions to be extremely good. The most recent work was carried out by Itasca in August 2019. Approximately 50% of the underground development requires ground control and simple standard procedures have been established.

Mechanical scaling of all development is carried out immediately following blasting. Shotcrete and resin rebar are used in the pre-production OVD on an as-required basis and shotcrete followed by systematic resin bolting is used for permanent development such as ramps and cross-cuts. Longer bolts are installed in wider intersections with unfavourable structure orientations. Permanent development is also re-scaled every 12 months.

In some areas of the mine, the spacing between the parallel vein systems is small and the resulting pillar between the mined stopes has collapsed. Itasca has made a general recommendation that a minimum 10.0 m pillar is required around permanent development.

Ground control equipment at Björkdal includes an Atlas Copco Scaletec, 3 Jama 8000 scaler, a Sandvik DS411 bolting machine, a Normet 7110 Shotcrete and a Normet 8100 units supported by the delivery of concrete directly to the face by a local supplier. An additional Epiroc Boltec bolting machine will be added to the equipment during 2021.

Development is ongoing in the Aurora Zone, which comprises several thin and closely spaced veins (a so-called "stringer zone"). These areas, which are larger and more extensive than elsewhere, were the focus of the 2019 Itasca report, which analyzed potential stopes, pillars, and the related stress regimes in some detail, with the following conclusions:

- Unconsolidated backfill is required to limit the stope back length to 60 m.
- Sill pillars between 15 m and 10 m are required.
- Some stope backs should be shotcreted.
- Permanent accesses should be 25 m in the hanging wall, and will need protection pillars of 10 m where they pass through the orebody.
- Cable bolts are recommended but can be reconsidered depending on the acceptable level of risk.

As part of an ongoing collaboration with Itasca, new mining areas are continuously evaluated during the design phase. FLAC models are utilised to ensure geomechanical stability of specific areas, such as Skarn, which are also inspected on a weekly basis.

SLR considers it essential that Björkdal continue to monitor local ground conditions as mining progresses.

16.1.4 Infrastructure

The underground mine workings are accessed by two ramps located in the wall of the existing open pit. The ramps cut through the orebody and connect to cross-cuts that run perpendicular to the vein structure. All material mined underground is hauled to the surface via these two ramps by a contractor using rigid trucks.

A layout of the 2020 underground infrastructure is presented in Figure 16-3.

Looking Southwest

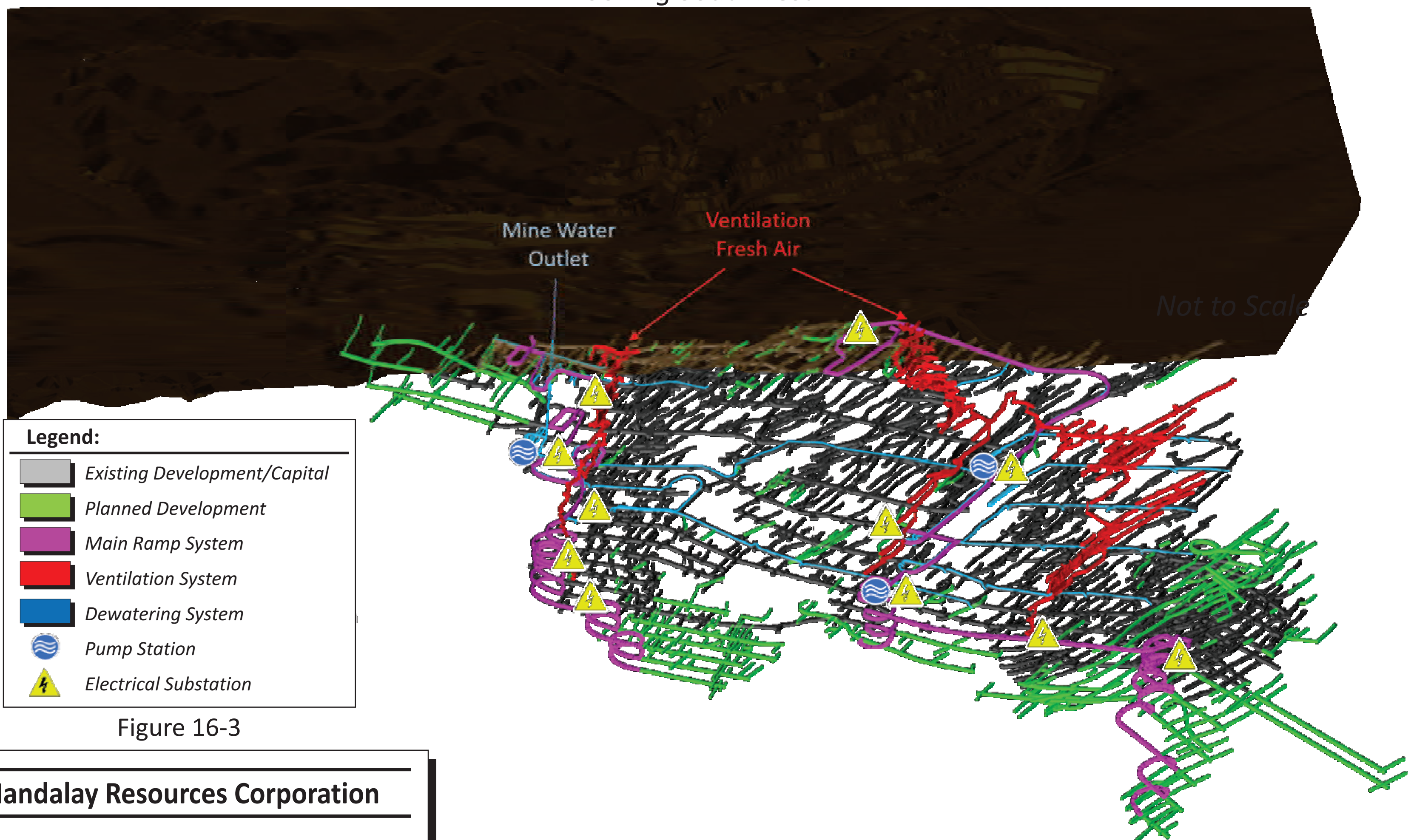


Figure 16-3

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Björkdal 2021 Underground Infrastructure Layout

March 2021

Source: Mandalay Resources Corporation, 2021.

16.1.4.1 Dewatering

Heavy storm events can result in a substantial influx of water into the underground mine via high permeability fault systems connecting with the open pit. The site is currently in the process of upgrading the pumping system.

The 340/Ramp 2 pump station handles all the water that comes from production and groundwater inflows from the Lake Zone and Central Zone. The water is pumped from the working faces with submersible pumps in lifts to the 340/Ramp 2 pump station. The 340/Ramp 2 pump station pumps the water using two large submersible pumps (2 x 90 kW) in one horizontal 800 m section in two 150 mm diameter pipes to the Main Zone pump station. The water flow from this area varies between 10 m^3/h and 70 m^3/h, depending on the level of production activities and the season.

The Main Zone pump station, located on the 265 level, sends all underground pump water to surface using three centrifugal pumps (3 x 75 kW), with a capacity of 180 m^3/hr in total. The water is transported in one vertical lift of 200 m to surface in a 250 mm diameter steel pipe. The mine water then flows in a ditch to a clear water basin where the water is treated to remove suspended solids and nitrates.

The pump water that comes to the Main Zone pump station is mainly from the Lake Zone 340 ramp pump station, but also from the working faces in the deeper levels of the Main Zone, which is pumped with submersible pumps similar to Lake Zone.

Total annual pumped water from underground to surface is approximately 750,000 m^3.

16.1.4.2 Ventilation

The underground ventilation system is simple and effective. Fresh air is introduced into the mine via two primary intake air shafts located adjacent to the open pit and is distributed to the working areas by means of 13 secondary fans installed throughout the mine. Fresh air is drawn through old stopes to avoid the need for heating during the winter months. The return air is exhausted via two main ramp systems into the open pit.

16.1.4.3 Electrical

Björkdal has combined 400 V/1,000 V electrical sub-stations as well as single 400 V and 1,000 V sub-stations. Separate cables for both 1,000 V and 400 V are used.

All underground mining equipment requiring electrical power operate on 1,000 V while pumps and fans operate on 400 V. Electrical sub-stations are placed in strategic locations, close to fresh air ventilation shafts and near production faces.

Underground communication uses a digital leaky feeder system that covers the entire mine. Communication between personnel is carried out using Motorola two-way radios.

16.1.5 Mine Equipment

16.1.5.1 Open Pit

The open pit is not currently being mined. Some surface equipment is however being used to rehandle the low grade stockpile into the primary crusher.

16.1.5.2 Underground

With the exception of materials handling, haulage to the surface, and road maintenance, underground mining activities are carried out by Björkdal personnel. The underground mining equipment used at Björkdal is presented in Table 16-3. During 2021 an Epiroc Simba will replace one of the existing longhole drills and an Epiroc Boltec Bolter will be added to the equipment.

Table 16-3: Björkdal Underground Mining Equipment
Mandalay Resources Corporation – Björkdal Gold Mine

Make	Model	Machine Type	Purpose	Owner	Units
Epiroc	Boomer E2C	Face Drilling	Production	Contractor	1
Epiroc	Boomer M2C	Face Drilling	Production	Björkdal	2
Epiroc	Simba	Longhole Drilling	Production	Björkdal	3
Atlas Copco	Scaletec MC	Scaler	Production	Björkdal	1
Gia	UV211	Charging Unit	Production	Björkdal	1
JAMA	8000	Scaler	Production	Björkdal	3
Normet	Charmec	Charging Unit	Production	Björkdal	1
Normet	7110	Shotcreting	Production	Björkdal	1
Normet	8100	Shotcreting	Production	Björkdal	1
Sandvik	DS411	Bolter	Production	Björkdal	1
Sandvik	LH410	RC Loader	Production	Björkdal	1
Sandvik	LH514	RC Loader	Production	Björkdal	2
Scania	R520 XT	Haul Truck	Production	Renfors	6
Volvo	FMX	Concrete Mixer	Production	Björkdal	3
Volvo	L110E	Wheel Loader	Production	Björkdal	1
Volvo	L120H	Wheel Loader	Production	Björkdal	1
Volvo	A25D	Water Dumper	Production	Björkdal	1
Volvo	A25G	Water Dumper	Production	Björkdal	1
Volvo	L180H	Wheel Loader	Production	Björkdal	3
Komatsu	WA80	Wheel Loader	General	Björkdal	1
Volvo	L110H	Wheel Loader	General	Björkdal	1
Volvo	L90H	Wheel Loader	General	Renfors	1
Volvo	L90F	Wheel Loader	General	Björkdal	1
Volvo	L90F	Wheel Loader	General	Björkdal	1

16.2 Norrberget

Norrberget is planned to supply approximately 162,000 tonnes of ore over 2028 and 2029. Given the volume is a relatively small proportion of the total, and will be mined at a later stage than the rest of the operation, the details of the mine plan are summarised here.

16.2.1 Mine Design

A pit design for Norrberget was created based on the Whittle output shell using Deswik mine planning software. The pit design parameters used are shown in Table 16-4 and based on current operating practices at Björkdal.

Table 16-4: Norrberget Pit Design Parameters
Mandalay Resources Corporation – Björkdal Gold Mine

Parameter	Unit	Input
Overall Slope Angle	degrees	36-52
Bench Face Angle	degrees	70-75
Berm Width	m	5
Bench Height	m	5-10
Benches per Berm	#	1
Single Ramp Width	m	15
Ramp Slope	%	10

The final pit bottom is at the 70 level, approximately 50 m below the original topography. A single 15 m wide ramp is used to access the orebody.

The final pit outline, along with topography and crown pillar for reference, is presented in Figure 16-1.

16.2.2 Mining Method

At Norrberget, open pit mining will be carried out by a contractor, using trucks and excavators. This production will be part of an integrated mining contract for both Björkdal and Norrberget.

The mining schedule at Norrberget is integrated into the Björkdal open pit schedule to minimize potential production shortfalls and to provide added flexibility to the deliverable mill feed.

Waste mined during the life of the open pit will be placed on the north side of the open pit and will contribute to sound attenuation from the operation of the pit.

16.2.3 Geotechnical and Slope Stability

In July 2017, SRK was engaged to carry out a geotechnical assessment of the Norrberget deposit. The assessment included the following:

- analysis of drill core from existing logs and photographs,
- intact rock strength,
- jointing and structure,

- kinematic analysis,
- SBlock analysis, and
- recommendations for slope designs to be used in for pit optimization and pit design.

The review recommended that the pit design be split into two distinct sectors: the southwest (footwall to the ore) and the northeastern sector (hanging wall). The southwest sector has been designed with an overall slope angle of 36° and a BFA of 70°. The northeastern sector has been designed with an overall slope angle of 52° and a BFA of 75°. The shallower design of the southwest sector does not significantly raise the strip ratio of the Norrberget mine as the recommended overall slope angle closely mirrors the dip of the orebody.

16.2.4 Hydrological Studies

In 2016, Golder Associates AB (Golder) was commissioned to carry out a hydrological study of the Norrberget area. Water handling at Norrberget will be integrated into the water management plan for Björkdal. Water quality of discharge from the mine and existing surface waterways will be monitored by Björkdal staff to comply with local regulations and the operating conditions of the environmental permit.

Golder concluded that the groundwater level at Norrberget is 115 MASL and the existing topography at the site averages 120 MASL. At an expected pit depth of 57 MASL (60 m below surface) the expected groundwater infiltration rate is 800 m^3 per day and the expected contribution of surface run-off and rainfall is 450 m^3 per day. This leads the analysis to conclude that pumping requirements at Norrberget should not exceed 1,250 m^3 per day. The estimated area of influence on the local groundwater system has been assessed to have a radius of approximately 450 m to 500 m from the centre of the pit.

Pumping is planned to use portable pumps to dewater the workings, as required, and waste water will be discharged to the sedimentation dam northwest of the Norrberget pit.

The proposed open pit design is located at the confluence of two minor streams. Stream diversion trenches will be dug north and south of the planned pit to steer water from these two streams around the open pit and reconnect with the original drainage east of the pit design. A further trench will be constructed on the gently sloping west side of the designed pit to redirect surface water drainage away from the proposed pit and into the northern stream channel.

16.2.5 Mine Equipment

Mine equipment for Norrberget will be provided by mining contractors as needed. As the Norrberget pit is scheduled to be mined in 2028, equipment details have not yet been determined.

16.3 Consolidated Life of Mine Plan

The LOM plan for Björkdal comprises production from Björkdal underground, open pits at Björkdal and Norrberget, and historic stockpiles and is shown in Table 16-5.

Table 16-5: Life of Mine Production Plan
Mandalay Resources Corporation – Björkdal Gold Mine

	Units	Average/ Total	2021	2022	2023	2024	2025	2026	2027	2028	2029
MINING PRODUCTION - UNDERGROUND											
Total Rock	kt	5,968	1,087	1,166	1,001	814	798	727	374	-	-
Waste	kt	345	128	140	64	8	5	1	-	-	-
Ore	kt	5,623	960	1,026	937	807	793	726	374	-	-
Stope Tonnes	kt	4,881	673	758	774	790	787	725	374	-	-
Development Tonnes	kt	742	287	268	163	16	6	1	-	-	-
Grade	g/t Au	2.05	2.09	2.00	2.34	2.19	1.97	1.73	1.83	-	-
Gold Mined	koz	371	64	66	71	57	50	40	22	-	-
Capital Development	m	7,433	3,084	3,139	976	234	-	-	-	-	-
MINING PRODUCTION - OPEN PIT											
Total	kt	31,324	-	-	-	4,498	4,208	6,623	6,490	6,118	3,387
Total Waste	kt	28,004	-	-	-	4,161	3,809	6,148	6,451	4,963	2,472
Waste - Capex	kt	18,917	-	-	-	3,087	2,638	4,602	6,340	1,660	590
Waste - Opex	kt	9,087	-	-	-	1,074	1,171	1,546	111	3,303	1,882
Ore	kt	3,319	-	-	-	340	403	475	39	1,156	906
Grade	g/t Au	1.13	-	-	-	0.90	0.91	1.03	1.01	1.21	1.28
Gold Mined	koz	121	-	-	-	10	12	16	1	45	37
Strip Ratio	W:O	8.4	-	-	-	12.2	9.5	12.9	164.5	4.3	2.7
MINING PRODUCTION - STOCKPILE											
Ore	kt	2,551	340	274	363	153	104	98	887	144	187
Grade	g/t Au	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Gold Mined	koz	52	7	6	7	3	2	2	18	3	4

	Units	Average/ Total	2021	2022	2023	2024	2025	2026	2027	2028	2029
TOTAL											
Ore	kt	11,493	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,093
Grade	g/t Au	1.47	1.71	1.72	1.87	1.67	1.53	1.39	0.99	1.15	1.17
Gold	koz	544	71	72	78	70	64	58	42	48	41
PROCESSING FEED											
Underground											
Ore	kt	5,623	960	1,026	937	807	793	726	374	-	-
Grade	g/t Au	2.05	2.09	2.00	2.34	2.19	1.97	1.73	1.83	-	-
Open Pit											
Ore	kt	3,319	-	-	-	340	403	475	39	1,156	906
Grade	g/t Au	1.13	-	-	-	0.90	0.91	1.03	1.01	1.21	1.28
Stockpile											
Ore	kt	2,551	340	274	363	153	104	98	887	144	187
Grade	g/t Au	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Total											
Ore	kt	11,493	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,093
Grade	g/t Au	1.47	1.71	1.72	1.87	1.67	1.53	1.39	0.99	1.15	1.17
Gold	koz	544	71	72	78	70	64	58	42	48	41
Recovery	%	0.883	0.883	0.883	0.883	0.883	0.883	0.883	0.883	0.883	0.883
Gold Recovered	koz	480	63	63	69	62	57	51	37	42	36

16.3.1 Björkdal Underground

The Björkdal underground mine commenced production in 2008. The past four years (2017 to 2020) have seen production steadily increase from 775,000 tpa to 1,070,000 tpa.

Mine production in the LOM plan is scheduled from two main sources; stopes and OVD. The average LOM annual production rate for the underground mine is scheduled to be within the range of 800,000 tpa and 1,000,000 tpa for the next six years. The current underground haulage capacity is in the order of 1.0 Mtpa. Ore will be sourced from OVD for approximately three years and stope production will be carried out over the subsequent seven years. A drop in production is planned after the sixth year, when underground output decreases to a 374,000 tpa, with the balance being made up with open pit and stockpile tonnes.

Björkdal has a significant amount of underground development workings in place, which allows for flexibility in mine scheduling. Pillar recovery is scheduled for the latter years of production.

16.3.2 Björkdal Open Pit

Open pit mining for Björkdal was suspended in 2019 and is scheduled to restart in 2024. The open pit will deliver between 340,000 tpa and 1,127,000 tpa, with the final year delivering up to 773,000 tonnes. Ore production is variable as the strip ratio is high. Planned waste mining has been kept relatively level averaging approximately 4.8 Mtpa for the first five years. Mining of the crown pillar and main open pit area will commence with moraine and loose waste rock removal in 2024. Further mining will be postponed until 2026 when the eastern portal becomes obsolete and mining of first pushback commences. The final pushback is planned to start when all underground operations have ceased in mid-2027. Until that time, mining will be focused in areas away from any underground infrastructure, and to limited pre-stripping of the north/east pit wall over the crown pillar area.

16.3.3 Norrberget Open Pit

The LOM plan for Norrberget is integrated into the LOM at Björkdal and provides incremental high grade feed of 162,000 tonnes to the mill over six to seven months. Stripping of surface overburden is scheduled to commence in 2028, which will offset a shortfall of supply from the main Björkdal pit.

16.3.4 Stockpiles

Stockpiled ore will be fed continuously throughout the LOM to make up shortfalls in mill feed from the underground, and later, the open pit mine. Peak stockpile ore mill feed, 887,000 tonnes, occurs in 2027 during waste stripping of the crown pillar ore in the Björkdal open pit.

Average stockpile feed over the remaining LOM is 283,000 tpa.

17.0 RECOVERY METHODS

17.1 Introduction

The original Björkdal plant was designed and built by Davy McKee in 1987 for Terra Mining. There have been a number of major changes made to the processing circuit with the primary objective of increasing plant throughput while maintaining gold recovery. The modifications are summarized in Table 17-1.

Table 17-1: Plant Modifications
Mandalay Resources Corporation – Björkdal Gold Mine

Year	Modifications
1989	Plant commenced operation
1990	New 750 kW regrind mill installed
1992	Sala 6.6 m^3 flotation cell installed
1993	2 – 75 kW Sala Agitated Mills (SAM) installed before flotation circuit
1994	A sorting plant and a new mill facility were constructed and commissioned in December 1994
2005	Knelson CD12 and a small regrind mill (7.5 kWh) installed in the gravity section
2009	Knelson XD30 installed before flotation
2013	The Reichert cones were replaced by Rougher spirals; an Outokumpu SkimAir- 240 flotation cell and a new double deck screen were installed in the grinding circuit
2017	Flotation expansion installed and commissioned, increased flotation capacity and increased recovery
2018	Expert Process Control System installed (Mintek), commissioning ongoing

17.2 Process Description

A simplified process flowsheet is provided in Figure 17-1.

The concentrator includes primary, secondary, and tertiary crushing, primary, and secondary grinding, a series of gravity concentration steps, regrinding, and flotation to produce three gravity concentrates and a flotation concentrate.

Ore is delivered to a series of small stockpiles that are utilized to campaign ore through the processing facility in order to provide reconciliation data for various parts of the mines. From the stockpiles, a front-end loader feeds a jaw crusher. Discharge from the jaw crusher is screened. The screen undersize is nominally minus 8 mm. The material is conveyed to a 5,000-tonne fine ore bin or to an emergency stockpile. Screen oversize is stored in a 400-tonne stockpile. Ore is reclaimed from the stockpile and fed to a secondary cone crusher. Discharge from the cone crusher is conveyed to a second screen. Undersize from the screen is combined with the undersize from the first screen and stored in the fine ore bin or the emergency stockpile. Oversize from the second screen is fed to a tertiary cone crusher. The discharge from the tertiary crusher is combined with the discharge from the secondary cone crusher and fed to the second screen. Thus, the ore is recirculated through the tertiary cone crusher until it meets required product size (i.e., minus 8 mm).

Crushed ore is reclaimed from the fine ore bin and passed across a series of two screens prior to being fed to the primary grinding circuit. The screen oversize is directed to an oversize material stockpile. The screen undersize is split and fed to the primary ball mill and primary rod mill that are operated in parallel. Discharge from the primary mills is fed to a classifying screen. The screen oversize is returned to the primary ball mill for additional grinding. Screen undersize has a particle size of approximately 80% passing (P_{80}) 560 µm. The slurry is pumped to hydrocyclones for additional classification.

The cyclone underflow (P_{80} 800 µm) is fed to rougher spiral concentrators. Tailings from the rougher and cleaner spirals are returned to the secondary ball mill number 3 with a discharge P_{80} 475 µm. From the discharge of mill number 3, the slurry is pumped to combine with the discharge from ball mills 1 and 2. The discharge from the three mills is pumped to the classifying screen.

Concentrate from the rougher spirals is fed to the cleaner spiral classifiers. Tailings from the cleaner spirals are combined with the tailings from the rougher spirals and processed in the regrind secondary ball mill number 3 circuit. Concentrate from the cleaner spirals is cleaned on shaking tables. Tailings from the shaking tables are fed to a Knelson centrifugal gravity concentrator. Tailings from the Knelson concentrator are combined with the tailings from the rougher and cleaner spiral concentrators and processed in the regrind secondary ball mill circuit. Concentrate from the shaking tables and the Knelson concentrator are fed to the cleaner shaking table where two concentrate grades are produced. The gravity concentrate contains approximately 60% gold and the middlings from the cleaner shaking table contain approximately 1,500 g/t Au.

Overflow from the cyclone that follows the classifying screen (P_{80} 230 µm) is further classified in the flotation cyclones. The flotation cyclone underflow (P_{80} 410 µm) is fed to a Knelson concentrator. The Knelson tail is fed to a single SkimAir flash flotation cell. The SkimAir flotation concentrate reports to the final flotation product thickener, while the tailings from the SkimAir cell are combined with the flotation cyclone overflow (P_{80} 125 µm) as feed to three banks of conventional rougher flotation cells that operate in series. Tailings from the rougher flotation circuit feed the scavenger flotation circuit that contains three conventional flotation cells. Concentrate from the scavenger flotation circuit is recombined with the feed to the rougher flotation circuit. Tailings from the scavenger flotation circuit are the final tailings from the plant. Rougher flotation concentrate is cleaned in the first cleaner flotation circuit that consists of one bank of four conventional flotation cells and the second cleaner flotation circuit that consists of one tank flotation cell. Tailings from the first cleaner flotation circuit are returned to the feed of the rougher flotation circuit and tailings from the second cleaner flotation circuit are returned to the feed of the first cleaner flotation circuit. The second cleaner flotation concentrate is collected in the final flotation product thickener along with the SkimAir flotation concentrate. The flotation concentrate is dewatered in the flotation concentrate thickener and filtered prior to shipment.

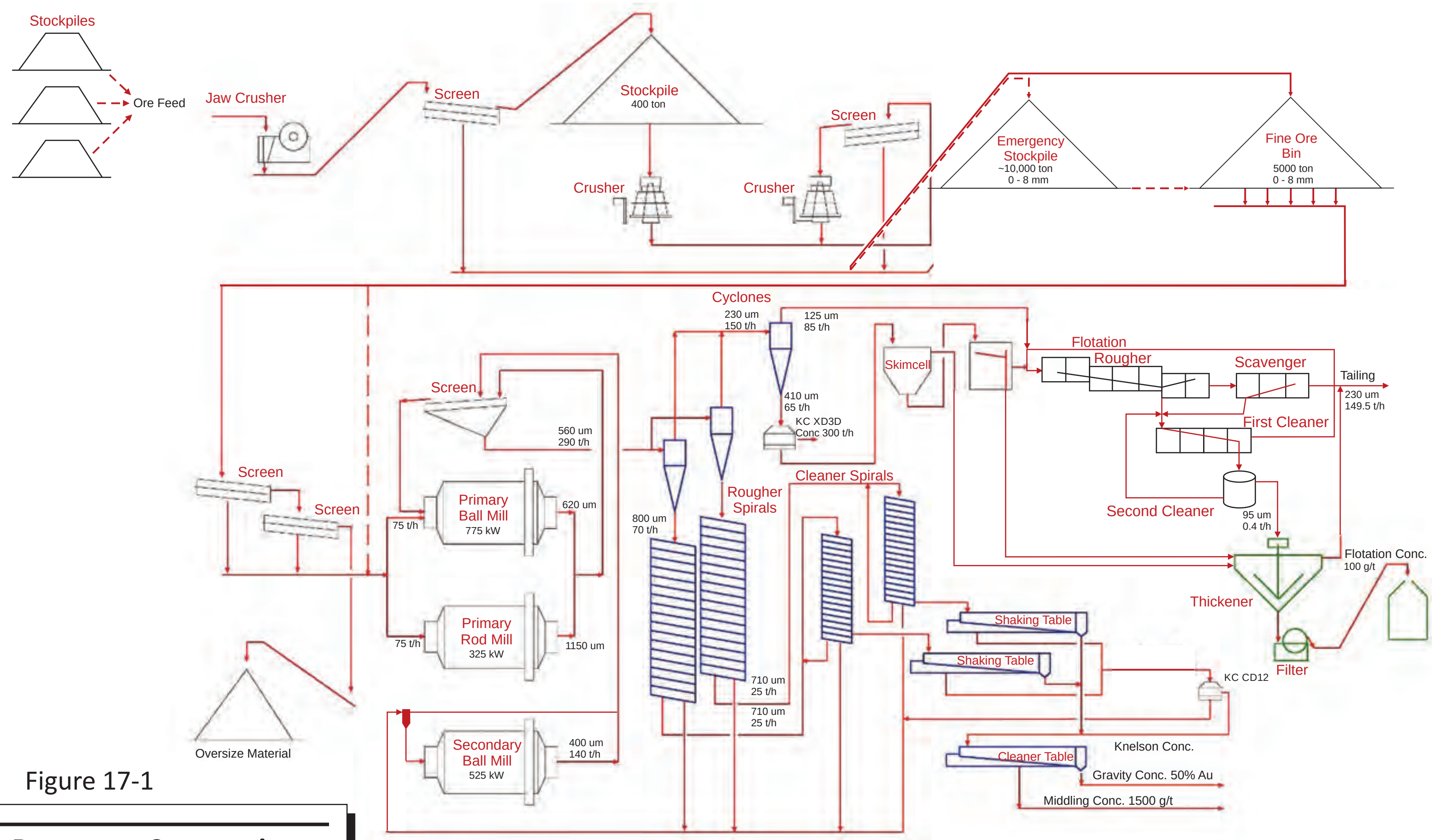


Figure 17-1

Mandalay Resources Corporation

Björkdal Mine

Västerbotten, Sweden

Process Flowsheet

March 2021

Source: Modified from WIDcon AB, 2014.

18.0 PROJECT INFRASTRUCTURE

18.1 Björkdal

A site surface plan based on a LIDAR survey conducted in July 2016 shows the overall extent of the Mine operation and infrastructure and is presented in Figure 18-1.

18.1.1 Tailings Management Facility

The TMF is located in an area of gently undulating relief approximately 1.5 km north of the processing plant.

The current TMF will reach full capacity in the spring of 2022. Further expansion of the TMF has been approved under the latest environmental operating permit that was received on December 11, 2018 and remains valid for a period of ten years.

TMF expansions have been designed by the independent consultants, Tailings Consultants Scandinavia (TCS).

During 2019 the Western Barrier Dam was raised by 2.5 m, which provides sufficient tailings capacity up to April 2022.

The raising of Dam K1 will be carried out in two stages and the Stage 1 raise, initiated during 2020, will be completed by the end of 2021. Stage 2 is scheduled to be completed during 2023. At the planned plant throughput of 1.3 Mtpa, this will provide sufficient tailings storage capacity for eight more years of mine life up to, and including, 2031.

Figure 18-1

Mandalay Resources Corporation

Björkdal Gold Mine

Västerbotten, Sweden

Site Infrastructure Layout

March 2021

Source: Mandalay Resources Corporation, 2016.

18.1.2 Process Water Supply

Water for the process plant is supplied from two sources. Two submersible pumps located at the Kåge River supply approximately 700,000 m^3 of raw water annually to plant water tanks via two pipelines. Existing water rights allow Björkdal to withdraw up to 50 L/s, equivalent to 180 m^3/h and 1.58 million m^3/yr. A second pump station located at the TMF recycles cleared water to the processing plant. Approximately 59% of the process water is recycled from the tailings system and the remaining 41% is drawn from the Kåge River.

At present, the Mine is diverting approximately 800,000 m^3 per year of water from the underground and open pit mines to the TMF and this allows a 59:41 ratio to prevail throughout the year. The result is that less water is discharged from the tailings system and less fresh make-up water is required. During 2020, a total of 1,475,000 m^3 of water was pumped from the underground and open pit mines.

18.1.3 Power Supply

The power supply for the site is provided by Skellefteå Kraft AB, the local power company. The electricity is sourced from relatively low-cost hydro power and is delivered to Björkdal via the Swedish power grid.

18.1.4 Communications

On-site communications include mobile services, internal radio communication, and internet service. Back-up of the Björkdal computer servers is completed automatically through high speed internet to a service company in Skellefteå.

18.1.5 Waste Rock Dumps

The waste rock from open pit mining and low grade ore stockpiles currently amount to more than 60 Mt. An additional moraine stockpile amounts to more than one million tonnes.

Previous characterization studies conducted have shown that waste rock contains very low levels of heavy metals and sulphur and concluded that the waste should be considered inert.

There are currently two active waste dump areas; the North and South waste dumps, as shown in Figure 18-1. Under the new operating permit application, the capacity of the waste rock dumps has been expanded to over 53 Mt. This capacity is sufficient to cover the needs of the current mine life.

18.1.6 Surface Facilities

The Mine operation has all the facilities associated with an open pit and underground gold mine and includes the items listed below:

- Well-kept gravel site roads,
- An administrative building consisting of office space, conference rooms and kitchen facilities.
- Barack modules with office space for contactors, changing rooms and mine dry mess,
- An open pit with ramp access to the underground operations,
- Raw ore stockpile facility containing a number of 5,000 tonne to 12,000 tonne capacity raw ore stockpiles,
- Primary jaw crushing facility with 400 tonne coarse ore stockpile,
- Secondary crushing facility,

- 5,000 tonne fine ore stockpile and reclaim facility,
- 3,700 tpd mill, gravity gold plant, and flotation plant,
- An internal metallurgical assay laboratory,
- Company and contractor maintenance facilities,
- A core logging facility with covered storage, sample preparation laboratory, and grade control assay laboratory,
- 250 ha TMF,
- Fresh water supply and storage,
- Water treatment plant,
- Explosive magazine and mixing facilities,
- Storage facilities for chemical reagents and bulk supplies,
- An off-site covered core storage facility,
- Swedish grid electrical power.

18.2 Norrberget

Currently, there is no infrastructure at the Norrberget deposit other than forest access roads, currently used for forestry and hunting access to the surrounding area, and exploration drill pads. Water for drilling is obtained from surface streams or pumped from previous drill holes. Given the small size of the deposit and short mine life, it is envisaged that the bulk of the required infrastructure will be able to be somewhat temporary in nature.

18.2.1 Mine Water Supply

Water to support Norrberget mining operations is planned to be sourced from Lillträsket, a small surface lake approximately two kilometres northwest of the proposed operation. Lillträsket is planned to be used as a sedimentation clearing pond for the Björkdal TMF and appropriate land purchases have been made to facilitate its conversion to this use. As the pit progresses deeper, it is expected that much of the water required for mining can be recycled from dewatering operations.

A pipeline is planned to follow the existing track between Lillträsket and the deposit as this will obviate the need to construct a dedicated maintenance track. The pipeline will be constructed to service both the dewatering discharge needs of the Mine and the supply of mining operations water.

Fresh water supply for drinking and washing is planned to be trucked in. On the Mine site, fresh water is provided from an on-site bore and this may prove to be the most economical option for fresh water supply at Norrberget. No investigations as to water quality for this purpose have yet been carried out.

18.2.2 Power Supply

The power supply for Norrberget is planned to be an extension of the existing Swedish electricity grid from Nylunds (approximately 3.5 km east). The major power supplier in the region is Skellefteå Kraft AB, the energy supply mix is dominated by locally sourced hydro power and is relatively low cost.

The planned route for the cable extension follows the course of the existing access road and a small sub-station is planned to service the operation of the site.

Other options for site power supply are being further investigated by Björkdal staff; this may provide opportunities to reduce required capital investment or unlock operational benefits.

18.2.3 Communications

A system of three radio repeater stations is planned to integrate the Norrberget site into the larger Björkdal radio system. This system is required for safe operations to be overseen by management and technical staff and will allow ore haulage trucks to operate around the existing open pit.

In addition to the radio system, cellular phone signal is available in the area. A GPS base station will be installed to facilitate surveying of the surface mine and allow GPS excavator control and communication. This can be integrated into the current system at Björkdal.

18.2.4 Waste Rock Dumps

Based on the current Mineral Reserves, it is forecast that approximately 0.5 Mt of loose glacial cover and approximately 1.45 Mt of solid waste rock will be removed from the Norrberget open pit. This material is planned to be stockpiled on both the north and south sides of the designed open pit. These piles will be designed to function as sound attenuation barriers to reduce the impact on the amenity of the small village of Norra Bastuträsk, approximately 1.7 km to the northeast of the proposed workings.

18.2.5 Surface Facilities

There is little requirement for permanent surface facilities at Norrberget. The short mine life and proximity to existing facilities at Björkdal minimize the need for any extensive construction. Office space for technical and management staff will be accommodated within the extant buildings at the Mine. Portable units are planned to be used to supply the required toilet/shower block, change house, and heated muster room.

Other surface infrastructure that would typically be required will be shared with the Björkdal site.

18.2.6 Ore Haulage Road

The existing forest access track will be widened and upgraded to a standard suitable for heavy vehicle access from Route 870 (Fällfors Road) to the deposit at Norrberget, a stretch of approximately 3.5 km. Existing access tracks will be suitable for ore haulage from Route 870 to the primary crusher stockpile area.

Construction of the road upgrade will require culverts in three places, to allow the passage of a surface stream and for two of the surface water diversion trenches described in Section 16.

19.0 MARKET STUDIES AND CONTRACTS

19.1 Markets

The principal commodity at Björkdal is gold, which is freely traded at prices that are widely known, so that prospects for sale of any production are virtually assured.

19.2 Contracts

Björkdal produces four salable products: a gravity concentrate, a middlings concentrate, a Knelson concentrate, and a flotation concentrate. The sales agreements are summarized in Table 19-1.

Table 19-1: Summary of Sales Agreements
Mandalay Resources Corporation – Björkdal Gold Mine

Product	Counter Party	Gold Payable (%)	Silver Payable (%)
Gravity Concentrate	Aurubis	99.75	98.50
Middlings Concentrate	Aurubis	98.00	97.00
Knelson Concentrate	Aurubis	98.00	97.00
Flotation Concentrate	Boliden	95.00	95.00

The above mentioned sales agreements provide for a concentrate treatment charge, refining charges for gold and silver, and minor penalty provisions for any excessive amounts of bismuth, tellurium, and fluorine contained in the concentrates.

The terms of the concentrate sales agreement are confidential but have been reviewed by SLR and are considered appropriate for the product and within industry norms. The specific terms of the agreements are included in the SLR assessment of the economic viability of the LOM plan.

Other contracts that exist between the Mine and suppliers include those for:

- Tailing dam construction work: PEAB Anläggning AB.
- Underground Ore Transport: Renfors AB is responsible for the haulage to the surface of all underground mined material and haulage from stockpiles to crusher.
- Skellefteåbränslen AB: supplies diesel and gas to site.
- Blasting: EPC Sverige AB for the supply of emulsion explosives and blast hole loading for underground.
- Byggbetong AB: Shotcrete for underground.
- Sandvik Mining & constructions Sverige Ab, Epiroc SWEDEN Ab: Spare parts for mining equipment
- Exploration Diamond Drilling: Contracted on an as-needed basis.
- Minlab Ab laboratory service on-site.
- Variety of leased mining equipment.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Environmental Studies

A full environmental audit is carried out every three years by an independent consultant and the local authorities. The monitoring, control, and management policies and procedures are well documented and entirely appropriate to the type of operation.

The Mine has low sulphide content and, as a result, no acid rock drainage (ARD) potential exists. Gold is recovered by mechanical and gravity processes with no use of cyanide. There are no harmful elements associated with the Mine tailings and the tailings have been declared non-toxic by the authorities. Previous characterization studies conducted have shown that waste rock from open pit mining contains very low levels of heavy metals and sulphur and have concluded that the waste should be considered inert.

Water quality is monitored on a regular basis at eight strategically placed monitoring stations. The Upper Lillträsk Creek, Upper Kåge River and Upper Vidmyr Creek stations are located upstream of the mining area and provide reference water quality data; one station on the mine property monitor discharge quality from the TMF (PP2); and four additional stations located in Lillträsk Creek, Lower Lillträsk Creek, Kåge River, and Lower Röjmyr Creek to monitor changes in the receiving watershed.

Sampling is performed by certified samplers and the protocol includes analyses for a suite of twenty-two metals; pH; temperature; ammonium-nitrogen, phosphates and phosphorus; nitrogen, nitrates and nitrites; oil and total suspended solids (TSS).

Historically, Björkdal reported that the discharge water quality from both the mine water management system (PP1) and the TMF (PP2) exceeded permissible levels for nitrates and TSS. Elevated levels of phosphorus and phosphates have also been noted at PP1.

Since 2018, and following several studies conducted by the Mine to establish the cause of the elevated levels, all mine discharge water has been discharged to the TMF through PP2, and PP1 removed from the control and monitoring system. Mine discharge water is no longer released from PP1. This change has been approved by the environmental court and is anticipated to resolve all issues with elevated nitrites and TSS. While ongoing measures are being implemented to continually reduce levels, Björkdal's long-term solution is the raising of Dam K1 which will support degradation of nitrogen due to longer residence time and dilution.

The raising of Dam K1 is subject to a permitting process. The supporting Environmental Impact Assessment (EIA) was completed in 2019 and included the extension of the underground mine. No significant impacts were identified during the EIA process.

20.2 Permitting

All operations are fully permitted in accordance with Swedish environmental, health, and safety legislation.

The current environmental permit (M 771-17) was granted in December 2018 and remains valid for a period of ten years from that date for the TMF (dam and related water discharge) and until 05 October

2067 for all other aspects of the operations. The environmental permit allows for expansion of the TMF for a mill throughput of 1.7 Mtpa.

A building permit (M 2945-19), for Dam K1 was granted in May 2020, however, approval of the change permit submitted in October 2019 is still pending. The change permit application also covers the extension of the underground mine. Björkdal is actively engaging the authorities on the status of the application. In November 2019, Björkdal applied for designated land with the Mine inspector in support of the construction of Dam K1. This was approved on February 04, 2021.

Under the existing long-term water-use permit, Björkdal is permitted to use the Kåge River as a water source for the processing plant, with the allowed limit being 50 L/s (180 m^3/h). The plant uses approximately 150 m^3/h and half of this is recycled from the TMF. Water used at the Mine site for purposes other than the processing plant is sourced from dug wells.

The current permits in place for the operation are presented in Table 20-1.

Table 20-1: Permits
Mandalay Resources Corporation – Björkdal Gold Mine

Permits	Valid from Date	Valid to Date	Type
M 2945-19	2020-05-20	2030-05-20	Building permit for Dam K1
M 771-17	2018-12-03	2028-12-03 (for the TMF) 2067-10-05 (for other operations)	Environmental permit
VD DVA 9/87	1987-05-26	No expiry date	Water-use permit

20.3 Social or Community Requirements

There are no issues with community impact. The Mine is located in a part of Sweden that has a long history of mining activity and mining is accepted as a socially responsible and necessary contributor to the local economy. Engagement and information sharing with nearby residents takes place on an annual basis.

The Björkdal property is located in an area where the Svaipa Sami village (the local indigenous group) retains winter grazing rights for their reindeer herds. A compensation agreement for lost grazing land and increased operating costs for the reindeer herders was signed in April 2017. This agreement remains valid for the planned operating life of the Mine. The EIA completed in 2019 in support of the change permit application noted that no further impact on the reindeer industry was expected to arise due to the activities applied for, as no new aboveground areas would be required outside the contract area established with the Sami village.

The Norrberget deposit is not covered by the above agreement. A new mining concession has been granted that covers Norrberget and is valid until January 2044. Current planning makes provision for the mining of Norrberget in 2027 and 2028.

During 2020 Björkdal increased the sponsorship to the local community where the biggest investment is a new playground for the preschool and leisure center.

20.3.1 Health and Safety Management Plan

The management at Björkdal has a strong focus on the safety of all personnel employed at, or visiting, the operation and is committed to the following fundamental objectives:

- No personnel employed by Björkdal or its contractors should suffer either injury or illness arising from being employed at the Björkdal site.
- All personnel, contractors, service providers, and suppliers must rate safety and the protection of the environment as core values.

Safety meetings to discuss workplace Occupational Health and Safety (OHS) issues are conducted by relevant department or contractor supervisors and presented to individual work groups. Safety meetings are held weekly and are attended by all members of the work group.

All managers and employees at Björkdal have completed a comprehensive program focused on safety culture and improving attitudes towards safe work habits. The program was carried out 2017/2018 by a boutique safety consultancy, RMS Switzerland and is a continuous part of the general introduction for new employees.

Other safety related initiatives being, or having been, introduced in 2020/2021 include:

- The introduction of self-rescuers for all personnel working or entering the underground mine.
- Risk assessment training for all managers and safety representatives.
- An employee bonus that focus of increasing risk observations and reporting (in order to prevent hazards to occur).
- General induction training days that include company safety culture.
- A new system of pre-start for light vehicles and a campaign of pre-start checks for heavy vehicles.
- Emergency preparedness training regularly during the year.
- A project with the aim of switching from general to personal workwear.
- A Safety Day for managers and safety representatives will be introduced.

The safety statistics reporting at Björkdal is based on the following classifications:

- Medical Treatment Injury Frequency Rate (MTIFR).
- Lost Time Injury Frequency Rate (LTIFR).
- Total Reportable Injury Frequency Rate (TRIFR).

The incident classification is presented in Table 20-2. MTIFR and LTIFR statistics for 2015 through 2020 are presented in Table 20-3.

Table 20-2: Incident Classification
Mandalay Resources Corporation – Björkdal Gold Mine

Incident Classification	Statistical Grouping		
	TRIFR	MTIFR	LTIFR
First Aid	✓	✓	-
Medical Treatment	✓	✓	-
Restricted Duties	✓	-	-
Lost Time	✓	-	✓
Fatality(s)	✓	-	✓

Table 20-3: Statistics for MTIFR and LTIFR
Mandalay Resources Corporation – Björkdal Gold Mine

Year	MTIFR	LTIFR
2015	22.24	16.68
2016	0	12.28
2017	9.73	12.97
2018	13.91	6.94
2019	13.75	12.16
2020	16.88	2.11

The Björkdal health and safety statistics for 2020 are summarized in Table 20-4.

Table 20-4: 2020 Health and Safety Statistics
Mandalay Resources Corporation – Björkdal Gold Mine

Class	Value
Fatalities	0
Lost Time Incidents (LTI)	1
Restricted Work Incidents (RW)	0(4)
Medical Treatment (MT)	8
Total Hours, Contracted Time Björkdal	357 760
Total Hours, Worked for Contractors	116 100
Total Recordable Incident Rate (TRIFR)	18.99
Medical Treatment Incident Rate (MTIFR)	16.88
Lost Time Incident Rate (LTIFR)	2.11

20.4 Mine Closure Requirements

Mine closure and reclamation plans are submitted and approved as an Annex to the Environmental Permit. The approved plan provides an overview of reclamation requirements that follow the July 2004 European Commission guidelines for Best Available Practice for the management of tailings and waste rock in mining activities. Mandalay notes that no additional requirements are needed to support the change permit application given the relatively small nature of the planned changes. Pending regulatory approval, Mandalay intends to update its closure and reclamation plan three years after the verdict. Thereafter, every five years or earlier if necessary. A final detailed remediation and closure plan must be submitted to the authority in good time before the activity ceases.

The 2018 environmental permit includes an updated closure and reclamation plan. Mandalay presently has US$4.43 million (SEK 43 million) in a secured reclamation account held by the Swedish authorities. As part of the change permit application, Mandalay provided a justification/calculation for why the current reclamation account would not need to increase. Mandalay notes that this will be decided by the court, however, so far in the process, there has been no opposition from the regulators.

21.0 CAPITAL AND OPERATING COSTS

21.1 Capital Costs

21.1.1 Basis of Estimate

The Mine is an on-going operation with the necessary facilities, equipment, and manpower in place to produce gold. The basis for the LOM plan is the Probable Mineral Reserve estimate outlined in Section 15. SLR has reviewed the LOM and cost estimates in sufficient detail to be satisfied that economic extraction of these Probable Mineral Reserves is justified. The majority of the capital cost estimates contained in this Technical Report are based on quantities generated from the open pit and underground development requirements and data provided by Björkdal.

A summary of capital requirements anticipated over the LOM is summarized in Table 21-1.

Table 21-1: Capital Cost Summary
Mandalay Resources Corporation – Björkdal Gold Mine

Description	Value (US$000)
Sustaining Capital Fixed Assets	39,952
Capital Development Underground	19,820
Pre-Strip Open Pit	44,500
Total Sustaining Capital	**104,273**
Growth Capital Fixed Assets	13,007
Total LOM Capital Expenditure	**117,279**

21.1.2 Sustaining Capital

The sustaining capital cost estimate provides for the periodic addition of capital required to maintain the operations at its existing levels. Sustaining capital is broadly divided between three areas: spending on fixed assets, ongoing underground development, and open pit pre-stripping. Pre-stripping costs account for the removal of approximately 18.9 Mt of open pit waste rock and overburden, while underground development includes the advancement of 7,433 m of cross-cuts and ramps to facilitate access to future mining areas. Costs are estimated based on actual cost history at Björkdal. The fixed asset estimate includes provision for equipment replacement; maintenance of the underground ventilation, electrical distribution, and mine water management systems; equipment replacement in the process plant and the replacement of items associated with tailings disposal, water treatment, and other general items.

21.1.3 Growth Capital

SLR notes that the majority of the growth capital reported is for further exploration and resource upgrade drilling in the underground mine, (more than 80% of the total amount), and comes directly from the 2021 budget.

21.2 Operating Costs

21.2.1 Basis of Estimate

The Mine maintains detailed and all-inclusive operating cost records that provide an excellent basis for the estimate of future operating costs. Mandalay produced a cash flow estimate based on the budgeted costs for 2021. This estimate was checked against the 2017 to 2020 costs provided by Mandalay. The majority of operating costs at Björkdal are expended in Swedish Kronor. All costs have been converted to US dollars using exchange rate assumptions of 9.0 SEK/US$.

Unit costs used to estimate LOM operating costs are summarized in Table 21-2. SLR notes that the annual fluctuation in production levels is relatively low, such that the effect of fixed versus variable expenses is minimized.

Table 21-2: Unit Cost Inputs
Mandalay Resources Corporation – Björkdal Gold Mine

Activity	Units	Value
Open Pit Mining	US$/t moved	2.67
Open Pit Mining	US$/t ore moved	9.97
Underground Mining	US$/t ore	22.53
Stockpile Mining	US$/t moved	0.94
Processing and refining	US$/t processed	8.25
G&A	US$/t processed	9.32
Total Cost	**US$/t processed**	**32.36**

21.2.2 Life of Mine Operating Costs

SLR has used the Björkdal unit costs to estimate LOM operating costs. Average LOM plan operating costs are shown in Table 21-3.

Table 21-3: Life of Mine Operating Costs
Mandalay Resources Corporation – Björkdal Gold Mine

Description	LOM (US$000)	Annual Average (US$000)	Unit Cost (US$/t processed)
Mining and Rehandle	169,965	18,885	14.79
Processing	94,818	10,535	8.25
G&A	107,141	11,905	9.32
Total Operating Cost	**371,923**	**41,325**	**32.36**

The LOM has been prepared on the basis that all planned mining activities can be carried out using the existing Björkdal manpower. It is assumed that current contract prices will remain unchanged for mining activities performed by a contractor such as open pit mining and underground rock haulage.

Cost inputs have been priced in real Q4 2020 dollars, without any allowance for inflation or consideration to changes in foreign exchange rates.

22.0 ECONOMIC ANALYSIS

This section is not required as the property is currently in production, Mandalay is a producing issuer, and there is no material expansion of current production. SLR has verified the economic viability of the Mineral Reserves via cash flow modelling, using the inputs discussed in this Technical Report.

23.0 ADJACENT PROPERTIES

There are no adjacent properties relative to this Technical Report.

24.0 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25.0 INTERPRETATION AND CONCLUSIONS

The Björkdal plant has processed approximately 33.9 Mt of ore to December 31, 2020 to produce a total of approximately 1.49 Moz Au at an average feed grade of 1.53 g/t Au. Both open pit and underground mining methods have been employed on the property.

25.1 Geology and Mineral Resources

Björkdal:

- Gold mineralization at the Mine occurs mostly as a large number of steeply dipping, structurally controlled narrow quartz veins that have been identified by drilling and grade control mapping and sampling for a distance of approximately 2,300 m in an east-west direction (along strike), 2,600 m in a north-south direction (across strike), and to a depth of approximately 750 m from surface.
- Exploration activities carried out since 2017 have discovered a number of mineralized zones that are associated with moderately north-dipping shear zones. These exploration programs have also discovered a number of gold bearing zones that are hosted by moderately north-dipping zones of prograde and retrograde skarns that have been developed in a marble unit.
- Ongoing exploration and grade control programs have identified the presence of a number of faults and shears present in the Mine. These programs have shown that the paragenetic relationships of these faults and shears with the gold mineralization is complex. The larger of these structures, the Björkdal shear, has been traced in the Mine from surface to a depth in excess of 500 m.
- Information collected from exploration and grade control programs in 2020 has improved the understanding of the control that the Björkdal shear has on the gold bearing quartz veins. The current view is that the Björkdal shear is a post-mineralization fault that truncates the gold bearing quartz veins into a hanging wall structural block and footwall structural block. Work is in progress to understand the magnitude and sense of movement along the Björkdal shear.
- The Björkdal open pit wireframes were based on a nominal 0.3 g/t Au cut-off grade over a minimum of two metres. The underground wireframes were based on a nominal two metre minimum width at a cut-off grade of 0.5 g/t Au. A total of 566 mineralized wireframe models were created for the underground mine and 453 wireframe models were created for the open pit mine.
- The dual capping value approach was continued to be used for estimation of the gold grades contained within the mineralized wireframe models in the underground mine. In this approach, the composited assays for DDH and RC drill holes are capped to values of 60 g/t Au and 40 g/t Au. Two different area of influences are then used when estimating the block grades for each mineralized wireframe. The higher grade capped composites are used within a first pass search ellipse with a 15 m radius, while the lower grade capped composites are used for subsequent estimation passes. A single capping value of 40 g/t Au was applied to the composited samples contained within the chip sample database. A value of 30 g/t Au has been selected as the capping value for the DDH, RC, and chip samples contained within the open pit wireframes. This capping value was also applied to all samples contained within the dilution domain volume.
- The up-dip limits of the Aurora Zone along its western limits have not been defined by the current drilling pattern. The data available to date suggests that potential remains for hosting economic

gold mineralization, as a weakly developed alignment of gold values suggests the presence of an east-plunging rake.

- Based on the examination of the reconciliation results, the year-end 2019 long-term block model predicted that approximately 40,100 oz Au may be present on an in-situ basis between the development muck and stope muck sources excavated in 2020. The data shows that the plant produced a total of approximately 44, 900 oz Au on a recovered basis for the same period.
- A potential source of the additional gold produced by the plant includes additional gold mineralization discovered as a result of detailed mapping and sampling results. An additional source of the positive variance includes gold recovered as a result of processing material from the stockpiles. SLR notes that the gold grades used to estimate the grades in the long-term model represent the cyanide-leachable portion of the gold in a given sample, while the processing plant recovers all gold that may be present, as the process flow sheet does not include a cyanide leaching circuit. A component of the positive variance may be due to any non-cyanide leachable gold that is recovered by the plant.
- Considering that the current year-end 2020 long-term model was prepared using the same work flows and estimation parameters as were used to prepare the year-end 2019 long-term model, it is reasonable to assume that the current long-term block model may yield similar results going forward.

Norrberget:

- The primary gold mineralization at Norrberget is contained within bands of veinlets and alteration containing amphibole in a package of interbedded mafic tuffs and volcaniclastics.
- Mineralization wireframes were generated using a 0.4 g/t Au cut-off grade and a two metre minimum horizontal width. The wireframes represented a primary band of continuous mineralization and two limited footwall bands of mineralization.
- Samples within the Norrberget domains were capped at 24 g/t Au, affecting seven out of the 311 samples within the mineralized domains. Intercepts within the domain were composited to 1.0 m lengths with a minimum sample length of 0.5 m.
- Bulk density applied to the block model was based on average densities for each lithology. The mineralization has an average density of 2.78 g/cm^3.
- The low number of mineralized samples at Norrberget necessitated the use of inverse distance weighted interpolation rather than the ordinary kriging method. Continuity analysis of grade contours was reviewed to help define high grade trends that were used to inform the interpolation parameters.

25.2 Mining and Mineral Reserves

- At a cut-off grade of 0.32 g/t Au, open pit Probable Mineral Reserves at Björkdal are estimated to be approximately 3.16 Mt grading 1.05 g/t Au, containing 106,000 oz Au.
- At a cut-off grade 0.87 g/t Au for stopes and incremental cut-off grade of 0.32 g/t Au for development material, underground Probable Mineral Reserves at Björkdal are estimated to be approximately 5.62 Mt grading 2.05 g/t Au, containing 371,000 oz Au.
- Stockpile Mineral Reserves are estimated to be approximately 2.55 Mt grading 0.64 g/t Au, containing 53,000 oz Au, at a cut-off grade of 0.32 g/t Au.

- At Norrberget, there are estimated to be approximately 162,000 tonnes of Probable Mineral Reserves at a grade of 2.80 g/t Au for a total of 15,000 oz Au.
- The current Mineral Reserves for Björkdal support a mine life of approximately nine years at a production rate of approximately 1.3 Mtpa, with the exception of the last year of production. Gold production averages approximately 55,000 oz per year, excluding the final year. A number of opportunities that could further extend the mine life exist including:
  - Continue upgrading Inferred Mineral Resources to Indicated Mineral Resources.
  - Identify remnant underground mining areas with in-situ Mineral Resources that could be extracted in a safe and cost effective manner.
- The Björkdal open pit mining operation was suspended in July 2019 and is now scheduled to recommence in 2024. Mining will initially concentrate on a number of smaller satellite pits on the periphery of the main pit. Mining operations in these areas will not affect ongoing underground operations or existing portal access.
- The current mine plan includes the recovery of the crown pillar from the main open pit during the final years of mining. This pillar contains infrastructure servicing the underground operations that will be disrupted by mining of the crown pillar. It also contains a large number of voids from previous underground mining that may cause some operational issues during mining and potentially some high wall stability concerns.
- Mining of the crown pillar and main open pit area will commence with moraine and loose waste rock removal in 2024. Further mining will be postponed until 2026 when the eastern portal becomes obsolete and mining of the first pushback commences. The final pushback is planned to start when all underground operations have ceased in mid-2027.
- A cost benefit study, conducted during 2020, showed that it would not be financially beneficial to relocate the existing in-pit underground access in order to allow the crown pillar to be mined in parallel with underground operations. Such a proposal would necessarily require the costly development of an additional portal and decline.
- The open pit mining operation will use contractors for most of the mining activities. SLR considers that there may be an opportunity to reduce open pit operating costs by converting to a mine-owned fleet when the open pit operation restarts in 2024.
- The underground mine is scheduled to produce approximately 960,000 tonnes of run-of-mine ore during 2021 and an average of approximately 858,000 tonnes of ore over the following five years of the underground operations. Underground production will reduce and end in year seven (2027) of the current LOM.
- The low grade stockpile will be used to provide the additional ore needed to allow the mill to operate at full capacity in all years through to the end of the mine life in 2029.
- Due to the variable quality of the material that comprises the low grade stockpiles, grade variations in the feed to the mill, from that forecast in the LOM plan, are anticipated.
- The underground Mineral Reserves at Björkdal are based on a minimum mining width of 3.85 m inclusive of dilution. This comprises a 2.5 m baseline minimum mining width, 0.5 m on both hanging wall and footwall, plus an additional 10% dilution to align with recent historic reconciliation data. Further dilution, ranging from 5% to 50%, was added on a stope-by-stope basis depending upon a stope's proximity to other stopes.

- Structural features such as folding and their impact on metal distribution are still not well understood in some areas which makes accurate forecasting of grade, dilution, and mining losses a challenge. SLR is of the opinion that some variation from planned, in the short term, is an inevitable consequence of the complexity of the orebody. As a result, historical dilution and recovery reconciliation data is heavily relied upon for mine planning.
- Mining method and stope design is driven primarily by geotechnical considerations. SLR considers it essential that continued attention be given to local and regional rock mechanics issues during future mine design as underground stresses are redistributed.
- Detailed reconciliation comparing design to actual mined tonnes (using CMS) and grade from all stopes, was undertaken on a quarterly basis throughout 2020. The results indicated that diluted stope ore tonnage was under-estimated by approximately 9% and gold content by approximately 5%. Historical reconciliation indicates that dilution averages 50% underground. This is consistent with factors used in the mine design and planning.
- The nature of the mining method is such that development ore will always represent a significant proportion of the underground tonnage production (13% for the LOM).
- As presently planned, mining of the Norrberget open pit will be carried out by the same contractor employed at the Björkdal open pit. The total mine life for Norrberget is estimated to be approximately six months.

25.3 Processing

- Björkdal has been successful in recovering nearly 90% of the gold, with approximately 70% to 76% of the gold recovered in gravity concentrates (i.e., gravity concentrate, middlings, and Knelson concentrate) and an additional 12% to 18% of the gold recovered in flotation concentrates.
- Preliminary metallurgical tests using samples from Norrberget show that the mineralogy is more complex and the gold grain sizes are smaller, which requires a finer grind size to achieve liberation. Since the deposit is small, it is not anticipated that modifications to the existing processing plant will be cost effective. Therefore, the data indicates that the average gold recovery for Norrberget will be approximately 75%.

25.4 Environmental, Permitting, and Social or Community Considerations

- A new operating permit was granted in December 2018 and remains valid for the TMF (dam and related water discharge) for ten years and until October 5, 2067 for all other aspects of the operations. The environmental permit allows for expansion of the TMF for a mill throughput of 1.7 Mtpa.
- A building permit was granted in May 2020 for Dam K1, however, approval of the change permit submitted in October 2019 is still pending. The change permit application also covers the extension of the underground mine and is supported by an EIA.
- A compensation agreement for lost grazing land and increased operating costs for the reindeer herders was signed in April 2017. This agreement is valid for the planned operating life of the Björkdal Mine.
- The Norrberget deposit is not covered by the aforementioned agreement. A new mining concession has been granted that covers Norrberget and is valid until January 2044. Mining of Norrberget is planned for 2028 and 2029.

- The 2018 environmental permit includes an updated closure and reclamation plan. A reclamation account is in place and held by the Swedish authorities.

25.5 Risks

- The Mine has been in production for over 30 years and is a mature operation. In SLR's opinion, there are no significant risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information, Mineral Resource or Mineral Reserve estimates, or projected economic outcomes.

26.0 RECOMMENDATIONS

SLR presents the following recommendations:

26.1 Geology and Mineral Resources

1. Conduct a study that determines the gold grades of the assays obtained from the on-site PAL1000 residues (tailings). The results from such a study may be useful in reducing the variances observed between the Mineral Resource block models and the plant production data.
2. Review and update as appropriate the validation procedures for the drill hole management protocol.
3. Continue efforts to use the actual as-mined volumes as determined from the CMS surveys to code the block model rather than the design shapes. Use of the actual excavated volumes will improve the block model reconciliation results for those stopes which are accessed by means of a bottom drive only (i.e., the “blind” stopes).
4. Continue efforts to construct a full three-dimensional digital model of the distribution of the host rocks in the vicinity of the Mine area. Use of immobile element geochemical signatures (e.g., Ti versus Zr plots) may be useful in assisting to discriminate between the footwall intermediate volcanic and the hanging wall mafic volcanic units.
5. Carry out exploration activities to search for the fault-displaced continuations of the quartz veins located in the upper portions of the Mine. In addition, exploration activities to search for the fault-displaced continuity of the Aurora Zone are also warranted.
6. Create clipped wireframe models for cross-cutting veins prior to their use in preparing Mineral Resource estimates.
7. Examine the two metre minimum width criteria used to create the vein interpretations in light of the reconciliation information being collected for the excavated stopes. Consideration may be given to modifying this minimum width to better reflect the thinnest openings that are being achieved on a day-to-day operational basis.
8. Continue to collect additional samples from selected exploration drill holes for density measurements.
9. Continue collecting information regarding the distribution of the gold grades in the walls of the development headings by means of the POD-series drill holes.
10. Carry out studies to examine the impact of the spacing of the POD-series drill holes on the accuracy of the local grade estimate.
11. Continue collecting chip samples across the full width of the face for underground development headings and entering all chip sample information into the drill hole database as pseudo-drill holes that span the full width of the face of the development heading.
12. Harmonize the across-strike dimensions (i.e., the northing, or Y-direction) of the blocks with the minimum widths selected for preparation of the mineralized wireframes to reduce the amount of dilution being introduced into the block model.
13. Evaluate alternate parameters for the search strategies to reduce the presence of estimation artifacts and improve the accuracy of the local estimate.
14. Test the up-dip projection of the moderately plunging shoot located on the western limit of the Aurora Zone mineralization by drilling.

15. Continue to collect high quality scans of all stope voids on a regular and timely basis. This information should then be integrated into the material tracking and metal accounting systems to permit comparisons to be made for the block model versus the mine actual production and then the mill output. The information will also be useful in evaluating the accuracy of the excavation voids against the designed excavations.
16. Consider expanding the time period for the reconciliation studies. The current reconciliation studies evaluate the predictive accuracy of the year-end 2019 long-term block model over the most recent 12-month production period. Use of the year-end 2017 block model for comparison with the production data for 2018, 2019, and 2020 will enable the quantification of the accuracy of the estimation procedures and parameters over a 36-month period.
17. At Norrberget, carry out additional drilling to delineate the mineralization at depth and along strike.

26.2 Mining and Mineral Reserves

1. Continue ongoing reconciliation and production management work to improve future grade and dilution forecasts.
2. Undertake a cost benefit analysis for relocating the underground access portals and developing additional underground infrastructure to gain access to potential additional Mineral Reserves from the Björkdal open pit whilst underground operations continue.
3. Review the 2017 Norrberget Mineral Reserves in light of recent changes in gold price, subject to the inclusion of any additional drilling information into the resource model.

26.3 Processing

1. Continue to monitor the performance of all unit operations and to optimize plant performance to achieve the highest economic outcome possible.
2. Continue to evaluate historic data and to use the results to estimate future plant gold recovery and operating costs.
3. In future metallurgical tests for Norrberget, use variability samples with a range of head grades from throughout the deposit, using test conditions that evaluate what the metallurgical response will be in the existing processing facility.

26.4 Permitting

1. The changed permit application covering the extension of the underground mine and raise of Dam K1 is pending a decision from the Swedish authorities. SLR notes however that the building permit for Dam K1 was issued in May 2020. Björkdal is actively engaging the authorities on the status of the change permit application. These efforts should be continued to ensure timely receipt of the required permit.

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28.0 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Björkdal Gold Mine, Sweden" with an effective date of March 18, 2021 was prepared and signed by the following authors:

(Signed and Sealed) ***Reno Pressacco***

Dated at Toronto, ON
March 26, 2021

Reno Pressacco, M.Sc.(A), P.Geo.
Associate Principal Geologist

(Signed and Sealed) ***Richard C. Taylor***

Dated at London, UK
March 26, 2021

Richard C. Taylor, MAusIMM, CP
Principal Mining Engineer

(Signed and Sealed) ***Kathleen A. Altman***

Dated at Lakewood, CO
March 26, 2021

Kathleen A. Altman, Ph.D., P.E.
Associate Principal Metallurgist

(Signed and Sealed) ***Alessandra (Alex) Pheiffer***

Dated at London, UK
March 26, 2021

Alessandra (Alex) Pheiffer, M.Sc, PrSciNat
Technical Director, Environmental and Social Impact Assessment, Europe

29.0 CERTIFICATE OF QUALIFIED PERSON

29.1 Reno Pressacco

I, Reno Pressacco, M.Sc(A)., P.Geo., as an author of this report entitled "Technical Report on the Björkdal Gold Mine, Sweden", prepared for Mandalay Resources Corporation and dated March 18, 2021, do hereby certify that:

1. I am an Associate Principal Geologist with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.
2. I am a graduate of Cambrian College of Applied Arts and Technology, Sudbury, Ontario, in 1982 with a CET Diploma in Geological Technology, Lake Superior State College, Sault Ste. Marie, Michigan, in 1984, with a B.Sc. degree in Geology and McGill University, Montreal, Québec, in 1986 with a M.Sc.(A) degree in Mineral Exploration.
3. I am registered as a Professional Geologist in the Province of Ontario (Reg. #939). I have worked as a geologist for a total of 35 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements, including preparation of Mineral Resource estimates and NI 43-101 Technical Reports.
    - Numerous assignments in North, Central and South America, Europe, Russia, Armenia and China for a variety of deposit types and in a variety of geological environments; commodities including Au, Ag, Cu, Zn, Pb, Ni, Mo, U, PGM, REE, and industrial minerals.
    - A senior position with an international consulting firm, and
    - Preparation of the Mineral Resource estimates for open pit and underground mines at the Mine for the four prior years.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Björkdal Gold Mine on September 20 to 22, 2016 and most recently on November 18 to 21, 2019.
6. I am responsible for Sections 2 through 12, 14, 23, and 24, and relevant disclosure in Sections 1, 25, 26, and 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have previously prepared public domain Mineral Resource estimates for the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 18th day of March, 2021.

(Signed and Sealed) ***Reno Pressacco***

Reno Pressacco, M.Sc.(A)., P.Geo.

29.2 Richard C. Taylor

I, Richard C. Taylor, MAusIMM, CP, as an author of this report entitled "Technical Report on the Björkdal Gold Mine, Sweden", prepared for Mandalay Resources Corporation and dated March 18, 2021, do hereby certify that:

1. I am Principal Mining Engineer with SLR Consulting Ltd, 69 Polsloe Road, Exeter, EX1 2NF, Devon, UK.
2. I am a graduate of North Staffordshire Polytechnic in 1987 with a B.Eng. degree in mining engineering.
3. I am registered as a Chartered Professional in Australia with the AusIMM (Reg.# 222470). I have worked as a mining engineer for a total of 33 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on many mining operations and projects globally for feasibility study, due diligence, and regulatory requirements
   - Operational experience as Senior Planning Engineer, and Technical Services Manager at six mines in South Africa, Australia, Central Asia, and UK, both open pit and underground.
   - Manager at three mining consultant companies in South Africa and Australia
   - Planning and operational experience in coal, gold, copper, nickel, diamonds, tungsten and PGMs.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I did not visit the Björkdal Gold Mine.
6. I am responsible for Sections 15, 16, 18, 19, 21, and 22, and related disclosure in Sections 1, 25, 26, and 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 18th day of March, 2021.

(Signed and Sealed) ***Richard C. Taylor***

Richard C. Taylor, MAusIMM, CP

29.3 Kathleen A. Altman

I, Kathleen A. Altman, Ph.D., P.E., as an author of this report entitled “Technical Report on the Björkdal Gold Mine, Sweden”, prepared for Mandalay Resources Corporation and dated March 18, 2021, do hereby certify that:

1. I am an Associate Principal Metallurgist with SLR International Corporation, of 1658 Cole Blvd, Suite 100, Lakewood, CO 80401.
2. I am a graduate of the Colorado School of Mines in 1980 with a B.S. in Metallurgical Engineering. I am a graduate of the University of Nevada, Reno Mackay School of Mines with an M.S. in Metallurgical Engineering in 1994 and a Ph.D. in Metallurgical Engineering in 1999.
3. I am registered as a Professional Engineer in the State of Colorado (Reg. #37556). I have worked as a metallurgical engineer for a total of 40 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Review and report as a metallurgical consultant on numerous mining operations and projects around the world for due diligence and regulatory requirements.
    - I have worked for operating companies, including the Climax Molybdenum Company, Barrick Goldstrike, and FMC Gold in a series of positions of increasing responsibility.
    - I have worked as a consulting engineer on mining projects for approximately 20 years in roles such a process engineer, process manager, project engineer, area manager, study manager, and project manager. Projects have included scoping, prefeasibility and feasibility studies, basic engineering, detailed engineering and start-up and commissioning of new projects.
    - I was the Newmont Professor for Extractive Mineral Process Engineering in the Mining Engineering Department of the Mackay School of Earth Sciences and Engineering at the University of Nevada, Reno from 2005 to 2009.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Björkdal Gold Mine from September 22 to 25, 2017.
6. I am responsible for Sections 13 and 17 and relevant disclosure in Sections 1, 25, 26, and 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have prepared previous Technical Reports dated January 16, 2017, March 29, 2018, March 28, 2019, and March 26, 2020 on the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 18th day of March, 2021.

(Signed and Sealed) ***Kathleen A. Altman***

Kathleen A. Altman, Ph.D., P.E.

29.4 Alessandra (Alex) Pheiffer

I, Alessandra (Alex) Pheiffer, M.Sc., PrSciNat, as an author of this report entitled "Technical Report on the Björkdal Gold Mine, Sweden", prepared for Mandalay Resources Corporation and dated March 18, 2021, do hereby certify that:

1. I am Technical Director, ESIA, with SLR Consulting France SAS, of 13 Rue Martin Luther King, Saint Martin d'Hères, 38400, Grenoble.
2. I am a graduate of Rand Afrikaans University in 2004 with a M.Sc. Environmental Management.
3. I am registered as a Professional Natural Scientist (PrSciNat) in Environmental Science (Reg. No. 400183/05) with the South African Council for Natural Scientific Professions. I have worked as an environmental scientist for a total of 18 years. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on many mining operations and projects for feasibility, due diligence, and regulatory requirements.
   - Operational experience for a period of one year as an Assistant to the Chief Environmental Officer within Anglo Platinum's Waterval Smelter in South Africa.
   - Experience as an Environmental Scientist in coal, gold, copper, PGMs, iron, manganese, uranium, chrome, ferrochrome.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the Björkdal Gold Mine.
6. I am responsible for Section 20 and related disclosure in Sections 1, 25, 26, and 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 18th day of March, 2021.

(Signed and Sealed) ***Alessandra (Alex) Pheiffer***

Alessandra (Alex) Pheiffer, M.Sc., PrSciNat www.slrconsulting.com