PRELIMINARY ECONOMIC ASSESSMENT FOR THE JOMA PROJECT, NORWAY

Prepared For

Joma Gruver AS

A company in the Bluelake Mineral Group

Report Prepared by

srk consulting

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EXECUTIVE SUMMARY

PRELIMINARY ECONOMIC ASSESSMENT FOR THE JOMA PROJECT, NORWAY

1 INTRODUCTION

SRK Consulting (Sweden) AB ("SRK") is an associate company of the international group holding company, SRK Consulting (Global) Limited (the "SRK Group"). SRK was commissioned by Joma Gruver AS, a company in the Bluelake Mineral Group ("Bluelake Mineral", hereinafter also referred to as the "Company" or the "Client"), to prepare a Preliminary Economic Assessment ("PEA") on the Joma deposit, located in Norway and the Stekenjokk-Levi deposit, located in Sweden (the "Project").

The Joma deposit is located approximately 570 km north of Norway's capital, Oslo, and 230 km northeast of the closest major city, Trondheim and the Stekenjokk-Levi deposit is located in the Vilhelmina area of northwestern Sweden on the border between Västerbotten and Jämtland counties (Swedish: län), approximately 25 km west of the town of Klimpfjäll, 150 km northwest of the nearest major town of Vilhelmina and 650 km north-northwest of the capital city of Stockholm (Figure ES 1).

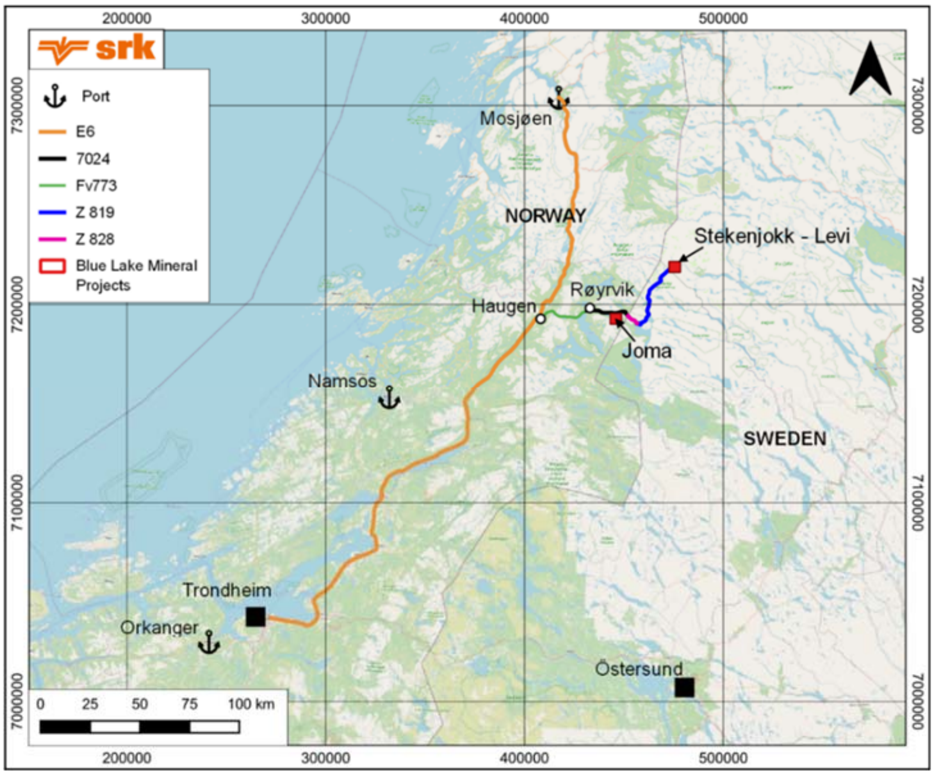

Figure ES 1: Location of Joma deposit, Norway and Stekenjokk-Levi deposit, Sweden

The Company has consolidated the ownership of these two assets which are approximately 60 km apart by paved road, with the intention evaluating and implementing a re-start of the two historical mines utilising a single ore processing plant at the Joma Project location. Future campaign mine production at Stekenjokk will be considered during winter months only.

SRK completed the Mineral Resource Estimates (“MRE”) for the Stekenjokk-Levi and the Joma deposits in a separate engagement with the Company which is used as a basis for the PEA.

The PEA is based on the combined production from the Joma and Stekenjokk-Levi underground mines with a single beneficiation plant to be built on the site of the previous Joma concentrator with a target production rate of 750 ktpa. Due to differing head grades and historical metallurgical responses, the ores from Joma, Stekenjokk and Levi will be processed in individual campaigns. In addition, as the Stekenjokk and Levi mines will only operate during the winter season, ore from all three mines will be separately stockpiled ahead of the concentrator.

The flowsheet will consist of crushing and grinding ahead of flotation to produce separate concentrates. Joma ore will produce copper and zinc concentrates, and Stekenjokk and Levi will produce copper, zinc and lead concentrates. Precious metals (gold and silver) will report to the different concentrates according to their specific metallurgical responses.

The mine plan for Joma also considers storage underground of all future tailings from the process facilities as a paste backfill in the historical (and future) mining voids. This also includes future Run-of-Mine (“ROM”) processed from the Stekenjokk-Levi mines at the Joma process facility.

The PEA is preliminary in nature. It includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorised as Mineral Reserves. There is no certainty that the PEA will be realised.

1.1 Report Contributors

The PEA was prepared by SRK for Joma Gruver AS (part of the Bluelake Mineral Group), managed by Mr Chris Bray (MAusIMM(CP) who is a Qualified Persons (“QP”) as defined in 2014 Canadian Institute of Mining and Metallurgy (“CIM”) Definition Standards. The Mineral Resources used as a basis for the PEA were the responsibility of Dr Lucy Roberts MAusIMM(CP) of SRK who is defined as a QP under the CIM definition standards.

2 THE JOMA DEPOSIT

2.1 Overview

The Joma deposit is a brownfields project with Cu-Zn mineralisation of Caledonian volcanogenic massive sulfide ("VMS") style. The individual lenses vary greatly in thickness and length with the massive zone attaining a maximum thickness of about 50 m. The orebody forms a folded, plate-like body that dips steeply to the west-southwest from the surface and flattens out at depth. This project was a historical underground mine in production during the period 1972 to 1998 with approximately 11 Mt of processed ore (Grong Gruber AS). Residual and unmined zones of this deposit have been the topic of previous historical resource estimates.

SRK ran a mineable stope optimiser ("MSO") using the minimum stope dimensions of 10m x 10m x 3m in order to define potential realistic mining targets to be generated. The resultant MSO shapes were used to constrain the reporting of the Mineral Resource. Furthermore, SRK notes that the majority of the defined MSO shapes occur within 50m of the depletion survey for the mine as shown in Figure ES 2, other than at Joma South.

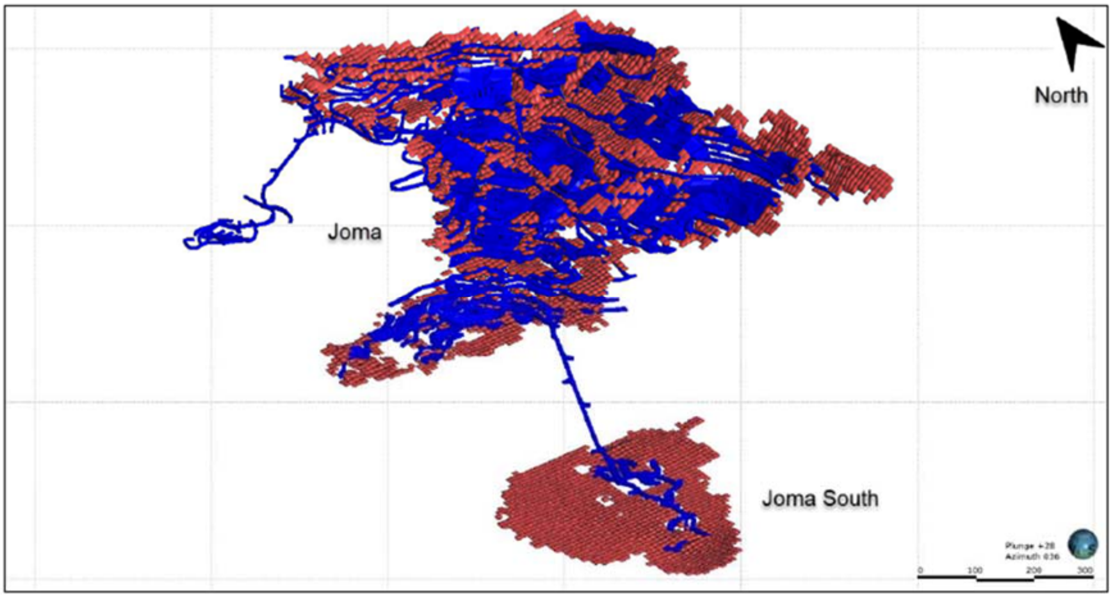

Figure ES 2: North-east view of the MSO shapes (red) in relation to the depletion survey (blue). The MSO shapes have been used to constrain the reporting of the Mineral Resources

The MRE for the Joma deposit, used as a basis for the PEA, is presented in Table ES 1. The MRE is reported and classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) and Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") Standards of Disclosure for Mineral Projects (May 2016).

Table ES 1: SRK December 2021 Mineral Resource statement for the Joma Project*

Deposit	Classification	Tonnes (Mt)	Cu %	Zn %	NSR (USD/t_{ROM})	Cu tonnes (kt)	Zn tonnes (kt)
Joma	Measured	-	-	-	-	-	-
	Indicated	6.0	1.00	1.66	95.95	60.0	99.6
	Inferred	0.3	0.9	1.4	81.3	3	4
Joma South	Measured	-	-	-	-	-	-
	Indicated	-	-	-	-	-	-
	Inferred	0.9	1.3	0.5	102.2	12	5
Total Indicated Mineral Resource		**6.0**	**1.00**	**1.66**	**95.95**	**60.0**	**99.6**
Total Inferred Mineral Resource		**1.2**	**1.2**	**0.7**	**97.0**	**15**	**9**

**In reporting the Mineral Resource Statements, SRK notes the following:*

- *Mineral Resources have an effective date of 09 December 2021 and have been depleted to reflect the current understanding of the mining completed up to the date of the mine closure (1998). The depletion is based on the digitised development plans, as held by the mine at the time of closure. The digitisation exercise was completed by the Company.*
- *The Qualified Person for the declaration of Mineral Resources is Dr Lucy Roberts, MAusIMM(CP), of SRK Consulting (UK) Ltd. The MRE was authored by a team of consultants from SRK.*
- *Three primary lenses of mineralisation were interpreted and modelled, alongside nine smaller lenses. The majority of the smaller lenses are interpreted to be separate to the larger mineralisation volumes. The larger lenses are interpreted to coalesce and bifurcate. For reporting the Mineral Resource, SRK has combined all of the modelled domains across the entire deposit.*
- *Mineral Resources are reported as in situ and undiluted. The Mineral Resources are reported within mineable stope optimiser shapes, generated using a net smelter return of USD 50/tore, with a minimum stope shape of 10mX x 10mY x 3mZ using a Cu and Zn price of USD 9,100/t and USD 2,800/t respectively and include royalty reductions. The recoveries used in the net smelter return calculations were based on the historical performance of the Joma plant being:*
  - *For the Cu concentrate: Cu recovery 87%, Zn recovery 5%, for an average Copper concentrate grade of 24%Cu; and*
  - *For the Zn concentrate: Zn recovery 76% for an average Zinc concentrate grade of 52%Zn.*
- *Assumed operating costs include:*
  - *Mining at USD31.8/t_{Ro}M*
  - *Processing cost of USD14.5/t_{RoM}*
  - *Copper Concentrate transport charges of USD40.5/t_{conc} and treatment charges of USD80/t_{conc}*
  - *Zinc Concentrate transport charges of USD20.2/t_{conc} and treatment charges of USD140/t_{conc}*
  - *Metal Payability of 95.8 % (copper) and 84.6% (zinc)*
  - *Refining Changes of USD0.08/lb payable copper,*
  - *G&A cost of USD3.5/t_{RoM}*
- *Given these parameters and the results of the MSO assessment, SRK considers there to be reasonable prospects for eventual economic extraction, and as such, fulfil the requirements for reporting a Mineral Resource.*
- *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability, nor have any mining modifying factors been applied.*
- *In order to verify the historical data, SRK has reviewed the digital database, reviewed a re-sampling programme of historical core, reviewed core photographs, and has reviewed the available quality control and quality assurance data from the 2021 re-sampling. SRK is unaware of any issues at Joma which could materially affect the reporting of Mineral Resources by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors.*
- *Tonnages are reported in metric units, with metal grades in percent (%). Tonnages and grades are rounded appropriately. Rounding, as required by reporting guidelines, may result in apparent summation differences between tonnes, grade and contained metal content. Where these occur, SRK does not consider these to be material.*

2.2 Permitting

The Company holds nine mineral permits in the Joma region, including six permits overlying the Joma deposit, and three covering separate deposits. The Joma mine and plant areas are covered by ‘extraction’ permits (Norwegian: Utvinningsrett) that were approved in April 2021 for an indefinite period of time.

For environmental approval, the Company recently finalised an environmental and social impact assessment (“ESIA”), which is currently under review by the authorities (Røyrvik municipality) to gain zoning plan approval (under the Planning and Building Act 2008). Prior to commencing operation, the Company must also gain approval through a discharge/emissions permit (under the Pollution Control Act 1981), operating permit (under the Minerals Act 2009) and building permit (under the Planning and Building Act 2008).

2.3 Mining

The mining inventory for Joma was estimated using a similar approach as for mineral resources. NSR values were estimated into the block model using lower consensus market forecast (“CMF”) prices of 7,000 USD/t for copper and 2,150 USD/t for zinc. Minimum MSO stope shapes of 10mX x 10mY x 3mZ were used as a mining target with an NSR cut-off of 50 USD/t_{ROM}. The mining inventory totals 3.6 Mt with the following mining methods and modifying factors applied:

- Room & Pillar method (85% of mining inventory) with no additional external dilution and 35% losses.
- Longhole mining of crown pillar (15% of mineral inventory) at the end of the mine life with 5% dilution and 5% losses.

Figure ES 3 and Figure ES 4 provide respective plan and long views of the mining inventory (green) and historical mine development which will need to be rehabilitated to restart mining. The historical mine is currently flooded with a bulkhead blocking the entrance of the existing adit at the 480 mRL and a staged dewatering program is required during the preproduction period.

The mine plan for Joma considers storage underground of all future tailings from the process facilities as a paste backfill in the historic (and future) mining voids. This also includes future ore processed from the Stekenjokk-Levi deposit at the Joma process facility.

Materials handling at Joma considers truck haulage to surface with tailings sent back underground as slurry to an underground paste plant. Paste backfill will be moved to stopes with a combination of reticulation piping and agitator trucks as required.

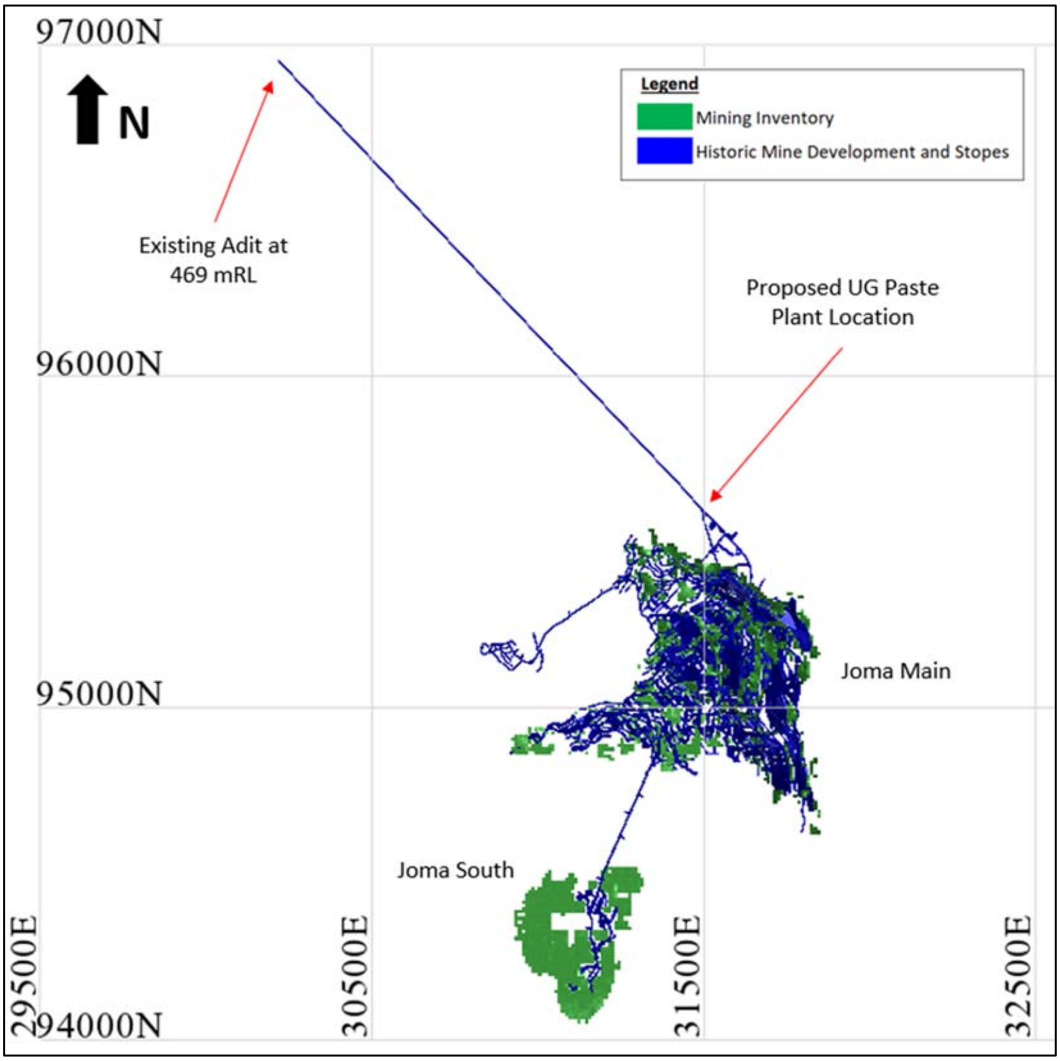

Figure ES 3: Plan view of the Joma Mining Inventory and historical mine development and stopes

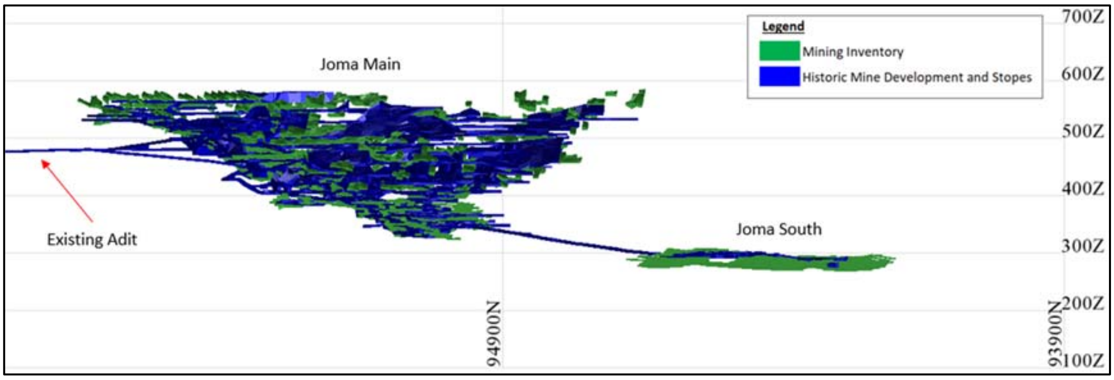

Figure ES 4: Long view of the Joma Mining Inventory and historical mine development and stopes, looking northeast

2.4 Mine Water Management

Before restarting the Joma mine operation, the currently flooded open pit, underground mine, and access decline must be dewatered and the surplus water treated to suitable levels before being discharged to the adjacent Huddingsvatn Lake. It is proposed that dewatering and surplus water treatment should be split into three stages as follows:

1. Dewatering of the existing flooded mine and open pit down to the 480 mRL.
2. Active mining of levels above the 480 mRL with access through the existing 480 mRL decline. Dewatering of the flooded workings below the 480 mRL will continue during this phase until the existing mine is completely dewatered.
3. Active mining of the full mine footprint to the final life of mine design, after dewatering of the existing flooded workings down to their full depth.

Two water treatment plants will be required, namely a water treatment plant to treat water to a suitable quality for use in the process plant circuit and a surplus water treatment plant.

All water from the mine will be fed into a sedimentation pond at the industrial area with potential additional treatment required prior to feeding into the process water circuit. Surplus water to be discharged to Lake Huddingsvatn after the process water circuit will require further treatment.

This proposed water treatment approach focusses on the surplus water treatment requirements as the plant water treatment is expected to be relatively straightforward and can be designed later in the design process. The high density sludge (“HDS”) process is proposed as the optimal selection for the Project requirements.

3 THE STEKENJOKK-LEVI DEPOSIT

3.1 Overview

The Stekenjokk-Levi deposit (Figure ES 5) is a brownfields project with Zn-Cu-Pb-Ag-Au mineralisation of Caledonian VMS style. This project was a historical underground mine in production during the period 1976 to 1988 with approximately 7 Mt of processed ore (Boliden). The ore is typically shallow dipping to flat with thickness between 2 and 20 m. All mining took place underground as cut-and-fill mining using the coarse fraction of the flotation tailings as back-fill material with high percentage ore recovery achieved. Flatter areas used the room and pillar method with the coarse tailings backfill as a working floor in thicker areas. Unmined zones of this deposit have been the topic of previous historical resource estimates.

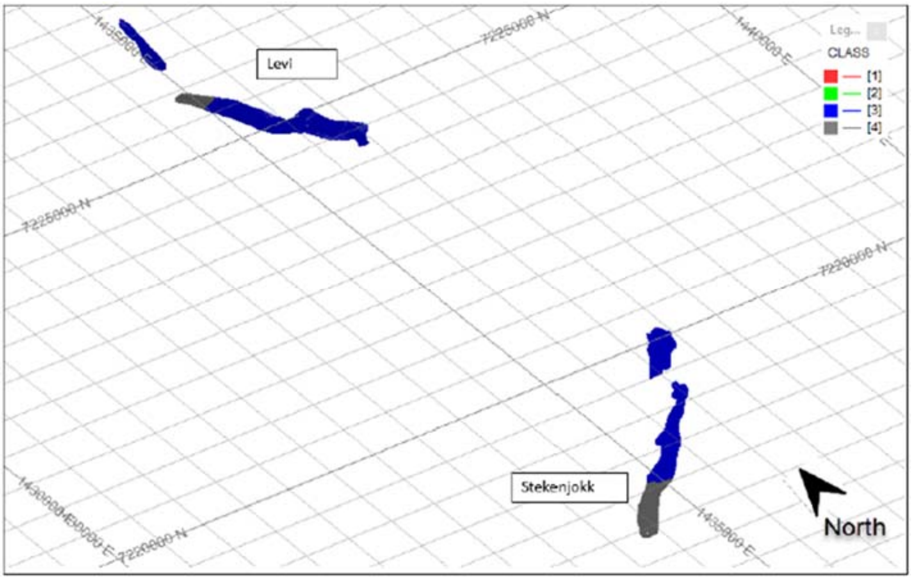

Figure ES 5: View of the Resource block model for the Stekenjokk-Levi deposit coloured by Classification, blue = Inferred material

The MRE for the Stekenjokk-Levi deposit, used as a basis for the PEA, is presented in Table ES 2. The MRE is reported and classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) and NI 43-101 Standards of Disclosure for Mineral Projects (May 2016)

Table ES 2: SRK Mineral Resource Statement for the Stekenjokk Project, Sweden, as of 23 November 2021*

Area	Classification	Tonnes (Mt)	Cu %	Zn %	Pb %	Ag g/t	Au g/t	NSR (USD/t ore)	Contained Metal: Cu (kt)	Contained Metal: Zn (kt)	Contained Metal: Pb (kt)	Contained Metal: Ag (koz)	Contained Metal: Au (koz)
Stekenjokk	Measured Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Inferred Mineral Resources	6.7	0.9	2.7	0.6	55	0.2	128	60	181	40	11,783	43
Levi	Measured Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Inferred Mineral Resources	5.1	1	1.5	0.1	22	0.2	105	51	77	5	3,640	33

**In reporting the Mineral Resource Statements, SRK notes the following:*

- *Mineral Resources have an effective date of 19 November 2021.*
- *Qualified Person for the declaration of Mineral Resources is Dr Lucy Roberts, MAusIMM(CP), of SRK Consulting (UK) Ltd. The MRE was authored by a team of consultants from SRK.*
- *Four primary lenses of mineralisation were interpreted and modelled, alongside two smaller lenses. The two smaller lenses are interpreted as internal high-grade domains in the larger lenses and are associated with elevated Cu and Zn grades. For reporting the Mineral Resource, SRK has combined all of the modelled domains across the entire deposit*
- *Mineral Resources are reported in situ and undiluted. It is assumed that all mineralised material will be transported 75 km to the future Joma process facilities in Norway. The Mineral Resources are reported within mineable shapes, generated using a net smelter return of 60 USD/t¬ ROM, with a minimum mining width of 2m where the dip of the mineralisation is in excess of 40° and a minimum mining width of 3m where the dip of the mineralisation is less than of 40°. The Cu, Zn, Pb, Ag and Au prices used in the NSR calculation were of 9,100 USD/t, 2,800 USD/t, 2,400 USD/t, 2,600USD/t, 25/oz and 1,790/oz respectively and include royalty reductions. Given these parameters, SRK considers there to be reasonable prospects for eventual economic extraction, and as such, fulfil the requirements for reporting a Mineral Resource.*
- *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability, nor have any mining modifying factors been applied.*
- *SRK is unaware of any issues at Stekenjokk-Levi which could materially affect the reporting of Mineral Resources by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors*
- *Tonnages are reported in metric units, with metal grades in percent (%) and grams per tonne (g/t). Tonnages and grades are rounded appropriately. Rounding, as required by reporting guidelines, may result in apparent summation differences between tonnes, grade and contained metal content. Where these occur, SRK does not consider these to be material.*

3.2 Permitting

The Stekenjokk-Levi deposit is currently covered by two exploration licences. Applications for exploitation concessions were submitted to the authorities in 2019 and currently under review. Although the Jämtland County Administrative Board (“CAB”) agreed to authorising the Stekenjokk K nr 1 permit, the Västerbotten CAB requested the Company to conduct more detailed environmental studies into the impact of the potential mine on the Natura 2000 protected area of Vardo-, Laster- och Fjällfjällen surrounding the Levi K Nr 1 permit area. This study was completed in 2021 and submitted to the authorities for review.

In addition to the exploitation concession, mining activities require an environmental permit (under the Swedish Environmental Code, 2000). For this environmental approval, the Company is required to undertake a more detailed ESIA, which will be reviewed by Swedish Environmental Protection Agency in conjunction with the Västerbotten/Jämtland CAB. In addition, a building permit (under the Planning and Building Act 2010) and land designation (under the Minerals Act, 1991) are required.

3.3 Mining

The Stekenjokk-Levi deposit is separated into two mines with shared surface infrastructure. All future ore from the Stekenjokk and Levi mines will be transported from Sweden 60 km to the Joma process facilities in Norway. All tailings from the processing of Stekenjokk-Levi will be stored underground as a paste backfill in the substantial historic voids at the Joma mine.

The mining inventory for both the Stekenjokk and Levi mines were estimated using a similar approach as for the mineral resources. NSR values were estimated into the block model using lower CMF prices of 7,000 USD/t for copper, 2,150 USD/t for zinc, 1,850 USD/t for lead, 1,380 USD/oz for gold and 19.3 USD/oz for silver. Mineable shapes were defined using a minimum mining width of 2 m where the dip of the mineralisation is in excess of 40° and a minimum mining width of 3 m where the dip of the mineralisation is less than of 40°with an NSR cut-off of 60 USD/t_{ROM}.

The mining inventory for Stekenjokk totals 5.4 Mt with a combination of R&P and longhole open stoping mining methods applied with modifying factors of 5% dilution and 15% losses.

Figure ES 6 and Figure ES 7 provide respective plan and long views of the mining inventory by method as well as existing development that will need to be rehabilitated to restart mining and future planned development. The historical Stekenjokk mine is currently flooded and a staged dewatering program is required during the preproduction period. Materials handling at Stekenjokk considers truck haulage to surface prior to contract transportation to the Joma process facilities.

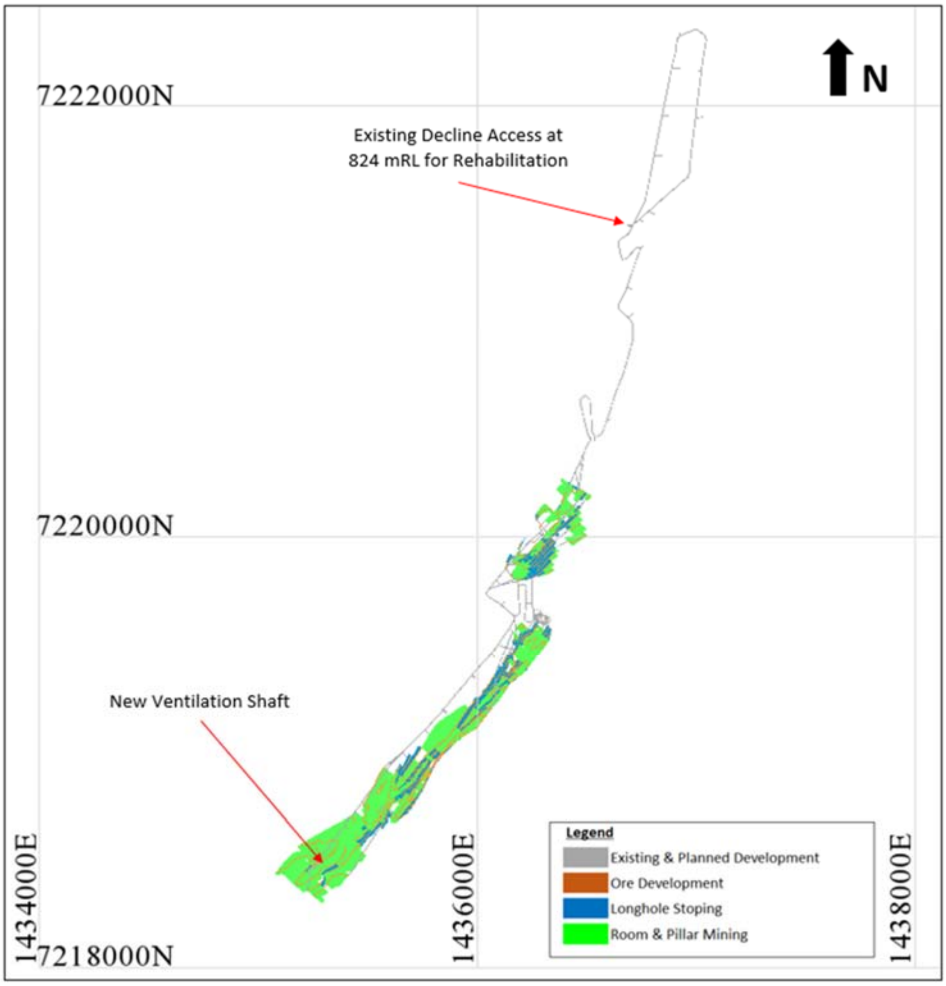

Figure ES 6: Plan view of the Stekenjokk Mining Inventory by mining method and existing and planned development

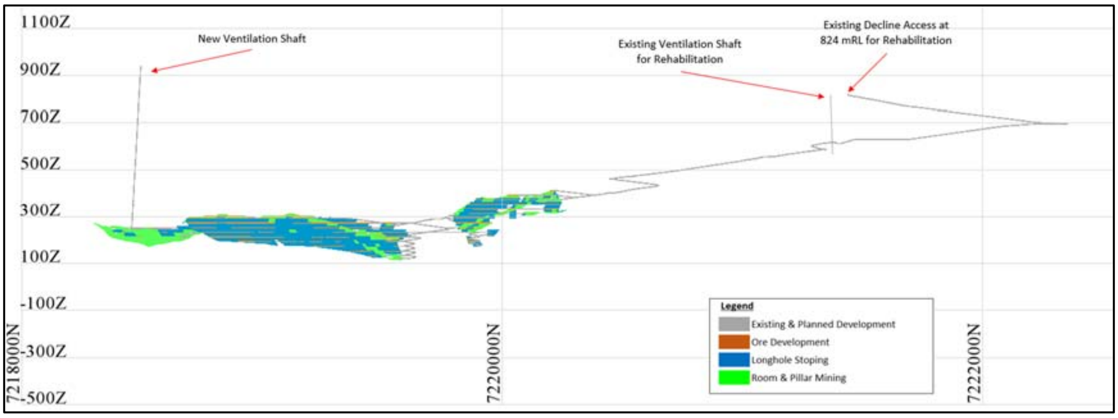

Figure ES 7: Long view of the Stekenjokk Mining Inventory by mining method and existing and planned development, looking northwest

The mining inventory for Levi totals 2.3 Mt (57% tonnes from Levi South and 43% tonnes from Levi North) with the following mining methods and modifying factors applied:

- Room & Pillar method (67% of mining inventory) with no additional external dilution and 35% losses.
- Longhole open stoping (32% of mining inventory) with 5% dilution and 15% losses.

Figure ES 8 and Figure ES 9 provide respective plan and long views of the mining inventory by method as well as the future planned development through decline access at Levi South. Materials handling at Levi considers truck haulage to surface prior to contract transportation to the Joma process facilities.

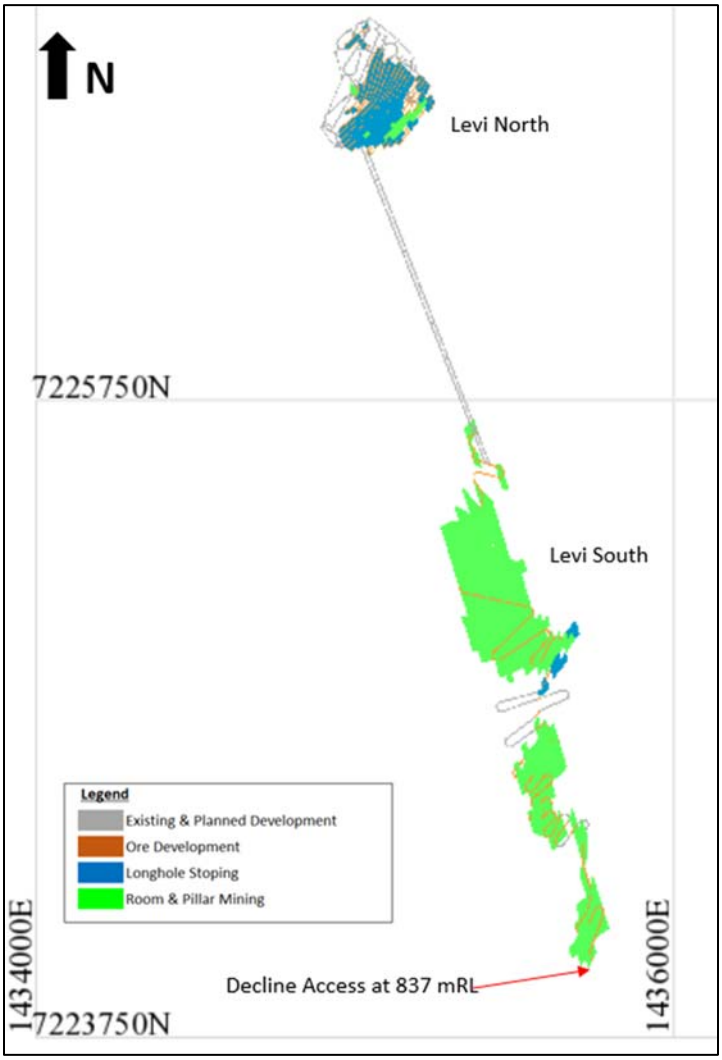

Figure ES 8: Plan view of the Levi Mining Inventory by mining method and existing and planned development

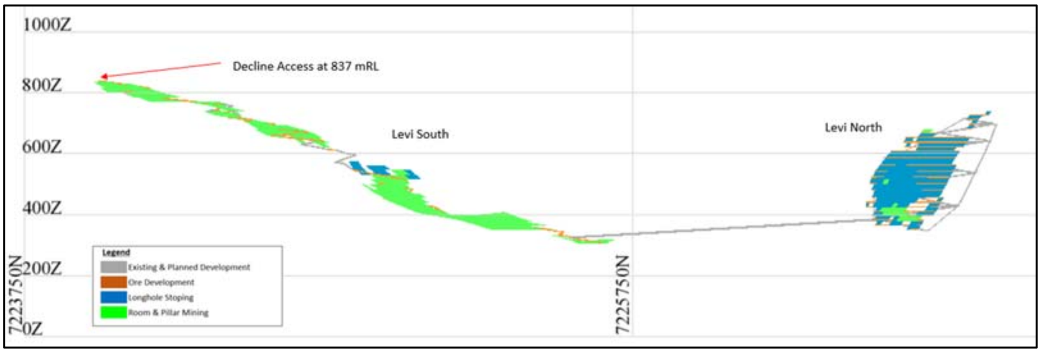

Figure ES 9: Long view of the Levi Mining Inventory by mining method and existing and planned development, looking southwest

4 MINING INVENTORY AND SCHEDULE

The PEA mining inventory is provided in Table ES 3 showing the contribution of ROM tonnes and grades from the individual mines of Joma, Stekenjokk and Levi.

Table ES 3: Lubambe Mine Area Mineral Resources as at 30 June 2021

Mine Inventory	Units	Total	Joma ROM	Stekenjokk ROM	Levi ROM
Mine Feed	t	**11,240,031**	3,558,695	5,407,789	2,273,548
Grade					
Cu	%	**1.03**	1.20	0.87	1.15
Zn	%	**2.00**	1.37	2.60	1.58
Pb	%	**0.33**	-	0.64	0.11
Au	g/t	**0.15**	-	0.23	0.17
Ag	g/t	**30.76**	-	53.96	23.72
Metal Content					
Cu	t	**115,530**	42,549	46,851	26,131
Zn	t	**225,096**	48,713	140,486	35,897
Pb	t	**37,048**	-	34,456	2,592
Au	g	**1,642,983**	-	1,257,009	385,973
Ag	g	**345,733,991**	-	291,800,306	53,933,684

The combined mining schedule for the Project is shown in Figure ES 10 considers the following:

- Mine production at Stekenjokk-Levi is only considered during winter months only (6 months a year) due to the limitation of the exploitation concession. Mine production at Joma is considered over the full year in the PEA.
- Overall combined target production of 750 ktpa from Year 1 of production, sourced from Joma (500 ktpa) and Levi South (250 ktpa).
- Production from Stekenjokk commences from Year 6 when the Levi South mining inventory is exhausted at a rate of up to 500 ktpa.
- Production from Levi North commences from Year 8 when the Joma mining inventory is exhausted at a rate of up to 250 ktpa.
- The overall combined target production rate reduces from 750 ktpa down to 500 ktpa after Year 11 when the Levi North mining inventory is exhausted.
- Mining is completed in Year 17 when the Stekenjokk mining inventory is exhausted.

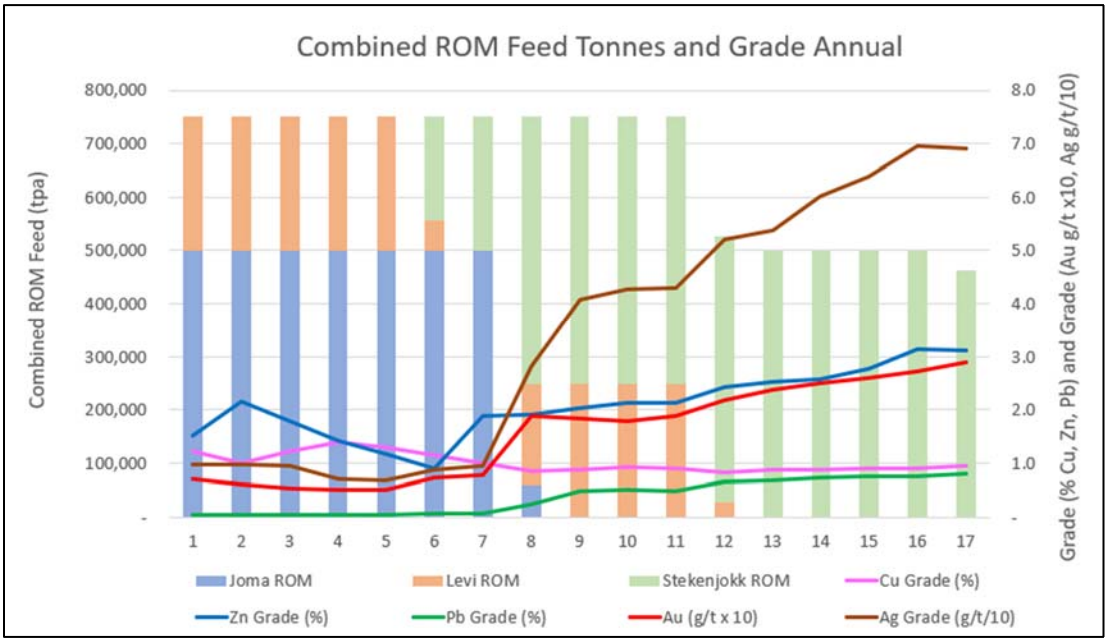

Figure ES 10: Annual combined mining schedule

Table ES 4 provides a summary of the main development and rehabilitation milestones to be achieved prior to and during production for the Joma, Stekenjokk and Levi mines. The mine plan also includes a provision to commence dewatering of the Joma mine from Year -2 and dewatering of the Stekenjokk mine from Year 4.

Table ES 4: Development and Rehabilitation milestones for the Joma, Stekenjokk and Levi mines

Development by Mine	Units	Quantity	Profile	Start	Complete
Joma Mine					
Rehabilitate Adit	m	2,074	5mWx5mH	start Year -1	end Year -1
Rehabilitate Decline	m	1,383	5mWx5mH	start Year 2	end Year 4
Shaft Excavation	m	357	4.0m dia	start Year 5	end Year 5
South Access Development	m	330	5mWx5mH	start Year 4	end Year 4
Stekenjokk Mine					
Decline Rehabilitation	m	3,798	5mWx5mH	start Year 4	end Year 4
Shaft Rehabilition	m	280	4.0m dia	start Year 4	end Year 5
Diamond Drill Drive Stripping	m	2,575	5mWx5mH	start Year 4	end Year 5
Shaft Excavation	m	695	4.0m dia	start Year 5	end Year 5
Levi South					
Portal Box Cut				start Year -1	end Year -1
Vent Adit 1				start Year -1	end Year -1
Vent Adit 2				start Year -1	end Year -1
Levi North					
Connection Drive from Levi South	m	1,090	5mWx5mH	start Year 8	end Year 8
Return Vent Drive	m	930	5mWx5mH	start Year 8	end Year 8

5 MINERAL PROCESSING

The PEA assumes that a single beneficiation plant will be built on the site of the previous Joma concentrator with a capacity of 750 ktpa. Due to differing head grades and historical metallurgical responses, the ores from Joma, Stekenjokk and Levi will be processed in individual campaigns.

The flowsheet will consist of crushing and grinding ahead of flotation to produce separate concentrates. Joma ore will produce copper and zinc concentrates, and Stekenjokk and Levi will produce copper, zinc and lead concentrates. Precious metals (gold and silver) will report to the different concentrates according to their specific metallurgical responses.

The flotation tailings will be processed through a precious-metals leach circuit for additional gold and silver recovery to doré.

Concentrate grades and metal recoveries used in the PEA are shown in the Table ES 5 below which are based on historical production performance.

Table ES 5: Comparison of recent Resource and Reserve estimates

Mineral Processing		Units	Joma ROM	Stekenjokk ROM	Levi ROM
Copper Concentrate					
Process Recoveries					
	Cu	%	87%	90%	90%
	Zn	%	5%	5%	5%
	Au	%	29%	32%	32%
	Ag	%	38%	25%	25%
	Concentrate Grade	% Cu	24%	23%	23%
Zinc Concentrate					
Process Recoveries					
	Zn	%	76%	75%	75%
	Concentrate Grade	% Zn	52%	53%	53%
Lead Concentrate					
Process Recoveries					
	Pb	%		70%	70%
	Concentrate Grade	% Pb		60%	60%
Precious Metals					
	Au	%	40%	40%	40%
	Ag	%	31%	31%	31%
Dore Precious Metal Grade		%	90%	90%	90%
Total Metal Recovery					
	Cu	%	87%	90%	90%
	Zn	%	81%	80%	80%
	Pb	%	0%	70%	70%
	Au	%	69%	72%	72%
	Ag	%	69%	56%	56%

6 PROJECT INFRASTRUCTURE

6.1 Joma Site

The historical Joma mine has been on care and maintenance since closing in 1998 and SRK understands that the project site has a significant amount of surface infrastructure including buildings, roads, power and water supply. Future detailed mine planning and studies will need to assess the existing infrastructure to incorporate the new infrastructure required to re-start the operations.

6.2 Stekenjokk-Levi Site

The historical Stekenjokk mine has been on care and maintenance since closing in 1988 and SRK understands that there is limited infrastructure onsite. Grid electrical power (20 kV) is supplied to the mine, with a transformer located on the mine site.

Future detailed mine planning and studies will need to assess if any of the historical infrastructure can be utilised and to incorporate the new shared infrastructure required to re-start the mine operations

7 CAPITAL AND OPERATING COSTS

7.1 Introduction

The PEA capital and operating cost estimate assumes an Owner-Operator approach for the future operations at the Joma mine and process facilities in Norway and the Stekenjokk and Levi mines in Sweden. The capital and operating cost estimates were based on a number of sources of data including:

- benchmark data with the application of modifying factors as necessary; and
- estimate of plant and equipment requirements from the technical work completed and applied to the development and mining schedule.

Contractor mining costs are assumed for the following activities:

- Rehabilitation of the existing mine access and developments to re-establish access.
- Shaft or raise development for ventilation.
- Excavate Boxcuts and portal preparations for new mine access.

SRK investigated the typical salary and wage rates for staff and workers which have been applied in the operating cost estimate. These rates have been applied to the estimates of personnel requirements on an annual basis in line with the mining schedule.

A total closure cost provision of USD 20m has been assumed for the PEA.

7.2 Capital and Operating Costs

The annual capital cost estimate over the life of mine (“LoM”) is shown in Figure ES 11 with the initial 2-year period of preproduction and also a provision for closure costs at the end of the mine life.

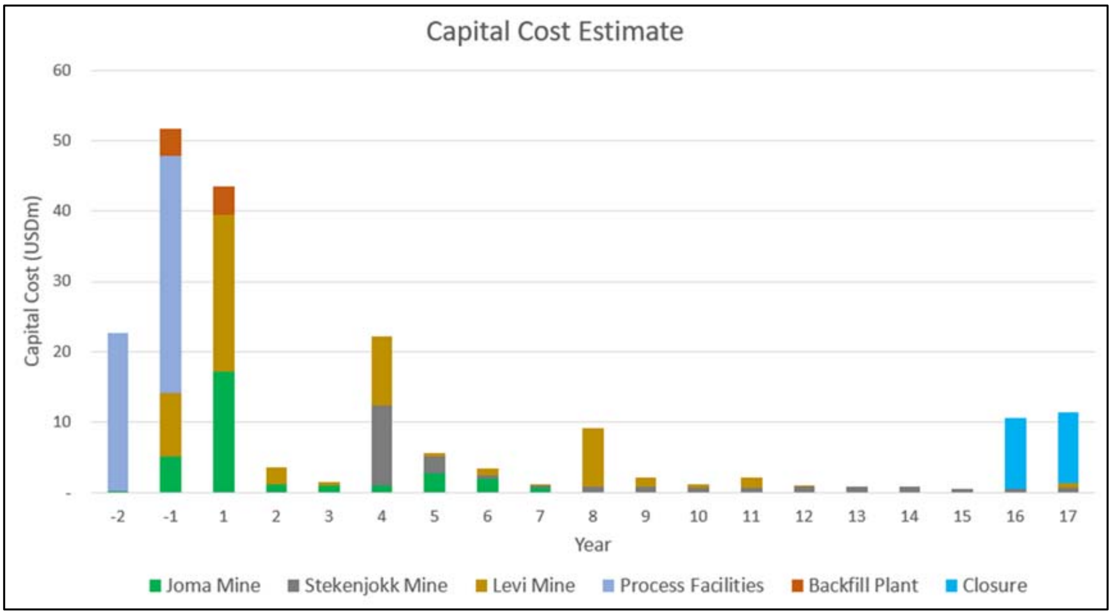

Figure ES 11: Capital Cost estimate over the LoM

The annual operating cost estimate over the LoM is shown in Figure ES 12 with an initial production rate of 750 ktpa in Year 1, ramping down to 500 ktpa after Year 11 till the end of the mine life. The operating cost is variable based on the underground truck haulage distance which typically increases with the depth of mining and additional costs for transport of ROM from the Stekenjokk-Levi mines to the Joma processing facility. Figure ES 13 shows the annual split of unit operating cost (USD/t_{ROM}) over the LoM.

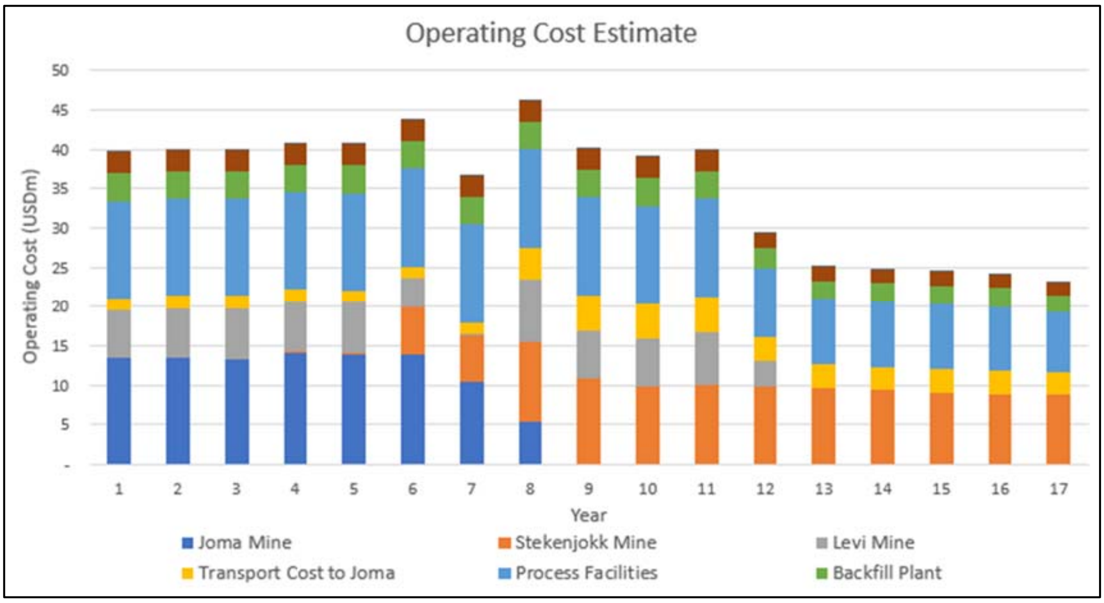

Figure ES 12: Operating Cost estimate over the LoM

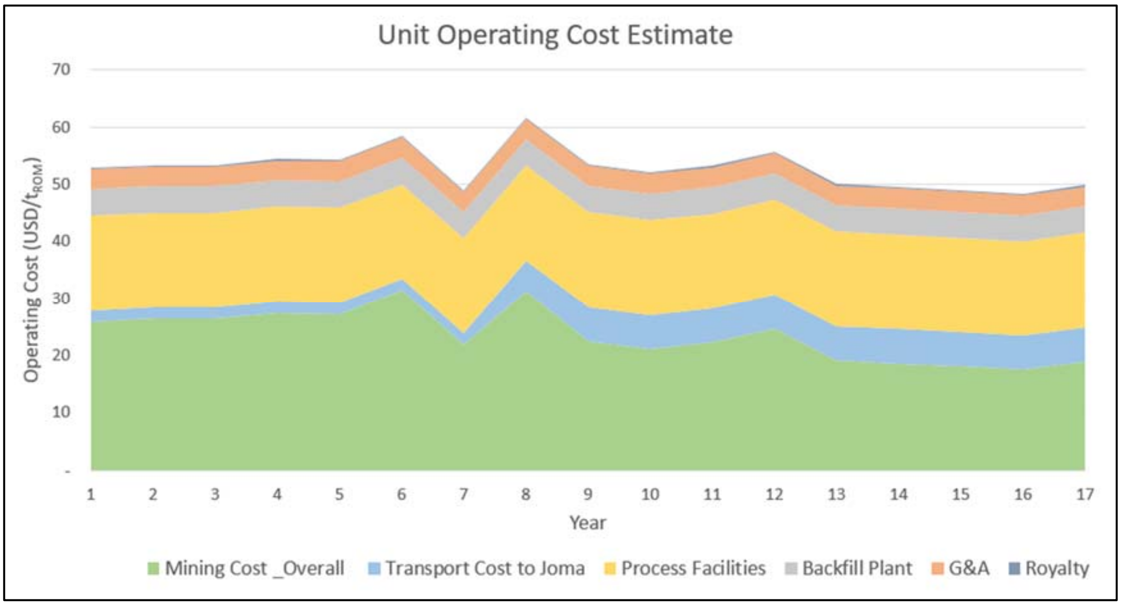

Figure ES 13: Unit operating Cost estimate over the LoM

8 ECONOMIC ASSESSMENT

8.1 Introduction

The PEA is based on the combined production from the Joma and Stekenjokk-Levi underground mines over a 17-year period following a 2-year pre-production period for construction, development and commissioning activities. The Joma process facility has a planned production rate of 750 ktpa for the first 11 years, ramping down to 500 ktpa till the end of the mine life.

The commodity price scenarios applied in the PEA are described as follows (see Table ES 6):

- **LTC Case:** considers median long term consensus (“LTC”) market forecast prices during Q2 2022.
- **Strategic Case:** considers spot metal prices in Q2 2022 discounted by 12% based on the view of Bluelake Mineral management that prices will remain at these levels for an extended period.

Table ES 6: PEA Metal Price Scenarios

Commodity Prices	Units	LTC Case	Strategic Case
Copper Price	USD/t Cu	7,700	8,620
Zinc Price	USD/t Zn	2,250	3,692
Lead Price	USD/t Pb	1,950	2,002
Gold Price	USD/oz Au	1,400	1,659
Silver Price	USD/oz Ag	18.25	20

The following general assumptions have been applied in the PEA:

- All costs and revenues are in United States Dollars ("USD") and are in real money terms.
- Any cash flows prior to the start of construction are considered sunk and have been excluded from the analysis.
- A discount rate of 8% has been applied for Net Present Value ("NPV") calculations.
- Commercial smelter terms for each mine and product are summarised in Table ES 7;
- Diesel fuel prices are based on average prices and exchange rates during 2021, with an allowance for tax reduction, resulting in USD1.3/litre for Sweden and Norway.
- Electricity prices are based on average prices and exchange rates during 2021, resulting in USD0.05/kWhr for Sweden and USD0.08/kWhr for Norway.
- For the purposes of the PEA an all-inclusive material handling and truck transport cost of USD 0.10/t of concentrate per kilometre has been assumed for moving ROM from the future Stekenjokk-Levi mine to the Joma processing facilities;
- Mine water quality and treatment requirements are not well defined and have not been considered in the economic assessment;
- Royalties payable are based on 0.2% of the NSR; and
- The cash flow model is post-tax (average corporate tax rate of 21.7%) and pre-finance.

Table ES 7: Commercial Smelter Terms

Commercial Terms	Units	Joma ROM	Stekenjokk ROM	Levi ROM
Copper Concentrate				
Payable Metal				
Cu	(%)	95.8%	95.6%	95.6%
Au	(%)	90.0%	90.0%	90.0%
Ag	(%)	90.0%	90.0%	90.0%
Unit Treatment/Freight/Refining Charges				
Cu TC	(USD/t)	60.0	60.0	60.0
Cu con freight	(USD/t)	40.5	40.5	40.5
Cu RC	(USD/lb payable)	0.06	0.06	0.06
Au RC	(USD/oz payable)	5.0	5.0	5.0
Ag RC	(USD/oz payable)	0.5	0.5	0.5
Zinc Concentrate				
Payable Metal / Smelter Recovery				
Zn	(%)	84.6%	84.9%	84.9%
Unit Treatment Charges/Freight				
Zn TC	(USD/t)	155.0	155.0	155.0
Zn con freight	(USD/t)	20.2	20.2	20.2
Lead Concentrate				
Payable Metal / Smelter Recovery				
Pb	(%)	-	85.0%	85.0%
Unit Treatment Charges/Freight				
Pb TC	(USD/t)	140.0	140.0	140.0
Pb con freight	(USD/t)	20.2	20.2	20.2
Dore				
Payable Metal / Smelter Recovery				
Au	(%)	99.5%	99.5%	99.5%
Ag	(%)	99.6%	99.6%	99.6%
Unit Freight/Refining Charges				
Au Freight	(USD/kg)	10.0	10.0	10.0
Ag Freight	(USD/kg)	10.0	10.0	10.0
Au RC	(USD/oz payable)	0.25	0.25	0.25
Ag RC	(USD/oz payable)	0.35	0.35	0.35

8.2 Economic Assessment – LTC Case

The annualised and cumulative post-tax cashflow for the LTC Case is provided in Figure ES 14 with an average annual past-tax cashflow of USD 21.7m during the production Years 1 to 17 and payback in Year 6. The cashflow is variable mainly based on the annual production rate, grade variation, operating costs and ROM tonnage transported from Stekenjokk-Levi to the Joma processing facilities.

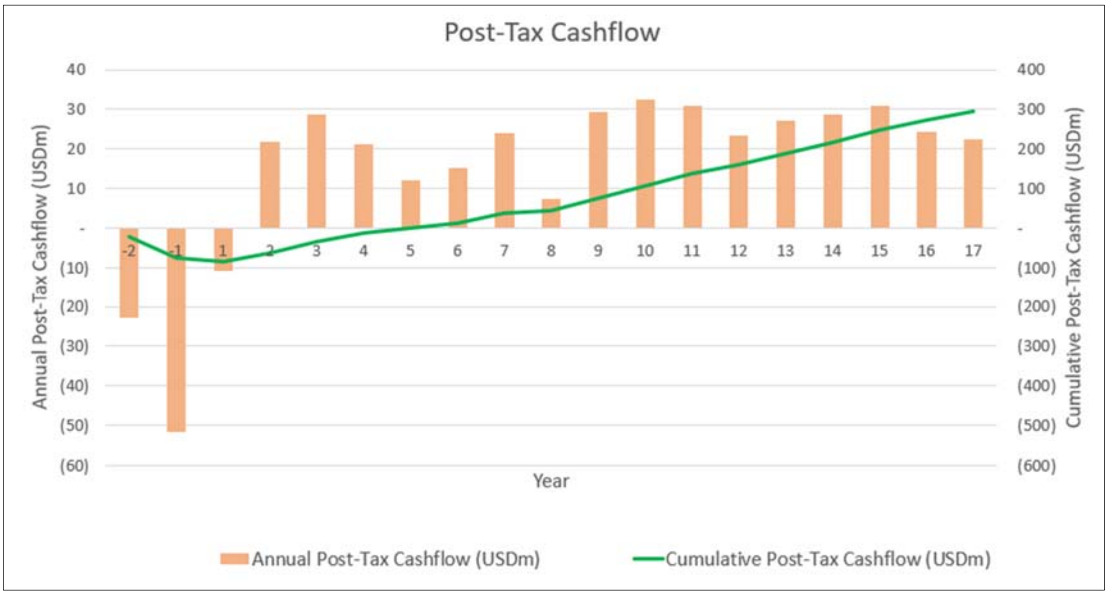

Figure ES 14: LTC Case: Post-Tax Cashflow over LoM

The percentage of gross revenue by metal is provided in Figure ES 15, with approximately 58.9% estimated for copper, 22.5% from zinc, 8.8% from silver, 5.5% from lead and 4.3% from gold.

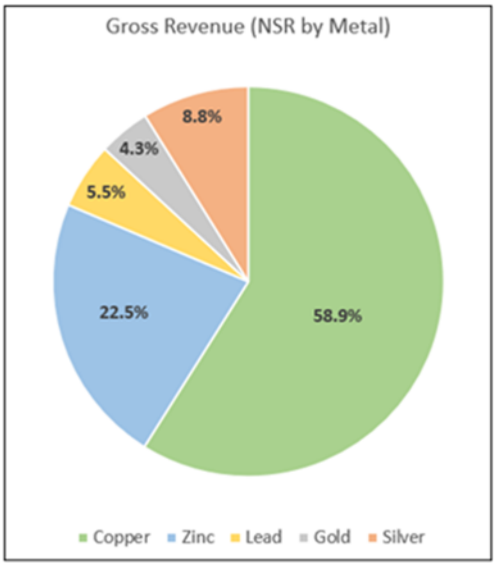

Figure ES 15: LTC Case: Percentage of Gross Revenue by Metal

A summary of the post-tax cashflow analysis results from the PEA including NPV and Internal Rate of Return ("IRR") is provided in Table ES 8. Figure ES 16 provides a sensitivity of the NPV for the Base Case Copper price Capital and Operating costs for the Project.

Table ES 8: LTC Case: PEA post-tax cashflow analysis results

PEA Summary - LTC Case	Units	Value
Net Free Cash	USDm	294
NPV (8%)	USDm	87
IRR	%	19.8%

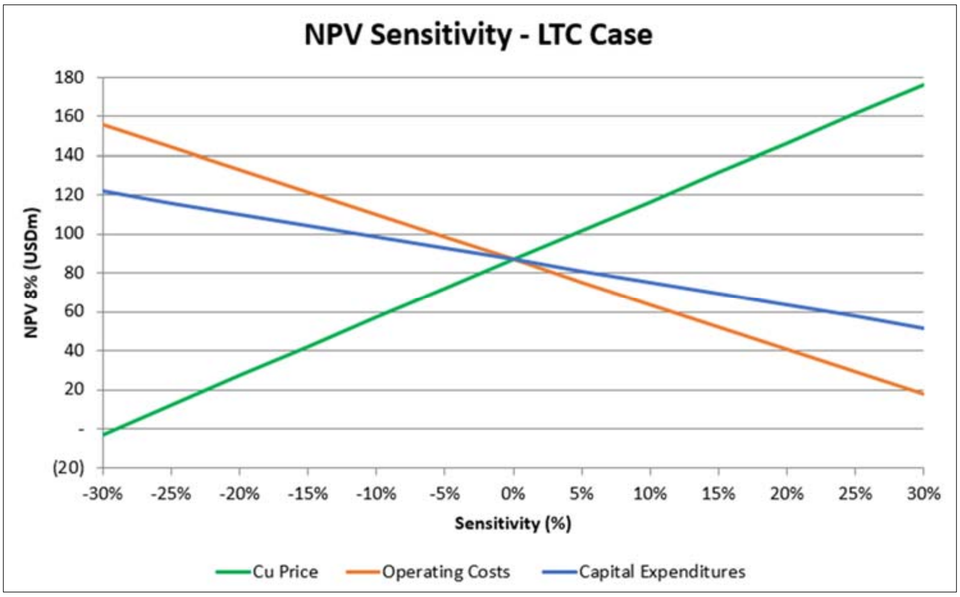

Figure ES 16: LTC Case: NPV Sensitivity Analysis

8.3 Economic Assessment – Strategic Case

The annualised and cumulative post-tax cashflow for the Strategic Case is provided in Figure ES 17 with an average annual past-tax cashflow of USD 36.3m during the production Years 1 to 17 and payback in Year 3. The cashflow is variable mainly based on the annual production rate, grade variation, operating costs and ROM tonnage transported from Stekenjokk-Levi to the Joma processing facilities.

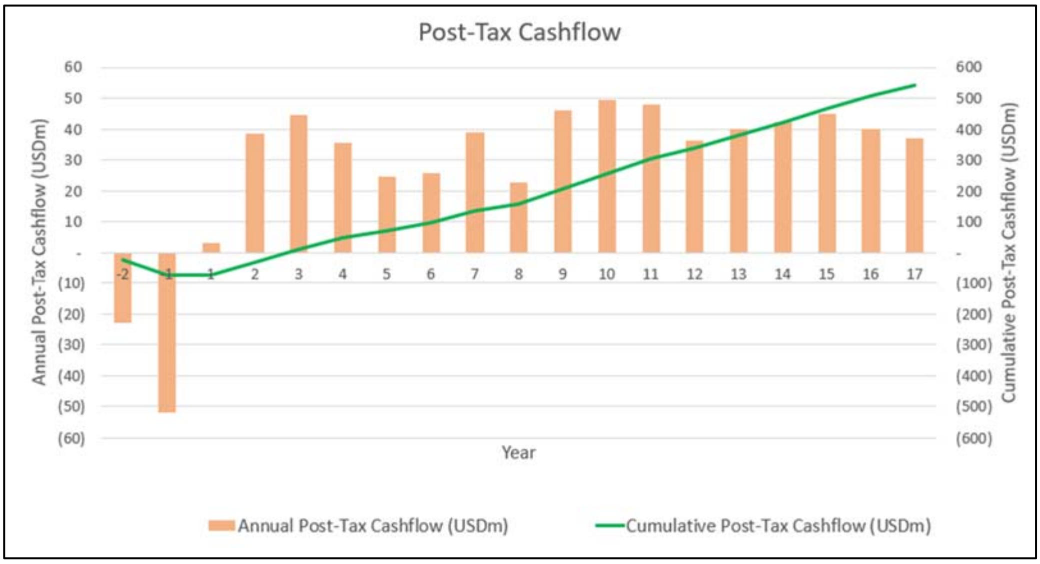

Figure ES 17: Strategic Case: Post-Tax Cashflow over LoM

The percentage of gross revenue by metal is provided in Figure ES 18, with approximately 52.5% estimated for copper, 31.5% from zinc, 7.6% from silver, 4.4% from lead and 4.0% from gold.

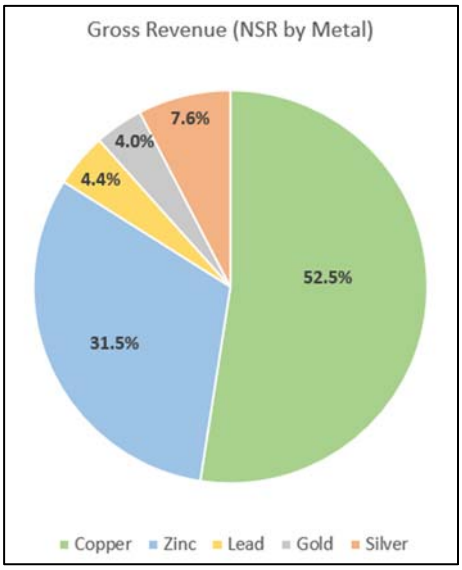

Figure ES 18: Strategic Case: Percentage of Gross Revenue by Metal

A summary of the post-tax cashflow analysis results from the PEA including NPV and IRR is provided in Table ES 9. Figure ES 19 provides a sensitivity of the NPV for the Base Case Copper price Capital and Operating costs for the Project.

Table ES 9: Strategic Case: PEA post-tax cashflow analysis results

PEA Summary - Strategic Case	Units	Value
Net Free Cash	USDm	543
NPV (8%)	USDm	201
IRR	%	34.0%

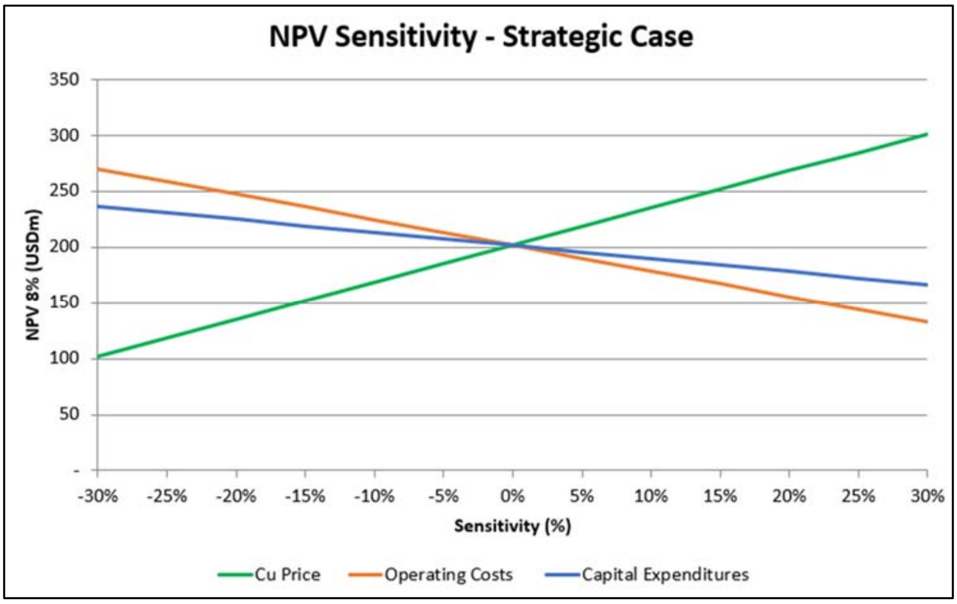

Figure ES 19: Strategic Case: NPV Sensitivity Analysis

9 GREEN CASE ASSESSMENT

An additional concept-level 'Green Case' has been assessed to understand the early-stage potential for a fully electric mine utilising developing battery-electric technologies for underground loaders and trucks. The main atmospheric contaminants from underground mining are emissions from diesel powered equipment, primarily loaders and trucks. Table ES 10 provides a summary estimate of the LoM diesel fuel and lubricant usage for each mine.

Table ES 10: Summary of diesel fuel and lubricant usage over LoM

Diesel Fuel Usage			
	Joma Mine	M.Litres	**7.1**
	Stekenjokk Mine	M.Litres	**14.1**
	Levi Mine	M.Litres	**5.8**
	Total	**M.Litres**	**27.0**
		t	**22,490**
Lubricant Usage			
	Joma Mine	kL	**534**
	Stekenjokk Mine	kL	**709**
	Levi Mine	kL	**341**
	Total	**kL**	**1,584**

Figure ES 20 shows a high-level estimate of the carbon dioxide and sulphur dioxide emissions from the diesel equipment and emulsion explosive usage over the PEA mine plan for Joma and Stekenjokk-Levi.

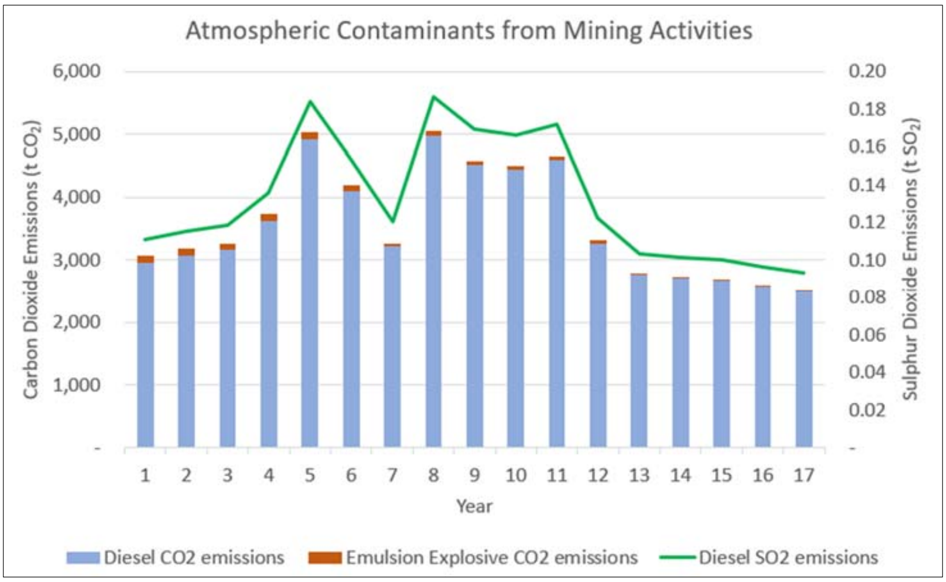

Figure ES 20: Atmospheric Contaminants from Mining Activities

Table ES 11 provides a comparison of the concept-level capital and operating costs which indicates higher capital costs for the electric mine approach but opportunities for a lower operating cost over the LoM.

Table ES 11: Green Case – LoM Capital and Operating Cost comparison

			LOM CAPEX	LOM OPEX	TOTAL (CAPEX+OPEX)
Diesel Mine					
	Joma Mine	USDm	14.7	29.5	44.2
	Stekenjokk Mine	USDm	32.0	39.3	89.5
	Levi Mine	USDm		18.2	
	Total	USDm	46.7	87.0	133.7
Electric Mine					
	Joma Mine	USDm	17.0	31.9	48.8
	Stekenjokk Mine	USDm	37.8	22.2	79.3
	Levi Mine	USDm		19.4	
	Total	USDm	54.7	73.4	128.1

The results from the Green Case Assessment provide an early indication of the potential for reducing atmospheric contaminants in the mine plan for Joma and Stekenjokk-Levi and the indicative costs. It is recommended that future more detailed planning is undertaken with consultation with equipment suppliers to understand the requirements (and costs) of reducing diesel-powered mobile equipment and practically implementing developing battery-electric and trolley assist technologies at the individual mines.

10 INTERPRETATION AND CONCLUSIONS

The PEA economic analysis for the LTC and Strategic cases indicate that the Joma Project has good economic potential and warrants continued development.

10.1 The Joma Deposit

The Joma Project is at an advanced stage of exploration and geological understanding. Infill drilling from surface and underground, digitising of underground geological maps and geological modelling in 3D has added further geological confidence to the local scale geometry of the mineralisation and grade distributions in the resultant Mineral Resources.

The geological interpretation used to generate the Mineral Resource presented herein is generally considered to be robust; however, there are areas of lower geological confidence, classified as Inferred Mineral Resources, which may be subject to further revision in the future. SRK notes that the there is a degree of uncertainty associated with depletion survey volume and that these underground workings are currently flooded.

With respect to re-establishing underground mining of the Joma deposit, SRK concludes that R&P is an appropriate mining method with longhole benching in thicker zones. The proposed mining methods and equipment are regularly utilised in the Nordic region.

The main challenges to mining at Joma Project will be to understand the ground and water conditions ahead of development and mining activities so that adequate preparation can take place to manage potential challenges. Only a limited amount of site-specific investigation has been carried out and collection of more data and detailed analysis is required.

10.2 The Stekenjokk-Levi Deposit

The Stekenjokk-Levi Project is at an advanced stage of exploration. Historical surface and underground drilling, the digitising of interpreted sections, and geological modelling in 3D has added a certain degree of confidence in the understanding of the geological and grade continuity. This is reflected in the classification applied to the declared Mineral Resources.

The geological interpretation used to generate the Mineral Resource estimate for Stekenjokk-Levi is generally considered to be robust; however, there are areas of lower geological confidence, currently unclassified, which may be subject to further revision in the future. SRK notes that the there is a degree of uncertainty associated with the depleted volume at the Stekenjokk mine and that these underground workings are currently flooded.

The main challenges to mining at the Stekenjokk and Levi mines will be to understand the ground and water conditions ahead of development and mining activities so that adequate preparation can take place to manage potential challenges. Only a limited amount of site-specific investigation has been carried out and collection of more data and detailed analysis is required.

10.3 Metallurgy and Mineral Processing

Future testing of variability composites across the Joma and Stekenjokk-Levi deposits and pilot plant testing of larger bulk samples will be required to confirm processing requirements and projected recoveries for the mineralisation’s.

10.4 Environmental, Social and Governance

Demonstrating good environmental, social and governance (“ESG”) practice is central to Bluelake Mineral’s vision of the Project. The Joma and Stekenjokk-Levi deposits have the potential to provide a secure, local source of low-carbon intensity critical raw materials to a rapidly expanding green technology manufacturing industry in northern Europe. The following highlights the key positive ESG credentials of the Project:

- Active engagement with Sámi reindeer herding communities;
- Electrical grid dominated by renewable energy – with abundant hydroelectric and wind power in the region;
- European Union Green Deal - including carbon border adjustment mechanism (”CBAM”) – will incentivise the use of locally-sourced, low-carbon intensity materials for manufacturing;
- Brownfield Project – both areas have been mined in the recent past with local expertise and existing infrastructure in place; and
- Source of employment and opportunity to improve local infrastructure.

The Company will need to work closely with local stakeholders including land owners to reduce the Project’s impact and ensure the Project provides long-term benefits to the local area. This is particularly relevant to Sámi reindeer herding communities, with collaboration required to ensure access to pastureland and migration routes. For example, through ongoing discussions subsequent to submitting an exploitation concession application for Stekenjokk-Levi, the Company adjusted the previous operational plan in collaboration with the Sámi community to ensure both land users can work in tandem. The Company is committed to continued engagement with all key stakeholders and in cooperation with the authorities.

The PEA outlined a number of options to reduce the impacts of the Project on the environment that will be explored further in future technical studies. This includes the use of electric vehicles, conveyor systems and the use of existing already modified brownfield sites.

10.5 Stakeholder Engagement

The Company continues to work in partnership with the local authorities and understands the importance of strong local support and partnerships with all stakeholders. The Company will use the PEA as a communication tool to continue dialogue with project-affected people, particularly Sámi representatives.

The Project is expected to provide approximately 215 jobs during the life of mine operation with a significant socio-economic impact on the region.

11 RECOMMENDATIONS

Based on the results of this PEA, the Company intends to advance the consolidated Joma and Stekenjokk-Levi projects to the confidence level of a Prefeasibility Study ("PFS") while continuing its ongoing permitting and stakeholder engagement activities at both projects. The PFS will require further mining technical studies and in parallel detailed ESIA studies for final permitting approval. The key aspects of the future work program include:

1. Update the Mineral Resource Estimates to convert a strategic amount of the current inferred resource to Indicated confidence level for the PFS.
    a) To include a drilling program and drill core re-logging.
    b) Drill program to include data collection for the PFS including geotechnical, hydrogeology and metallurgical testwork samples.
2. PFS to increase confidence levels in mine planning, ore processing, costs, and to include;
    a) Process testwork on representative samples to identify opportunities to improve process recoveries. This also extends to ore sorting to reduce material transport costs from Stekenjokk-Levi to Joma.
    b) Geochemical investigation, analysis and modelling to estimate dewatering water quality and treatment requirements prior to discharge.
    c) Identify engineering solutions and complete trade-off studies to reduce reliance on fossil fuels and the carbon footprint of the project considering opportunities for electrification of the equipment fleet through battery-electric and trolley assist technologies.
3. ESIA Studies to advance during the PFS technical studies;
    a) Baseline environmental and social studies
    b) Impact assessment of the project to include closure plan

The PFS and supporting investigation and technical work will be used as a basis for future permitting applications that must be obtained after the zoning plan has been adopted:

- Operating license from the Directorate for Mineral Management.
- Emission permit from the Norwegian Environment Agency.
- Building application (framework application and IG) from Røyrvik municipality.

The PEA will be used as a basis for detailed project planning and estimating the cost of future studies (including the ESIA) and permitting for the Project.

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GLOSSARY, ABBREVIATIONS, UNITS I

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A STEKENJOKK-LEVI PEA REPORT A-1

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PRELIMINARY ECONOMIC ASSESSMENT FOR THE JOMA PROJECT, NORWAY

1 INTRODUCTION

SRK Consulting (Sweden) AB ("SRK") is an associate company of the international group holding company, SRK Consulting (Global) Limited (the "SRK Group"). SRK was commissioned by Joma Gruver AS, a company in the Bluelake Mineral Group ("Bluelake Mineral", hereinafter also referred to as the "Company" or the "Client") to prepare a Preliminary Economic Assessment ("PEA") on the Joma deposit, located in Norway and the Stekenjokk-Levi deposit, located in Sweden (the "Project").

The Joma deposit is located approximately 570 km north of Norway's capital, Oslo, and 230 km northeast of the closest major city, Trondheim and the Stekenjokk-Levi deposit is located in the Vilhelmina area of northwestern Sweden on the border between Västerbotten and Jämtland counties (Swedish: *län*), approximately 25 km west of the town of Klimpfjäll, 150 km northwest of the nearest major town of Vilhelmina and 650 km north-northwest of the capital city of Stockholm (Figure 1-1).

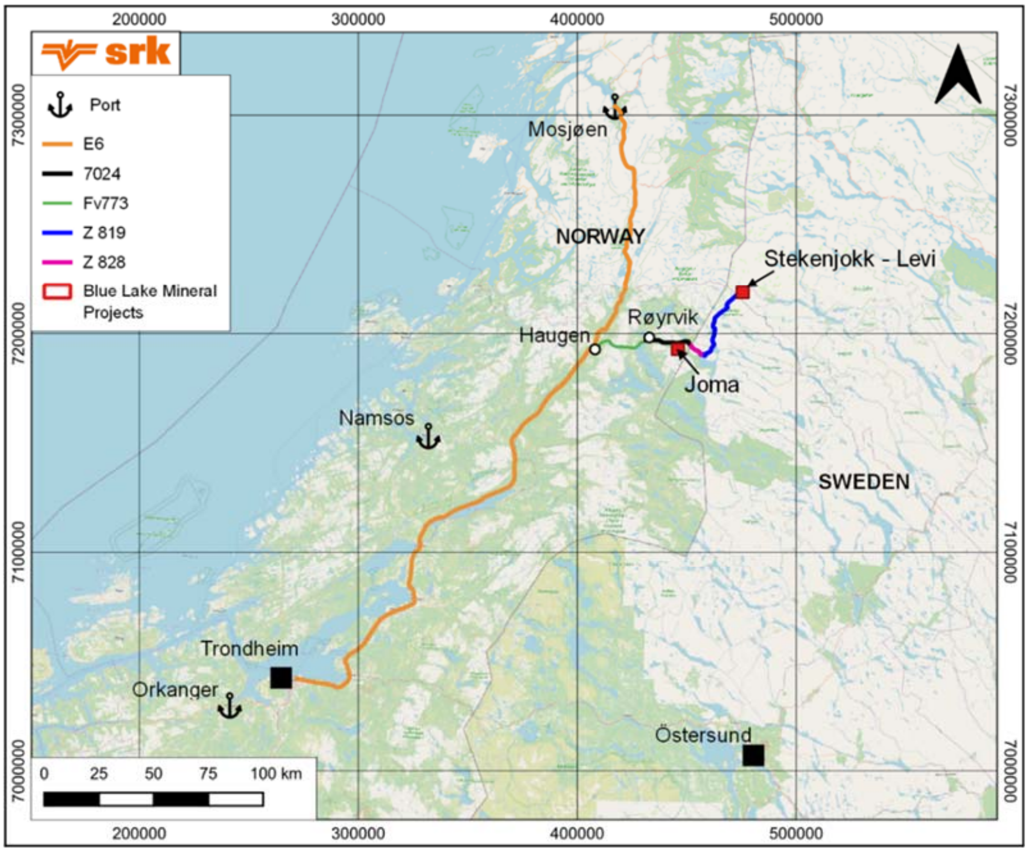

Figure 1-1: Location of Stekenjokk-Levi deposit, Sweden, and Joma deposit, Norway

The Joma deposit is a brownfields project with Cu-Zn mineralisation of Caledonian VMS style. The individual lenses vary greatly in thickness and length with the massive zone attaining a maximum thickness of about 50 m. The orebody forms a folded, plate-like body that dips steeply to the west-southwest from the surface and flattens out at depth. This project was an historical underground mine in production from 1972 to 1998 (Grong Gruber AS). Residual and unmined zones of this deposit have been the topic of previous historical resource estimates.

The Stekenjokk-Levi deposit is a brownfields project with Cu-Zn mineralisation of Caledonian VMS style. This project was an historical underground mining producer from 1976 to 1988 (Boliden). The ore is shallow dipping to flat with thickness between 2 and 20 m. All mining took place underground as cut-and-fill mining using the coarse fraction of the flotation tailings as back-fill material with high percentage ore recovery achieved. Flatter areas used the Room and Pillar method with the coarse tailings backfill as a working floor in thicker areas. Unmined zones of this deposit have been the topic of previous historical resource estimates.

The Company has consolidated the ownership of these two assets which are approximately 60 km apart by paved road, with the intention evaluating and implementing a re-start of the two historical mines utilising a single ore processing plant at the Joma Project location. Future campaign mine production at Stekenjokk will be considered during winter months only.

SRK completed the Mineral Resource Estimates (“MRE”) for the Stekenjokk-Levi and the Joma deposits in a separate engagement with the Company which is used as a basis for the PEA.

The PEA is based on the combined production from the Joma and Stekenjokk-Levi underground mines with a single beneficiation plant to be built on the site of the previous Joma concentrator with a target production rate of 750 ktpa. Due to differing head grades and historical metallurgical responses, the ores from Joma, Stekenjokk and Levi will be processed in individual campaigns. In addition, as the Stekenjokk and Levi mines will only operate during the winter season, ore from all three mines will be separately stockpiled ahead of the concentrator.

The flowsheet will consist of crushing and grinding ahead of flotation to produce separate concentrates. Joma ore will produce copper and zinc concentrates, and Stekenjokk and Levi will produce copper, zinc and lead concentrates. Precious metals (gold and silver) will report to the different concentrates according to their specific metallurgical responses.

The mine plan for Joma also considers storage underground of all future tailings from the process facilities as a paste backfill in the historical (and future) mining voids. This also includes future Run-of-Mine (“ROM”), processed from the Stekenjokk-Levi deposits at the Joma process facility.

A separate PEA report covering the Stekenjokk-Levi deposit including the MRE and Life of Mine Plan (“LOMP”) is provided in Appendix A (the ‘Stekenjokk-Levi PEA’).

The PEA is preliminary in nature. It includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorised as Mineral Reserves. There is no certainty that the PEA will be realised.

1.1 PEA Approach

The PEA is based on a conventional underground approach using a combination of electric-powered equipment (such as Jumbo and Longhole Drills) and diesel-powered mobile equipment (for example, loaders and trucks).

An additional concept-level 'Green Case' is assessed to understand the early-stage potential for a fully-electric mine utilising developing battery-electric technologies for underground loaders and trucks with a provision for charging stations (see Section 23.1).

Two commodity price scenarios are applied in the PEA, described further in Section 21 (Economic Analysis), and comprise:

- **LTC Case:** considers median Long-Term Consensus ("LTC") market forecast prices during Q2 2022.
- **Strategic Case:** considers London Metal Exchange ("LME") spot metal prices in Q2 2022 discounted by 12% based on the view of Bluelake Mineral management that commodity prices will remain at these levels for an extended period.

1.2 The Joma Project

The Joma Project comprises the previously operating mine of Joma located in Røyrvik municipality (Norwegian: *kommuner*) in northern Nord-Trøndelag County (Norwegian: *fylker*) 570 km north of Oslo, and 230 km northeast of Trondheim. The volcanogenic massive sulphide ("VMS") deposit was mined historically in periods between 1912 and 1916 and again between 1972 and 1998 by several companies primarily for zinc and copper. During the latest production period, an estimated 11.5 Mt of material was mined at a grade of 1.49% Cu and 1.45% Zn.

The Project is within the rugged Scandinavian (or Nordic) mountains close to the border with Sweden. It is accessible by road with the major E6 highway approximately 40 km to the west and minor roads leading to the village of Røyrvik 15 km to the west of the Project.

The Project and Mineral Resource statement herein is covered by a series of exploration and extraction permits that are currently valid and held by 100% owned subsidiary Joma Gruver AS. The Project is at a conceptual stage, but it is currently envisaged that it will comprise an underground operation feeding a processing operation producing both a sulphide concentrate.

1.3 Terms of Reference

The effective date of the PEA Technical Report is 04 May 2022 (the "Effective Date") with reliance on:

- the Mineral Resource statement, with an effective date of 9 December 2021, reported in accordance with the Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") guidelines and the 2014 Canadian Institute of Mining and Metallurgy ("CIM") definition standards for reporting Mineral Resources and Mineral Reserves (the "2014 CIM Definition Standards") as at 22 May 2019; and
- an opinion on the reasonableness of the technical-economic inputs into the LOMP, specifically: saleable product, operating expenditure and capital expenditure.

Currency is expressed in United States dollars ("USD") unless stated otherwise; units presented are typically metric units, such as metric tonnes, unless otherwise noted.

1.4 Report Contributors

The work undertaken by SRK in compiling this report has been managed by Mr Chris Bray (MAusIMM(CP) who is a Qualified Persons ("QP") as defined in CIM Definition Standards. In addition, the MRE upon which the PEA study is based, was completed by QP Dr Lucy Roberts MAusIMM(CP) of SRK. The details of the various contributing authors and their respective areas of technical responsibility are presented in Table 1-1.

As part of this work, SRK has undertaken site visits and made first-hand observations of the core, collection and core logging procedures employed and reviewed all the Project data available. The site visits were undertaken by Mr Harri Rees of SRK Exploration Services Ltd ("SRKES") in September 2021 and by Mr Tony Lund, a mining engineer working for Lund Mining Services and sub-contracted to SRK, in October 2021.

Table 1-1: Contributing authors and respective area of technical responsibility

Qualified Persons Responsible for the Preparation of this Technical report						
Qualified Person	**Position**	**Company**	**Independent of Bluelake Mineral**	**Date of Last Site Visit**	**Professional Designation**	**Sections of the Report**
Christopher Bray	Principal Consultant (Mining Engineer)	SRK UK	Yes	No Visit	BEng, MAusIMM(CP)	All Sections and overall Project Management
Dr Lucy Roberts	Principal Consultant (Resource Geology)	SRK UK	Yes	No Visit	BSc (Hons), MSc, PhD, MAusIMM (CP)	Section 12 and 14
Other Experts who assisted the Qualified Persons						
Expert	**Position**	**Company**	**Independent of Bluelake Mineral**	**Date of Last Site Visit**	**Sections of the Report**	
Tony Lund	Consultant (Mining Engineer)	SRK Associate	Yes	October, 2021	Mine Design, Scheduling and Ventilation, Section 16	
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Inge Moors	Senior Consultant (Due Diligence)	SRK UK	Yes	No visit	Economic Analysis, Section 22	

1.5 Reporting Standards

The Client, Bluelake Mineral AB (publ), is listed on the Nordic Growth Market Small-Medium Enterprise stock exchange ("NGM Nordic SME") based in Stockholm trading under the ticker 'BLUE'. The NGM Nordic SME does not have any requirements in terms of Mineral Resource or Mineral Reserve reporting standards. The Client has requested that the work undertaken, and the report produced, is based on the PEA definitions produced by the Canadian NI 43-101 and the Mineral Resource is reported according to CIM Definition Standards on Mineral Resources and Reserves. These standards are internationally recognised and allow the reader to compare to similar Projects. The definitions and requirements within the CIM Definition Standards and NI 43-101 are aligned with the Committee for Mineral Reserves International Reporting Standards ("CRIRSCO") reporting template and as such is an internationally recognised reporting standard comparable to other recognised international reporting codes such as the SAMREC code of South Africa and the JORC Code of Australia.

1.6 Limitations, Reliance on SRK, Declaration, Consent, Copyright and Cautionary Statements

1.6.1 Limitations

SRK's opinion contained herein, and effective 04 May 2022, is based on information collected and completed by SRK throughout the course of the PEA, which in turn reflect various technical and economic conditions at the time of writing. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

1.6.2 Reliance on information

SRK has relied upon the accuracy and completeness of technical, financial and legal information and data furnished by or through the Company.

Whilst SRK has exercised all due care in reviewing the supplied information, SRK does not accept responsibility for finding any errors or omissions contained therein and disclaims liability for any consequences of such errors or omissions.

SRK's assessment of the Company's Mineral Resources, Technical-economic parameters ("TEP"), and the LOMP for the PEA is based on information provided by the Company throughout the course of SRK's investigations, which, in turn, reflect various technical and economic conditions prevailing at the date of this report. These TEP can change significantly over relatively short periods of time. Should these change materially the TEP could be materially different in these changed circumstances.

This PEA Technical Report specifically excludes all aspects of legal issues, marketing, commercial and financing matters, insurance, land titles and usage agreements, and any other agreements and/or contracts the Company may have entered into.

This report may include technical information that requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK understands that the PEA Technical Report will be used in discussions with future potential investors and partners and will not be used as a listing document.

1.6.3 Declaration

SRK will receive a fee for the preparation of this report in accordance with normal professional consulting practices. This fee is not dependent on the findings of this Technical Report and SRK will receive no other benefit for the preparation of this Technical Report. SRK does not have any pecuniary or other interests that could reasonably be regarded as capable of affecting its ability to provide an unbiased opinion in relation to the TEP, the LOMP for the Project and the projections and assumptions included in the various technical studies completed by Company, opined upon by SRK and reported herein.

2 RELIANCE ON OTHER EXPERTS

SRK has relied on information generated from many sources to compile this PEA in addition to technical work completed by SRK specialists. The principal sources of external information are:

- Discussions and meetings with Company staff and its associated consultants, contractors and business partners.
- Internal memos and reports by the Company and its subsidiaries.
- Previous technical reports:
  - SRK MRE report for Joma (SRK Consulting (Sweden) AB, 2021).
  - Environmental impact assessment reports and Zoning Plan by Multiconsult Norge AS (“Multiconsult”) (multiple 2018-2021).
  - Norsulfid AS avd. Grong Gruber report on water quality between 1970 and 2003 (Norsulfid AS avd. Grong Gruber, 2004).
  - Reports produced by and on behalf of previous owners Drake Resources.
- Publicly available information and reports – including:
  - Finnish Geological Survey (GTK) geological report (GTK, 2012).
  - Norwegian Geological Survey (NGU) geophysical report (NGU, 1962).
  - NGU mineral deposit factsheet (NGU, 2018).
  - PorterGeo website factsheet (PorterGeo, 2012).
  - US Geological Survey (USGS) geological model (USGS, 2010).
  - Other freely available GIS data, satellite imagery and media articles.

SRK has also confirmed that the Mineral Resources reported herein are within the extraction permit boundaries given below and that the extraction permit as presented by the Company reflect the publicly available information at the Norwegian Geological Survey. SRK has not, however, conducted any legal due diligence on the ownership of the exploration permits or exploitation concessions themselves and compliance with the conditions therein.

3 PROPERTY DESCRIPTION AND LOCATION

The following section outlines the location and description of the Project, including permitting.

3.1 Property Description

The Project comprises a VMS deposit with economically interesting grades of copper (Cu) and zinc (Zn). The deposit was mined throughout the 20th century and the site has a prominent historical legacy both underground and on the surface.

The Joma Project encompasses two mineralised bodies: the main Joma mineralisation in the north (referred to as "Joma Main") and less extensive mineralisation approximately 300 m to the south (referred to as "Joma South"). Whilst mineralisation at Joma was first identified in the early 1900s, the most significant commercial production came between 1972 and 1998. During this period, an estimated 11.5 Mt was mined at a grade of 1.49% Cu and 1.45% Zn (Bluelake Mineral, 2021).

Initial production came from a small open pit along the north eastern edge of the deposit where mineralisation crops-out close to surface, although the deposit was primarily mined using underground methods. The mine was eventually closed due to the depletion of material that was economic at the time, at which point the mine was abandoned and allowed to flood. Many of the office buildings, workshops and processing facilities still stand, but are in a varying state of disrepair and much of the processing equipment and mining plant was sold.

The Project is currently covered by six extraction permits covering a total area of 280 hectares (4.8 km^2). In addition, the Company has three valid exploration permits in areas close to Joma covering 425 ha (4.25 km^2) and has applied for six additional permits in areas adjacent to the valid extraction permits covering an additional area of 1,097.5 ha (10.975 km^2). Maps are provided in the following sections.

Following on from the PEA, Bluelake Mineral intends to advance the consolidated Joma and Stekenjokk-Levi projects to the confidence level of a Prefeasibility Study ("PFS") while continuing its ongoing permitting and stakeholder engagement activities at both projects. The PFS will require further mining technical studies and in parallel detailed environmental and social impact assessment ("ESIA") studies for final permitting approval.

3.2 Location

The Joma Project is located in eastern Central Norway, approximately 570 km north of Norway's Capital, Oslo, and 230 km northeast of the closest major city (in Norway), Trondheim. The Project area is located close to the Norway-Sweden border, and as such is also close to Östersund in Sweden. A map showing the location of the Project in relation to Stekenjokk-Levi and within Norway is provided in Figure 3-1.

Coordinates for the deposit are approximately 64° 51' 11.2"N, 13° 53' 05.7" E (WGS84). The old mine buildings are located at 64° 52' 07.8" N, 13° 51' 08.6" E (WGS84).

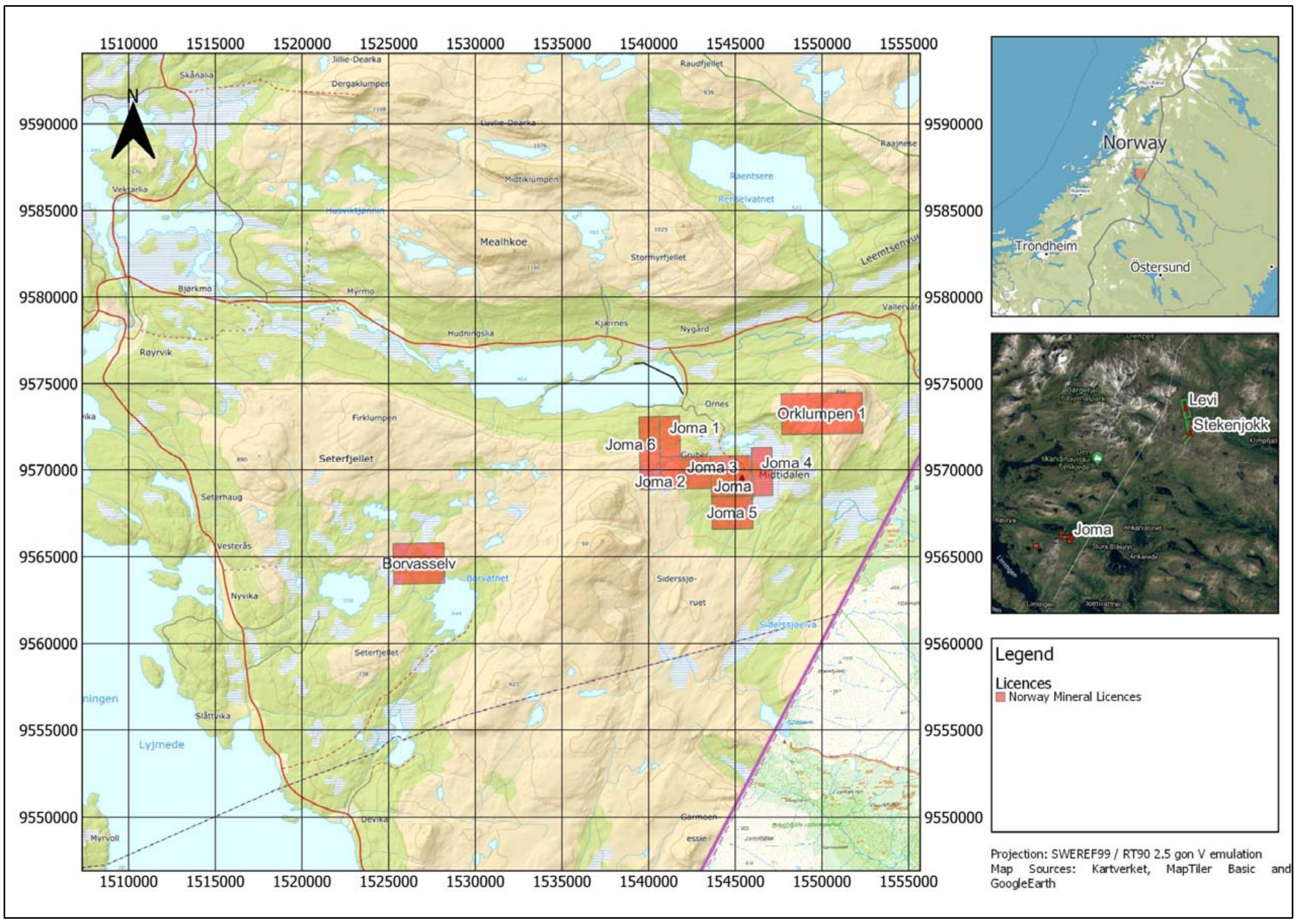


Figure 3-1: Location of Joma Project and permit boundaries

3.3 Coordinate Systems

Two coordinate systems are relevant to the Joma Project; the historical local grid and the modern Universal Transverse Mercator ("UTM") system. The NN2000 vertical reference frame is also applicable but is typically within 0.25 m of elevations surveyed using the local grid system.

Most modern surveying for geological and mining purposes in Norway is undertaken in the EPSG:25833 coordinate system (Datum: ETRS89, Projection: UTM Zone 33N). This zone covers all of Europe, uses metres as a unit, and has an accuracy of 1 m. The NN2000 vertical reference frame is the Norwegian vertical reference frame.

The historical local grid was developed for use at the Joma Project during exploration and operation of the mine in the late 1960s. The grid is aligned north/ south with no rotation and metre units. Whilst the datum points and original conversion have been lost or destroyed, a new transformation was created in 2018. A local surveying company, Oyvind, was contracted to survey a series of known survey points including four datum points and 73 surface drillhole collars. Of the 73 collars, 43 were identified from the historical database, and a direct transformation created using Micromine software. Details of the transformation are in Table 3-1.

The distance between measured and calculated coordinates is variable but is reported to range between 16 cm and 1.11 m, with an average difference of 0.34 m and median of 0.17 m (Stefanini, 2018).

Table 3-1: Coordinate Transform Factors (Local Grid → Modern)

Axis	X (East) (Local Grid à ETRS89 UTM33N)	Y (North) (Local Grid à ETRS89 UTM33N)	Z (Elevation) (Local Grid à NN2000)
Conversion Factor	+415,442	+7,097,306	+0.26

3.4 Mineral Permits

3.4.1 Norwegian legislation

Legislation of importance to permitting of mining projects in Norway is summarized below:

- Norwegian Minerals Act 2009 (Norwegian: *Mineralloven*).
- Planning and Building Act 2008 (Norwegian: *Plan-og bygningsloven*) - determines whether mining can be undertaken in a specific area;
- Regulations on Environmental and Social Impact Assessments 2017 (Norwegian: *Forskrift om konsekvensutredninger etter plan- og bygningsloven*);
- Pollution Control Act 1981 (Norwegian: *Forurensningsloven*), which regulates emissions such as noise and stack emissions, dust, greenhouse gases and waste and Pollution Regulations 2004 (Norwegian: *Forurensningsforskriften*);
- Nature Diversity Act 2009 (Norwegian: *Naturmangfoldloven*), which regulates conservation and sustainable use of biological, geological and landscape diversity and ecological processes and also guides legal interpretation and decision-making according to other sector laws, such as the above-mentioned Acts;

- Waterways and Groundwater Act (Water Resources Act) 2000 (Norwegian: *Vannressursloven)* and Regulations on the framework for water management (Norwegian: *Vannforskriften); and*
- Cultural Heritage Act 1979 (Norwegian: *Kulturminneloven*), which regulates culturally significant monuments and sites.

Norway is not a member of the EU but is a member of the European Free Trade Association ("EFTA") and the European Economic Area ("EEA"). Although its environmental legislation is heavily influenced by the EU, Norway is not bound by EU legislation in the areas of nature conservation, agriculture and fisheries. The EU Directives with significant bearing on mining projects are:

- EU Environmental Impact Assessment Directive (originally 1985 No.85/337/EEC, latest amendment 2014 No.2014/52/EU); this is implemented in the Regulations on ESIA's, under the Planning and Building Act 2008. The same regulations also implement the United Nations Economic Commission for Europe ("UNECE") Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention).
- EU Water Framework Directive (originally 2000 No.2000/60/EC); this is implemented in the Regulations on the framework for water management.
- EU Mine Waste Directive (originally 2004 No. 2004/35/EC, latest amendment 2006 No.2006/35/EC); this is implemented in Norwegian legislation in Chapter 17, Handling of mineral waste from the mineral industry (Norwegian: *håndtering av mineralavfall fra mineralindustrien*), of the Regulations on Treatment and Recycling of Waste (Norwegian: *Avfallsforskriften*).
- EU Industrial Emissions Directive ("IED", originally 2010 No. 2010/75/EU); seeks to place minimum standards and ensure appropriate control on polluting industries. The IED sets a requirement for the implementation of best available techniques, defined at European wide level for mining. In Norway the provisions of this Directive are implemented via the Nature Diversity Act and the Pollution Control Act. Requirements of these Acts and their daughter regulations will need to be considered beyond exploration.

In addition to the European legislation, the Norwegian Mineral Industry has also adopted the Canadian Towards Sustainable Mining ("TSM") initiative.

3.4.2 Norwegian permitting summary

The Norwegian Directorate for Mineral Management (Norwegian: *Direktoatet for mineralforvaltning*, "*DMF*") is the responsible authority for granting mineral permits under the Norwegian Minerals Act (2009; the "Act"). The objective of the Act is to "*promote and ensure socially responsible administration and use of mineral resources in accordance with the principle of sustainable development*". The Act governs all mineral exploration and mining activities and distinguishes between minerals owned by the State and minerals owned by the landowners. Any party wishing to explore for deposits of minerals owned by the landowner must enter into an agreement with the landowner. The minerals owned by the State, and which thereby are covered by an exploration or extraction permit, are metals with a specific gravity of 5 g/cm^3 or more. This includes chromium, manganese, molybdenum, niobium, vanadium, iron, nickel, copper, zinc, silver, gold, cobalt, lead, platinum, tin, zinc, zirconium, tungsten, uranium, cadmium, thorium, and ores of such metals. Titanium and arsenic and their ores as well as pyrrhotite and pyrite are also defined as minerals owned by the State.

It must be stated that any party may explore for mineral deposits on another party's land (including private landowners), although this work may not obstruct the exploration or mining activities and associated operations of other parties pursuant to the Act. Only the holder of an exploration permit has the right to convert this to a mining licence (extraction permit) should the outcomes of exploration support this.

The mineral permit (exploration or extraction) holder has the right to undertake such works on the surface of the land as are necessary to establish the existence of mineral deposits, although activities that could cause damage may not be implemented without the consent of the landowner and the user of the land.

3.4.3 Mineral permit types

Exploration permit

The Act states that exploration permit/right (Norwegian: *Undersökelseretter*) are initially granted for 7 years. This can be renewed once for a further three years, after which the licensee must either give up the permit or apply for an extraction permit, for which they have the sole right to do so.

Exploration permits can be no more than 10,000,000 m^2 (10 km^2) and no less than 1,000,000 m^2 (1 km^2).

Extraction permit

Application for an extraction permit/right (Norwegian: *Utvinningsrett)* requires that the holder of an exploration permit demonstrates that deposit of sufficient size, quality and nature has been identified and can be extracted economically. Extraction permits may be granted on smaller areas than the original exploration permits.

Extraction permits are granted for an indefinite period but may expire if operations have not commenced within 10 years of the permit being granted.

Operating licence

In addition to an extraction permit, an operating licence (Norwegian: *Driftskonsesjon*) is required to develop mineral deposits larger than 10,000 m^3. When considering granting an operating licence, consideration is made of a submitted plan of operations, and whether the applicant is qualified to extract the deposit. An operating licence is also granted for an indefinite period, but may expire if:

- operations do not commence within five years;
- operations are discontinued for more than one year (extensions may be granted up to four additional years); and
- the extraction permit is cancelled.

3.4.4 Permit status

The Company has provided copies of the relevant documents relating to the Joma mineral permits and additional exploration areas. In all, the Company holds 9 permits in the region, including six permits overlying the Joma deposit, and one permit over the Gjersvik Mine approximately 21 km west of Joma. The remaining two permits are located in the wider Joma area, as shown in Figure 3-2.

The Company has also informed SRK that it is applying for additional exploration permits in the Joma area. Copies of the application documents have been provided to SRK for review. The outlines of the permits as applied for are also shown in Figure 3-3.

The permit documents are provided in Norwegian but have been verified against available digital data from the Geological Survey of Norway (Norwegian: *Norge Geologiske Undersøkelse*, "*NGU*"). The pertinent details of the permits are summarised in Table 3-2.

The Joma 1-6 permits are noted as overlying existing land holdings; with a summary of these conflicts shown Figure 3-4. Under Norwegian Mining Law, a separate agreement with each of the landowners is required to access and develop these areas.

SRK notes the documents provided for review show the permits are issued to Joma Næringspark AS rather than the Company's Norwegian subsidiary Joma Gruver AS. The company has indicated that these permits were transferred to Joma Gruver after granting, which is reflected in the digital NGU data (DMF, 2018).

Table 3-2: Mineral permit summary (not including applications)

Permit Type	Permit Name	Permit ID	Permit Granted For	Date Granted	Permit Duration	Area (m^2)
Utvinningsrett (Extraction)	Joma 1	0019-1/2017	Cu, Zn, Ag	28-04-2021	Indefinite	500,000
	Joma 2	0020-1/2017	Cu, Zn, Ag	28-04-2021	Indefinite	1,000,000
	Joma 3	0021-1/2017	Cu, Zn, Ag	28-04-2021	Indefinite	1,000,000
	Joma 4	0022-1/2017	Cu, Zn, Ag	28-04-2021	Indefinite	600,000
	Joma 5	0023-1/2017	Cu, Zn, Ag	28-04-2021	Indefinite	800,000
	Joma 6	0024-1/2017	Cu, Zn, Ag	28-04-2021	Indefinite	900,000
Undersökelseretter (Exploration)	Orklumpen 1	1196/2018	Cu, Zn	07-09-2018	7 years	2,000,000
	Borvasselv	1197/2018	Cu, Zn	07-09-2018	7 years	1,250,000
	Gjersvik 1	0018-1/2017	Pb, Cu, Zn	01-03-2017	7 years	1,000,000

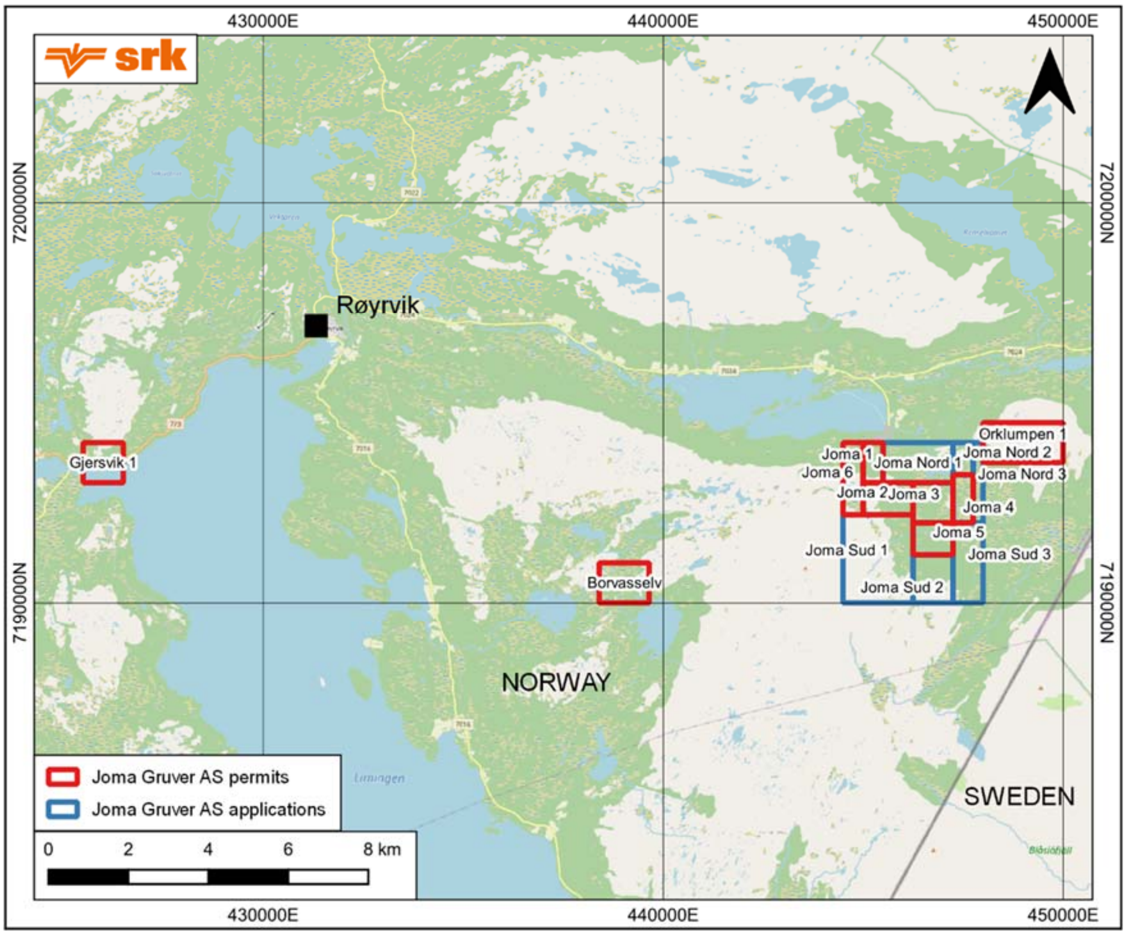


Figure 3-2: Joma Gruver AS mineral permits (regional)

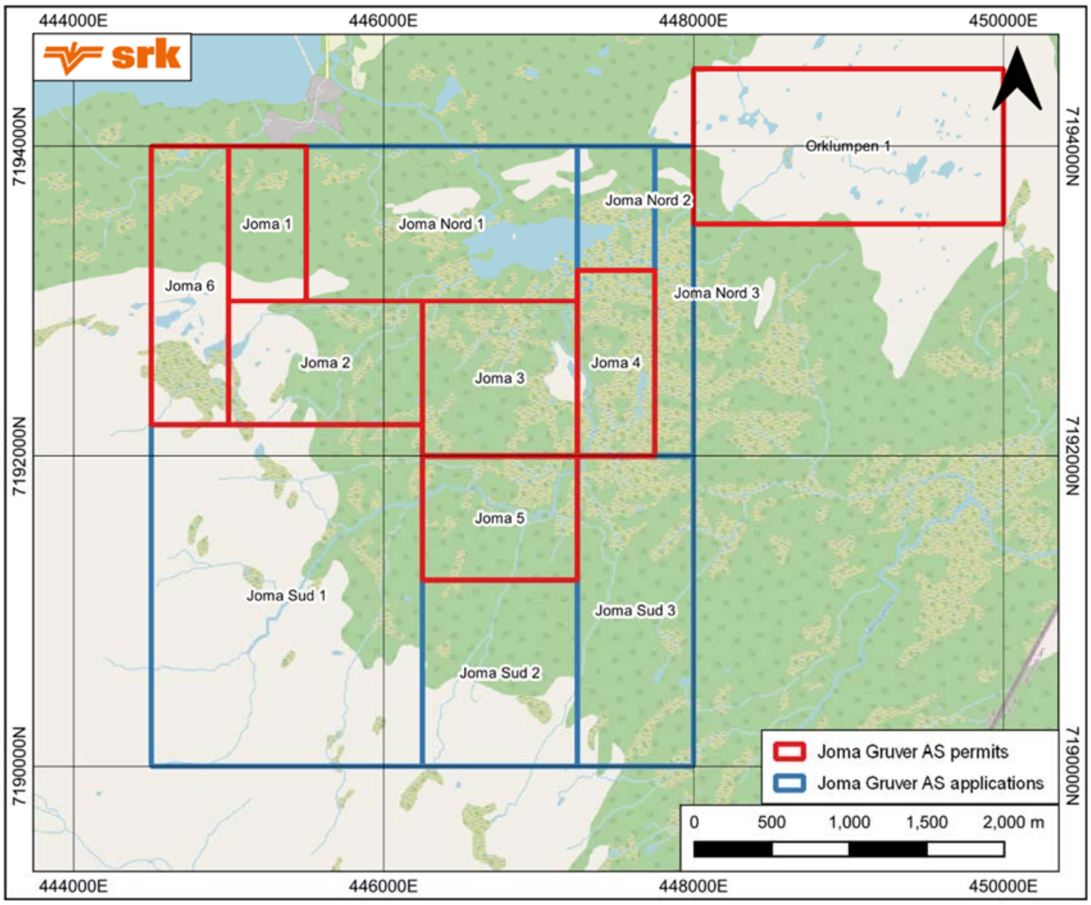


Figure 3-3: Joma Gruver AS mineral permits (local to Joma deposit)

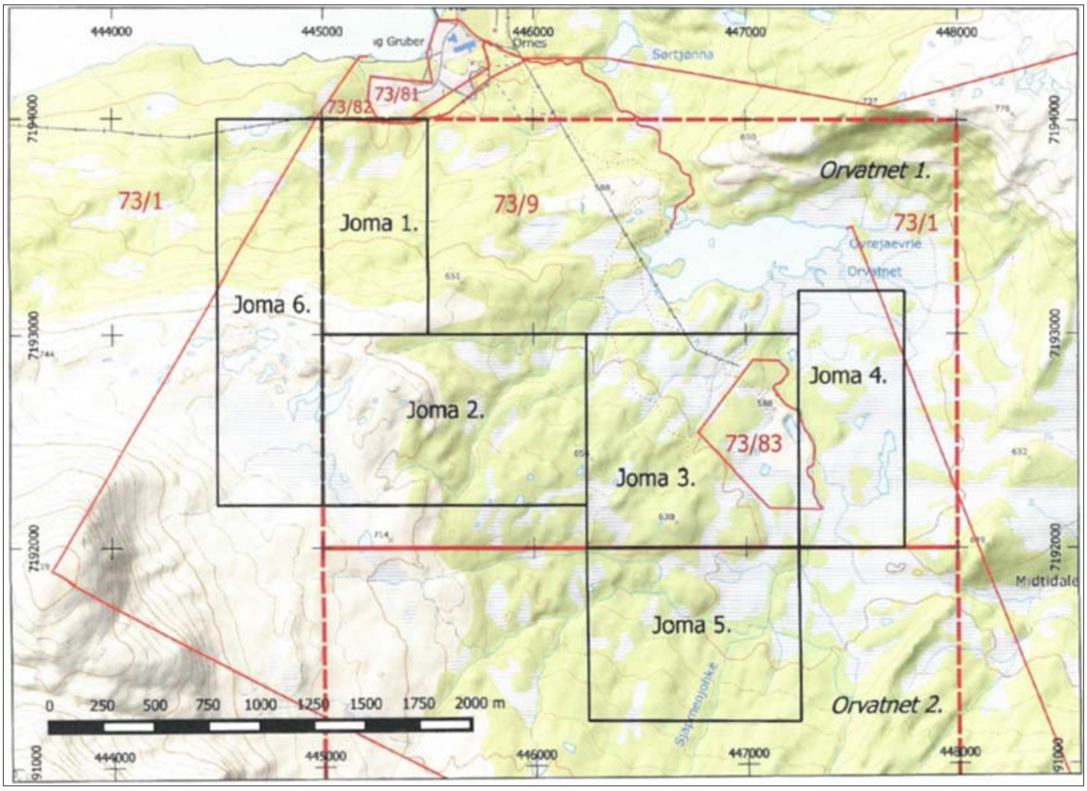


Figure 3-4: Joma Permits (black) with conflicting land ownership (red) (Source: (DMF, 2017))

3.5 Environmental Permitting

Although the Minerals Act (2009) is the primary governance tool for gaining extraction permits, the Act does not exempt permit holders from getting approvals required under other legislation, particularly with respect to environmental authorisation.

The primary approvals required for mining projects in Norway are outlined in Table 3-3. The listed approvals must be obtained sequentially. Sustainability criteria are central to the regulatory authorities' approval decisions on zoning plan, discharge plan and operating license. The zoning plan approval will be based on an ESIA. The discharge plan must include a mine waste management plan, prepared in accordance with the requirements of the EU Mine Waste Directive, which is implemented in Norwegian law. The operating license will be issued under the Minerals Act (2009), which stipulates that the objective of the Act is to '*promote and ensure socially responsible administration and use of mineral resources in accordance with the principle of sustainable development*'.

For each approval there is a process of consultation and decision-making that must be followed. The consultation processes extend beyond the lead authorities, the local municipality, the DMF and the Norwegian Environment Agency (Norwegian: *Miljødirektoratet*) ("NEA"), to other interested regulatory authorities, other users of land, as well as other interested members of the public.

An ESIA (Norwegian: *konsekvensutredning*) is the base for all approval decisions and is key for the zoning plan decision under the Planning and Building Act (2008). The competent authority for the ESIA and zoning plan decision will be the planning authority, likely to be the local municipality with input from the DMF. It is important to recognise the ESIA must explain the options for design, technology, location, scope and scale of the project that the proponent has considered and include an evaluation of the relevant and realistic alternatives. The mining area must be set aside for exploitation in the land-use section of the municipal master plan. An application for this must be made to the municipality. The work to be undertaken to support the application must be undertaken in accordance with an approved scoping plan. The work includes preparation of a zoning plan.

Table 3-3: Primary approvals needed for the mining projects in Norway

Primary Approval	Responsible Regulatory Authority	Supporting Information Required
Extraction permit for state-owned minerals (under the Minerals Act 2009)	Directorate for Minerals Management (DMF) within the Norwegian Ministry of Trade, Industry and Fisheries	DMF requires evidence that extraction can be done in an economically feasible manner before it grants an extraction permit. Mining usually cannot commence with an extraction permit alone; other approvals must be obtained as outlined below.
Approved zoning plan (under the Planning and Building Act 2008) Revision of the municipal land use plan to include the proposed mining area	Royrvik Municipality	The municipality as the authority for local planning decides whether mineral extraction can be allowed. The mining area must be set aside for exploitation in the land-use section of the municipal master plan. An application for this must be made to the municipality. The work to be undertaken to support the application must be undertaken in accordance with an approved scoping plan. The work includes preparation of a zoning plan. An Environmental Impact Assessment ("EIA") may be required to inform the zoning plan. *Note: Although the legislation refers to EIA, this is expected to include social components, so the acronym ESIA is used by SRK.* As the scoping plan influences the scope of the ESIA and zoning plan, it must be approved before the ESIA process and zoning plan preparation commences officially. Revision of the municipal land use plan can be undertaken based on an approved zoning plan
Discharge/Emissions permit (under the Pollution Control Act 1981)	Norwegian Environment Agency	To obtain approval for emissions from the mine and disposal of mine waste, an application for a discharge permit must be sent to the NEA.
Operating license (under the Minerals Act 2009)	DMF	The extraction of mineral deposits totaling more than 10,000 m^3 of matter also requires an operating license from the DMF. DMF will issue the license after approval of the license application. The application needs to include supporting information such as: • Extraction permit; • Evidence from the local municipality that the project is in accordance with municipal plans; • Map of area and project boundaries; • Declaration of competence; • Operating plan and a closure plan; • Overview of planned investments and financing; • Security for safety and remediation measures.
Building permit (under the Planning and Building Act 2008)	Røyrvik Municipality	The application details buildings and other structures that will be erected or modified. The approved zoning plan is the basis for the application.

An ESIA will be the base for all approval decisions and will be key for the zoning plan decision. The competent authority for the ESIA and zoning plan decision will be the planning authority, likely to be the local municipality, with input from the DMF. According to the regulations on impact assessments (Royal Decree 21 June 2017[1]), the formal steps or procedure to be followed for the ESIA are presented in Table 3-4. It is important to recognise the impact assessment must explain the options for design, technology, location, scope and scale of the project that the proponent has considered and include an evaluation of the relevant and realistic alternatives. The ESIA regulations are the responsibility of the Ministry of Climate and Environment along with the Ministry of Local Government and Modernisation.

[1] Regulations on impact assessments - regjeringen.no

In addition, the regulations noted above, additional guidance has been produced by the Norwegian Public Roads Administration (Norwegian: *Statens Vegvesen*) in a document referred to as 'Handbook v 712[2]' and the Miljødirektoratet, guideline M-1941 (www.miljodirektoratet.no/konsekvensutredninger).

Table 3-4: Norwegian legal ESIA procedure

ESIA phase	Procedural requirement
Screening	Project proponent may seek a screening opinion from the competent authority to clarify whether an activity requires an impact assessment (section 12). As the project is likely to be an Annex 1 activity (4b and 19), an ESIA will be required and therefore a screening opinion is not considered necessary for this project.
Scoping (including public consultation)	The project proponent must submit a 'planning programme' or a 'notification with a proposed assessment programme', depending on the nature of the project. The ESIA scoping plan must include a map of the affected area and contain a description of: • plan or initiative, the affected area and the issues considered important for the environment and society; • topics to be assessed and the planned methods; • relevant and realistic alternatives and how these must be assessed in the impact assessment; • planning or application process, with the time limits in the process, participants and plan for participation by specially affected groups and other stakeholders.
	ESIA scoping plan must be circulated to the affected authorities and interest groups, with a comment period of at least six weeks (section 15).
	Competent authority sets the assessment programme based on the ESIA scoping plan prepared by the project proponent and the impact assessment requirements in chapter 5 of the regulations, within 10 weeks of the time limit for submitting comments (section 16). The competent authority must also provide the necessary guidelines for the planning and assessment work.
Baseline, impact assessment and management planning	Project proponent conducts the assessment, following the plan provided by the competent authority. Studies and field surveys must flow recognised methodologies and carried out by people with relevant professional experience (section 17). Specific requirements for the description of the project and the content of the impact assessment, including environmental and social topics to be considered, are provided for in the regulations (section 19-24).
Public consultation	Competent authority or proposer must circulate the planning proposal or application for an initiative with the impact assessment for comments to the affected authorities, parties and interest groups and present the documents for public scrutiny, with comments allowed for at least six weeks (section 25).
Decision-making	Competent authority must determine the application and, if approved, set conditions to avoid, limit, remedy and if possible compensate for significant impact on the environment and society. The authority may also set monitoring requirements (section 29).

[2] Håndbok V712 Konsekvensanalyser (vegvesen.no)

Although not in the EU, Norway uses the EU regulation to guide much of its legislation. The EU EIA directive (2014/52/EU) requires the following factors that may be affected by the Project to be assessed in an EIA (referred to herein as an ESIA):

- population and human health;
- biodiversity, including fauna and flora and particular focus on species and habitats protected under Directive 92/43/EEC (conservation of natural habitats and of wild fauna and flora) and Directive 2009/147/EC (conservation of wild birds);
- land (for example land use, ownership);
- soil (for example organic matter, erosion, compaction, sealing);
- water (for example hydromorphological changes, quantity and quality);
- air;
- climate (for example greenhouse gas emissions, impacts relevant to adaptation);
- material assets; and
- cultural heritage, including architectural and archaeological aspects, and landscape.

3.6 Surface Rights

As long as a project proponent holds either an exploration or exploitation authorisation, they are permitted entry over that land for the purposes of the activities outlined in their authorisation. Measures that may cause damage of significance may not be implemented without the consent of the landowner and the user of the land.

The extraction permit applies only to minerals owned by the State (density >5 g/cm^3). Any party wishing to extract deposits of minerals owned by a landowner must enter into an agreement with the landowner. If no agreement is reached, an application may be made for compulsory acquisition. Compulsory acquisition may also be applied for regarding land rights required to extract and process the minerals. If compulsory acquisition is granted, it will be made subject to conditions and fair compensation of the landowner.

3.7 Payments and Royalties

An applicant for an exploration permit must pay a fee of Norwegian Kroner ("NOK") 1,000 per lease area to have their application processed. This also covers the annual fee for the first year. To retain an exploration permit, the annual fee to the Norwegian State for every 10,000 m^2 is:

- for the second and third calendar year: NOK 10;
- for the fourth and fifth calendar year: NOK 30; and
- for the sixth and seventh calendar year: NOK 50.

After 7 years, an extension lasting up to three years can be granted and, for a renewed exploration permit, the annual fee is NOK 50 for every 10,000 m^2.

Parties that are exploring or extracting deposits of minerals owned by the State shall pay an annual fee to the State for their exploration permits and extraction permits. The size of the fees is variable and is set by the Norwegian Ministry of Trade and Industry.

A party that is extracting a mineral deposit owned by the State shall pay the landowner an annual fee of 0.5% of the sales value of that which is extracted. The fee for each year shall fall due for payment on 31 March of the following year.

In addition, a permit holder must pay compensation for damage caused by works to land, buildings or facilities. These costs shall be agreed with the landowner and, if disputed, will be settled in a valuation proceeding.

SRK is not aware of any other 'royalties' owed to the state specific to minerals.

3.8 Ownership

A number of companies are known to have held mineral permits over the Joma area; however, the dates of ownership are poorly defined. Initially, a permit was held by AS Grong Gruber (a separate company to Grong Gruber AS). This company was established in 1912 for the development of the Joma Project but is understood to have ceased production in 1916 (NGU, 2018).

In 1972, extraction permits were granted to Grong Gruber AS when the deposit started production. The rights were subsequently sold to Finnish mining company Outokumpu, possibly in 1983, and then to Norsulfid AS which operated the mine until its close in 1998. Following closure, exploration permits have been held for the mine and surrounding areas by IGE Nordic and Drake Resources.

The mineral permits covering the Joma Project are currently held by Joma Gruver AS. Joma Gruver AS is owned 100% by Vilhelmina Mineral AB, a Swedish company registered in Stockholm. In 2020, 94.7% of Vilhelmina Mineral AB shares were purchased by Bluelake Mineral AB (previously Nickel Mountain Resources AB), increased to 99% in 2021. As such, Bluelake Mineral holds a 99% share in Joma via Vilhelmina Mineral. Figure 3-5 shows the organogram for the Project ownership.

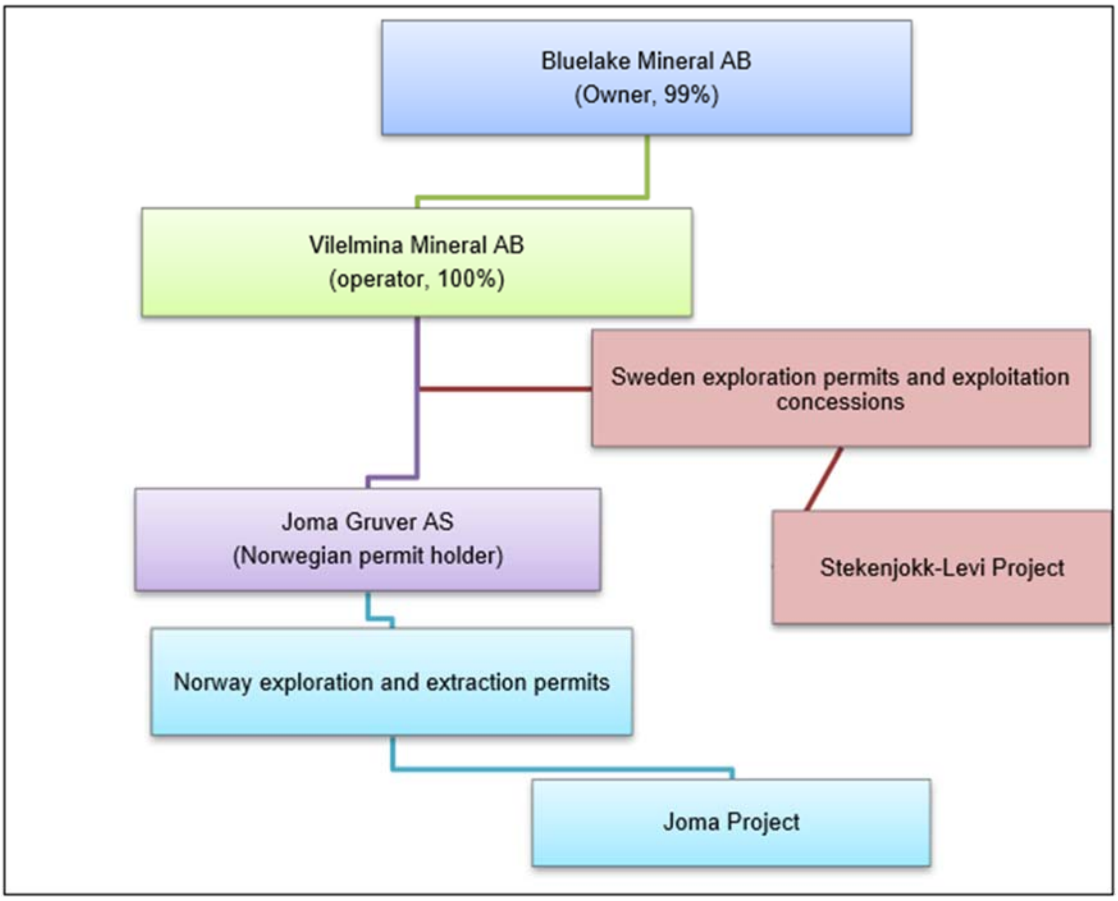


Figure 3-5: Joma Project Ownership

4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

This section provides a summary of the environmental and social setting of the Project.

4.1 Accessibility

The Joma Project is located in eastern Central Norway, within Nord-Trøndelag county, Røyrvik municipality. The Project is accessed by well-paved roads. From Trondheim, the E6 road can be followed north for approximately 260 km, turning onto the Fv773 at Haugen. The Fv773 is followed east for approximately 30 km to Røyrvik, from which the 7028 (Hudningsveien) is then followed east for a further 15 km before turning southeast for onto a local road (Jomaveien) for 1.3 km that leads to the Project area.

The closest railway is located approximately 30 km west of the Project with Haugen the nearest station some 50 km by road. The railway line follows the route of the E6 road between Trondheim in the south and Fauske in the north. The line is not electrified and is used for both passenger and freight rail. The closest port facilities are located at Namsos (used by previous operator Joma Gruber, 155 km southwest by road), Mosjøen (165 km northwest by road) and Orkanger (340 km southwest by road). Figure 4-1 shows the local and regional access.

International access is easiest via Trondheim Airport, located approximately 230 km southwest of the project. The airport has good links to Europe, with international carriers providing regularly scheduled flights to a range of European airports, including hubs in Amsterdam and London.

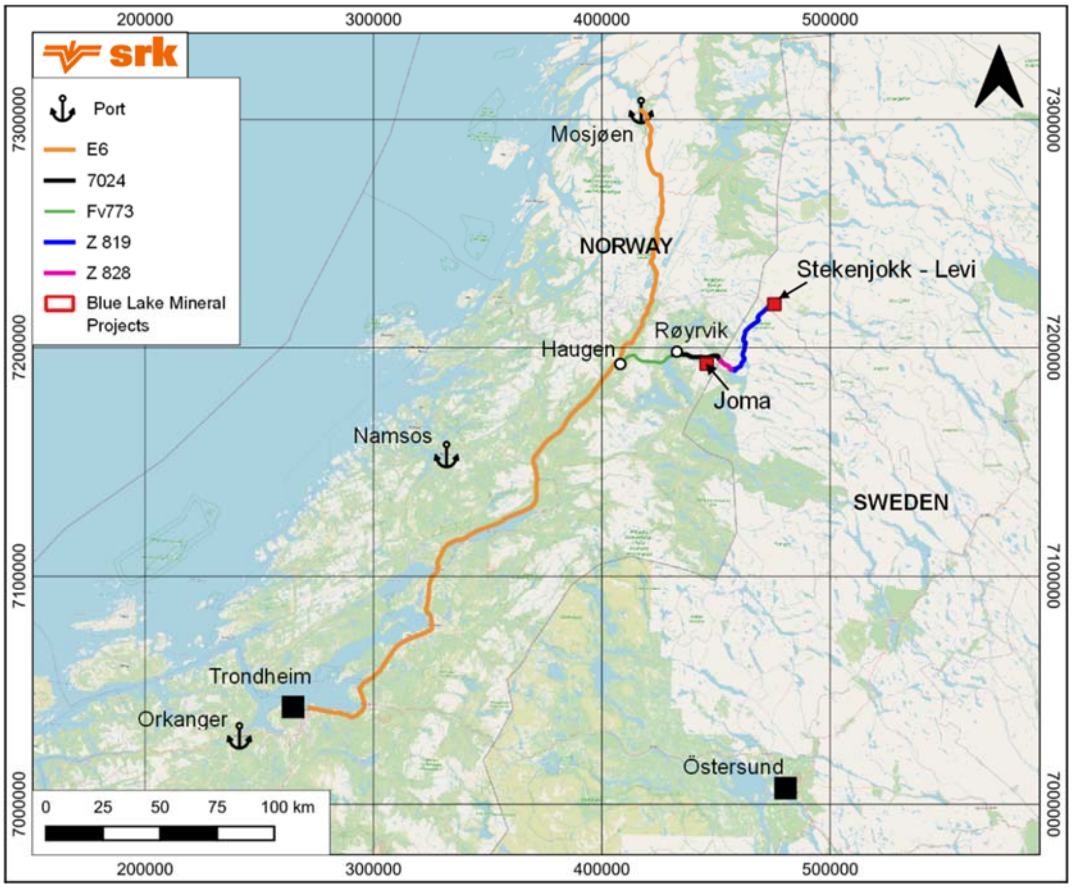


Figure 4-1: Primary access routes to Joma Project

4.2 Physiography and Climate

4.2.1 Topography & elevation

The Joma Project is located approximately 600 m above sea level ("masl"), positioned in a shallow depression between taller hills to the northeast and southwest. Topography generally slopes upwards to the southwest onto the slopes of Jomaklumpen, with a maximum elevation of 1,150 m.

Figure 4-2 shows a Google Streetview image from the main access route to the mine, looking southwest towards Jomaklumpen. Figure 4-3 shows the area around at the Project taken during the SRK 2021 site visit. The photograph shows an old rock waste dump and the lake which historically was used as a tailings management facility.

Figure 4-2: Historical processing buildings in the industrial site, surrounding forests and Jomaklumpen peak (Source: Google, 2021)

Figure 4-3: Project industrial site and waste rock dump (Source: SRK site visit, 2021)

4.2.2 Water

Water bodies

The Joma area is within the Ångerman River (Swedish: *Ångermanälven*) basin catchment that generally flows southeast into the Baltic Sea with the mouth at Nyland, eastern Sweden. At a local level, the Project sits within a saddle between two main valleys: Hudningsvatnet valley draining water into the Hudningsvatnet (also referred to as Hudningsjaevrie[3]) lake to the west and Midtidalen (Mittiälven) valley draining into the Stora Blåsjön lake to the east.

[3] Norwegian has two written forms: Nynorsk (new Norwegian) and Bokmål (old Norsk).

The Project area is crossed by a network of small to medium streams, active throughout the year, which create a series of marshes and wetlands (Norwegian: *myr*) along their banks and intersections. Close to the historical mine site, the lake of Orvatnet (Ovrejaevrie) is the source of the rivers feeding both these valleys with the Orvasselva stream flowing from Orvatnet to Hudningsvatnet lakes. A map showing these main water bodies is shown in Figure 4-4 .

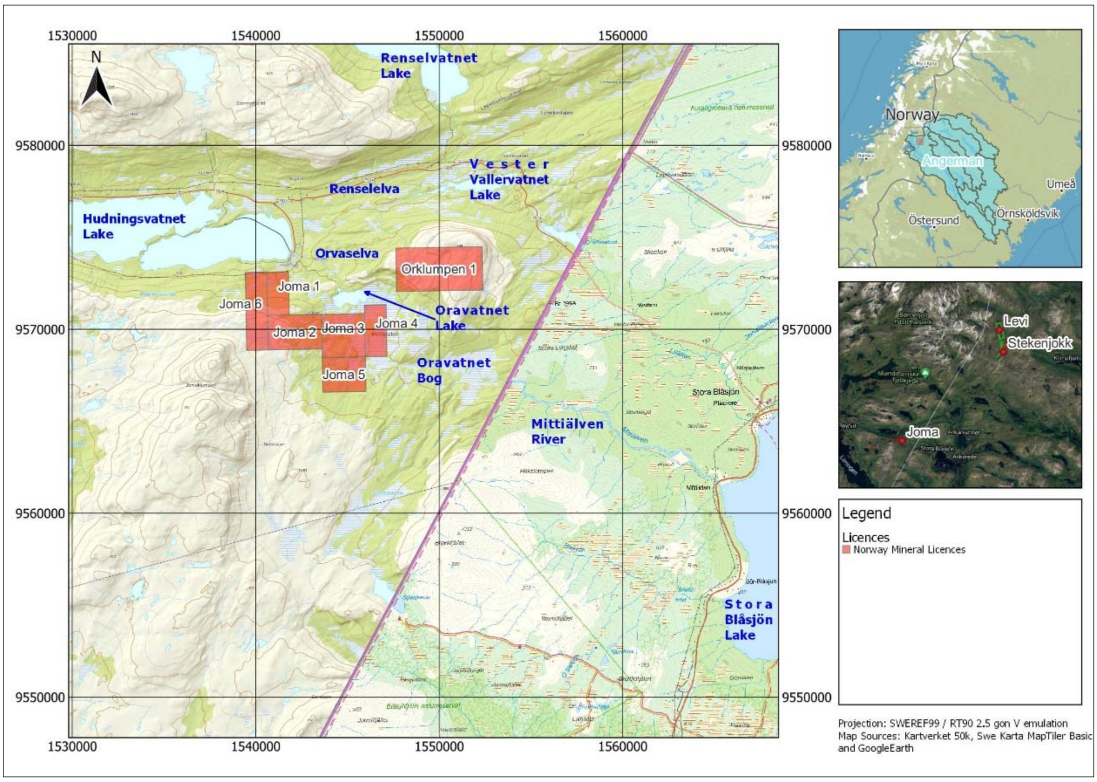


Figure 4-4: Location of main water bodies in local area and Joma Project extraction permits

A map showing the local waterbodies around the Joma Project is shown in Figure 4-5. This includes the causeway (dam) built by the previous mine operators to separate the main Østre Hudningsvatnet into the tailings impoundment to the southwest and the natural waterbody to the northeast. The Renselelva and Orasselva rivers both flow into the northeastern part of the lake that flows into Vestre Hudningsvatnet via a small canal then downstream into the Hudningselva (then on to the main Ångerman basin). In addition, there is a sluice gate that controls flow between the Vestre and Østre Hudningsvatnet lake. It is currently open to allow water to flow between the two but has been closed during operation to ensure contaminated water in the tailings area does not mix with the cleaner water in the west.

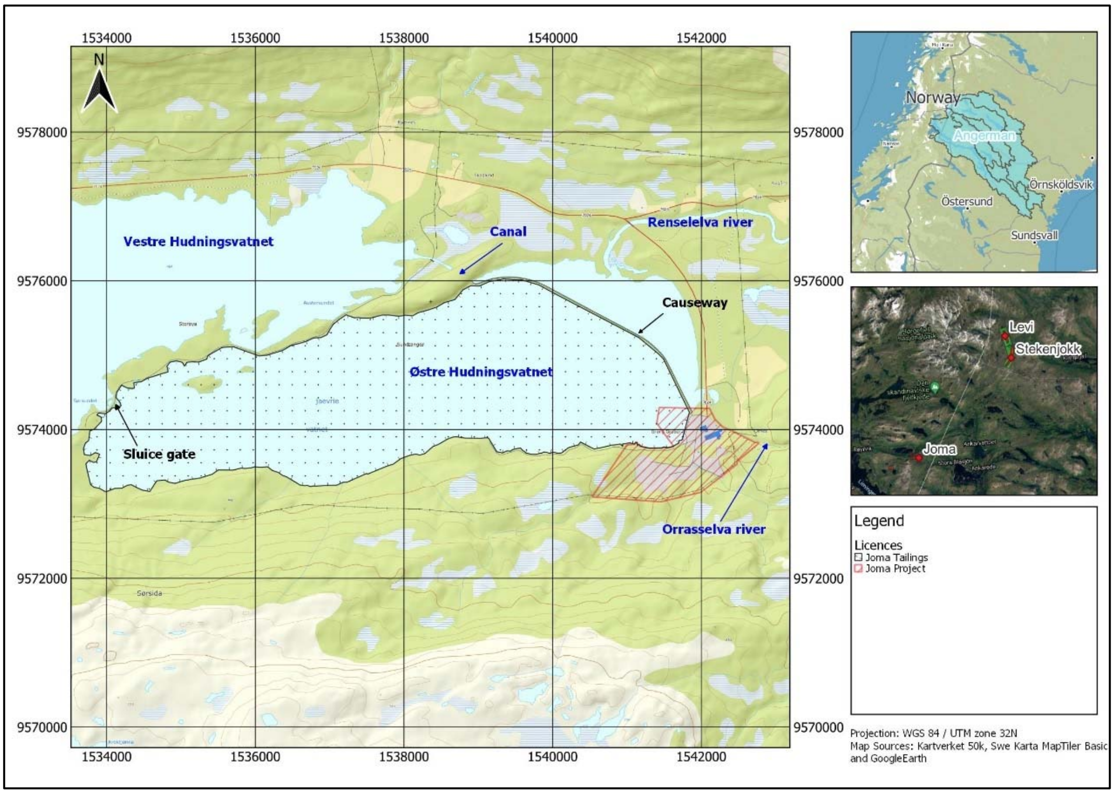


Figure 4-5: Location of local water bodies surrounding Joma Project (industrial area red hatch) and historical tailings impoundment (black dotted area)

Water quality

After closure of the mining operation in 1998, Norwegian Institute for Water research (Norwegian: *Norsk institutt for vannforskning*, "NIVA") monitored the water bodies between 1999 and 2006. NIVA monitoring shows elevated concentrations of several metals in water bodies downstream of mine and industrial areas, especially of Zn, but also Cu and cadmium (Cd). The metal concentrations have decreased significantly in several water bodies after 2006. The zinc concentration is still in condition class IV and V ('bad' and 'very bad'[4]) in Østre Hudningsvatnet and parts of Orvasselva but is lower than in 2006. The streams that flow through the industrial area are contaminated with metals and adds pollution to Østre Hudningsvatnet. Vestre Hudningsvatnet, Hudningselva and Orvatnet are only slightly affected by the mine runoff according to the ESIA studies described in Section 19.2.

Water and sediment sampling and analysis was conducted in 2020 by Multiconsult who concluded the chemical condition is good in all water bodies, with the exception of Tippbekken stream/creek, Østre Hudningsvatnet and Orvasselva. This is due to high concentrations of Cd and nickel (Ni) in the Tippbekken that flows through the western part of the industrial area. In Østre Hudningsvatnet, the Cd concentration exceeds Annual Averaged Environmental Quality Standards ("AA-EQS") (limit value for chronic effects with long-term exposure). The results were not conclusive for Orvasselva. The concentrations of Cd were just above AA-EQS in Orvasselva downstream the open pit area, as water discharge from Stigort 4 is still entering the river.

[4]In Norway, a classification system for water quality is used with 5 condition classes for ecological condition (very good to very poor) and 2 condition classes for chemical condition (good or bad – determined using 45 indicators including metals such as cadmium, nickel and lead).

4.2.3 Ecology and biodiversity

Vegetation within the Project area and away from the marshlands is dominated by dense evergreen forests, though this gives way to more grasslands and scrub on the higher slopes of Jomaklumpen. The area surrounding the Project is known for calcareous bedrock with species-rich habitats and a karst landscape according to the Norwegian nature database[5] (Norwegian: *Naturbase faktaark)*. The Rensellelva River is permanently protected from power development. The watercourses and areas are also known for a rich bird life (Multiconsult Norge AS, 2018a).

The NEA classifies the nearby Orklumpen Vest Forest (immediately to the north of the Orvatnet lake and west of the Orklumpen 1 mineral permit) as having a 'very important' natural value (A-value) for birch forest with perennials (Norwegian: *Bjørkeskog med høgstauder*[6]). In connection with this area, five species of pasture mushrooms were classified by the International Union for the Conservation of Nature ("IUCN"[7]) Red List as 'near threatened' ("NT"). These high-value areas are decided on using the Directorate for Nature Management ("DN"; *Direktoratet for naturforvaltning* – SRK notes this is a now defunct organisation merged into the NEA) Handbook 13 (referred to as DN-13). This handbook describes 56 habitat types that are thought to be particularly important in the biodiversity context and how local municipalities shall map the described nature types. A map showing the location of the high nature value areas is provided in Figure 4-6.

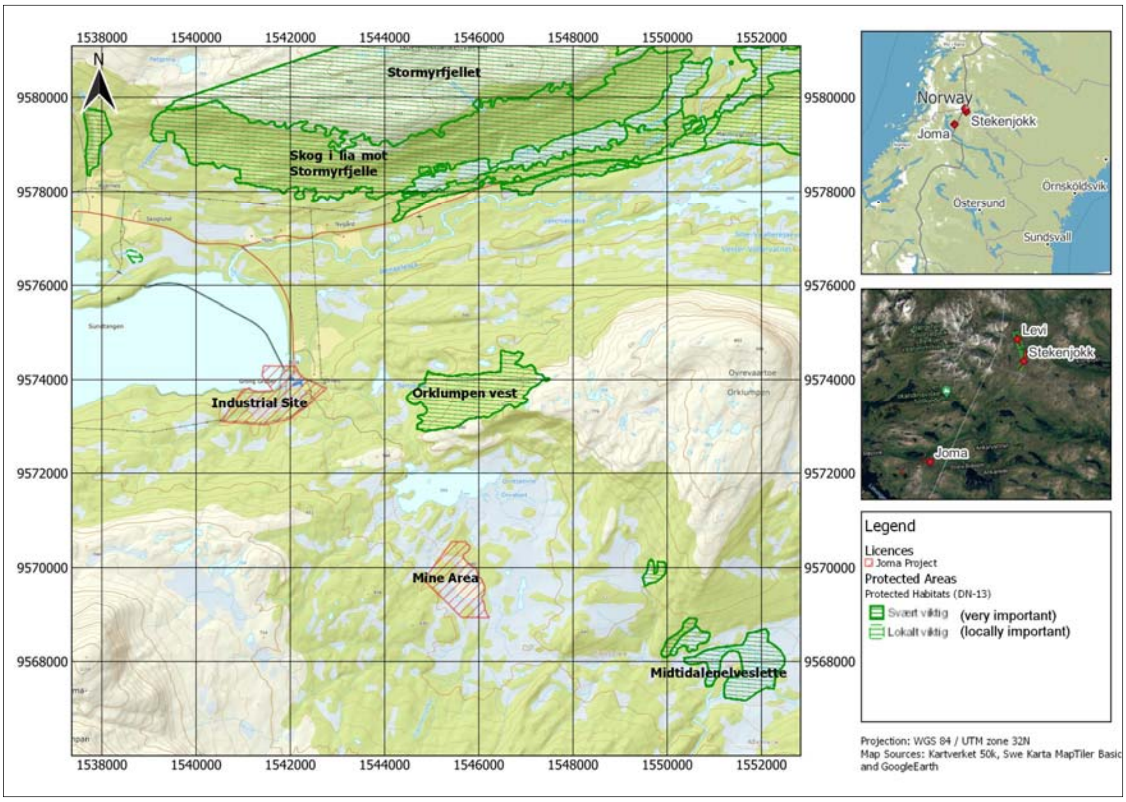


Figure 4-6: Location of 'important habitats' according to DN-13 and Joma Project (mine and industrial site areas)

[5] *Norwegian nature database: www.naturbase.no*
[6] *Orklumpen vest nature factsheet: Naturbase faktaark*
[7] *International Union for the Conservation of Nature: IUCN Red List of Threatened Species*

The Project area is also designated in the Norwegian nature database as a 'functional area' (national interest) for Willow Grouse (*Lagopus lagopus*) and classified as 'least concern' ("LC") by IUCN Red List, but as NT by the Norwegian Environment Agency. The 'functional areas' of national interest for specific species are shown in Figure 4-7. It is also an important habitat for moose (*Alces alces,* LC according to IUCN), Eurasian beaver (*Castor fibor,* LC according to IUCN) along with various wading birds (*Charadriiformes*). To the west of the mine site is an area of habitat for rock ptarmigan (*Lagopus muta,* NT according to IUCN). The greater area of influence for the planning area is registered in Rovbase[8] as a functional area and breeding area for wolverines (*Gulo gulo*, 'endangered', "EN" according to IUCN), although there have been limited sightings in the vicinity of the Project.

As part of further studies required for the discharge and operating permits, biodiversity (species and habitat) on land will be mapped within the proposed planning area. Furthermore, indirect effects on land and in the aquatic environment within the area of influence of the mine will be investigated. Impacts and possible consequences on the aquatic environment and watercourse nature will nevertheless remain a salient issue that requires management and monitoring.

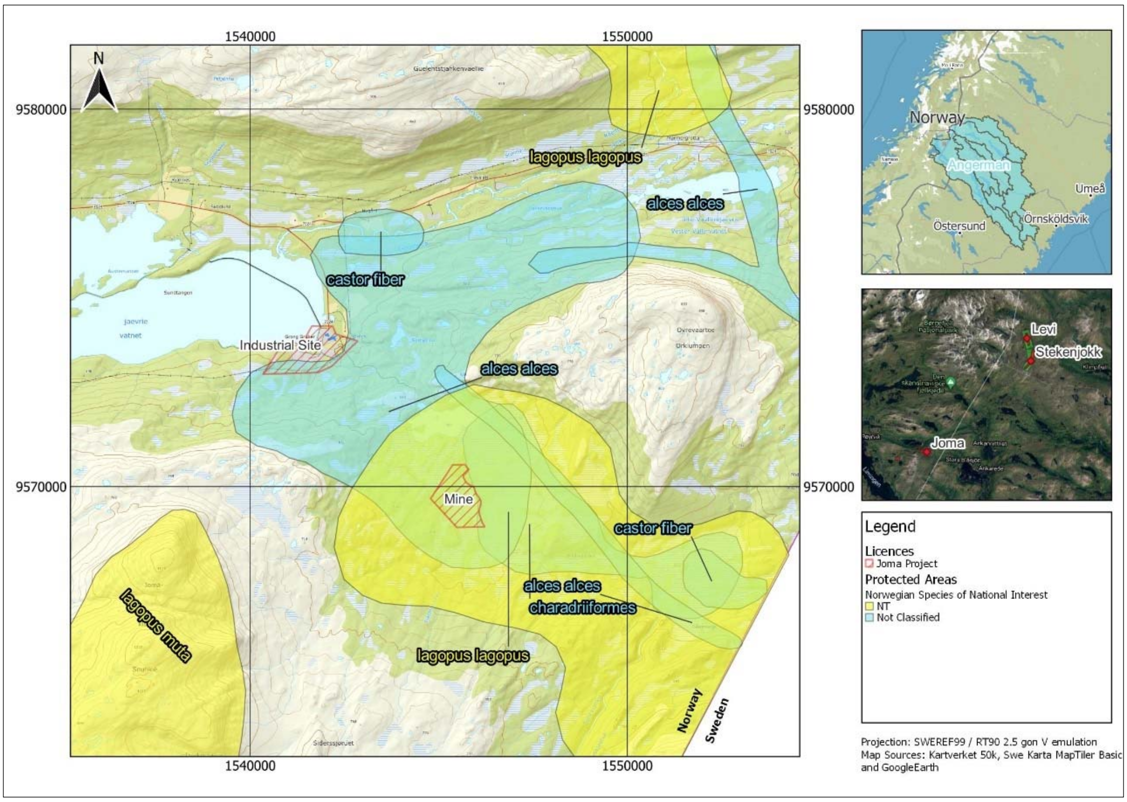


Figure 4-7: Loation of 'functional areas' of national interest for specific species and Joma Project (mine and industrial site areas)

[8] *Rovbase is a database of carnivores in Europe: Rovbase - Miljødirektoratet (miljodirektoratet.no)*

4.2.4 Protected areas

There are no environmentally protected areas (such as Natura 2000, Ramsar, National Parks) in the vicinity of the Project. As described above, the Orklumpen Vest Forest has been designated as 'very important' habitat by the Norwegian Environment Agency. Under this designation sites can be located both within and outside areas protected by the Nature Diversity Act / Nature Conservation Act (2009); in the case of Orklumpen Vest, it is outside. This means the high nature values relies on safeguarding primarily through the land management of local the municipality and private sector.

4.2.5 Climate

Historical climate

Under the Köppen Climate Classification system, Nord-Trøndelag County is primarily classified as Dfc (Subarctic), where the coldest month averages below 0°C, and 1 to 3 months averaging above 10°C. There is no significant difference in precipitation between seasons.

Historical temperature and rainfall graphs are shown in Figure 4-8. The coldest months are January and February with lows of -10 to -20°C, and warmest in July with highs of 15 to 18°C. Precipitation is consistent through the year but is lowest between April and May. Permanent snow coverage is common between October and April. Daylight hours are highly variable, ranging from lows of 4 hours per day in December through to 21.5 hours per day in June.

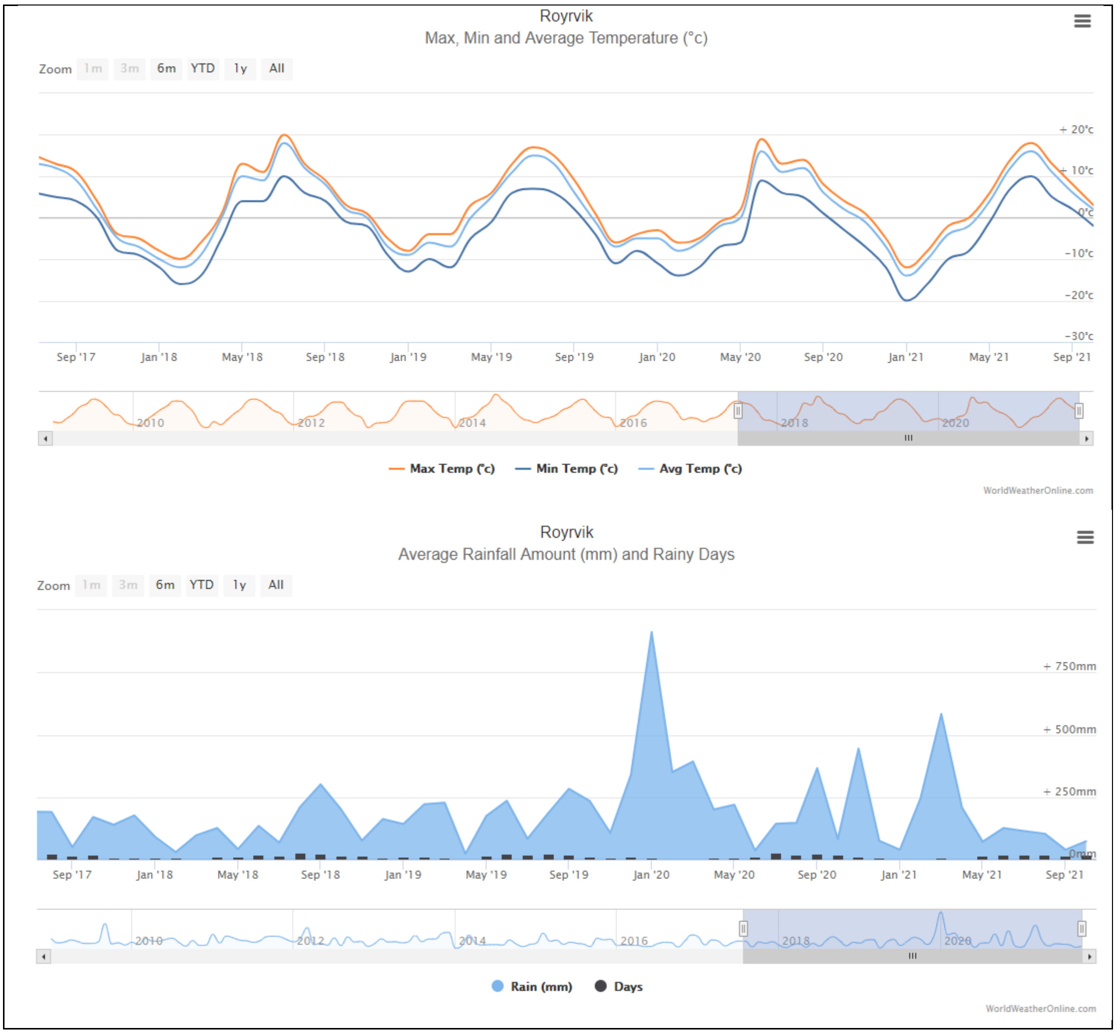


Figure 4-8: Temperature and precipitation averages for Røyrvik [9]

Climate change

Predicting future climate changes is challenging and not within SRK's scope of work; however, it is clear from reports from the Intergovernmental Panel on Climate Change ("IPCC") that the northern Europe regions are predicted to warm at a higher rate than other regions globally and are predicted to experience increased annual precipitation, as described in the IPCC 4th report (Intergovernmental Panel on Climate Change, 2007) and shown in Figure 4-9. These expected changes will need to be considered in the design of operational infrastructure, particularly that associated with water management, and in closure planning.

Sweden, as a signatory of the 2015 United Nations Paris Agreement[10], has committed to reducing human-induced climate change and to keep global warming to below 1.5°C above pre-industrial age levels.

[9] *World Weather Online: Klimpfjall, Vasterbottens Lan, Sweden | World Weather Online*
[10] Paris Agreement: The Paris Agreement | UNFCCC

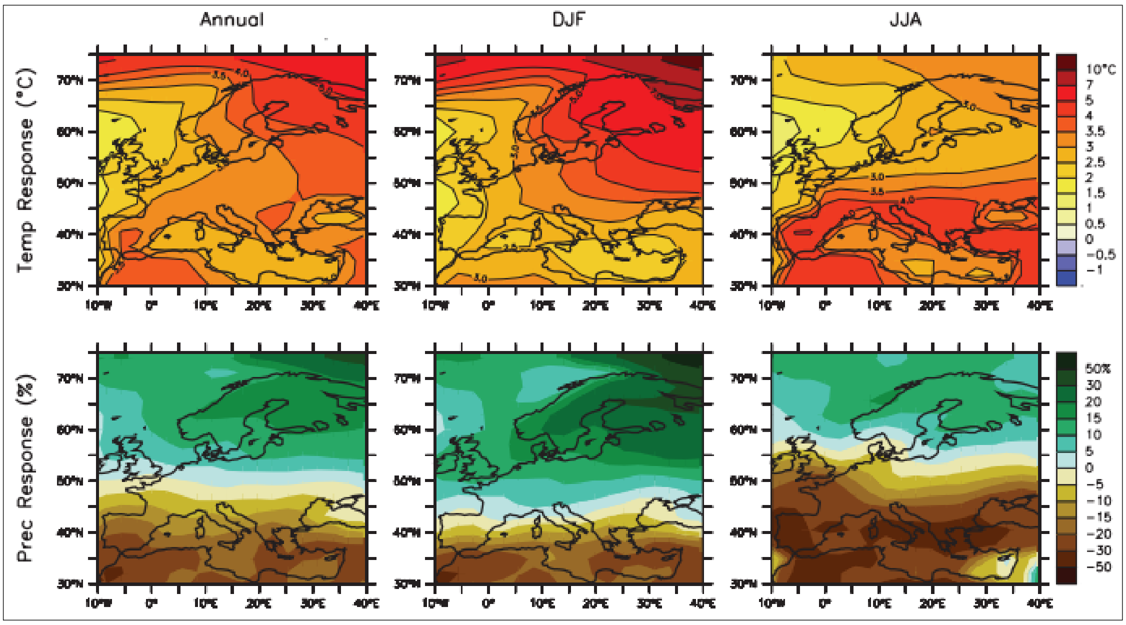


Figure 4-9: IPCC Climate Change projections (Source: (Intergovernmental Panel on Climate Change, 2007) [11])*

*Notes: DJF = December-February average, JJA = June-August average

4.3 Local Resources

The current land use in the planned mining area and in the immediate area consists primarily of reindeer husbandry as well as recreation, tourism and outdoor life, including hunting and fishing. In addition, the majority of the infrastructure related to the previous mining operation is still in place.

There are a few small villages in the area, both in Norway and in Sweden, that should be able to provide basic supplies; however, the majority of supplies will likely need to be organised in Trondheim or one of the larger towns on the western coast or fjords. The local population is small, and it is highly likely that any development of a mine in the future would require an external workforce to be housed on site.

The closest main settlements to the Project are shown on Figure 4-10 and described below:

- Ornes farm: less than 50 m north of the industrial site boundary across the Orvasselva.
- Nygård: 1.2 km north of industrial site.
- Høyslett: 2 km northeast of industrial site.
- Kjærnes: 2.5 km northwest of industrial site.

[11] From IPCC: *Area-averaged temperature and precipitation changes are presented from the coordinated set of climate model simulations archived at the Program for Climate Model Diagnosis and Intercomparison (PCMDI; subsequently called the multi-model data set or MMD)*

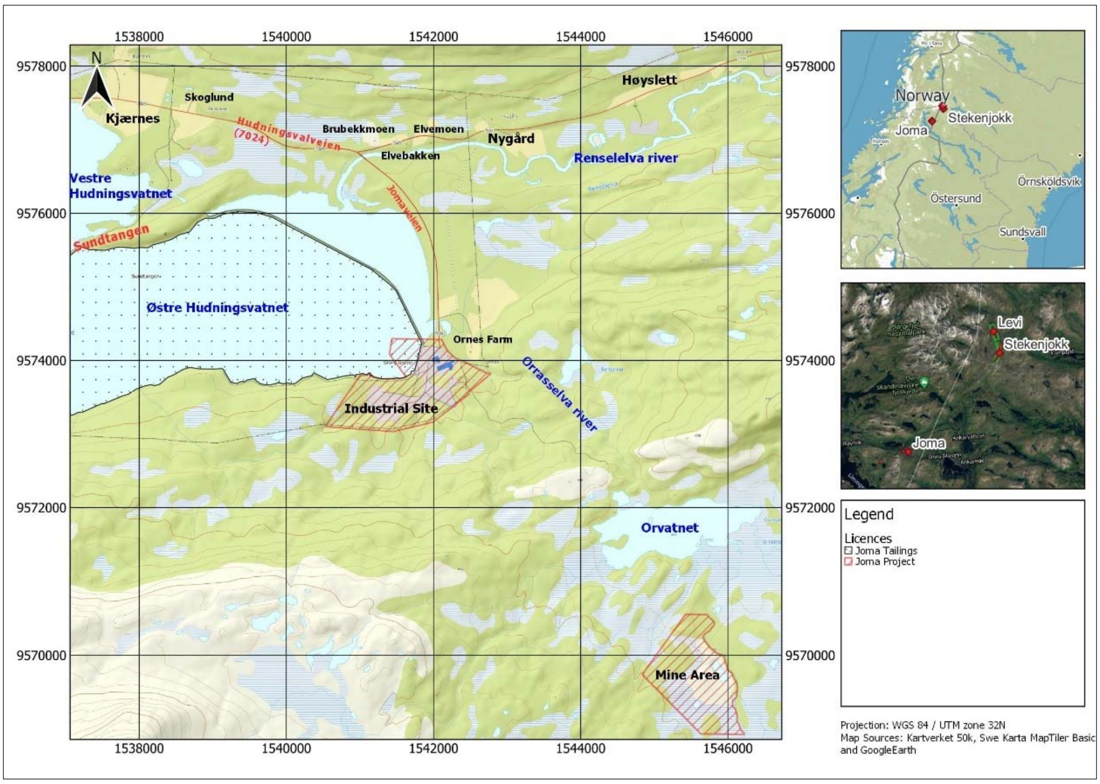


Figure 4-10: Location of villages and infrastructure surrounding Joma

4.4 Infrastructure

The road network is well-developed in the region, as shown on Figure 4-10. The main route, the 7028 (Hudningsveien) runs west to east from Sweden to Røyrvik with a trunk road connecting the Joma industrial area (Jomaveien).

Grid electrical power (24 kV) is supplied to the mine, with a 66 kV line located at Røyrvik[12]. Potable water supply is unknown but assumed not present. It is understood that historically water supplied to the mine was drawn from Hudningsvatnet, the lake adjacent to the mine buildings; however, this lake is now not considered to be suitable for use.

Whilst it is likely that there is a wired telecommunications line to the mine buildings, it is unknown if this line is still serviceable. Network coverage maps indicate that the Project area has some cell coverage provided by both Telia and Telnor; however, the speed and reliability of this connection is unknown[13].

Much of the infrastructure developed for the operation of the mine between 1972 and 1998 is still present at Joma, including various warehouses, engineering shops, offices and processing buildings. These facilities are understood to be in varying states of disrepair, but in many cases are still serviceable to some extent. It is noted that much of the processing equipment was sold at the closure of the mine.

[12] *Norwegian Water Resources and Energy Directorate map service: https://temakart.nve.no/link/?link=nettanlegg*
[13] *Global System for Mobile Communication Association ("GSMA"). Network coverage maps: https://www.gsma.com/coverage/*

5 HISTORY

The following chapter is an abridged version of the history of the Project, with more detail on exploration found in the 2021 MRE technical report.

5.1 Discovery and Exploration

There is limited information available in English regarding mining and exploration of the Joma Project. More information may be available in Norwegian, but this has not been identified or made available for review.

The Joma Project was first identified in the early 1900s and was operated as a mine by AS Grong Gruber (separate to Grong Gruber AS) between 1912 and 1916. During German occupation of Norway during World War II, geophysical investigation of the deposit was undertaken by German geologists, but no further mining took place. The deposit was re-assessed in 1956 with a short trial mining period, but again stood dormant until the 1960s, at which point more formal exploration of the deposit began. A further phase of trial mining was undertaken between 1969 and 1972, with the mine opening for production in 1972 (NGU, 2018).

There is limited information available regarding exploration of the Joma area leading up to or during operation of the Project between 1972 and 1998. A report available from the NGU (in Norwegian) indicates that an electromagnetic survey was undertaken over the area, completed in two stages in 1958 and 1962 (NGU, 1962). IGE Nordic and then Drake Resources both conducted exploration before Vilhelmina took over the majority of the Project in 2017.

It is estimated that during exploration and operation of the mine, over 3,000 holes have been drilled in the Joma area totalling over 113 km, and with close to 60,000 drillhole samples collected and assayed.

5.2 Historical MRE

A number of historical MRE have been completed on the Project. SRK notes that these historical estimates were not reported in accordance with an internationally recognised reporting code. The estimates are summarised below:

- Grong Gruber AS (1972 to 1998): these estimates were undertaken using a vertical sectional method for the main orebody and polygonal method for Joma South. Details of the estimation parameters are incomplete, but it appears that at the close of the mine in 1996 an estimated 10 Mt of in situ resources were present at 1.7% Cu and 1.7% Zn.
- IGE Nordic (2007): a review of the deposit and also used a polygonal estimate methodology. This review reported “known mineralisation” of 9.3 Mt at 0.99% Cu and 2.14% Zn in Joma Main, and 690,000 t at 1.5% Cu and 1.1% Zn from Joma South. In addition “available mineralisation” of 5.4 Mt at 0.93% Cu and 2.14% Zn was reported presumably accounting for sterilized ground and pillars (Gee, 2011).
- Gee (2011): grade and tonnage estimate undertaken on a database of historical drilling results, including 173 surface drillholes, 2,809 underground drillholes and over 24,000 samples assayed for Cu, Zn and specific gravity. Results showed approximately 4.1 Mt of material, at 1.8% Cu and 0.75% Zn reported at 1% Cu cut-off for Joma Main mineralisation. With an additional 616,000 t at 2.4% Cu and 1.2% Zn estimated for the Joma South (Gee, 2011).

- Drake Resources (2014): Exploration Target for the deposit was reported based on the numerical modelling undertaken by Gee (2011). This estimate is based on the numerical modelling outlined above, with additional validation of the data provided by the limited re-sampling programme. An Exploration Target of 4 - 10 Mt at 1-2% Cu and 1.5-2% Zn was reported (Drake Resources, 2014).

5.3 Historical Mining Production

It is understood that the deposit was mined between 1972 and 1998 by a series of companies. The project was initially operated by Grong Gruber AS but is understood to have been transferred to Finish mining company Outokumpu, possibly in 1983, and later to Norsulfid AS who operated the mine up until its close. During this period, an estimated 11.5 Mt of material was mined at a grade of 1.49% Cu and 1.45% Zn (Bluelake Mineral, 2021). Mining was primarily underground, although a small open pit was excavated along the northeastern rim of the deposit where it crops-out at surface. SRK understands the mine was closed down due to falling metal prices and a reduction in mineable material, although this is unconfirmed.

A summary of historical production from the Joma Project has been provided by Vilhelmina, based on an Annual Production Record reported at the closure of the mine in 1998. This is presented in Table 5-1.

Silver production data are also available for 1994, 1997 and 1998 and are summarised in Table 5-2. The source of these production data has not been provided for review and is taken in good faith.

A single assay result from a copper concentrate delivered by Grong Gruber AS in 1983 is available. This is understood to be from Joma, but again, has not been confirmed from the original source. Assay results indicate the shipment contained 12,882 t at 24.8% Cu, 137 g/t Ag, 0.6 g/t Au, 1% Zn and 0.08% Pb.

Table 5-1: Joma Historical Production Summary (after Grong Gruber AS, 1998)

Year	Mill Feed				Copper Concentrate				Zinc Concentrate			
	Tonne	t/d (350d/y)	Cu (%)	Zn (%)	Cu Recovery (%)	Concentrate Grade	Tonnes	Contained Tonnes	Zn Recovery	Concentrate Grade	Tonnes	Contained Tonnes
1972	73,109	209	1.43	0.96	85%	23%	3,908	889	41%	39%	738	286
1973	298,113	852	1.61	0.87	91%	22%	19,789	4,344	67%	46%	3,752	1,742
1974	278,018	794	1.56	0.99	93%	24%	16,620	4,034	72%	48%	4,120	1,986
1975	329,964	943	1.95	1.14	94%	24%	25,639	6,053	74%	48%	5,834	2,775
1976	330,573	944	2.06	0.97	95%	24%	27,344	6,470	72%	48%	4,815	2,302
1977	347,103	992	1.51	1.16	93%	25%	19,789	4,852	70%	49%	5,807	2,838
1978	352,034	1,006	1.54	1.13	90%	25%	19,942	4,906	71%	51%	5,550	2,830
1979	367,838	1,051	1.37	1.08	88%	24%	18,646	4,440	76%	52%	5,891	3,034
1980	395,847	1,131	1.62	1.00	90%	24%	23,999	5,784	79%	50%	6,220	3,132
1981	402,158	1,149	1.60	1.08	88%	24%	23,793	5,651	78%	51%	6,660	3,384
1982	424,831	1,214	1.57	1.14	87%	24%	24,685	5,823	80%	53%	7,346	3,863
1983	482,738	1,379	1.48	1.15	87%	25%	25,031	6,185	81%	54%	8,309	4,477
1984	395,711	1,131	1.38	1.42	84%	25%	18,414	4,611	81%	53%	8,616	4,578
1985	442,261	1,264	1.30	1.51	81%	25%	18,475	4,665	80%	53%	10,005	5,345
1986	489,406	1,398	1.53	1.47	88%	25%	26,539	6,584	81%	52%	11,140	5,792
1987	519,802	1,485	1.53	1.65	85%	24%	28,588	6,781	74%	52%	12,277	6,384
1988	510,913	1,460	1.34	1.59	86%	24%	25,076	5,905	80%	53%	12,326	6,488
1989	482,144	1,378	1.45	1.90	86%	24%	25,274	5,995	91%	52%	15,885	8,306
1990	511,640	1,462	1.31	2.03	82%	23%	23,778	5,467	68%	52%	13,666	7,102
1991	506,068	1,446	1.53	1.80	84%	23%	28,521	6,500	74%	51%	13,022	6,705
1992	524,119	1,497	1.18	2.18	84%	24%	21,721	5,174	77%	52%	16,964	8,786
1993	564,207	1,612	1.33	2.19	85%	23%	27,208	6,378	73%	52%	17,282	9,051
1994	604,281	1,727	1.44	2.04	86%	24%	31,116	7,443	74%	52%	17,425	9,145
1995	626,823	1,791	1.30	1.57	83%	24%	28,559	6,797	74%	53%	13,928	7,323
1996	551,698	1,576	1.52	1.12	88%	23%	31,699	7,389	74%	53%	8,620	4,557
1997	424,652	1,213	1.73	0.80	91%	24%	28,131	6,670	70%	53%	4,503	2,372
1998*	169,973	486	1.73	0.84	92%	24%	11,473	2,699	67%	53%	1,826	960
Total	11,406,024		1.49	1.45	87%	24%	623,757	148,487	76%	52%	242,527	125,541

*Production from January – May only

Table 5-2: Joma Historical Silver Production Data

Year	Ag (g/t, Mill)	Ag (g/t, Cu Concentrate)	Ore to Mill (tonnes)	Contained Ag (at Mill) (g)	Cu Concentrate Produced (tonnes)	Contained Ag (Concentrate) (g)	Recovery (%)
1994	26	194	604,281	15,711,306	31,116	6,036,504	38.4
1997	14	103	424,652	5,945,128	28,131	2,897,493	48.7
1998*	20	144	169,973	3,399,460	11,473	1,652,112	48.6

*Production from January – May only

6 GEOLOGICAL SETTING AND MINERALISATION

The following chapter is an abridged description of the geology and mineralisation of the Joma deposit; a full description can be found in the 2021 MRE technical report.

6.1 Regional Geology

The Grong-Stekenjokk area of central Norway and west-central Sweden is one of the most important areas for Cu-Zn(-Pb) VMS deposits in the Caledonides. Four mines have been operated in the area; Stekenjokk, Skorovas, Joma and Gjersvik, with a total combined production of approximately 24.5 Mt between 1952 and 1998 (GTK, 2012).

These deposits are hosted within a Cambrian to Silurian succession of the Scandinavian Caledonides, an ancient and deeply eroded mountain belt which today underlies much of the Scandinavian Peninsula. The Caledonides form a series of nappes (sheets of rock thrust laterally over neighbouring strata) overlying Palaeoproterozoic rocks of the Fennoscandian Shield and form the northernmost section of the composite Caledonian-Appalachian belt which can now be traced into eastern North America and into West and Central Europe (PorterGeo, 2012).

The nappes of the Caledonides have been grouped into four main allochtons (a large block of rock moved from its position of formation by faulting); the Lower, Middle, Upper and Uppermost Allochtons (Roberts and Gee, 1985). The Grong-Stekkenjokk district deposits are located in the Køli Nappe Complex in the Upper Allochthon, interpreted as consisting of high-grade metamorphic continental rocks thought to represent tectonically-shortened (folded and faulted) outermost margin of the Baltic palaeocontinent and lower grade metamorphic terranes comprising ophiolitic volcano-sedimentary rocks from the adjacent (and now closed) Iapetus Ocean (PorterGeo, 2012).

The Joma mineralisation lies within a sequence of mafic metavolcanic rocks of the Røyrvik Group, comprising an alternating sequence of tholeiitic to alkaline pillow lavas, pillow breccias and hyaloclastites, interbedded with commonly graphitic phyllites and ribbon cherts (PorterGeo, 2012). A summary geological map for the area is shown in Figure 6-1. The sequence is structurally overturned and deformed, with three to four phases of deformation recognised (GTK, 2012). These deformation events have been related to nappe formation, which has also advanced regional metamorphism to greenschist facies, and in plan view the deposit appears in the hinge of a major overturned isoclinal fold (Gee, 2011). The greenstones are underlain by recrystalised ribbon chert and graphitic phyllites, which, in turn, are underlain by a thick sequence of quartz and carbonate phyllites (GTK, 2012).

Differing interpretations of the deposits tectonic setting have been presented. Most commonly, the greenstones are reported as having formed in an ocean island, probably in an off-axis setting (as interpreted by Olsen, 1980). An alternative interpretation is presented by Stephens et. al, (1984) who interpret geochemical data from the host greenstones to show the influence of a mantle anomaly, and suggest the deposit was formed close to a divergent plate margin similar to modern day mid-oceanic ridges.

Massive sulphide lenses occur at the interface between an older volcanic-intrusive complex and a younger volcanic-volcaniclastic sequence. Geochemical signatures from these units show within-plate-basalt (“WPB”) and Mid-ocean-ridge-basalt (“MORB”) affinities respectively, linking the sulphide lens deposition to early opening of the basin (GTK, 2012).

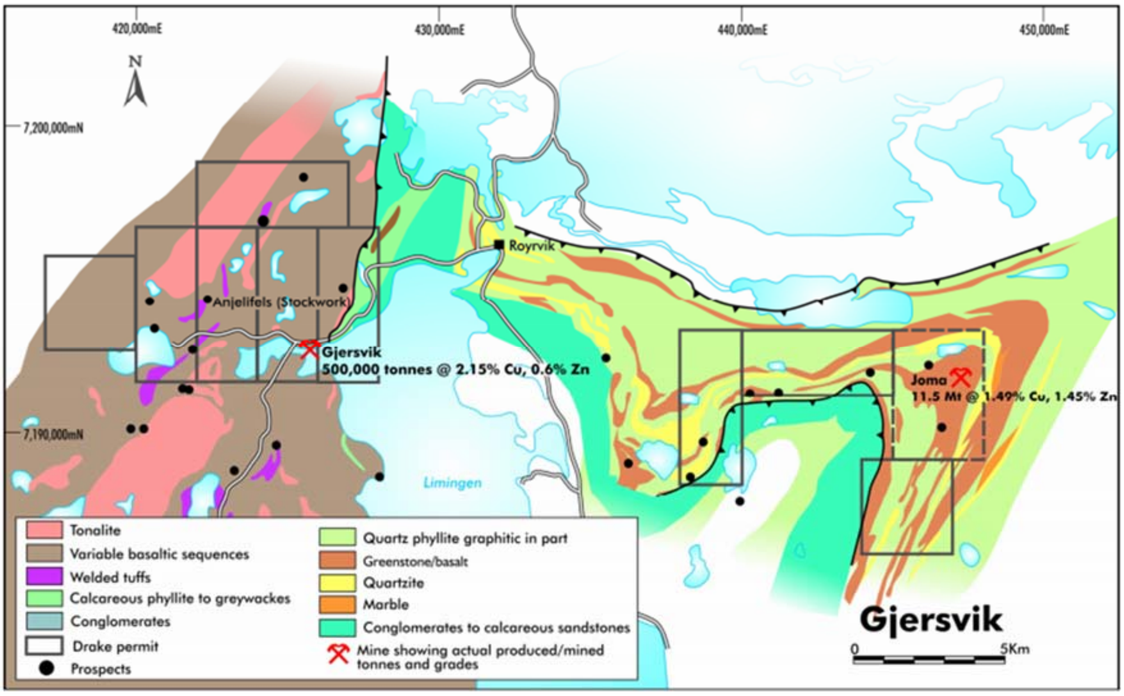


Figure 6-1: Geological Map of Røyrvik Area (Source: Drake Resources, 2012)

6.2 Property Geology

There is limited primary geological data available for review and, as such, the following description of the Joma Project is primarily sourced from other reports on the deposit.

6.2.1 Joma main mineralisation

The Joma Main mineralisation is hosted in an overturned sequence of metamorphosed pillowed and massive basalts and thinly bedded basic tuffs, along with quartz-rich and graphic phyllites (Figure 6-2). This sequence makes up three major greenstone units, named (from northeast to southwest) the outer, middle and inner greenstones (GTK, 2012). Mineralisation is present as a series of massive but internally complex sulphide lenses within the middle greenstone unit (Odling, 1989), with the major lenses separated at surface and merging at depth. Mineralisation crops out at surface where it has been exploited in a small open pit.

The mineralisation has a bowl-like shape in the north, transitioning to sub-horizontal in the central and southern areas of the deposit where the sulphide units eventually pinch out. In plan view, the deposit appears to have two limbs extending southeast and west from the central zone. The southeastern limb dips steeply to moderately west into the “bowl”, whilst the western limb dips approximately southeast with a steeper and more complex deformation, forming a series of moderately tight isoclinal folds and “steps”. The deposit is generally thickest in the east closest to the feeder structure, which sits above the main sulphide lenses, reaching a maximum thickness of approximately 50 m and thinning to the south and west. The deposit is interpreted as being truncated by a thrust fault in the southwest (Gee, 2011).

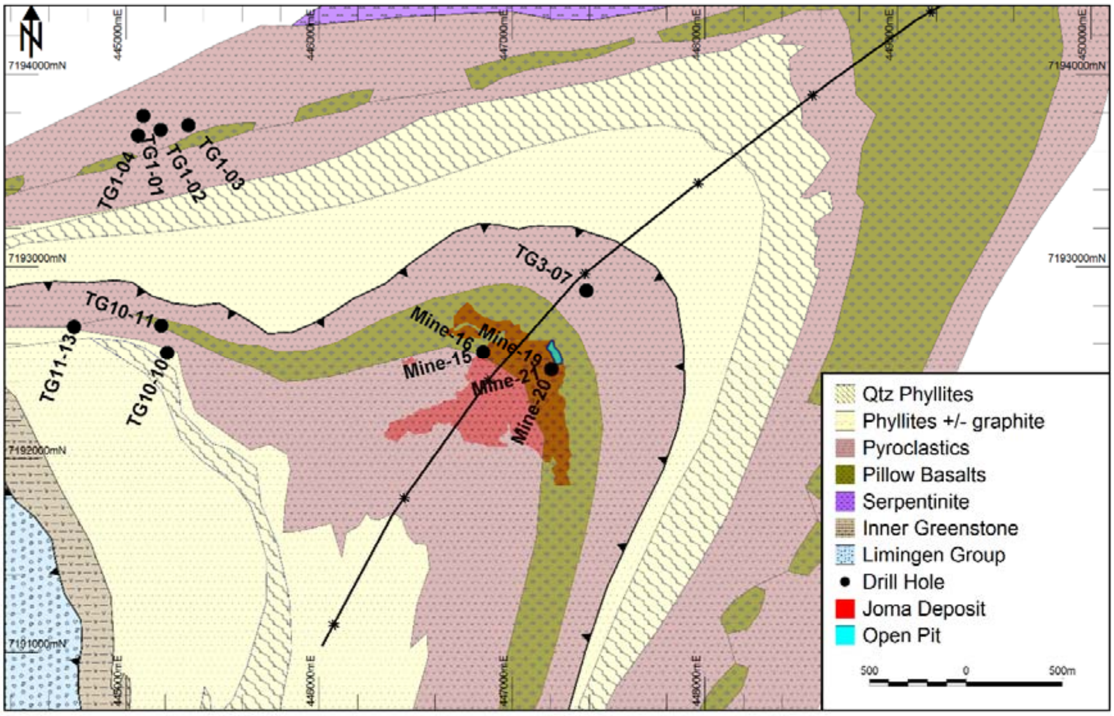


Figure 6-2: Summary Geological Map of Joma Syncline (Deposit extents shown modelled by Gee (2012)) (Source: Vilhelmina Mineral, 2018)

A general sulphide stratigraphy shows compositional changes from a thin Cu-rich (chalcopyrite-pyrrhotite) layer at the base, thinning westwards away from the feeder zone and intercalated with numerous thin layers of magnetite, chlorite schist and albite, and overlain by massive pyrite (GTK, 2012). At the eastern edge of the deposit, the feeder zone mineralisation is overlain by a Zn-rich pyritic zone. The most Cu-rich mineralisation is described as a tectonic breccia containing fragments of quartz, carbonate, pyrite and magnetite in a chalcopyrite-pyrrhotite matrix (GTK, 2012). Historically, five different "mineralisation types" have been distinguished based on sulphide mineralogy and texture. These are described as follows (after Gee, 2011 and Wilberg, 2021):

- **Type I (1):** fine grained, massive pyritic
- **Type II (2):** Cu-rich, massive pyrite-pyrrhotite-chalcopyrite
- **Type III (3):** Cu-rich, chalcopyrite-pyrrhotite breccia
- **Type IV (4):** Zn-rich, medium to coarse grained pyritic
- **Type V (5):** Disseminated to semi-massive sulphide mineralisation, often volcaniclastics with sulphide beds.

A layered zone with sulphides and a silicate exhalative zone is also reported (Gee, 2011). Based on historical sections produced for the deposit, the sulphide units are complexly intercalated and often laterally inconsistent.

The feeder zone to the massive Type I mineralisation is characterised by extensive albitisation, chloritization and quartz-sericite alteration along with sulphide dissemination and stockwork veining (GTK, 2012). The sulphide units have been interpreted as deposited in a submarine environment on top of and adjacent to a major growth fault (GTK, 2012).

6.2.2 Joma south mineralisation

There is less information available for the Joma South mineralisation, with the primary description provided by Gee (2011). The mineralisation is reported to occurs as a number of thin, higher-grade intersections around 500 m south of Joma Main.

There are no geological sections available for this area of the deposit, but sampled drillhole intervals indicate that the mineralisation is relatively flat lying and structurally simple compared to the complex folding seen in Joma Main.

7 DEPOSIT TYPE

The following chapter is an abridged version of the deposit type of the Joma deposit, with a full description found in the 2021 MRE technical report.

Based on the available descriptions of the deposit, and interpreted tectonic setting at formation, Joma is considered to be a mafic-ultramafic type VMS deposit. Previous classification systems used for VMS deposits would classify the deposit as either Cyprus type or Back-arc mafic (USGS, 2010).

Mafic-ultramafic type VMS deposits are interpreted to form along Mid-Oceanic spreading ridges. As the ridge spreads, heat from the spreading ridge and associated magmatism drives large seawater convection currents. This draws fluids down into the crust, where it can interact with wall rocks at high temperatures resulting in an enrichment of metal ions within the circulating fluids.

Heated fluids rise back along structural pathways at the edge of the rift from sea-floor vents. Cooling of hot, metalliferous fluids by ambient seawater is the primary driver of precipitation, leading to the formation of “black smokers”. For mafic-ultramafic type deposits, pyrite is typically the most common sulphide mineral precipitated (much less commonly marcasite or pyrrhotite) along with variable amounts of chalcopyrite and sphalerite.

8 EXPLORATION

Limited exploration has been undertaken by the Company, with the exception of the drilling programme outlined below. A brief history of the exploration undertaken by previous explorers is outlined in Section 5.1 with further details provided in the 2021 MRE technical report.

9 DRILLING

The following chapter is an abridged version of the drilling undertaken at the Joma deposit, with a full description found in the 2021 MRE technical report.

9.1 Historical Drilling

Although Joma has been drilled extensively, much of the related data and procedures used are unavailable for review due to being paper-based. Internal IGE Nordic memos, provided to SRK by the Company, indicate that the drilling database originally built and maintained by Grong Gruber AS was recovered from a server, but the software required to open the files was no longer available. As such, the database had to be reconstructed from paper sections.

Table 9-1 provides a summary of the known drilling undertaken at Joma, based on the provided database. Both surface and underground drillholes were drilled on four main profiles. Figure 9-1 shows a plan view of the deposit with available drilling traces.

At Joma Main, surface holes have a typical drillhole spacing of 20 m and are generally vertical or near vertical, although there are some inclined holes where the deposit is closer to surface. Holes are between 10 and 430 m in length, with an average length of around 130 m.

Underground holes are assumed to have been drilled primarily for development, grade control and mine planning, although some exploration holes are also likely. At Joma Main, underground drillhole fences are positioned approximately 20 m apart, with a tighter spacing of approximately 10 m in some areas. It should be noted that as this database has been digitised from paper sections, the true position and spacing of drillholes may vary. Underground holes were drilled in a fan pattern from drives, including both up-holes and down-holes. Underground holes at Joma Main have a length between 4 m and 140 m, averaging 22 m.

At Joma South, the spacing between surface drillholes varies between 20 and160 m; however, typical spacing is approximately 50 to 80 m. These drillholes are primarily inclined steeply towards the southeast and hole lengths vary between 626.0 and 269.35 m.

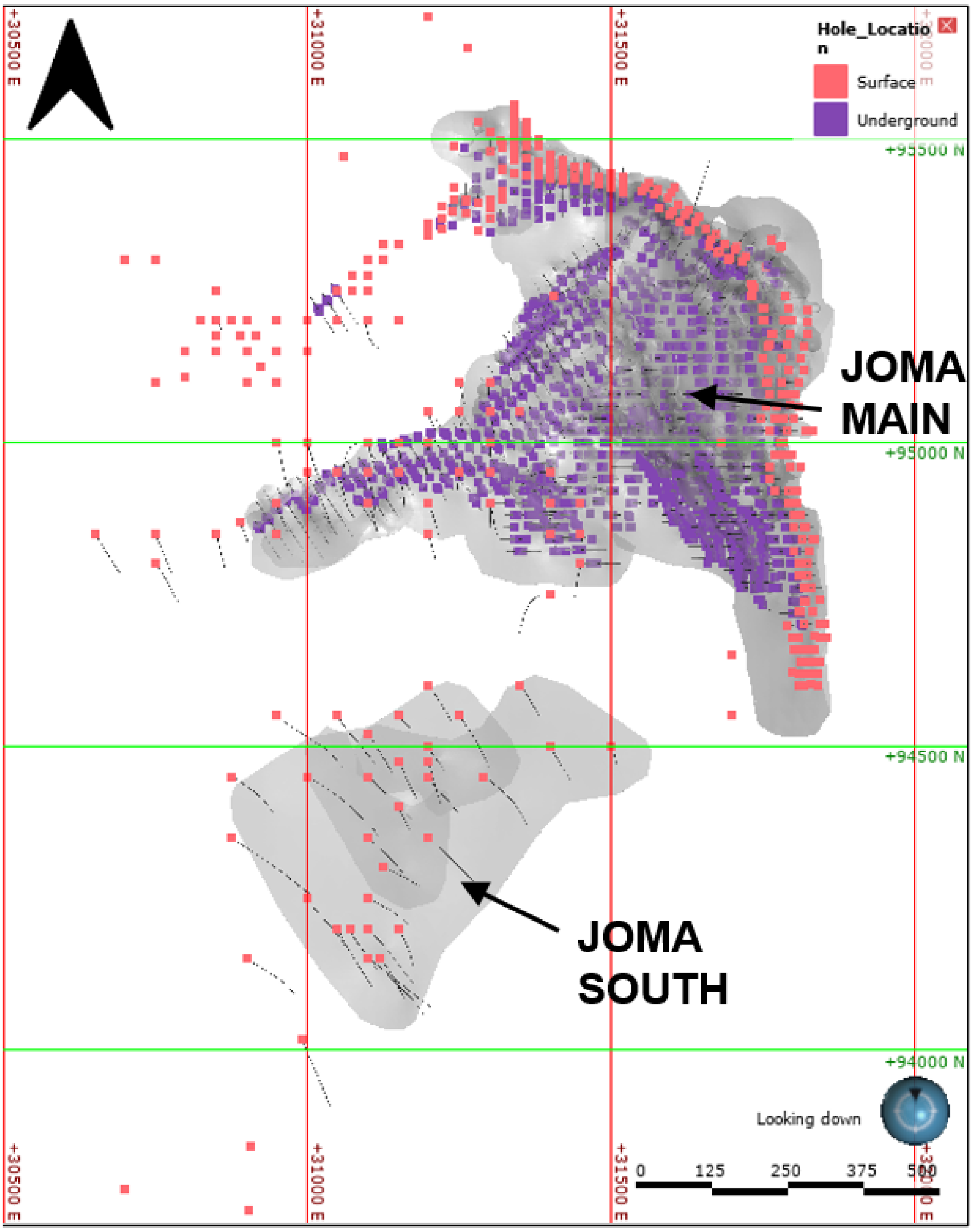


Figure 9-1: Historical drillhole locations

Table 9-1: Historical drilling summary*

Hole Location	Holes Drilled	Meters Drilled	Samples	Sample Length (m)
Underground	2,544	55,611	24,082	55,421
Surface	432	57,864	4,416	12,396
Total	2,976	113,476	28,574	68,008

*Note: Some assays in the database have no accompanying collar file, and so position is unknown but included in total. The table does not include the recent drilling conducted by the Company

9.2 Vilhelmina Mineral Drilling

In 2018, 13 diamond core drillholes were drilled by the Company at the Joma Project and surrounding exploration targets for a total of 2,466 m. Drilling was planned to test a variety of exploration and brownfields targets with five holes drilled at Joma Main, two holes at Target 10 and one hole each at Targets 3 and 11. The location of these holes is shown in Figure 6-2. All intercepts were from the Joma deposit area, with no significant intercepts reported from the exploration holes in the wider area.

10 SAMPLE PREPARATION, ANALYSES, AND SECURITY

The following chapter is an abridged version of the drilling undertaken at the Joma deposit, with a full description found in the 2021 MRE technical report.

- Historical samples: no details of the sample preparation, analysis or security has been provided. A titration method of metal assaying is likely to have been used.
- 2014-2021 samples: Drake Resources and the Company used ALS Minerals laboratory for sample preparation and analysis of their check assays. Best practice methodologies were used including sample crushing, pulverising and splitting before an ICP-MS method of assaying was completed for the base metals and fire assay for precious metals (gold and silver). Density measurements were also completed based on a standard water immersion method.

11 DATA VERIFICATION

SRK undertook a site visit between 30 August and 02 September 2021. The site visit was conducted by Mr Harri Rees, a Senior Exploration Geologist with SRK Exploration Services. The site visit allowed SRK to examine core stored at Løkken, inspect the mine site, discuss the Project with relevant personnel and collect further information.

The following addition data verification steps were taken:

- Database verification: checks on the data entry compared to original/raw copies.
- Digital database integrity: checking database contains valid information including inspecting for missing assay values and unsampled intervals.
- Assaying quality assurance/quality control (“QA/QC”) data including blanks, reference material and duplicates.
- Assessment of 2018 twinned drilling by Drake Resources.
- Assessment of 2014 and 2021 check sample analysis comparing historical to recent assay grades.

In addition to the verification work described above, the Company conducted digitisation of historical mine workings with which to deplete the Mineral Resources stated herein. SRK has not been able to verify the accuracy of this work as the mine workings are flooded. Significant work on delineating the 3D geometry of the underground workings will be required prior to commencing operations.

Overall, SRK's assessment of the available data indicates the assay data for the drilling and sampling to date are appropriately accurate and precise and it is the QP's opinion that the data can be used in an MRE.

12 MINERAL PROCESSING AND METALLURGICAL TESTING

SRK understands that no modern mineral processing studies and metallurgical studies have been undertaken by the Client or any former owners since the closure of the mine in 1998.

SRK understands that the historical processing circuits used by the mine consisted of a crushing and grinding circuit followed by sequential flotation to produce separate copper and zinc sulphide concentrates. For the purposes of this study, historical recoveries, as calculated from available production statistics, have been assumed from the mine's production records. SRK considers the historical grade and recovery figures to be reasonable for ore of the head grades shown and indicate that the metallurgical response of the ore seems straightforward. Additional metallurgical testing is recommended to support any further technical studies undertaken for the Joma Project.

The historical production records from 1972 to 1998 indicate that the average Cu recovery from the Cu concentrate was 87% and the average Cu concentrate grade was 24%. The average Zn recovery from the concentrate was 76% and concentrate grade was 52%, as shown in Table 5-1.

SRK is unaware of any deleterious elements that may affect processing performance or product quality. Typical deleterious elements in copper concentrates are arsenic, antimony, mercury, bismuth and lead and zinc; and for zinc concentrates are cadmium, mercury, iron, silica, and lead.

13 MINERAL RESOURCE ESTIMATES

The following chapter is an abridged description of the MRE completed for the Joma deposit by SRK in December 2021. A full description can be found in the 2021 MRE technical report.

13.1 Introduction

The Client has requested that the work undertaken, and the report produced, is based on the PEA definitions produced by the Canadian NI 43-101 and the Mineral Resource is reported according to CIM Definition Standards on Mineral Resources. The Joma Mineral Resource Statement presented herein represents the latest MRE prepared in accordance with NI 43-101 and according to the CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines (2019).

The database used as a basis of the Mineral Resource estimates was reviewed and verified by SRK. SRK considers that the estimates reported herein are a sound representation of the in-situ Cu and Zn content, as found in the deposit, given the current level of sampling.

The estimate, as prepared by SRK, utilises some 113,944.57 m of drilling from a total of 2,981 drillholes. SRK notes that within the database there are some assays not associated with a collar file and these have been excluded from the total presented. The MRE was completed by Mr James Williams, Mr Tom Stock and Dr Jamie Price, and was overseen by Dr Lucy Roberts.

All four are full time employees of SRK. Dr Lucy Roberts is considered a Qualified Person for Mineral Resource reporting and has supervised the preparation of the MRE. Dr Roberts is a Chartered Professional member of the MAusIMM. A site visit was conducted by Mr Harri Rees of SRKES on behalf of Dr Roberts. The site visit was undertaken between 30 August and 2 September 2021.

SRK previously reported an MRE for the Project with an effective date of 29 July 2021 ("SRK July 2021 MRE"), which was aligned with the reporting of Mineral Resources via a draft memorandum. The MRE presented herein has an effective date of 09 December 2021 ("SRK December 2021 MRE"), which is aligned with the reporting of Mineral Resources a via a revised memorandum. This updated MRE includes the Joma South mineralisation, which was not included in the SRK July 2021 MRE, as well as the use of updated metal prices as part of the mineable stope optimiser ("MSO").

The updated MRE has been determined incorporating drilling, geological models, and depletion models. The Mineral Resources have been depleted to reflect the understanding of the status of the operation at the closure of the mine.

Leapfrog Geo (version 2021.1) was used to review and define the relevant estimation domains, prepare assay data for geostatistical analysis, construct the block model, and estimate metal grades. Supervisor software was used to analyse grade continuity and validate the estimates where applicable.

13.2 Mineral Resource Estimation Procedures

The resource estimation methodology involved the following workflow:

- database compilation and review;
- geological modelling
- definition of estimation domains;
- statistical analysis and grade continuity analysis;
- block model construction and grade interpolation;
- block model validation;
- depletion of the block models by mining as-built solids;
- Mineral Resource classification;
- assessment of "reasonable prospects for economic extraction" and selection of appropriate reporting cut-off grades; and
- preparation of the Mineral Resource Statement.

13.2.1 Geological modelling

SRK elected to model the deposit using the vein modelling tool of Leapfrog Geo 2021, in combination with the use of additional polylines and points to guide wireframes, thus creating a semi-implicit model.

Following a statistical review, SRK selected a lower modelling cut-off of 0.5% Cu+Zn (sum of assay results). This was not considered a hard modelling rule, with any obvious “changes” in grade profile along the drillhole also used to inform interval (wireframe) selection boundaries, as quite often a grade change was observed at 0.3% Cu+Zn, which was then used to guide the modelling.

At Joma Main, three primary lenses of mineralisation were interpreted and modelled (referred to as domains 100, 300 and 400), alongside six smaller lenses (referred to as domains 200, 500, 600, 700, 900 and 1000), as shown in Figure 13-1. At Joma South, three lenses of mineralisation were interpreted and modelled (referred to as domains 2100, 2200 and 2300) and occur as broadly parallel, sub-horizonal bodies overlying each other. The largest of these lenses is domain 2100, which occurs above the less extensive lenses of domains 2200 and 2300 (Figure 13-1).

Due to the lack of structural data or structural interpretation on the cross-sections, the structural complexity cannot be interpreted with confidence.

Figure 13-2 shows a series of views of the modelled geology in relation the associated drilling, whereas Figure 13-3 shows the modelled mineralisation in relation to the 1996 interpretive sections produced by the mine.

Five of the primary domains at Joma Main were selected for sub-domaining, defined by Zn grade distribution. Sub-domains were not defined for the three domains at Joma South, due to relatively small sample populations.

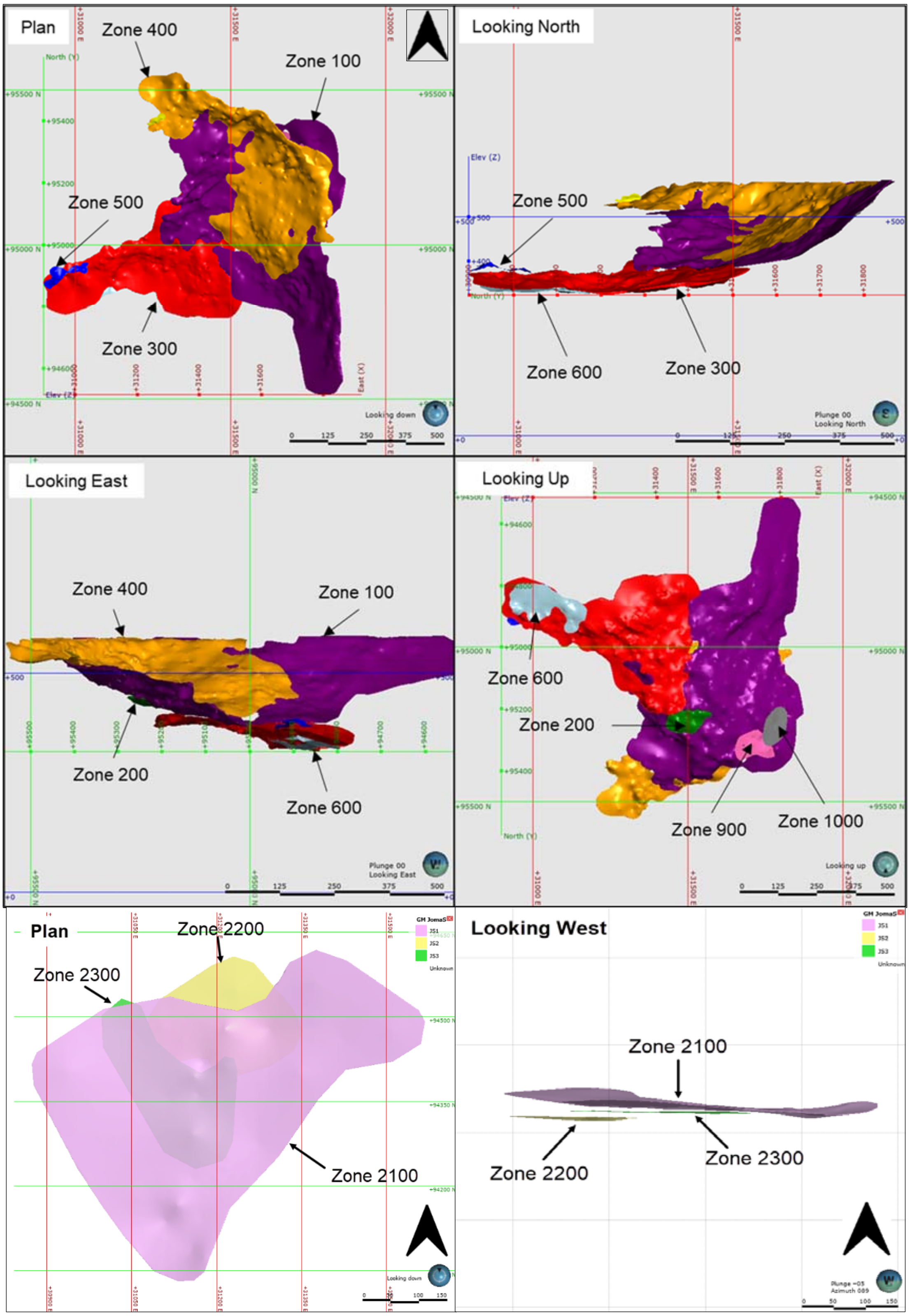


Figure 13-1: Modelled mineralised domains at Joma Main (top four images) and Joma South (bottom two images)

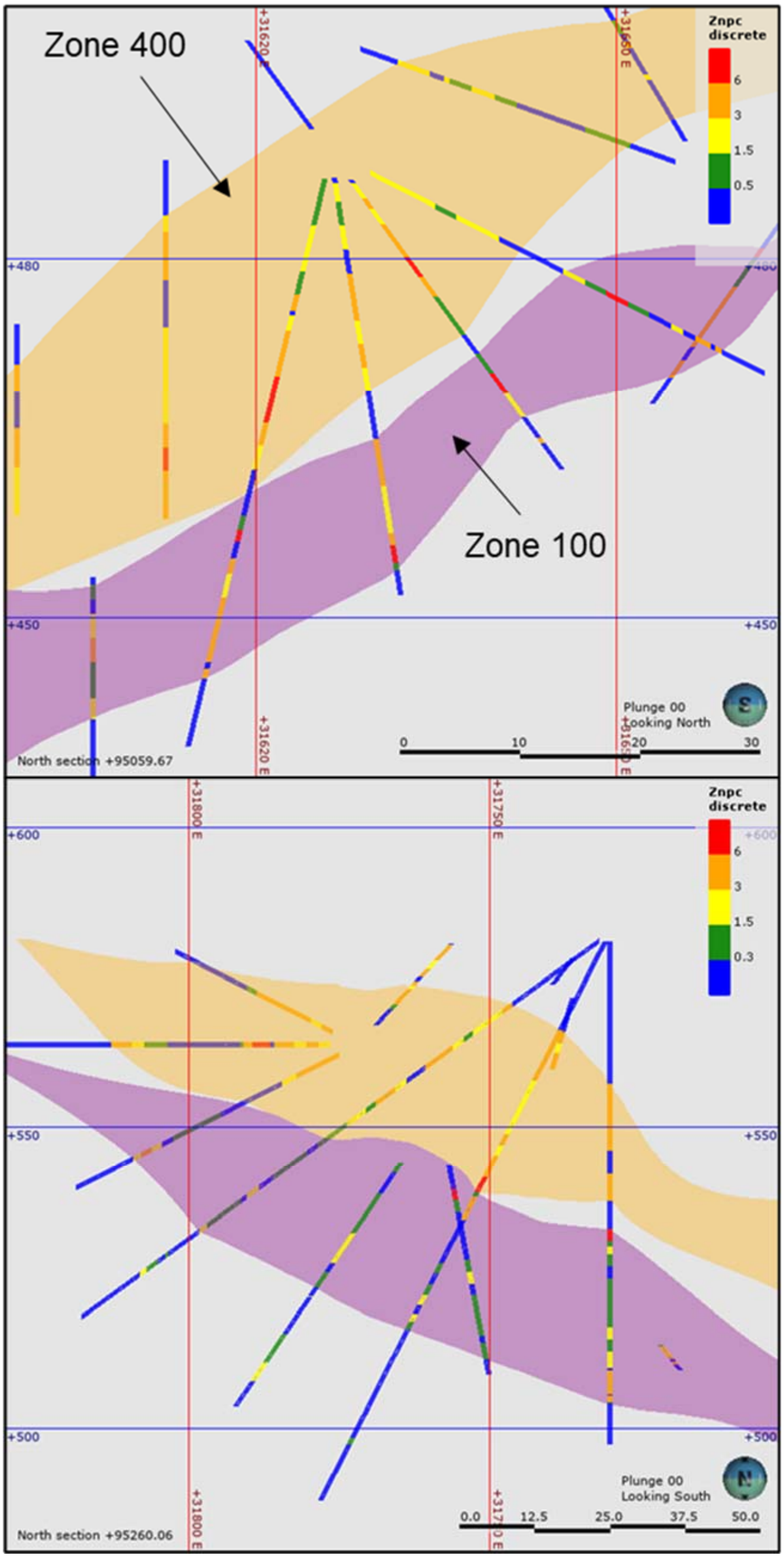


Figure 13-2: Example cross-sections showing Joma Main modelled domains compared to Zn grades

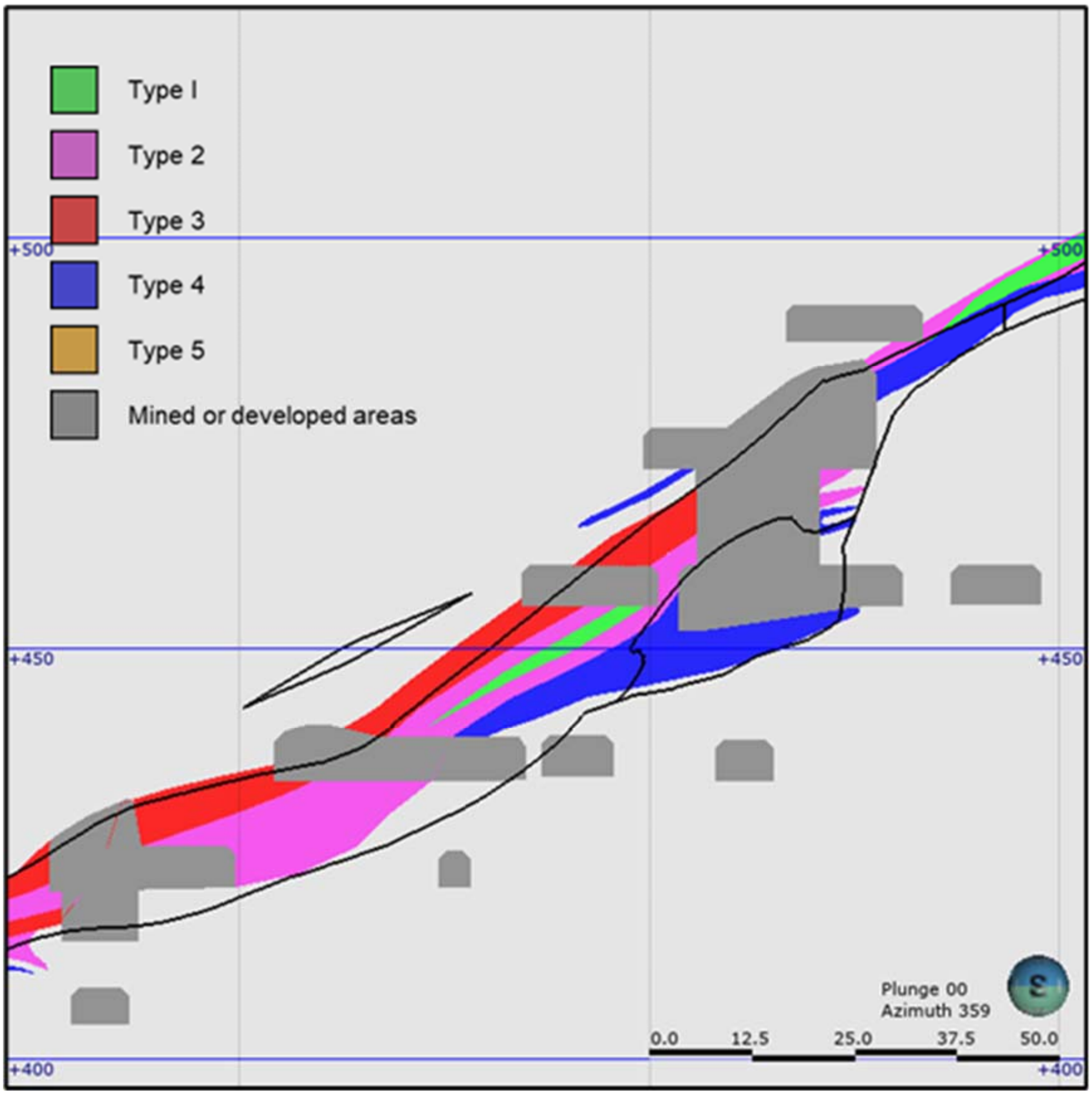


Figure 13-3: Comparative section showing modelled geology (black outline) against interpreted sections

13.2.2 Block model and grade estimation

Two non-rotated block models were created for the Joma Main and Joma South mineralised bodies, based on local mine grid coordinates. Block model parameters were chosen to reflect the average drillhole spacing in each area and to appropriately reflect the grade variability within the modelled mineralised domains.

To improve the geometric representation of the geological model, sub-blocking was allowed along the boundaries to a minimum of 1.0 x 1.0 x 0.5 m (x, y, and z) for the Joma Main block model. Sub-blocking for the Joma South block model was allowed along the boundaries to a minimum of 6.0 x 6.0 x 0.5 m (x, y, and z), owing to the more sparse and widely spaced drillholes in this area.

A summary of the block model parameters for the Joma Main model are given in Table 13-1, and the Joma South block model parameters are summarised in Table 13-2.

Table 13-1: Block model dimensions for Joma Main

Dimension	Origin (Local grid)	Parent Block Size	Number of Blocks	Min Sub-blocking (m)	Rotation (°)
X	30560	8	250	1	No rotation applied
Y	93850	8	288	1	
Z	150	2	270	0.5	

Table 13-2: Block model dimensions for Joma South

Dimension	Origin (Local grid)	Parent Block Size	Number of Blocks	Min Sub-blocking (m)	Rotation (°)
X	30560	48	42	6	No rotation applied
Y	93850	48	48	6	
Z	150	2	270	0.5	

Sensitivity of the estimates to the block dimensions within the modelled domains were tested using kriging neighbourhood analysis. The estimation methodology was based on the following:

- Capped 2 m composited drillhole data.
- Domain boundary conditions:
  - o hard boundary conditions were employed in the grade estimation where no structural sub domains were modelled; and
  - o soft boundary conditions were employed in the grade estimation between samples within structural sub domains for domains 100 and 400.
- Only composites from within individual mineralisation model domains were used to estimate blocks within those domains.
- Cu, Zn and density grades were estimated by Ordinary Kriging ("OK") for all domains at Joma Main other than 700, 900 and 1000 which were estimated by inverse distance weighting squared ("IDW^2"), due to the low sample support (number of samples).
- Cu and Zn grades were estimated by OK for domain 2100 at Joma South, whereas domains 2200 and 2300 were estimated by IDW^2 due to low sample support. Density was not estimated in the Joma South block model due to limited samples.
- Sub-block grades were assigned the grade of the parent block.
- Discretization level of 2 x 2 x 2 was set for all estimates within the parent blocks within the estimation domains.
- Search neighbourhood was guided by the general geometry of the overall modelled domains, drillhole spacing and grade continuity.

The block models were validated using several methods including comparing composite drillhole grades viewed on sections and plans to the block model. These inspections confirmed that the estimates locally conform to the composites. Figure 13-4 to Figure 13-5 are examples of the visual validation conducted.

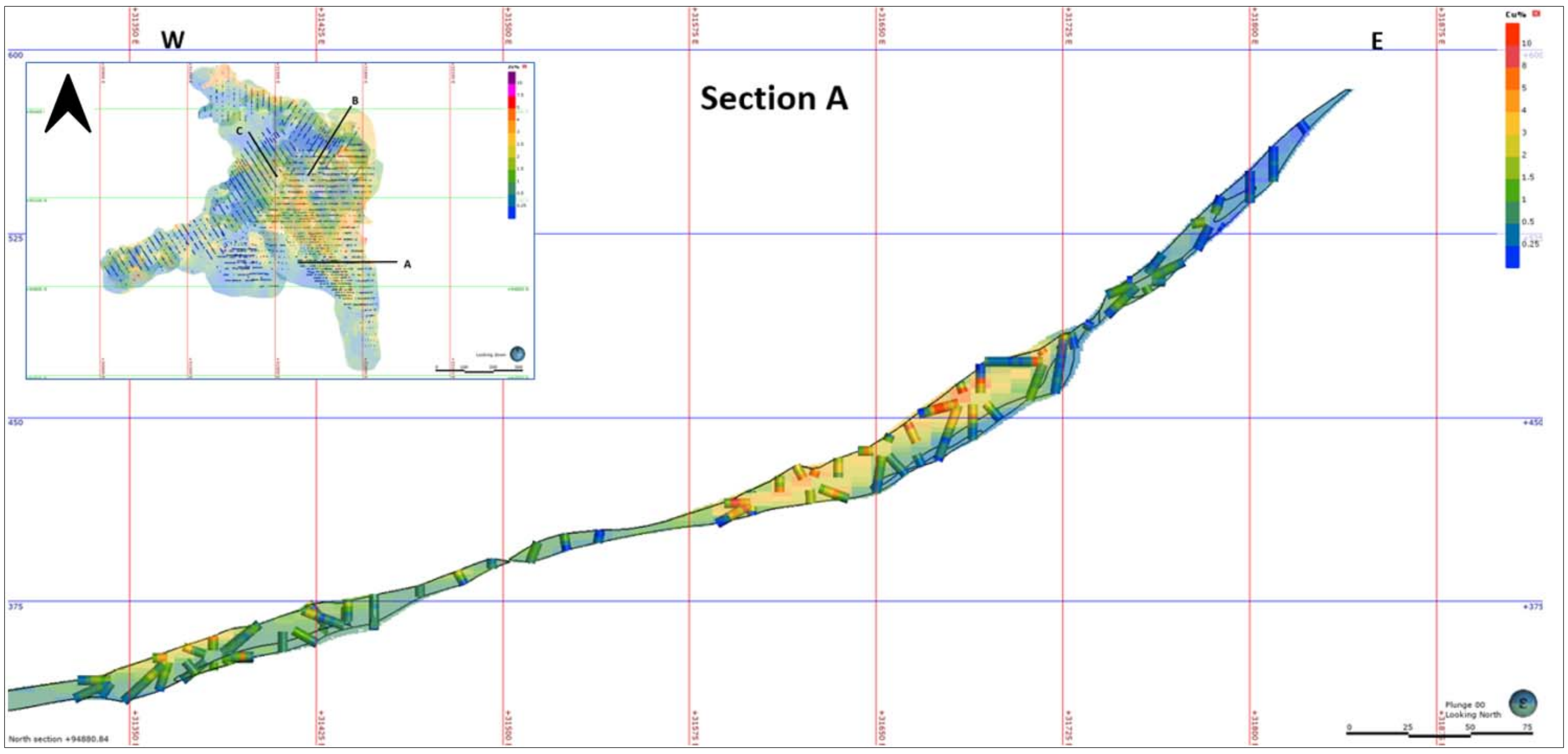


Figure 13-4: Cross-section (A) looking north showing block model and capped composite drillholes, coloured by Cu Grade (10 m clipping)

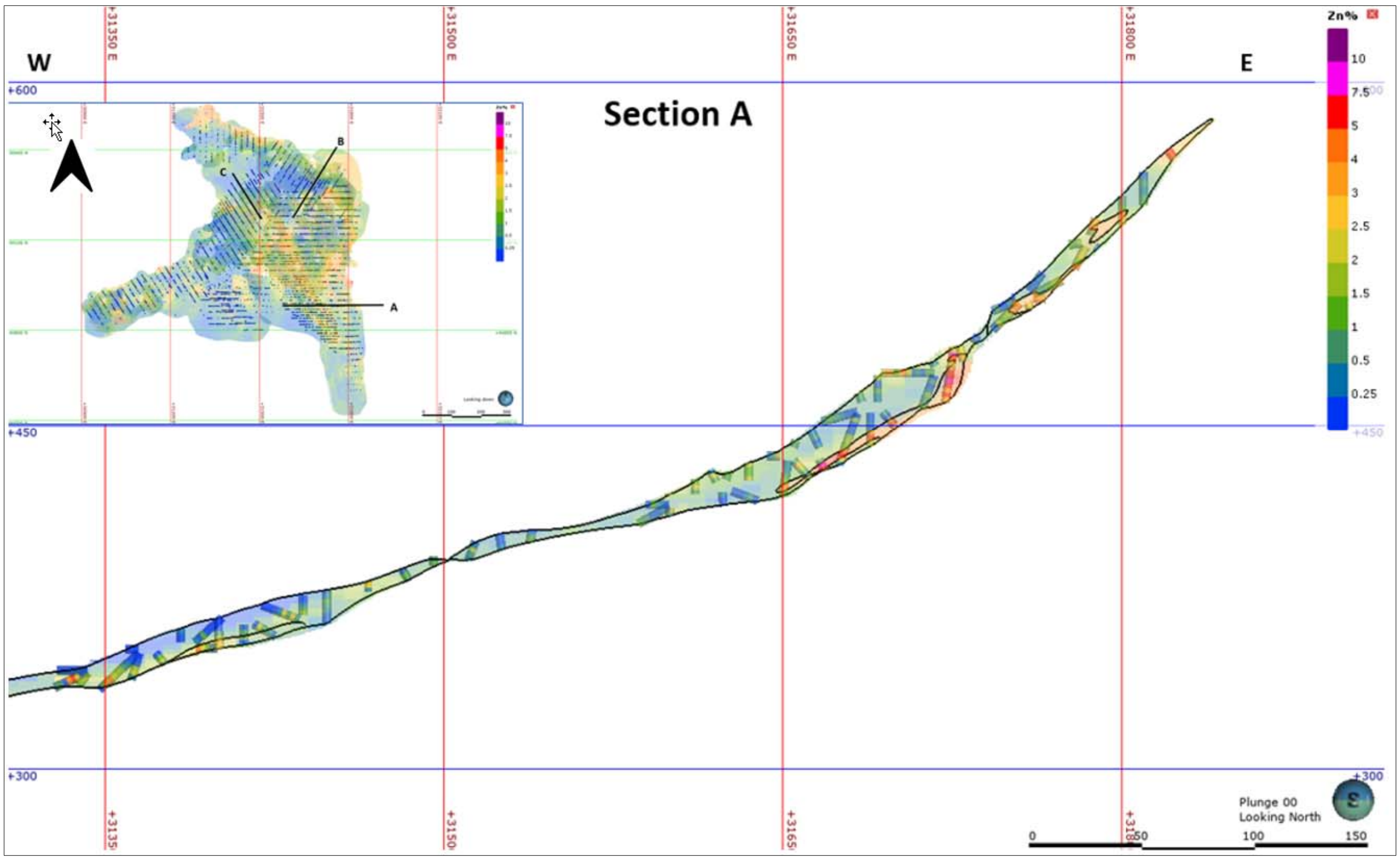


Figure 13-5: Cross-section (A) looking north showing block model and capped composite drillholes, coloured by Zn Grade (10 m clipping)

13.3 Mineral Resource Classification

The block models were classified using the guidelines and terminology according to the CIM Guidelines (2019). Mineral Resource classification is typically a subjective concept, industry best practice requires that classification should consider both the confidence in the geological continuity of the mineralised structures, the quality and quantity of exploration data supporting the estimates and the confidence in the tonnage and grade estimates. Classification should integrate all concepts to delineate regular areas of similar confidence.

The Joma Main and Joma South Mineral Resource estimates have been largely classified according to drillhole spacing, which across the Joma Project, occurs at an average spacing of approximately 20 m. The modelled areas are generally well informed and historically 20 m spaced drilling was used guide the mining operation the Joma Main and Joma South areas. In areas supported by multiple drillholes at distances of approximately 20 m apart, SRK considers this to be appropriate for Indicated classification. In areas supported by more widely spaced drillholes up to 50 m apart, SRK has considered appropriate for Inferred classification, ensuring blocks are also supported by multiple drillhole intercepts. No Measured Mineral Resources have been delineated by SRK, mainly due to the low confidence associated with the accuracy of the underground depletion solids and historical sampling and assaying methods.

SRK used these guidelines, along with consideration of data quality, geological continuity and complexity, and estimation quality, to define wireframes to outline contiguous zones of blocks with similar levels of confidence. In this process, some isolated blocks that satisfy the criteria are excluded from the final assignment, while some blocks are included.

The Inferred portions of the model require infill drilling to improve the quality of the geological interpretation and local block grade estimation before they can be used for long term mine planning. The resulting Mineral Resource classification for Joma Main is illustrated in Figure 13-6 and the classification for Joma South is displayed in Figure 13-7.

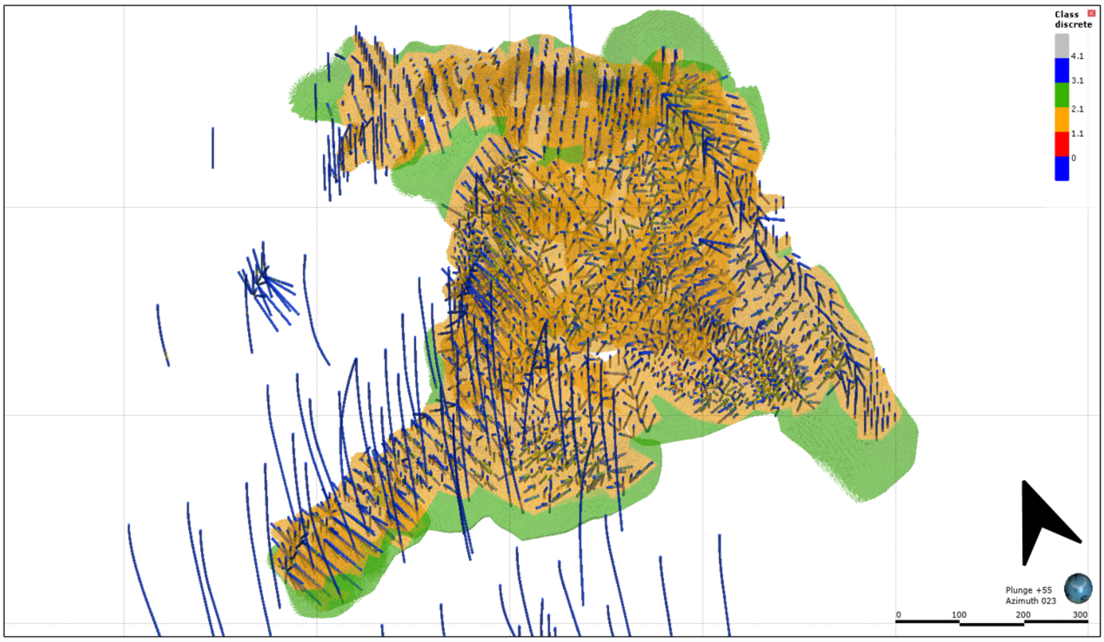


Figure 13-6: Oblique view of the Joma Main block model coloured by Mineral Resource classification (orange = Indicated, green = Inferred)

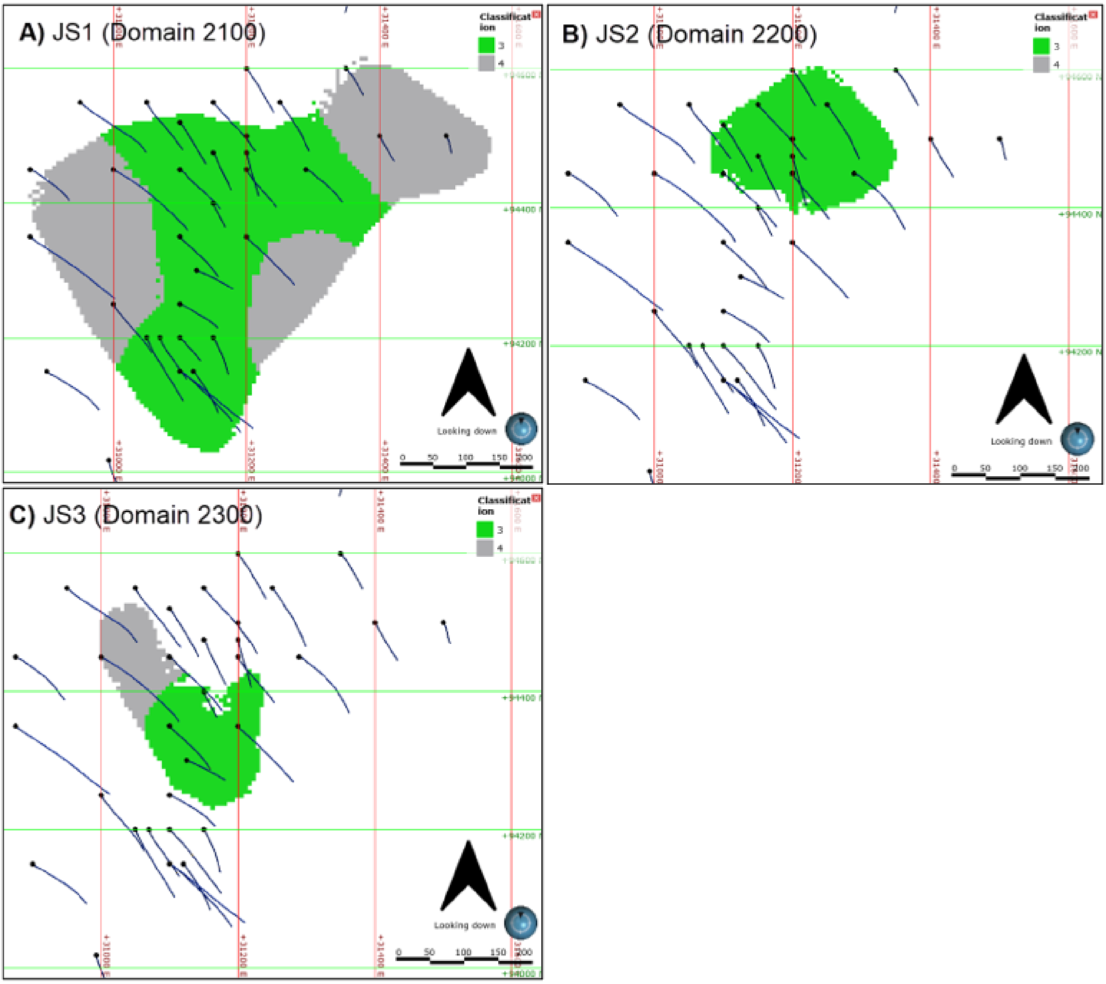


Figure 13-7: Plan view of domains comprising the Joma South block model coloured by Mineral Resource classification (green = Inferred, grey = unclassified)

13.4 Depletion

The historically mined areas (“asbuilts”) of development and stopes have been provided by the Company and reflect the mining at Project at the time of the mine closure (Figure 13-8). A small portion of the deposit has been mined from surface, which is incorporated in the depletion and topographic wireframes provided. SRK notes, however, that the wireframe is quite crude in this area of the open pit and a new depletion survey is required to accurately deplete this area of the model. 3D representations of the mined-out areas were digitised from 2D sections from Microstation .dgn files by the Company. SRK notes that the there is a degree of uncertainty associated with this survey volume. SRK recommends that once access is obtained to the mine, given that the workings are currently flooded, all areas are accurately resurveyed to confirm these volumes. During this survey the Company should also assess which areas of the workings have been backfilled as this will impact on future mine planning and geotechnical assessments.

SRK has used the mined volume to code blocks in the block models as ‘mined’ effectively removing these areas from the Mineral Resource.

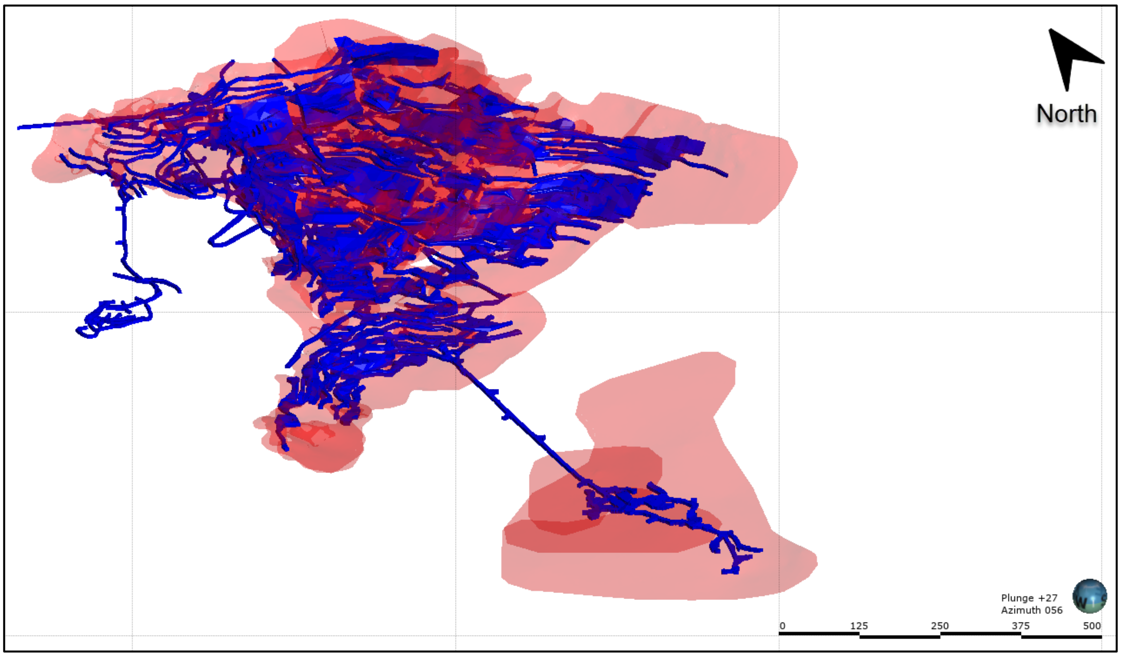


Figure 13-8: Oblique view showing mineralisation (red) and depletion (blue) solids

13.5 Reconciliation

SRK has been provided with limited production records which state tonnage and grade of mined material. No information has been provided to SRK in terms of which areas of the model were mined in which years. SRK has compared the total material mined in the block model versus the total mined production (Table 13-3). As stated in Section 13.4, there is a degree of uncertainty as to whether the mining conducted at the Project is fully represented in the mined volume used to deplete the model due to the process used to create the 3D mined volumes. This may explain the differences associated with the tonnages in Table 13-3. There are also areas of the model that are known to have been mined, but these have not been included in the current block model as these are thin, or poorly drilled. It is also noted that mining was not controlled using a 3D approach and instead was based on sections. There has also been a change in the geological interpretation, which may impact on the definition of mineable material and waste. It is not known if overbreak and underbreak were problems encountered during mining.

Overall, the relative difference in tonnage is 26% (11.4 Mt vs 8.4 Mt) whilst the Cu grade is quite similar and differs by 0.04% (1.49% vs 1.45%) and the Zn grade differs by 0.22% (1.45% vs 1.68%). The difference in contained metal for both Cu and Zn is quite large (-28 and -15% respectively) and this is primarily due to the known limitations (listed above) related to the current depletion survey. SRK cautions the reader that any direct comparison between the two sets of data presented in Table 13-3 should consider all the various uncertainties. Should the project be re-instated as a mine then any future stopes should be reconciled appropriately. SRK notes, however, that based on visual assessment of the current model, mining is likely to have been focused on highest Cu grades of the deposit. Furthermore, SRK notes that the focus of mining historically was on the Cu mineralisation, which would also provide some influence on the reconciliation achieved during production.

Table 13-3: Reconciliation of historical production data to SRK block model

Mined	Tonnes (Mt)	Cu (%)	Zn (%)	Cu Metal (kt)	Zn Metal (kt)
Production	11.4	1.49	1.45	169.94	165.49
SRK Model	8.4	1.45	1.68	122.17	141.02
Difference	-3.0	-0.04	0.22	-47.8	-24.48
% Difference	-26%	-3%	15%	-28%	-15%

13.6 Economic and Technical Input Parameters for Mineral Resource Reporting

In order to determine the quantities of material demonstrating "*...reasonable prospects for eventual economic extraction*", according to CIM (2014) requirements, SRK has used reasonable mining and processing assumptions to develop reporting cut-off net-smelter return ("NSR") values in relation to the Project location and mining history. These are based on discussions with the Company and benchmarked against other similar projects, where appropriate. Historical production records were used to provide the processing parameters. The parameters associated with the NSR calculation are provided in Table 13-5, the in situ NSR reporting cut-off grade was rounded up to the nearest whole number, to reflect the uncertainty, and also to account for costs such as backfilling. The metal prices for Mineral Resource reporting are based on 2021 long-term consensus market forecast data acquired by SRK, which includes a 30% premium on long-term price predictions, and therefore includes a certain degree of optimism, and supports the "reasonable" and "eventual" reporting components for Mineral Resources. No Mineral Reserves are currently declared for the Joma Project.

Considering this, SRK ran MSO software using the minimum stope dimensions of 10 x 10 x 3 m to define potential realistic mining targets to be generated. This minimum stope dimension eliminates small, discontinuous areas, which are unlikely to be mined, from being included from the final reporting volume. The MSO process was run over two sections of the Joma Main block model to create more appropriate shapes for the flatter zone (200 to 400 mRL) and steeper zone (400 to 600 mRL), based on the geometry of the model. Table 13-4 details the MSO stope design parameters. A third run for Joma South was also completed.

The resultant MSO shapes were used to constrain the reporting of the Mineral Resource. The optimisation parameters were based on SRK's experience as well as discussions with the Company. No dilution skin was applied as the fixed stope dimensions and minimum stope height would create additional dilution as the remaining mineralisation is irregular in shape. Future works should at least include a further split of the remaining material to create more appropriate optimisation parameters, development design and the mine rehabilitation costs to allow access to the underground, which should be addressed in a dedicated mining study.

SRK notes that no open pit optimisation has been undertaken as part of this study. This is due to the apparent risks associated with flooding the workings, historical mining, and potential environmental and social governance issues. All of these aspects require further assessment before an open pit mining study can be undertaken.

SRK notes that the majority of the defined MSO stopes at Joma Main occur within 50 m of the depletion survey as shown in Figure 13-9. SRK notes that before the material included in the Mineral Resource can be included in any kind of detailed mine planning exercise, or other such technical study, additional work, such as underground verification surveys, infill drilling or geotechnical assessments are recommended in order to refine the mining method, the actual stope sizes and geotechnical support required.

Table 13-4: Underground MSO Design Parameters

Geometry	Unit	Parameter (200-400 mRL)	Parameter (400-600 mRL)
First rotation angle	°	None applied	None applied
Fixed stope width	m	10	10
Fixed stope length	m	10	10
Stope minimum height	m	3	3
Stope maximum height	m	20	30
Stope pillar minimum	m	3	3
Dilution skin HW	m	0	0
Dilution skin FW	m	0	0
Minimum dip	°	0	-90
Maximum dip	°	90	90

Table 13-5: Technical and economic assumptions for Resource MSO and cut-off value

Input Summary	Units	Copper Circuit	Zinc circuit
Metal Price			
Cu	USD/t	9,100	
Zn	USD/t	2,800	
Processing			
Cu Recovery	%	87	
Zn Recovery	%	5	76
Operating Costs			
Mining Cost In-Situ	(USD/t_{rock})	31.8	
Processing, G&A	(USD/t_{ore})	14.5	
Cu Payable	%	95.8	
Zn Payable	%	84.6	
Mineral Resource NSR Reporting Cut-Off (after rounding)			
In situ	USD/t_{ore}	50	

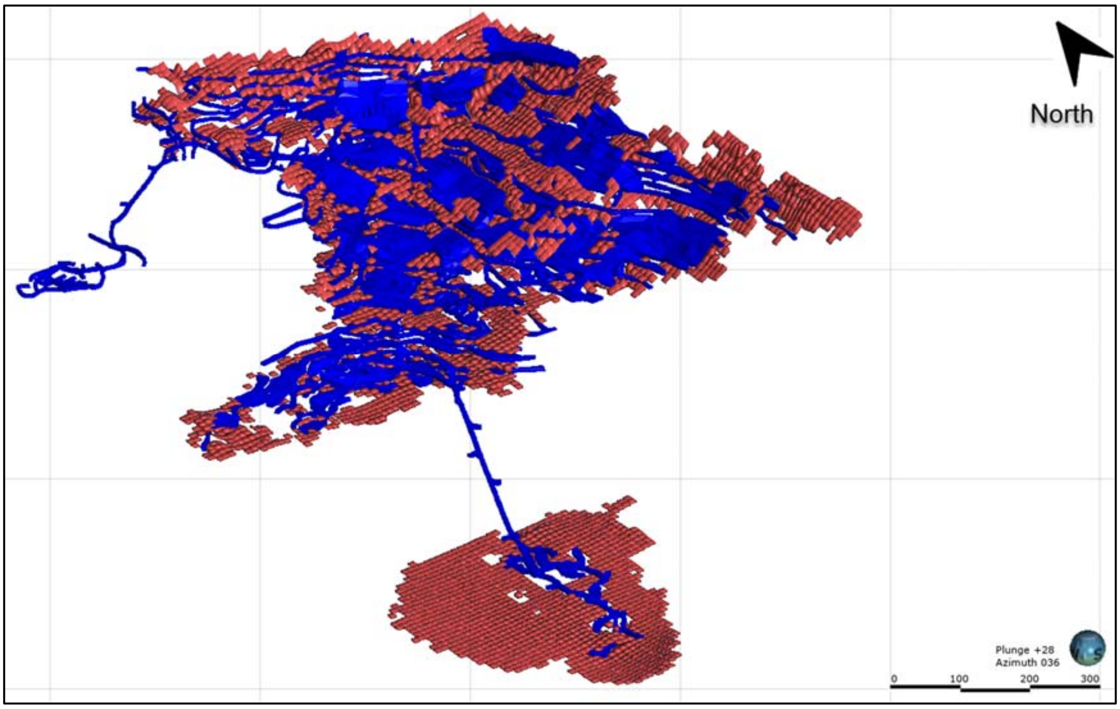


Figure 13-9: 3D oblique view of MSO shapes (red) in relation to depletion survey (blue)

13.7 Mineral Resource Statement

The 2021 Mineral Resource statement for the Joma Cu and Zn VMS deposit generated by SRK is presented in Table 13-6 and has an effective date of 09 December 2021. The statement is reported and classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) and NI 43-101 Standards of Disclosure for Mineral Projects (May 2016). It has been depleted to reflect the current understanding of mining and has limited to material falling within the defined MSO shapes.

Table 13-6: SRK December 2021 Mineral Resource statement for the Joma Project*

Deposit	Classification	Tonnes (Mt)	Cu %	Zn %	NSR (USD/t_{ROM})	Cu tonnes (kt)	Zn tonnes (kt)
Joma	Measured	-	-	-	-	-	-
	Indicated	6.0	1.00	1.66	95.95	60.0	99.6
	Inferred	0.3	0.9	1.4	81.3	3	4
Joma South	Measured	-	-	-	-	-	-
	Indicated	-	-	-	-	-	-
	Inferred	0.9	1.3	0.5	102.2	12	5
Total Indicated Mineral Resource		**6.0**	**1.00**	**1.66**	**95.95**	**60.0**	**99.6**
Total Inferred Mineral Resource		**1.2**	**1.2**	**0.7**	**97.0**	**15**	**9**

**In reporting the Mineral Resource Statements, SRK notes the following:*

- *Mineral Resources have an effective date of 09 December 2021 and have been depleted to reflect the current understanding of the mining completed up to the date of the mine closure (1998). The depletion is based on the digitised development plans, as held by the mine at the time of closure. The digitisation exercise was completed by the Company.*
- *The Qualified Person for the declaration of Mineral Resources is Dr Lucy Roberts, MAusIMM(CP), of SRK Consulting (UK) Ltd. The MRE was authored by a team of consultants from SRK.*
- *Three primary lenses of mineralisation were interpreted and modelled, alongside nine smaller lenses. The majority of the smaller lenses are interpreted to be separate to the larger mineralisation volumes. The larger lenses are interpreted to coalesce and bifurcate. For reporting the Mineral Resource, SRK has combined all of the modelled domains across the entire deposit.*
- *Mineral Resources are reported as in situ and undiluted. The Mineral Resources are reported within mineable stope optimiser shapes, generated using a net smelter return of USD 50/tore, with a minimum stope shape of 10mX x 10mY x 3mZ using a Cu and Zn price of USD 9,100/t and USD 2,800/t respectively and include royalty reductions. The recoveries used in the net smelter return calculations were based on the historical performance of the Joma plant being:*
  - *For the Cu concentrate: Cu recovery 87%, Zn recovery 5%, for an average Copper concentrate grade of 24%Cu; and*
  - *For the Zn concentrate: Zn recovery 76% for an average Zinc concentrate grade of 52%Zn.*
- *Assumed operating costs include:*
  - *Mining at USD31.8/t_{RoM}*
  - *Processing cost of USD14.5/t_{RoM}*
  - *Copper Concentrate transport charges of USD40.5/t_{conc} and treatment charges of USD80/t_{conc}*
  - *Zinc Concentrate transport charges of USD20.2/t_{conc} and treatment charges of USD140/t_{conc}*
  - *Metal Payability of 95.8 % (copper) and 84.6% (zinc)*
  - *Refining Changes of USD0.08/lb payable copper,*
  - *G&A cost of USD3.5/t_{RoM}*
- *Given these parameters and the results of the MSO assessment, SRK considers there to be reasonable prospects for eventual economic extraction, and as such, fulfil the requirements for reporting a Mineral Resource.*
- *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability, nor have any mining modifying factors been applied.*
- *In order to verify the historical data, SRK has reviewed the digital database, reviewed a re-sampling programme of historical core, reviewed core photographs, and has reviewed the available quality control and quality assurance data from the 2021 re-sampling. SRK is unaware of any issues at Joma which could materially affect the reporting of Mineral Resources by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors.*
- *Tonnages are reported in metric units, with metal grades in percent (%). Tonnages and grades are rounded appropriately. Rounding, as required by reporting guidelines, may result in apparent summation differences between tonnes, grade and contained metal content. Where these occur, SRK does not consider these to be material.*

13.8 Sensitivity Analysis

The Mineral Resources of the Joma Project are sensitive to the selection of the reporting cut-off. To illustrate this sensitivity, the modelled tonnages and grades for Indicated and Inferred Mineral Resources at Joma Main at different NSR cut-off values are presented in Figure 13-10 to Figure 13-11. The modelled tonnages and grades for Inferred Mineral Resources at Joma South are presented in Figure 13-12. The reader is cautioned that the figures presented in these tables and charts should not be misconstrued with a Mineral Resource statement and are presented to show the sensitivity of the block model estimates to the selection of the NSR cut-off grade ("CoG").

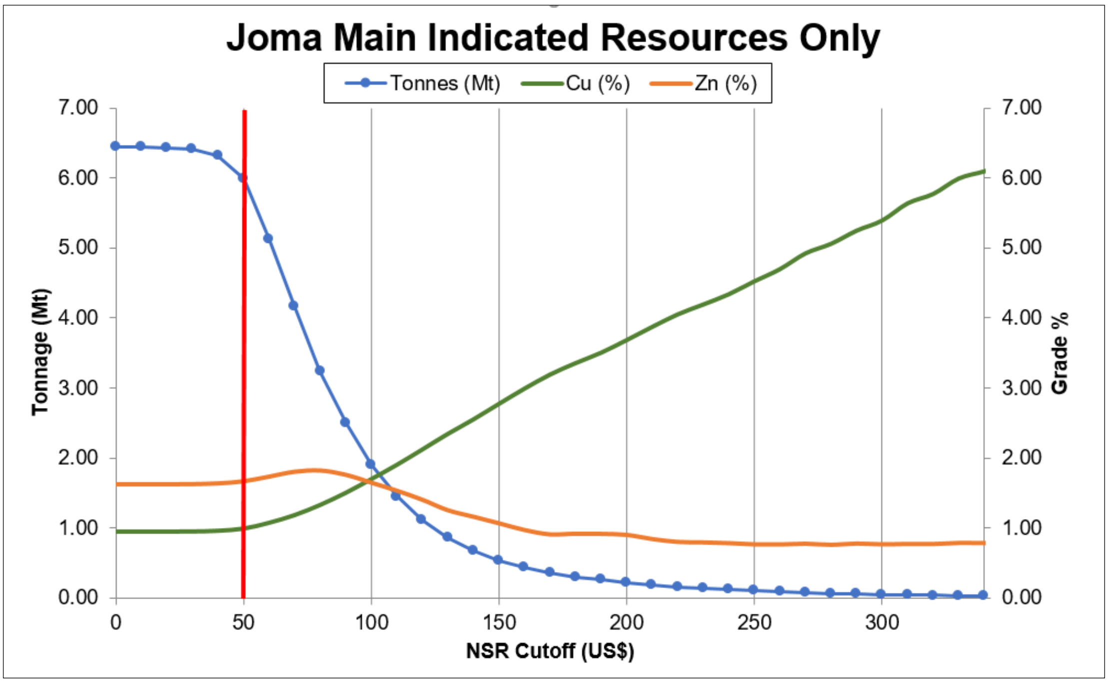


Figure 13-10: Joma Main grade-tonnage curves for Indicated Mineral Resources (NSR reporting CoG = red line)

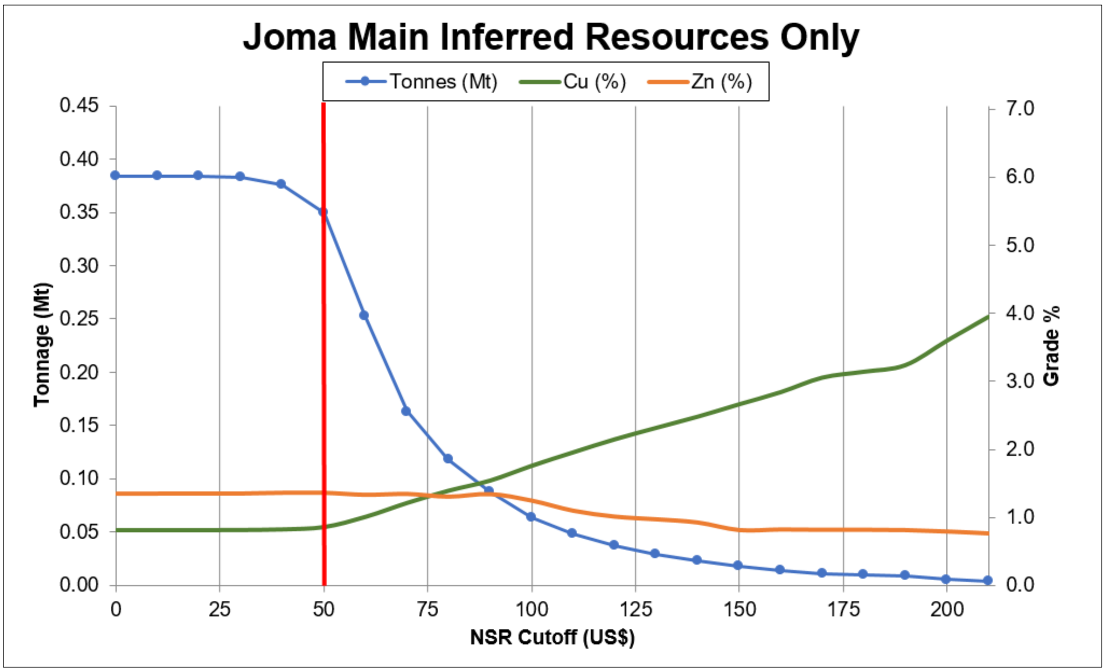


Figure 13-11: Joma Main grade-tonnage curves for Inferred Mineral Resources (NSR reporting CoG = red line)

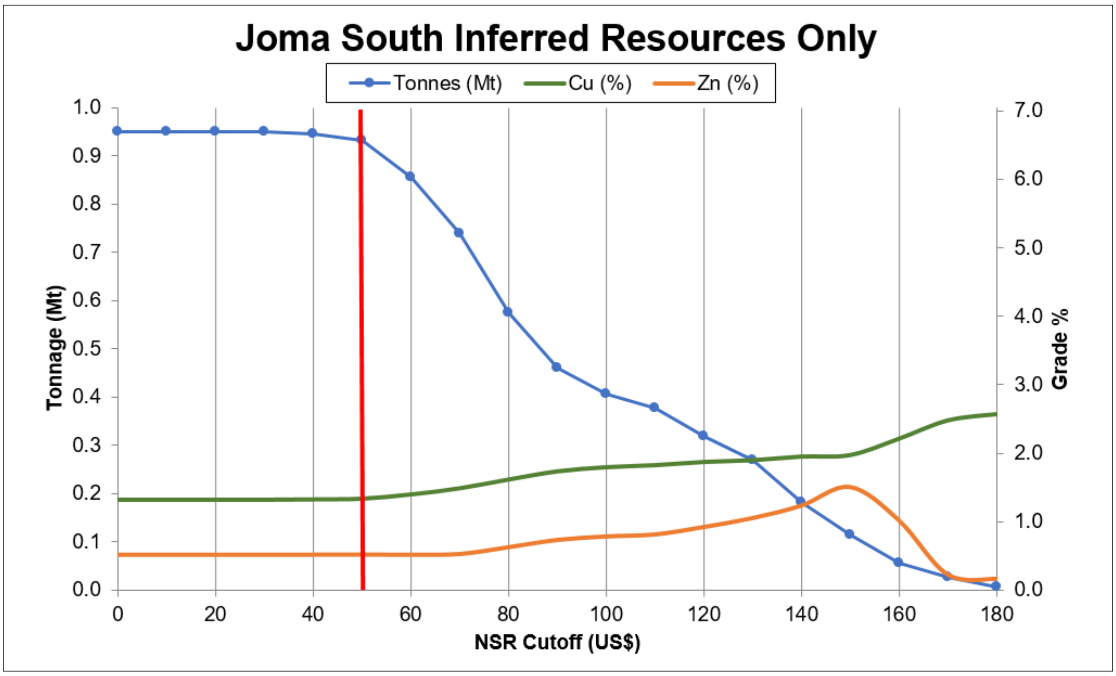


Figure 13-12: Joma South grade tonnage curves for Inferred material (NSR reporting CoG = red line)

13.9 Comparison to Previous Estimates

SRK is unaware of any Mineral Resource statements, reported in accordance with an internationally recognised reporting code for the Joma Project, prior to this study. Several previous estimates are known to have been undertaken, as described in Section 5.2. The 1998 and 2007 estimates were traditional sectional estimates and did not involve the use of 3D block models. The following provides a brief summary of the historical MRE:

- Gong Gruber AS (1998): 10 Mt at 1.7% Cu and 1.7% Zn. It is not known if this estimate was depleted, although it is not believed to be the case. It is likely that this estimate included mineralisation at Joma South.
  - SRK December 2021 Mineral Resource differs to the Gong Gruber AS estimate by 2.8 Mt, 0.67% Cu and 0.20% Zn, which is equivalent to a 28% decrease in tonnes, 39% decrease in Cu grade and 12% decrease in Zn grade.
- IGE Nordic (2007): 5.4 Mt at 0.93 % Cu and 2.14% Zn. This estimate is believed to have considered the depletion associated with mining and includes available mineralisation in the Joma South area.
  - SRK December 2021 Mineral Resource differs to the IGE estimate by -1.8 Mt, -0.10% Cu and 0.64% Zn, which is equivalent to a 33% increase in tonnes, 11% increase in Cu grade and 30% decrease in the Zn grade.
- Drake Resources (2014): exploration target stated a tonnage range between 4-10 Mt with Cu grading between 1-2 % and Zn between 1.5-2.5%.
  - Not comparable to SRK December 2021 Mineral Resource as this was an Exploration Target estimate only.

In summary, the SRK December 2021 estimate is within the reported exploration target tonnages and grade ranges reported by Drake Resources in 2014 and broadly comparable to the 2007 IGE Nordic estimate in terms of tonnes and Cu grade.

14 MINERAL RESERVE ESTIMATES

Due to the stage of the Project, no Mineral Reserves have been declared as part of this PEA. In order to declare Mineral Reserves, a PFS level of study is required for all modifying factors. This is not currently the case and a PFS is planned to commence as soon as possible after financing allows.

15 MINING METHODS

15.1 Introduction

The Joma deposit is a brownfields project with Cu-Zn mineralisation of Caledonian VMS style. The individual lenses vary greatly in thickness and length with the massive zone attaining a maximum thickness of about 50 m. The orebody forms a folded, plate-like body that dips steeply to the west-southwest from the surface and flattens out at depth. This project was a historical underground mine in production between 1972 to 1998 with approximately 11 Mt of processed ore (Grong Gruber AS).

The mining approach for the Joma deposit in this PEA considers re-establishing access through initially dewatering the upper levels of the mine and rehabilitating the surface adit at the 469 mRL and using Room and Pillar method ("R&P") and longhole benching methods for remnant mining the historical Joma mine and the new mining in the Joma South deposit. The Joma mine plan considers a target ROM production rate of 0.5 Mtpa which will feed the Joma process facilities in combination with additional ROM from the Stekenjokk-Levi deposits in Sweden for an overall production rate of 0.75 Mtpa.

The mine plan for Joma also considers storage underground of all future tailings from the process facilities as a paste backfill in the historical (and future) mining voids. This also includes future ore from the Stekenjokk-Levi deposits processed at the Joma process facility.

Materials handling at Joma considers truck haulage to surface with tailings sent back underground as slurry to an underground paste plant. Paste backfill will be moved to stopes with a combination of reticulation piping and agitator trucks as required.

15.2 Mining Methods

15.2.1 Mining method selection

Mining method selection is an objective process, whereby the most suitable mining method is determined by the physical characteristics of the orebody. By evaluation and then ranking these characteristics, the mining method is selected. The Nicholas stoping selection method (Hustrulid 1982) quantifies this process, which is the typical basis for method selection.

The method selection process is included here for completeness, and to provide justification for the chosen method. It can be seen that due to the flatter dipping nature and widths of the ore, standard and apparent dip R&P mining is most suitable. Table 15-1 summarises the input requirements for the method selection process.

The method provides each characteristic with a rank for each method dependant on its appropriateness and suitability. By giving consideration to all the input parameters with approximate weighting, an overall picture of the most suitable method is obtained. This is represented in Table 15-2 for flat dip and intermediate ore widths.

From the rankings, it can be seen that R&P stoping is by far the most suitable mining method given the ore body geometry and ground conditions. This is further supported from historical stoping void models and production documents.

Table 15-1: Nicholas Mining Method Selection

Parameters	Type
Ranking of Geometry/Grade Distribution	
General Shape	Tabular or Platy
Ore Thickness	Intermediate
Ore Plunge	Flat
Grade Distribution	Uniform
Ore Zone	
Rock substance strength	Strong
Fracture Spacing	Wide
Fracture Strength	Moderate
Hangingwall	
Rock substance strength	Strong
Fracture Spacing	Wide
Fracture Strength	Moderate
Footwall	
Rock substance strength	Strong
Fracture Spacing	Wide
Fracture Strength	Moderate

Table 15-2: Stoping Method for Flat Dipping, Intermediate Ore Widths

Mining Method	Ranking of Geometry/Grade distrabution	Rock Mechanics Characteristics			Total	Final Weighted Score
		Ore Zone	Hangingwall	Footwall		
Room & Pillar Mining	13	8	8	10	39	37
Cut & Fill Stoping	11	7	7	8	33	31
Sublevel Caving	9	9	6	9	33	31
Shrinkage Stoping	9	9	6	8	32	30
Top Slicing	11	7	6	8	32	30
Square Set Stoping	11	6	7	8	32	30
Block Caving	9	7	6	9	31	29
Sublevel Stoping	9	7	7	7	30	29
Longwall Mining	12	3	5	10	30	28

15.2.2 Mining method approach

The combination of key orebody parameters; tabular low dip angle orebody, relatively low grade and fair to intermediate rock mass conditions were considered in the mining method approach for the Joma deposit. Table 15-3 provides a summary of the underground mining methods proposed for Joma Deposit which are applied based on the thickness and dip of the mineralised zone. The mining methods proposed are all adaptions of the R&P method adjusted for alternative thicknesses and dips. The R&P approach recovers a portion of the mineral resource while leaving pillars in place for support of the mine.

Non-fill methods utilise permanent pillars to maintain safe and stable working environments and the fill method (namely, paste fill) can be used to stabilise the existing voids to enable access and mining around them or in the case of virgin or unmined areas to achieve higher extraction rates.

Table 15-3: Summary of Mining Methods Applied

Mining Method	Deposit Characteristics		
	Thickness		Dip Range
	Min (m)	Max (m)	(deg)
Classic Room & Pillar	2	15	0 to 15°
Step Room & Pillar	2	5	15 to 30°
Post Room & Pillar	15	30	20 to 55°

The classic R&P method shown in Figure 15-1 can be applied to a deposit thickness up to approximately 15 m and dip up to 15°.

A Step R&P Layout (Figure 15-2) is proposed for sections of the deposit which are 2 to 5 m thick with a dip of 15 to 30°. Step R&P is an adaption of trackless mining to orebodies with too steep a dip for rubber tyre machines to operate in a classic R&P layout. Haulage drifts and stopes are therefore angled diagonally across the dip, to create access to work areas with level floors at an angle suitable for trackless equipment.

Post R&P (Figure 15-3) can be applied to inclined orebodies with a dip ranging from 20 to 55° and large vertical stope heights. The stope is mined in a series of slices with backfilling (waste rock and/or paste fill) to assist with rock mass stability and provide a working platform while mining the next slice above.

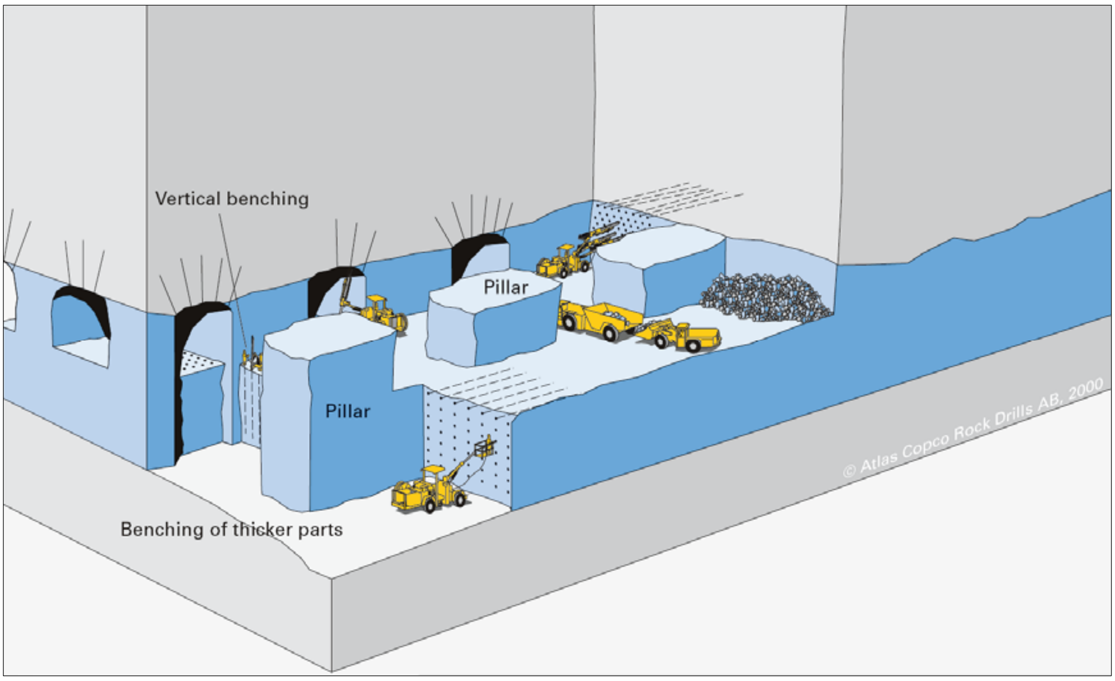


Figure 15-1: Classic R&P Method for dip of 2 to 20° and layer thickness < 15 m (Source: Atlas Copco)

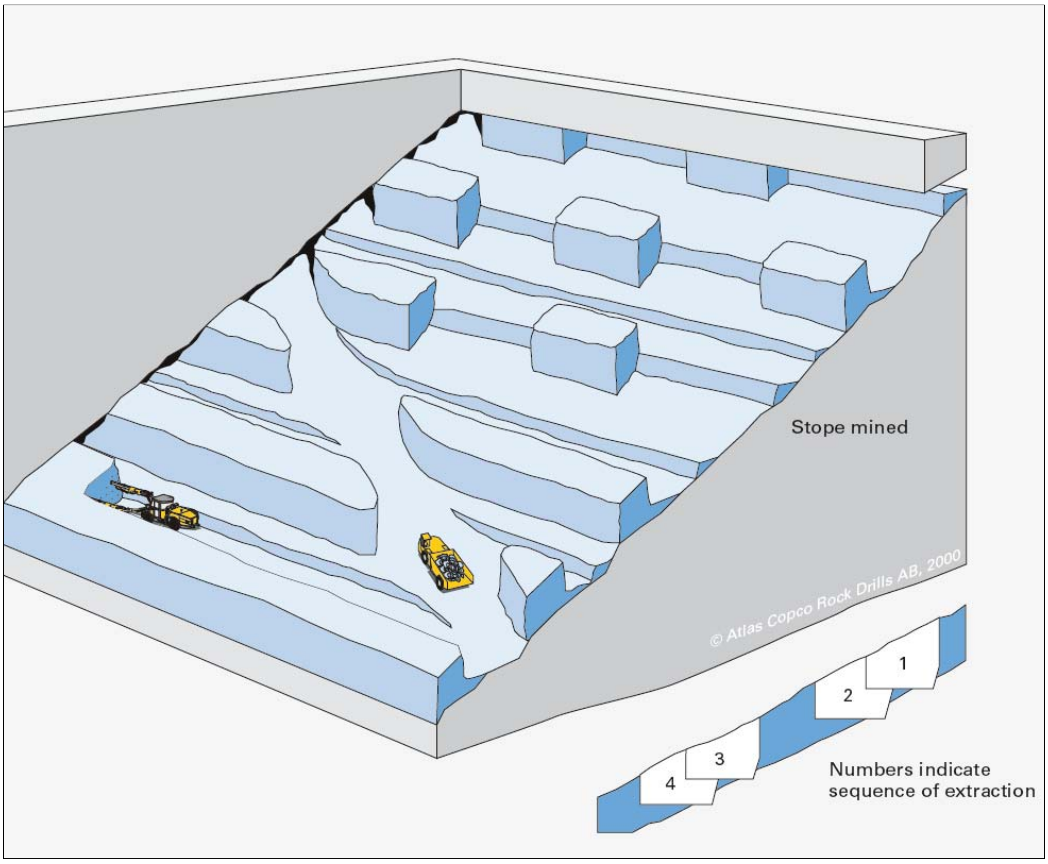


Figure 15-2: Step Room & Pillar Method for dip 15 to 30° and layer thickness 2 to 5 m (Source: Atlas Copco)

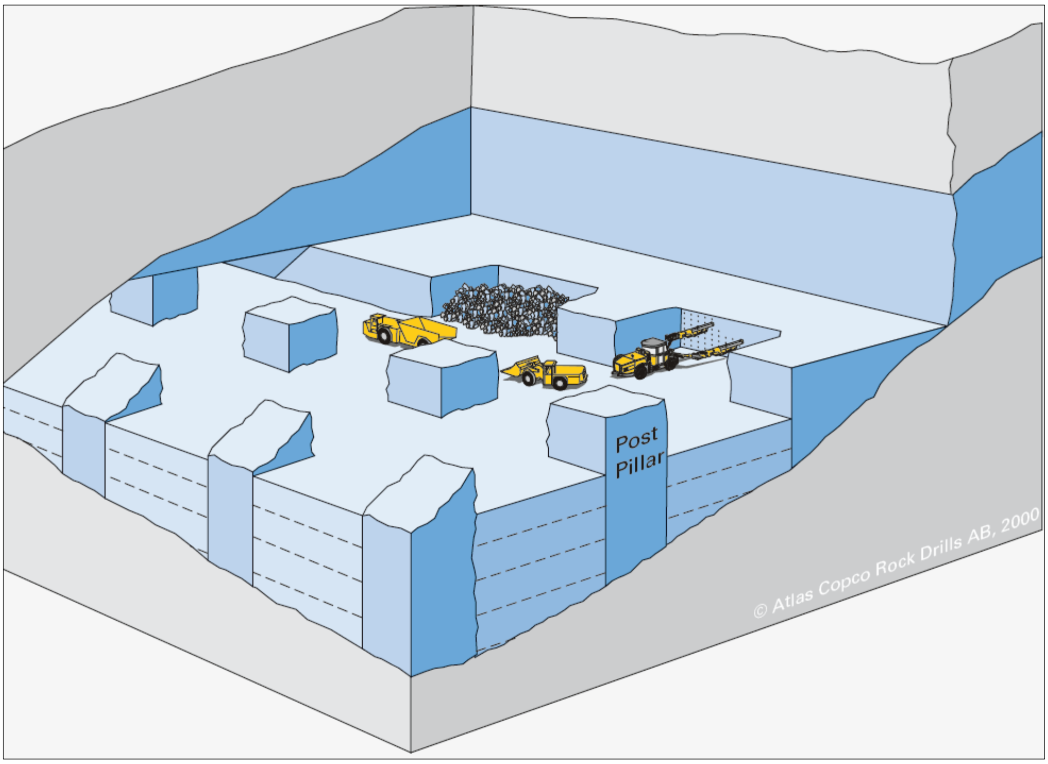


Figure 15-3: Post Pillar Method for dip 15 to 30° and layer thickness 15 to 30 m (Source: Atlas Copco)

15.3 Mine Geotechnical

The underground mine is currently under water. Geotechnical assumptions to support the mining element of the PEA have therefore been based on a general understanding of the geological environment within which the deposit is located along with historical mining data and anecdotal information provided by previous mine management. From these sources, SRK understands that the rock mass condition through the orebody, immediate hangingwall and footwall can be classified as generally good to very good with generally high intact rock strength and widely spaced jointing. These descriptors define a rock mass with a Q rock mass rating in the range 20 to 80 and a Bieniawski Rock Mass Ratio ("RMR") in the range 70 to 80. SRK understands that the historical mine development had little to no support and the stoping voids were large and extraction ratios were high for the mining method utilised.

Rock mass performance is likely to be kinematically controlled, that is loosening and movement of rock blocks from sidewalls and roof of development and rooms and particularly at room intersections where roof spans are greatest.

In modern mining environments, rock support is installed in all development where personnel and machinery operate irrespective of rock mass quality and strength. Based on the assumed rock mass conditions of good to very good the support regime for a standard 5 m wide by 5 m high development profile should comprise either:

- 2.4 m long rock bolts (split sets would appropriate for this rock mass) at a spacing of 1.8 m with weld mesh installed to the drive shoulders; or
- 2.4 m long rock bolts (split sets would appropriate for this rock mass) at a spacing of 2.5 m with 50 mm thick fibre reinforced shotcrete installed to the drive shoulders.

For the main decline, support split sets should be galvanised.

For room intersections, cable bolt support may need to be installed in addition to the split set support. The quantity and length of cable bolts will be dependent on the span dimension.

Mine flooding may have degraded the rock mass slightly. When rehabilitating development as well as scaling loose rocks, the rock mass condition needs to be continually evaluated and the rock support will need to be adjusted to suit the exposed rock mass conditions.

The geology of the deposit describes interbedded graphitic phyllites. SRK is not aware where these lie in the mining sequence but if they do intersect extractive development or stopes heavier ground support may be needed or increased dilution could be experienced.

For the PFS, more detailed characterisation of the rock mass forming the orebody, footwall and hangingwall will be required to develop numerical inputs for stope dimensioning and dilution estimates and support requirements for permanent and extractive development to a level of confidence appropriate for the study stage. These data should be generated from a combination of the following:

- detailed assessment of historical geology and mining documents to identify information that can be used to inform rock mass and structural geotechnical characteristics;
- geotechnical logging of existing uncut resource borehole core;
- geotechnical logging of core photographs;

- drilling and logging of specific geotechnical boreholes or new resource/exploration boreholes; and
- collecting fresh samples of intact rock for laboratory strength and deformation testing.

15.4 Net Smelter Return and Cut-off

NSR values were estimated into the block model using lower consensus market forecast ("CMF") prices of 7,000 USD/t for copper and 2,150 USD/t for zinc. The NSR cut-off for the Joma underground stope optimization was estimated 50 USD/t_{ROM} using the preliminary estimate of cost, recovery and payability parameters summarised in Table 15-4.

Table 15-4: Technical and economic assumptions for PEA MSO and cut-off value

Input Summary	Units	Copper Circuit	Zinc circuit
Metal Price			
Cu	USD/t	7,000	
Zn	USD/t	2,150	
Processing			
Cu Recovery	%	87	76
Zn Recovery	%	5	0
Payability			
Cu Payable	%	95.8	
Zn Payable	%	84.6	
Operating Costs			
Mining Cost In-Situ	USD/t_{ROM}	31.8	
Processing	USD/t_{ROM}	14.5	
G&A	USD/t_{ROM}	3.5	
NSR Reporting Cut-Off (after rounding)			
NSR Mining Cut-off	USD/t_{ore}	50	

15.5 Stope Optimisation and Mine Inventory

SRK used Deswik's Stope Optimiser module to generate mineable shapes and quantify the diluted tonnes and grade available for the mine inventory and schedule. The mine inventory for Joma was estimated using a similar approach as for mineral resources. Minimum MSO stope shapes of 10mX x 10mY x 3mZ were used as a mining target with an NSR cut-off of 50 USD/t_{ROM}.

Figure 15-4 and Figure 15-5 provide respective plan and long views of the mining inventory (green) and historical mine development which will need to be rehabilitated to restart mining. The historical mine is currently flooded with a bulkhead blocking the entrance of the existing adit at the 480 mRL and a staged dewatering program is required during the preproduction period. The existing historical development and production is summarised as follows:

- Adit: 2,074m - 5mW x 5mH (Square profile).
- Internal Ramps: 1,383 m - 5mW x 5mH (Square profile).
- Ore drives: 10,561m - 5mW x 5mH (Square profile).
- Vent Rises: Numerous, with over five connected to existing working from the plans received.
- Stopes: Extensive R&P and longhole stoping up to 70% reported extraction in some areas.

The proposed paste backfill plant has been sited underground at the junction of the adit and internal ramp systems, as shown in Figure 15-4.

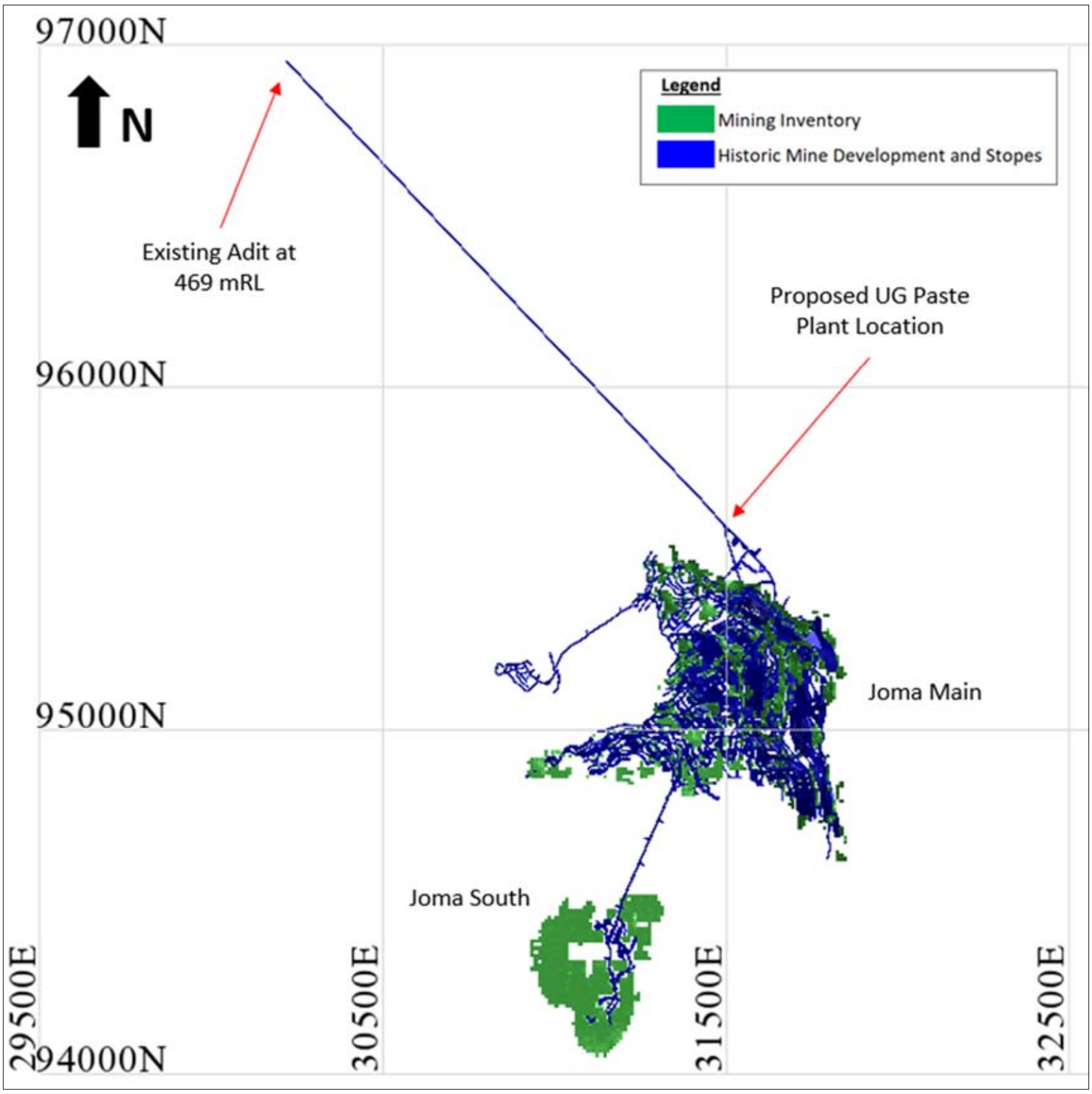


Figure 15-4: Plan view of the Joma Mining Inventory and historical mine development and stopes

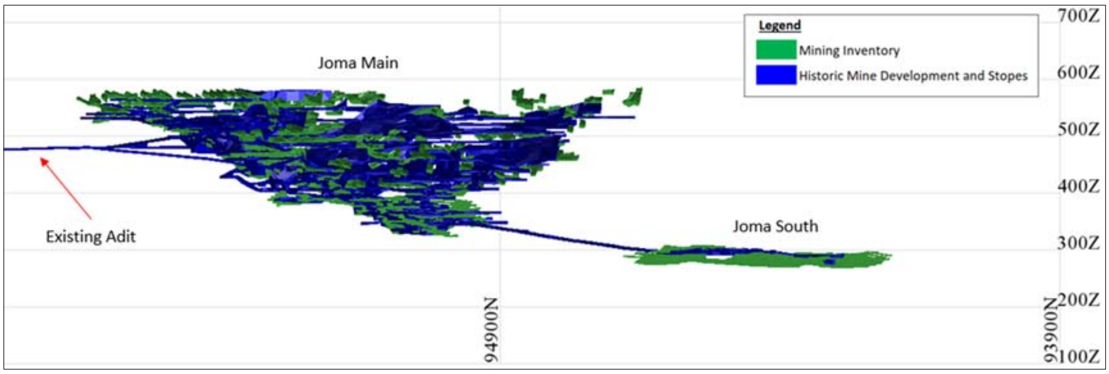


Figure 15-5: Long view of the Joma Mining Inventory and historical mine development and stopes, looking northeast

The mining inventory (Table 15-5) totals 3.6 Mt with the following mining methods and modifying factors applied:

- R&P method (85% of mining inventory) with no additional external dilution and 35% losses.
- Longhole mining of crown pillar (15% of mineral inventory) at the end of the mine life with 5% dilution and 5% losses.

Table 15-5: Joma Mining Inventory

Mining Inventory		Grade		Contained Metal	
Level	kt	% Cu	% Zn	t Cu	t Zn
Level 570	405	0.91	1.84	3,690	7,470
Level 560	137	1.42	1.69	1,952	2,326
Level 550	125	0.94	2.33	1,173	2,915
Level 530	51	1.20	1.38	610	704
Level 520	119	1.47	1.09	1,740	1,288
Level 500	277	1.28	1.14	3,544	3,143
Level 485	253	1.01	2.22	2,567	5,616
Level 470	180	0.92	2.11	1,650	3,793
Level 460	50	1.11	1.29	556	649
Level 450	266	1.11	1.63	2,959	4,339
Level 430	235	1.11	1.74	2,620	4,105
Level 415	92	1.51	1.40	1,396	1,293
Level 400	119	1.53	1.35	1,823	1,601
Level 385	173	1.31	1.18	2,271	2,040
Level 360	91	1.47	0.89	1,331	807
Level 350	109	1.46	1.23	1,587	1,334
Level 340	92	1.06	1.79	973	1,646
Level 330	53	1.14	1.21	597	634
Level 290	732	1.30	0.41	9,512	3,009
Total	**3,559**	**1.20**	**1.37**	**42,549**	**48,713**

15.6 Mine Design

The primary mine access to the underground workings will be via existing adit, with separate internal ramps and crosscuts for each mining area. Separate exhaust ventilation raise systems will connect to the decline access on each level, with the escape way system included in the development design and within the Joma South main ventilation rises.

The underground mine workings consist of both lateral and inclined development which connect the various ore zones and the required production levels developed in the orebodies, which are accessed from the main ramps. The main declines are developed to the necessary depths such that stoping levels are available to meet ore production requirements. Ore development headings are constructed within the different ore zones, accessing the minable stoping blocks.

The mine development layout is designed to provide logical, timely and efficient access to the stoping blocks at minimum cost, with the following factors taken into account:

- **Profile:** The profiles determined for the various types of development are based on the operating equipment selected, plus an allowance for any statutory clearance, or alternatively, internationally acceptable clearances.
- **Gradient:** The gradient of all level drives is set at 1:50 to ensure effective drainage, with the fall of the gradients designed to direct water to sumps. The decline gradient (1:7) is based on a trade-off between the maximum steepness to reduce the distance required to be developed between levels, and the provision of suitable operating conditions for the mobile equipment.

The gradient of the decline ramps is flexible with the constraints being capital cost of developing the vertical distance and the ability for productive long-term haulage from the decline. Operationally, 1:7 is now the norm which provides for the steepest practical gradient while still including curves and allowing for safe stoppage of machines on the down slope.

Ore drives should be 1:50 up to allow for water drainage and ease of drilling/mucking operations. Unless within the traditional R&P areas where this will be at the angle of the footwall of the ore. Where a choice between incline versus decline existed the incline was chosen for the consideration of handling of water (self-draining).

The centreline radius of curvature used for the ramps is 20 m. This is sufficient to provide turning capability for the development and production fleet. The minimum turning radius was considered for all possible trucks that can be used in the decline and is in the range 9 to 10 m. Stockpiles are required with the principal concern of expediting the ramp advance rate.

Development heading stockpiles have been spaced at intervals of 120 m and this assumes a stockpile is not usable until the face has advanced 30m past this point.

For stoping areas, the stockpile location and size must consider both the loader (bogger) and truck productivities. The maximum tramming distance for a loader ranges from 150 m to 300 m while still maintaining acceptable productivities.

Maintaining high truck productivity in high tonne-kilometre (tkm) operations is of primary importance. Truck productivities assume loading directly from the stockpile, so that the truck idle time is minimised. The production stockpiles have been located as close as possible to the centroid of the stoping panels wherever feasible.

Ventilation raises are designed to have a 9 m cross-sectional area and will be excavated by means of jumbo raising methods within mining areas. They are also to be used as an escape way, fitted with a ladder.

Each panel is designed to have an exhaust raise system running along each side it so that fresh air can be drawn down the decline for each stoping level. The exhaust raises are to be equipped with escape ladderway as part of the overall evacuation system for the mine.

The main ventilation rise for Joma South will be 4.0 m diameter raise drilled to surface and will have an unguided cage and hoist fitted to it for emergency egress.

15.7 Mine Production

The production drill and blast design for the Joma mine has been based on standard industry practice. Within the development and traditional R&P areas 45 mm Jumbo holes will be used in the mining process. Longhole benching is assumed in the thicker and more steeply dipping parts of the deposit with an allowance for 76 and 89 mm blast holes.

15.8 Mine Backfill

Due to the characteristics of the Joma deposit and historical mining a backfill system is required to optimise the underground extraction process and store processed tailings underground. The future backfill and placement system to implement is a consideration of:

- Fill performance requirements (strengths).
- Filling requirements (quantities, rates, and schedule).
- Materials available for fill.
- Geometry of mine for distribution of fill to stope areas.
- Surface constraints (footprint topographical constraints).
- Capital and operating costs.
- The timing of stoping and backfill activities in terms of available design and construction time.
- Other issues such as environmental or existing infrastructure constraints.

In the process of reviewing the mining methods to be employed at the Joma, it has been recognised that some form of fill may be considered to maximise extraction of the remnant mining pillars new zones from the various mining areas. There will be the requirement for both primary and secondary stope backfilling in conjunction with waste rock fill from development. Tentative designs suggest that mining methods to be employed, combined with the expected water inflow potential, will necessitate cement to be added to all tailing fill so that re-liquefaction does not occur. In areas where consolidated backfill is required, mining will be taking place on more than one side exposure, requiring a backfill strong enough to be self-supporting for the given hydraulic exposure and in a R&P area or for working on top of the backfill. Estimations of fill strength requirements (and therefore binder content) will be required for each type of fill exposure anticipated will be required during the mining process.

Mine backfill rates will be based on the mill throughput of 750 ktpa of processed ore minus the amount of concentrate produced or approximately 700 ktpa (or 390,000 m³/annum) tailings plus any development waste. Based on these figures, neglecting the rock waste generated underground which will be used as unconsolidated fill, approximately 1,100 m³ per day is required as an average. A small to medium backfill plant system and 110 mm diameter pipe and agitator truck underground distribution system will allow for 50 m³ per hour to 75 m³ per hour of fill to be placed.

Binder is required to consolidate the backfill for certain situations to achieve a minimum compressive strength. Each backfill product is different and only through a design and testing programme will the optimum recipes be determined. It is fair to say that binder will be utilised in the range of 2% to 10% of a consolidated recipe for consolidated backfill.

Binder is usually the highest single cost component of any backfill operating costs. Binder can be comprised of ordinary cement Type 10 or Type 50 sulphate resistant, slag cements or fly ash blends or a combination of these. Binder selection is based on required performance characteristics of the fill, price, and availability. A base case using locally available cement is undertaken in base recipe testing.

15.9 Mining Equipment

The equipment required to undertake mining activities at the Joma mine were selected based on practical experience of working in similar mining environments including working mines in the Nordic region.

Table 15-6 provides the main list of primary and secondary support equipment considered in the mine plan and unit productivities used to determine equipment requirements over the LOM. Table 15-7 provides the equipment operating factors used to estimate operating costs and throughout the LOM.

The trucking requirements (50 t capacity) have been assessed based on estimates of the haul distances by level and material type, provided in Table 15-8. It is assumed that development waste is stored underground in the historical or newly created mining voids as fill. Table 15-9 shows the truck productivity parameters applied over the LoM.

Table 15-6: Mine Equipment and Productivity Assumptions

Fleet	Units	Productivity		
		per annum	per month	Notes
Twin Boom Jumbo	dev m adv	6,504	542	Based on Twin Boom Jumbo development metres
Development Loader - 17t	t/hr	467,597	38,966	Based on Loader tonnes
Raisebore	raise m	1,095	91	
Production Loader - 17t	t/hr	818,294	68,191	Based on Loader tonnes
Longhole Drill	drill m	90,024	7,502	Based on LH drill metres
Truck 1 - 50t capacity				Based on TKM calculations
Chargeup wagon	tonnes charged	600,000	50,000	Based on Production Rate
Cemented Pastefill Carrier - Agitator	kt tails	250	21	Based on combined tailings transported at Joma
Grader	tpa	1,500,000	125,000	Production rate based; 1 x Grader at all times
Service (Fuel/Lube) Truck	Drills	7	7	1 x Service Truck for every 7 Drills
Integrated Toolcarrier	tpa	250,000	20,833	Production rate based; 1 x Integrated Toolcarrier at all times
Grade Control/Probe Drill	drill m	15,000	1,250	Based on grade control metres (production rate based)
Light Vehicle				Based on staff, shifts and crews
Personnel carrier				Based on shifts and crews

Table 15-7: Mine Equipment Operating Factors

Fleet	Availability (%)	Use of Availability (%)	Operator Efficiency (%)	Effective Utilisation (%)	Direct Operating Hours (DOH)	
					per year	per shift
Twin Boom Jumbo	83%	65%	100%	54%	4,661	6.5
Development Loader - 17t	82%	55%	100%	45%	3,897	5.4
Raisebore	80%	50%	100%	40%	3,456	4.8
Production Loader - 17t	82%	77%	100%	63%	5,455	7.6
Longhole Drill	85%	49%	100%	42%	3,599	5.0
Truck 1 - 50t capacity	85%	53%	100%	45%	3,892	5.4
Chargeup wagon	83%	50%	100%	42%	3,586	5.0
Cemented Pastefill Carrier - Agitator	80%	50%	100%	40%	3,456	4.8
Grader	82%	55%	100%	45%	3,897	5.4
Service (Fuel/Lube) Truck	80%	50%	100%	40%	3,456	4.8
Integrated Toolcarrier	80%	50%	100%	40%	3,456	4.8
Grade Control/Probe Drill	80%	50%	100%	40%	3,456	4.8
Light Vehicle	80%	20%	100%	16%	1,382	1.9
Personnel carrier	80%	30%	100%	24%	2,074	2.9

Table 15-8: Joma Haulage Distances

TKMs Average Haul	Average Haul Waste (km)	Average Haul Ore (km)
Level 500	0.25	2.67
Level 520	0.25	2.36
level 530	0.25	2.57
Level 550	0.25	2.65
Level 485	0.25	2.39
Level 470	0.25	2.43
Level 460	0.25	2.57
Level 450	0.25	2.20
Level 430	0.25	2.63
Level 415	0.25	2.75
Level 400	0.25	2.93
Level 385	0.25	3.09
Level 360	0.25	3.35
Level 350	0.25	3.39
Level 340	0.25	3.49
Level 330	0.25	3.58
Level 290	0.25	3.86
Level 560	0.25	2.80
Level 570	0.25	1.00

Table 15-9: Truck Productivity Parameters

Trucking TKM Cycle	Units	Value
Truck Availability	%	85.0%
Truck Utilisation	%	53.0%
Truck Capacity (50t)	m3	27.0
Loader Capacity	m3	7.0
Speed up Ramp	km/hr	10.0
Speed down Ramp	km/hr	12.0
Loading time 7m3 LHD	hrs	0.2
Dumping time	hrs	0.1
Capacity @ 90% Tray Fill	m3	24.3
SG loose	t/m3	2.1
Capacity	t	50.0
Trucks Hours per Year	hrs/year	2,946.3

15.10 Mine Personnel

The professional staff (including management), workforce, and maintenance personnel for the underground mine is estimated based on the typical levels for this size of operation, operating 2 x 12-hour shifts, 24 hours per day, and 7 days per week. The maintenance, underground operator, and labour estimates are based on the annual equipment estimates.

The majority of underground positions are based on three rostered crews working a 2-shift, 6-day rotation. A majority of the management and staff work only day shift. The initial workforce will comprise of skilled mining contractors who will take a lead role in rehabilitating the mine access and ore drives to re-establish production at the Joma mine.

15.11 Life of Mine Planning

15.11.1 Development and mining sequence

Table 15-10 provides a summary of the key Joma access and development required to commence and maintain production of the mine life. Initial dewatering is required (from Year -2) prior to commencing underground mine access rehabilitation (from Year -1) and development with an appropriate contractor (or contractors) in order to provide the necessary equipment and skills to achieve the required production schedule in Year 1. All other underground development and production activities will be completed by the owner's mining team.

For the purpose of the PEA, it is assumed that the mining contractor will provide their own equipment, consumables, personnel and management and these costs are incorporated into the contractor rates and mobilisation costs in the economic modelling.

Table 15-10: Joma Access Rehabilitation and Development

Development Schedule by Mine	Units	Quantity	Profile	Start	Complete	Rate (m/month)
Joma Mine						
Rehabilitate Adit	m	2,074	5mWx5mH	start Year -1	end Year -1	250
Rehabilitate Decline	m	1,383	5mWx5mH	start Year 2	end Year 4	50
Shaft Excavation	m	357	4.0m dia	start Year 5	end Year 5	120
South Access Development	m	330	5mWx5mH	start Year 4	end Year 4	50

15.11.2 Schedule methodology

The mining inventory utilised as a basis for the development and production scheduling is presented by the designated levels as shown in Table 15-5. SRK prepared a simplified semi-automated spreadsheet approach for scheduling the required rehabilitation and development to each level. The mine inventory was scheduled for each level in an ordered sequence based on development access and assumed dewatering in order to achieve the production target rate of 0.5 Mtpa.

The annual production schedule is used to derive an equipment fleet schedule including commissioning and replacement periods for the duration of the operation. Labour requirements for each period are also estimated based in the development, production and equipment estimates.

15.11.3 Schedule results

Figure 15-6 shows the annual combined development and production ROM tonnes and grase schedule achieving a sustainable production rate of 0.5 Mtpa over a 7-year period. The annual mine schedule physicals and key performance indicator ("KPI") breakdown over the LOMP for Joma are presented as follows:

- Mine physicals including ROM production and grade, development, rehabilitation, drilling, truck haulage and emulsion explosive usage (Table 15-11).
- Primary and auxiliary mine equipment including ventilation fans (Table 15-12).
- Mine personnel requirements for the underground operation (Table 15-13).

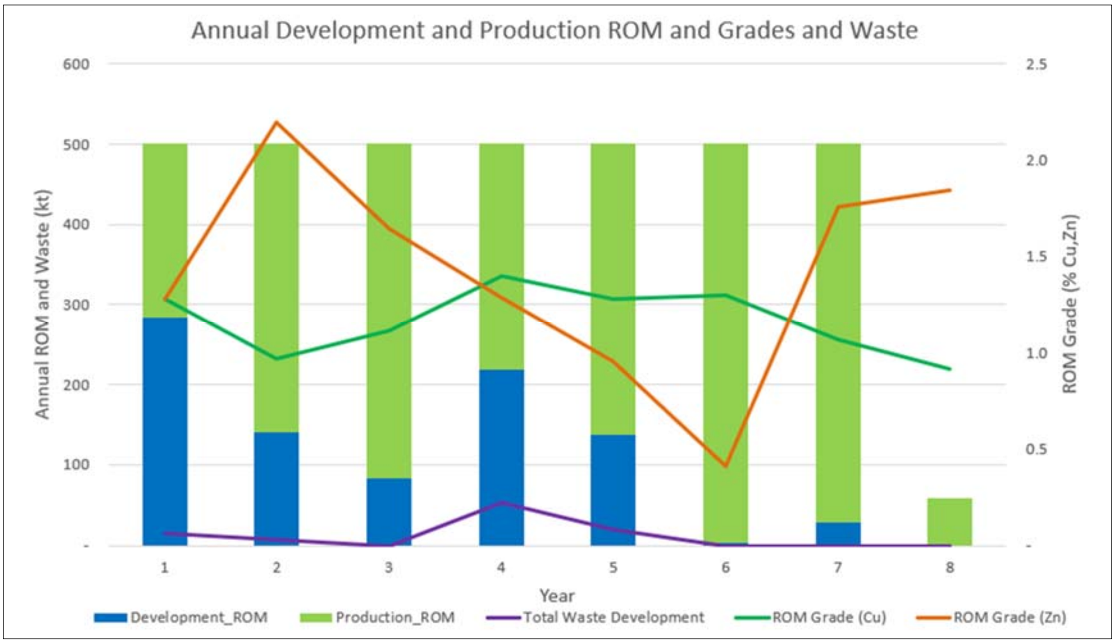


Figure 15-6: Annual Development and Production ROM and Grade

Table 15-11: Mine Physicals Schedule

Mine Schedule Physicals	Units	Total	Year -01	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08
ROM Production Profile											
Development_ROM	kt	**895**	-	284	140	83	219	138	4	28	-
Production_ROM	kt	**2,663**	-	216	360	417	281	362	496	472	59
Total ROM (Underground)	**kt**	**3,559**	-	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**59**
Grade											
ROM Grade (Cu)	% Cu	**1.20**	-	1.28	0.97	1.11	1.40	1.28	1.30	1.06	0.91
ROM Grade (Zn)	% Zn	**1.37**	-	1.28	2.19	1.64	1.29	0.95	0.41	1.76	1.84
Total Waste Development	**kt**	**95**	-	**15**	**7**	-	**53**	**19**	-	-	-
Lateral Development											
Rehab_Access	m	**3,457**	2,074	-	600	600	183	-	-	-	-
Rehab_Ore Drives	m	**14,454**	-	4,678	2,298	1,368	3,508	2,074	63	464	-
Total Rehabilitation	**m**	**17,911**	**2,074**	**4,678**	**2,898**	**1,968**	**3,691**	**2,074**	**63**	**464**	-
South Access	m	**330**	-	-	-	-	330	-	-	-	-
Level_X-Cut	m	**319**	-	14	-	-	222	83	-	-	-
Level_FW	m	**517**	-	203	105	-	209	-	-	-	-
Level_Ore Dev	m	**284**	-	-	-	-	89	195	-	-	-
Total Level Development	**m**	**1,450**	-	**217**	**105**	-	**850**	**278**	-	-	-
Vertical Development											
Shaft Excavation	m		-	-	-	-	-	357	-	-	-
Level_Vent Raise	m		-	-	-	-	-	25	-	-	-
Total Vertical Development	**m**	**382**	-	-	-	-	-	**382**	-	-	-
Drilling											
Production Drilling	km	**894**	-	88	147	170	115	148	203	20	3
Grade Control Drilling	km	**60**	-	5	9	10	7	9	12	6	1
Truck Haulage (ROM + Waste)											
Schedule Tonnes	kt	**3,654**	-	515	507	500	553	519	500	500	59
Schedule TKMs	tkm/1000	**9,807**	-	1,294	1,224	1,199	1,492	1,817	1,930	793	59
Average Haul Distance	km	**2.7**	-	2.5	2.4	2.4	2.7	3.5	3.9	1.6	1.0
Explosive Consumption											
Emulsion Usage	t	**3,873**	-	631	620	610	651	618	610	120	12

Table 15-12: Mine Equipment Schedule

Mining Equipment	Units	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08
Twin Boom Jumbo	each	1	1	1	1	1	1	1	-
Loader - 17t	each	2	2	2	2	2	2	2	1
Production Drill	each	1	2	2	2	2	3	1	1
Truck - 50t capacity	each	3	3	3	3	4	4	2	1
Chargeup wagon	each	1	1	1	1	1	1	1	1
Cemented Pastefill Carrier - Agitator	each	2	2	2	2	2	2	2	-
Auxiliary Equipment									
Grader	each	1	1	1	1	1	1	1	1
Service (Fuel/Lube) Truck	each	1	1	1	1	1	1	1	1
Integrated Toolcarrier	each	3	3	2	3	3	2	2	1
Grade Control/Probe Drill	each	1	1	1	1	1	1	1	1
Light Vehicle	each	11	11	11	11	12	12	11	8
Personnel carrier	each	4	4	4	4	4	4	4	3
Mine Ventilation									
Primary Fan (344 kW)	each	1	1	1	1	1	1	1	1
Development Fans (180 kW)	each	2	3	4	3	3	4	4	1
Stope Fans (110 kW)	each	3	5	6	4	5	7	7	1

Table 15-13: Mine Personnel Schedule

Mine Personnel	Units	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08
Management	each	5	5	5	5	5	5	5	5
Technical Support	each	15	15	15	15	15	15	15	15
Mine_Operations	each	25	27	27	27	29	31	23	15
Maintenance	each	28	28	28	28	30	30	28	19
Administration	each	2	2	2	2	2	2	2	2
Total Mine Personnel	**each**	**75**	**77**	**77**	**77**	**81**	**83**	**73**	**56**

Table 15-14: Mine Water Management

Mine Dewatering	Units	Year -02	Year -01	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08
Surface Level	mRL	470	470	470	470	470	470	470	470	470	470
Lowest Depth of Mining	mRL	470	470	470	470	430	360	290	290	470	470
Lowest Level of Mining	level	Level 470	Level 470	Level 550	Level 470	Level 430	Level 360	Level 290	Level 290	Level 570	Level 570
Pumping Head	m	-	-	-	-	40	110	180	180	-	-
Pumping Head (rounded)	m	-	-	-	-	100	200	200	200	-	-
Pumping Head (max)	m	-	-	-	-	100	200	200	200	200	200
Pumping Infrastructure and Equipment											
Primary Pump Station	each	1	1	1	1	1	1	1	1	1	1
Secondary Pumps	each	-	-	-	-	10	10	10	10	10	10

15.12 Conceptual Mine Dewatering and Water Treatment Plan

15.12.1 Introduction

The Project involves the restart of a decommissioned copper and zinc mine at Joma in Røyrvik municipality in Central Norway. Before restarting the mine operation, the currently flooded open pit, underground mine, and access decline must be dewatered and the surplus water treated to suitable levels before being discharged to the adjacent Huddingsvatn Lake.

A series of conceptual water balance schematics for the pre-mining start-up dewatering and active mining through to the end of the life were prepared for the Joma mine. The layout of the existing and proposed mine and key water management infrastructure is shown in Figure 15-7.

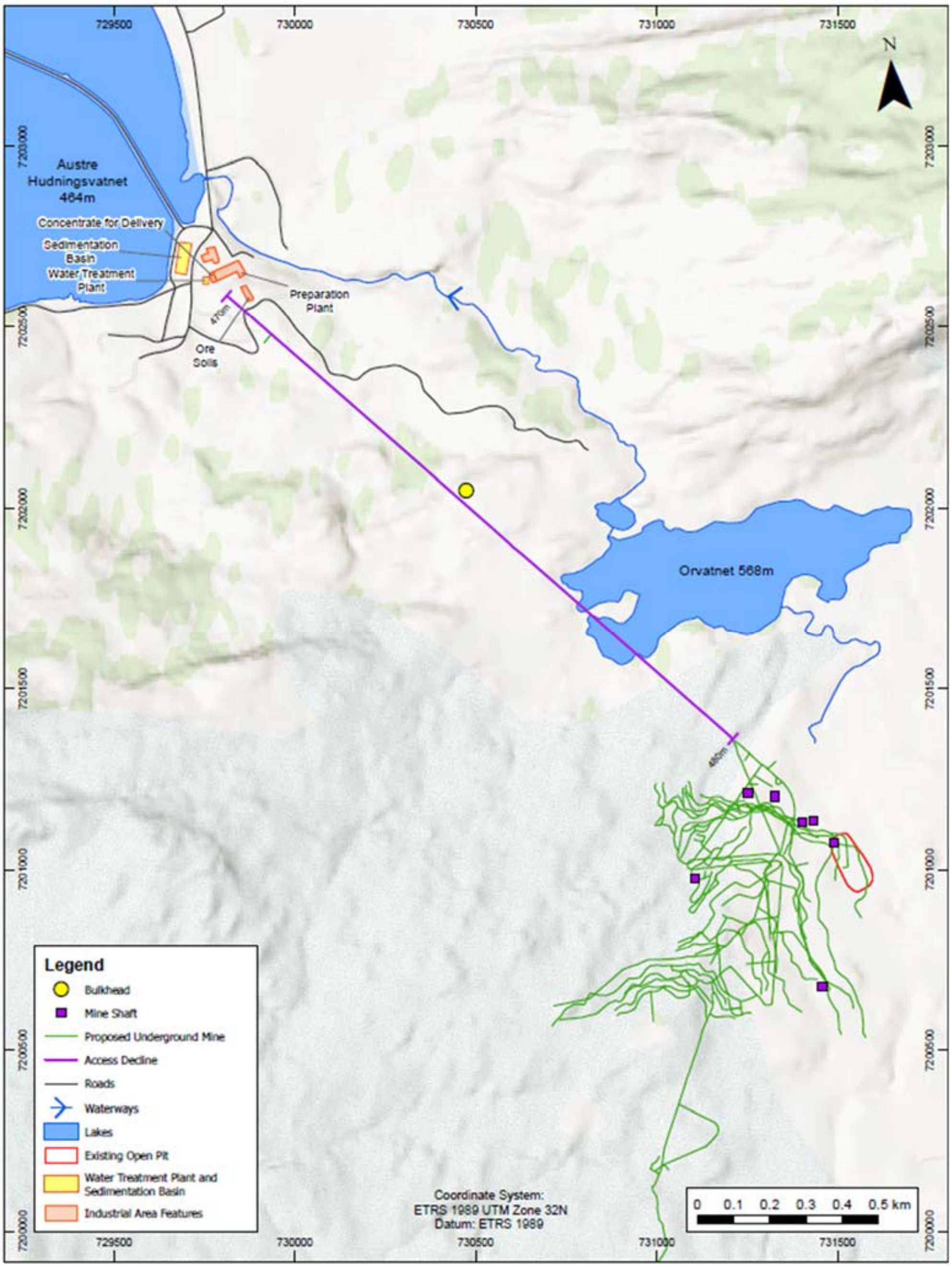


Figure 15-7: Layout of the key water management infrastructure (existing and proposed) at the Joma mine

It is proposed that dewatering and surplus water treatment should be split into three stages as follows. It should be noted that all flows discussed herein are indicative average flows and not intended for design purposes. Furthermore, the flow schematics referenced are conceptual and intended to communicate the key water movements only. They are therefore not to scale nor are they spatially accurate.

15.12.2 Stage 1 - Dewatering to the 480 mRL

Multiconsult (2020) propose to dewater the existing mine at the level of the main access decline (480 mRL) by gravity through the bulkhead via a pipeline to a water treatment plant located at the industrial area adjacent to the Huddingsvatn. The water will then be treated before being discharged to the Huddingsvatn Lake.

A schematic of the proposed water balance for dewatering to the access decline at the 480 mRL, Stage 1, is shown in Figure 15-8. The volume of water in the existing mine above the 480 mRL has been estimated by Multiconsult (2020) to be around 1 Mm^3. With a pumping capacity of 170 m^3/hr (47 L/s) this volume would take just under a year to pump out, assuming 80% pump availability i.e. 20% downtime for maintenance and breakdowns.

Once the mine has been dewatered to the 480 mRL and the bulkhead has been removed, access to the existing underground mine will be possible via the access decline from the proposed plant area. A mine dewatering system will then be installed to dewater residual groundwater flows into the underground mine above 480 mRL and to start dewatering of the flooded mine below 480 mRL.

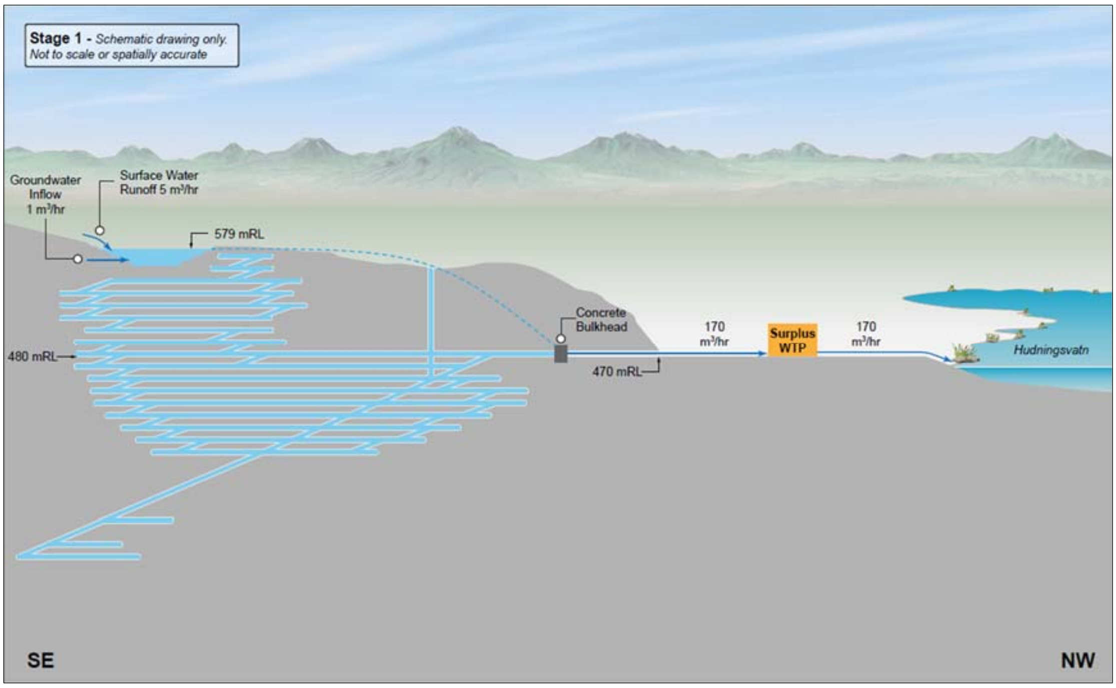


Figure 15-8: Stage 1 – Schematic Flowsheet

15.12.3 Stage 2 - Mining above the 480 mRL, dewatering below the 480 mRL

Once the flooded mine has been dewatered to below the level of the access decline, an active mining operation will be established on the levels at and above the 480 mRL with access from the main portal. At the same time, dewatering will continue in the flooded workings below 480 mRL until the flooded historical mine workings have been dewatered completely.

A schematic of the proposed water balance during this period, Stage 2, is shown in Figure 15-9.

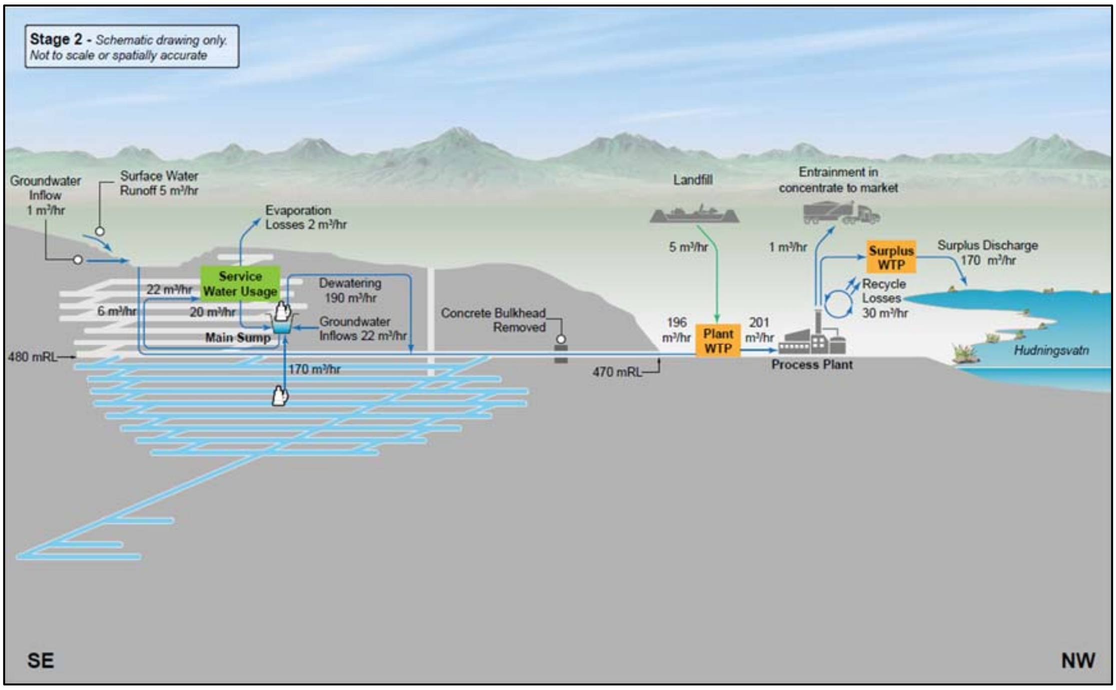


Figure 15-9: Stage 2 – Schematic Flowsheet

Key aspects of the water balance during Stage 2 are as follows:

- Groundwater inflows to the underground mine of around 22 m^3/hr (estimated from inflows to the previous underground mining operation) to the main underground sump.
- Residual surface and groundwater inflows to the open pit of 6 m^3/hr which will drain under gravity into the underground mine.
- Supply of service water from the main underground sump to the active underground mining operations at 22 m^3/hr. This water will be used in underground mining equipment and for dust suppression on roadways and material handling areas. Of this 22 m^3/hr, 2 m^3/hr is predicted to be lost to underground evaporation through the ventilation system leaving a net of 20 m^3/hr to be recycled back to the sump.
- Dewatering of the flooded mine below 480 mRL at a continued rate of 170 m^3/hr (47 L/s).
- Aggregation of the above underground flows (196 m^3/hr total) and pumping out/gravity drainage along the main access decline on the 480 mRL to a water treatment plant at the plant site. The plant water treatment plant will treat water only to a quality suitable for use in the process circuit, along with the recycle from the flotation plant (see below). It is expected that the plant water circuit quality would not be suitable for discharge.

- The process circuit is expected to include a floatation circuit with recycling of water via a process water treatment plant at around 92% efficiency i.e. 8% losses to evaporation, leakage etc. Tailings will be dewatered and sent to a temporary tailings dry stack facility during Stage 2, with the dewatered water being returned to the plant water circuit. The process circuit is expected to have a net make-up demand (consumptive water use) after losses of around 30 m^3/hr.
- A landfill will be located at the industrial area which will produce leachate that will need to be treated prior to discharge at an expected rate of around 5 m^3/hr. This water will also be sent to the process water circuit.
- 1 m^3/hr is expected to be lost in entrainment in product sent to market.
- The net surplus from the plant circuit to be sent to the surplus water treatment plant is expected to be in the order of 170 m^3/hr during Stage 2.

15.12.4 Stage 3 - Mining above the 480 mRL, dewatering below the 480 mRL

Once the existing mine has been dewatered completely, mining operations will be able to continue to the full planned depth. A schematic of the proposed water balance during normal operations to the end of the mine life, Stage 3, is shown in Figure 15-10.

The volume of water in the existing mine below the 480 mRL has been estimated to be around 2.5 Mm^3. With a pumping capacity of 170 m^3/hr (47 L/s) this would take around another 26 months (2 years and 2 months) to pump out, again assuming 80% pump availability i.e. 20% downtime for maintenance and breakdowns.

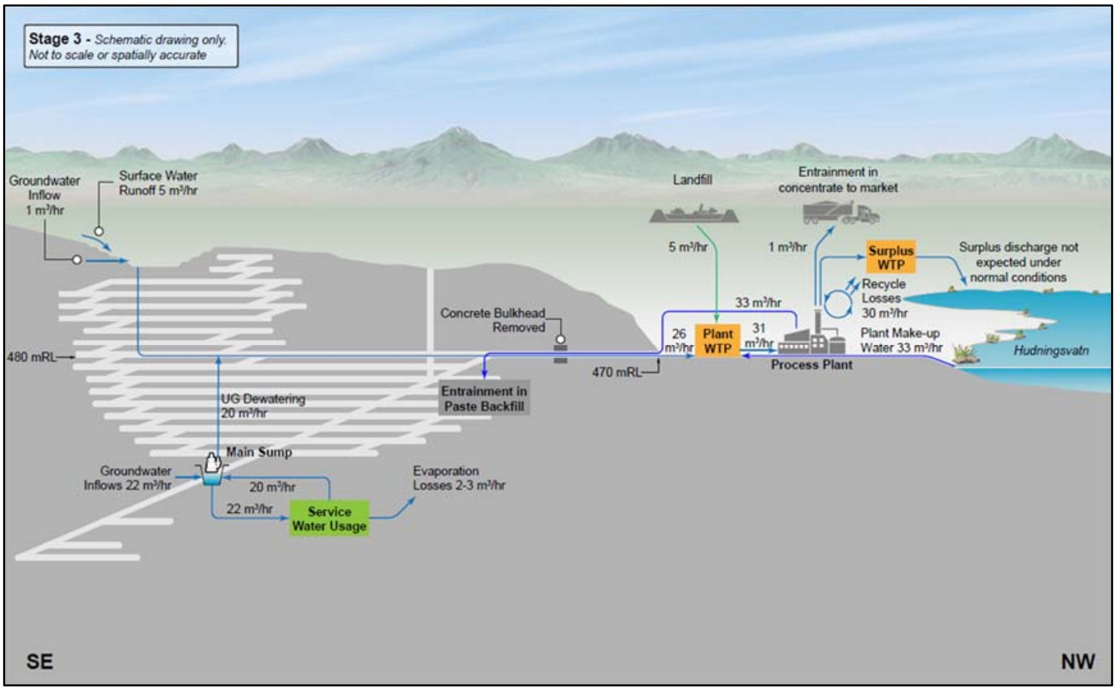


Figure 15-10: Stage 3 – Schematic Flowsheet

Key changes to the water balance during Stage 3 are as follows:

- Flows out of the underground mine will be significantly reduced (20 m^3/hr) due to no dewatering of flooded workings.
- The introduction of a paste backfill operation to replace the temporary dry stack tailings operation, with a net water loss to entrainment in emplaced backfill of 33 m^3/hr. The backfill process will comprise pumping of a tailings slurry along the access decline to a backfill plant located at the edge of the underground mine. At the backfill plant, the tailings will be filtered/dewatered to make a paste backfill, and the excess water recycled back to the plant. The paste backfill will be delivered to mined out areas through a combination of underground reticulation piping and mobile agitator trucks, as required.
- As a result of significantly reduced outflows from the underground mine in comparison to the previous stages, it is not expected that any surplus water will be required to be discharged to the Hudningsvatn lake. However, the surplus water treatment plant would be left in place as a contingency measure to retain the option to treat and discharge any unforeseen surplus flows.

15.12.5 Water treatment

In general, the proposed surplus water discharge to Lake Huddingsvatn should not impact the AA-EQS limits stated in the Norwegian Regulations on Frameworks For Water Management (Ministry of Climate and Environment, Ministry of Petroleum and Energy, 2007).

The Huddingsvatn has already been impacted by poor quality runoff with maximum zinc and cadmium concentrations exceeding, and copper and nickel close to, their relevant AA-EQS values. Effluent water quality requirements have not yet been defined but will need to consider the current water quality in the lake.

Although no geochemical analysis or modelling has been undertaken to date, it is likely dewatering water will contain elevated metals and the water treatment plant has been designed with this in mind. However, due to the limited information on the likely dewatering water quality, the chosen treatment technology should be capable of treating a wide variety of contaminants of concern.

Two water treatment plants will be required, namely a water treatment plant to treat water to a suitable quality for use in the process plant circuit and a surplus water treatment plant.

All water from the mine will be fed into a sedimentation pond at the industrial area with potential additional treatment required prior to feeding into the process water circuit. Surplus water to be discharged to Lake Huddingsvatn after the process water circuit will require further treatment.

This proposed water treatment approach focusses on the surplus water treatment requirements as the plant water treatment is expected to be relatively straightforward and can be designed later in the design process. The high density sludge ("HDS") process is proposed as the optimal selection for the Project requirements based on the available data for flowrate, water quality, design life, process reliability and metals treatability perspective. The HDS process involves precipitating out metals from solution using an alkali, commonly lime or sodium hydroxide. The final selection of reagents depends on the influent chemistry, influent flowrates, and local cost of reagents.

15.12.6 Mine dewatering assessment

The dewatering system has been assessed to provide an early-stage approach and preliminary estimate of cost using the high-level assumptions shown in Table 15-15. Future exploration will need to collect additional geotechnical and hydrogeological data which will be used to refine the approach to dewatering and water management in future detailed studies.

Further investigation and test work is required to establish the most appropriate dewatering system design; however, this study broadly outlines a practical solution based on the known parameters and comparison with similar operating mines. The pumped mine water will be contact water and will likely require some form of water treatment prior to discharge.

Table 15-15: Mine Dewatering Assumptions

Pumping Station or Equipment	Units	Value
Pumping station duty capacity	L/s	20
Pumping station standby capacity	L/s	20
Maintenance costs	USD per L	0.00006
Maintenance costs per station @ 20 L/s	USD per year	37,843
Challenge WT104 20L/s @ 200m	USD	100,000
Total cost per pumping station incl. build	USD	260,000
Pumping Station or Equipment	**Units**	**Unit Capital Cost**
Primary Pump Station	USD	260,000
Secondary Pumps	USD	5,000

Pumping Head (m)	Primary Pump Station (each)	Secondary Pumps (each)	Annual Operating Cost Primary (USD/annum)	Annual Operating Cost Secondary (USD/annum)
-	1	-	74,509	-
100	1	10	74,509	50,000
200	1	10	74,509	50,000
300	2	10	111,175	50,000
400	2	10	111,175	50,000
500	3	10	147,841	50,000
600	3	10	147,841	50,000
700	4	10	184,507	50,000
800	4	10	184,507	50,000
900	5	10	221,172	50,000
1,000	5	10	221,172	50,000

15.13 Underground Mine Infrastructure

15.13.1 Introduction

The historical Joma mine is currently flooded and has been on care and maintenance since closing in 1998. Future detailed mine planning and studies will need to assess the dewatering and rehabilitation requirements as well as the existing infrastructure to incorporate the new infrastructure required to re-start the operations considering (but not limited to):

- dewater and rehabilitate existing access(s);
- underground materials handling;
- ventilation shafts;
- backfill facilities;
- dewatering system;
- service and fresh water supply; and
- other underground facilities for maintenance, explosive storage, lunch rooms.

15.13.2 Mine electrical

The electrical distribution system will utilise a High Voltage ("HV") network. Power will be reticulated by ring main units installed in or adjacent to mining substations. From here Low Voltage ("LV") will be reticulated to Distribution Boards and then to Gate-End boxes for use by electrical equipment. The initial supply will be delivered to the underground via the adit from the main transformer in the process building. This will then be reticulated to underground via the internal ramps. The maximum power demand for the underground mine is estimated to be in the order of 2.0 MVA.

Power will be supplied to the mine portal area at a supply voltage of HV. From the portal, power will initially be delivered along the adit for development at LV for rehabilitation works. When development has progressed far enough to reach the first substation location underground, an HV line will be installed.

Power will be reticulated by armoured HV cable suspended from the development backs to substations where it will be stepped down to LV and distributed to working areas for use by mining equipment.

The maximum LV run is approximately 450 m and this determines the requirements for substation relocations.

15.13.3 Mine communications

Communications for the mine are assumed to be a radio-based communications system. This system is installed in stages and extends with progress of the main decline development and will provide all voice and data communications within the mine.

15.14 Mine Ventilation

15.14.1 Introduction

The primary underground vent network includes the main adit intake with the primary exhaust through existing exhaust raises located throughout the existing workings as well as the planned raise at Joma South.

The PEA assumes the primary vent layout and system, and proposes changes where relevant, and makes recommendations on the primary and secondary fan requirements to re-operate the mine practically and efficiently.

15.14.2 Ventilation design approach

The approach taken for the ventilation design comprised:

- Review the total vent requirements for the proposed underground fleet.
- Determine the secondary vent requirements, including fan and ducting size and type, development size and required flow rates.
- Size and cost primary and secondary fans requirements, ducting and associated development.
- Ventilation Requirements.
- The ventilation requirements are estimated from first principles and the equipment list provided indicates a total airflow of 150 m³/s.

The proposed mine primary ventilation system is shown in Figure 15-11.

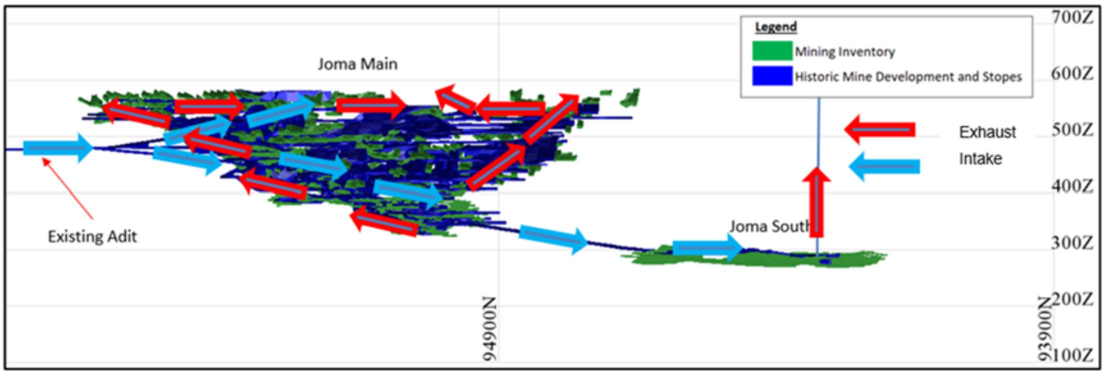


Figure 15-11: Primary Vent Layout

15.14.3 Connection of primary vent circuit for the mine

Exhaust fans are to be connected to the existing development to surface and vent stoppings used to direct the vent flow in the main mine working areas area to where it is required. The new exhaust rise for Joma South will have a primary fan mounted on it of the required size.

15.14.4 Ramp requirements

To minimise the required secondary vent for advancing the ramp and to allow development rehabilitation to progress at a faster rate, it is recommended that the internal exhaust raise be developed concurrently with the decline.

The decline will require secondary ventilation ahead of the establishment of the primary ventilation system and must provide enough airflow to clear diesel and noxious fumes from the decline face in a timely fashion. It is estimated that the minimum requirement for the delivery of sufficient airflow quantity to operate a truck and a loader is 26 m³/s.

The fan consider for this task is estimated at 180 kW (twin 90 kW fans in series) with 1,400 mm diameter ducting.

The number of fans and the associated costs have been modelled within the economic evaluation.

15.14.5 Secondary ventilation requirements

Secondary ventilation is conducted in both the footwall ramps and ore drives through the use of 110 kW electric powered fans and 1,200 mm PVC vent ducting. At every junction to a working level, fresh intake air from the ramp is force ventilated into the working level. This will be the initial requirement until the drive network breaks through into the exhaust raises at the end of the stope panel.

16 RECOVERY METHODS

The PEA assumes that a single beneficiation plant will be built on the site of the previous Joma concentrator. The plant will have a capacity of 750 ktpa. Due to differing head grades and historical metallurgical responses, the ores from Joma, Stekenjokk and Levi mines will be processed in individual campaigns. In addition, as the Stekenjokk and Levi mines will only operate during the winter season, ore from all three mines will be separately stockpiled ahead of the concentrator.

The flowsheet will consist of crushing and grinding ahead of flotation to produce separate concentrates. Joma ore will produce copper and zinc concentrates, and Stekenjokk and Levi ore will produce copper, zinc, and lead concentrates. Precious metals (gold and silver) will report to the different concentrates according to their specific metallurgical responses.

The flotation tailings will be processed through a precious-metals leach circuit for additional gold and silver recovery to doré.

The PEA LoM mill feed annual schedule by ore tonnage by source, and feed grade is shown in Figure 16-1.

Concentrate grades and metal recoveries used in the PEA are shown in the Table 16-1. These figures are based on historical production data.

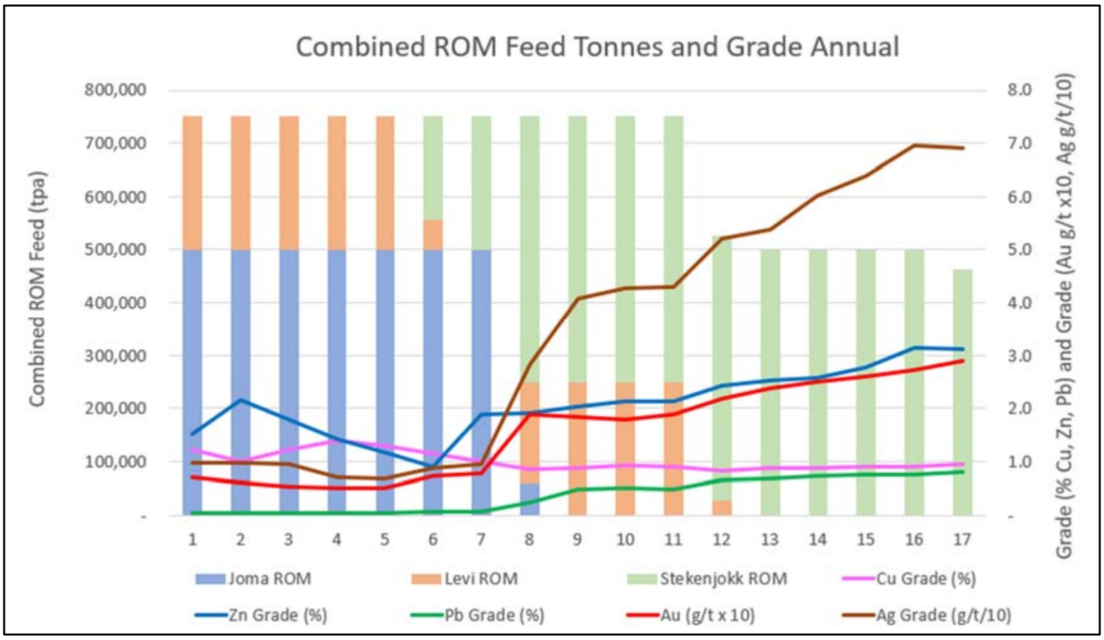


Figure 16-1: Annual combined mining schedule

Table 16-1: Processing recoveries and concentrate grades

Mineral Processing		Units	Joma ROM	Stekenjokk ROM	Levi ROM
Copper Concentrate					
Process Recoveries					
	Cu	%	87%	90%	90%
	Zn	%	5%	5%	5%
	Au	%	29%	32%	32%
	Ag	%	38%	25%	25%
	Concentrate Grade	% Cu	24%	23%	23%
Zinc Concentrate					
Process Recoveries					
	Zn	%	76%	75%	75%
	Concentrate Grade	% Zn	52%	53%	53%
Lead Concentrate					
Process Recoveries					
	Pb	%		70%	70%
	Concentrate Grade	% Pb		60%	60%
Precious Metals					
	Au	%	40%	40%	40%
	Ag	%	31%	31%	31%
Dore Precious Metal Grade		%	90%	90%	90%
Total Metal Recovery					
	Cu	%	87%	90%	90%
	Zn	%	81%	80%	80%
	Pb	%	0%	70%	70%
	Au	%	69%	72%	72%
	Ag	%	69%	56%	56%

17 PROJECT INFRASTRUCTURE

The historical Joma mine has been on care and maintenance since closing in 1998 and SRK understands that the project site has a significant amount of surface infrastructure (Figure 17-1) including buildings, roads, power and water supply. Future detailed mine planning and studies will need to assess the existing infrastructure to incorporate the new infrastructure required to re-start the operations considering (but not limited to):

- Site Layout, Access and Logistics.
- Surface Mine Infrastructure:
  - mineral processing facilities;
  - tailings management facilities;
  - water supply and treatment facilities;
  - concentrate handling infrastructure; and
  - buildings (stores, offices, change house, etc) and maintenance workshops.
- Underground Mine Infrastructure:
  - dewater and rehabilitate existing access(s);
  - underground materials handling;
  - ventilation shafts;
  - backfill facilities;
  - dewatering system; and
  - other underground facilities for maintenance, explosive storage, lunch rooms.

Figure 17-1: Existing surface infrastructure at Joma

18 MARKET STUDIES AND CONTRACTS

No market studies were undertaken. The metal price assumptions are based on recent CMF pricing. Recoveries and grades for copper, zinc, and lead concentrates (including gold and silver, where applicable) assumed in this study are based on those achieved at the historical Joma and Stekenjokk mines. Payability terms for concentrates and precious metals are based on recent subscription updates from recognised sources.

There are no contracts in place or under negotiation relevant to the sale of concentrate from the Joma or Stekenjokk-Levi Project.

19 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section highlights the potential salient issues and material risks identified for the environmental, social and governance ("ESG") aspects of the Project. The main source of information was environmental studies produced for the zoning plan produced by Multiconsult. This is supplemented with subsequent information primarily from SRK's site visit in September 2021 and information available in the public domain. SRK's comments on the status of these issues and risks is given along with an indication of whether they impact Reasonable Prospects for Eventual Economic Extraction ("RPEEE") for reporting Mineral Resources, are considered material to the Project and how they are planned to be managed.

19.1 Permitting Status, Land and Water Access Rights

The permitting status was discussed in Section 3.5. Currently, the minerals rights are in place and the zoning plan (including ESIA) has been submitted and is now being processed by the municipality and relevant authorities.

Land access rights along with water use and discharge rights with must be obtained before construction commences. This requires an operating permit along with discharge permit as described in Table 3-3.

19.2 Governance Standards

Bluelake Mineral is a publicly listed entity on the NGM Nordic SME. This exchange is not a regulated market and as such has limited requirements in terms of governance and required filings.

Bluelake Mineral is a member of SveMin (Swedish Mining Association) and follows the industry organisation's ethical rules including environmental protection policy[14].

19.3 Approaches to Environmental, Health and Safety and Social Management

The Company is yet to conduct active exploration in the Project area and does not currently have a technical team on the ground. On completion of the PEA, and assuming funding is available, the Company aims to create a team to run the Project including the MKB2 and PFS studies along with active stakeholder engagement.

[14] SweMin position statements: Statements arkiv - Svemin

With no field work being undertaken, Vilhelmina does not currently have an environmental management system ("EMS") or a health and safety management system in place, nor are associated management plans in place. SRK understands that during the next stage of development and prior to any teams mobilising to site, the necessary environment, waste, water, health and safety, stakeholder engagement and energy efficiency programmes would be developed. Construction, operational and closure management requirements would be developed based on the outcome of future development studies and associated ESIA's.

19.4 Environmental and Social Studies

An ESIA is underway as of Q1 2022 with a number of baseline studies and impact assessments on specific topics completed to date and compiled into the zoning plan required for the Røyrvik municipality (Multiconsult Norge AS, 2021a).

A series of impact assessment studies have been conducted as part of the detailed zoning plan produced by Multiconsult. Studies were completed on water quality, air quality, transport and traffic, biodiversity and aquatic environment, landscape, Sámi interests (including reindeer husbandry), cultural monuments and cultural environment, outdoor life, social conditions, public health, children and young people's upbringing.

These topics have also been assessed in a risk and vulnerability analysis (Norwegian: *risiko- og sårbarhetsanalyse*, "ROS"). The risk analysis and impact studies have been summarised in the main Zoning Plan report; this represents an ESIA in international terms.

As part of the Zoning Plan, the following reports have been produced:

- Water:
  - Multiconsult (October 2020) – aquatic environment biological condition report for water area around Joma Mines (Multiconsult Norge AS, 2020a)
  - Multiconsult (December 2020) – status of water quality in watercourses at Joma Mines (Multiconsult Norge AS, 2020b).
  - Golder Associates AB (April 2021) – potential water purification systems (Golder Associates AB, 2021a).
  - Multiconsult (May 2021) – assessment of water supply (Multiconsult Norge AS, 2021b).
  - Multiconsult (May 2021) – flood risk assessment (Multiconsult Norge AS, 2021c).
  - Multiconsult (January 2022) – Assessment of water quality.
- Air:
  - Multiconsult (March 2021) – air quality assessment – dust (Multiconsult Norge AS, 2021d)
  - Multiconsult (March 2021) – air quality assessment – noise (Multiconsult Norge AS, 2020c).
- Biodiversity and ecology
  - Multiconsult in May 2021 - natural environment (baseline) and impact assessment of the proposed mining operation (Multiconsult Norge AS, 2021e).

- Social and community:
  - Multiconsult (November 2020) - social and community setting, and the impact assessment of the proposed mining operation (Multiconsult Norge AS, 2020f).
- Infrastructure:
  - Multiconsult (December 2020) – transport and port impact assessment (Multiconsult Norge AS, 2020d).
  - Multiconsult (December 2020) – road quality impact assessment (Multiconsult Norge AS, 2020e).
- Cultural heritage, landscape and outdoor recreation:
  - Multiconsult (April 2021) - cultural heritage, landscape and outdoor recreation and the impact assessment of the proposed mining operation (Multiconsult Norge AS, 2021f).
- Land use:
  - Multiconsult (May 2021) – reindeer husbandry impact assessment (Multiconsult Norge AS, 2021g).
  - Multiconsult (April 2021) – outdoor industry impact assessment (Multiconsult Norge AS, 2021h).

19.5 Stakeholder Engagement

Vilhelmina is in dialogue with a number of key stakeholders, including the local authorities, local communities, investors and partners, and will continue to do so as the Project progresses. No formal stakeholder engagement plan is currently in place and formal records of engagements are not kept. As noted below, stakeholder engagement is a required part of future ESIA processes.

During the zoning plan preparation, stakeholder engagement has been conducted with the main local stakeholders:

- Trøndelag county;
- Røyrvik municipality;
- Sámi parliament (Norwegian: *Sametinget*);
- Norwegian Water Resources and Energy Directorate (Norwegian: *Norges vassdrags- og energidirektorat,* “NVE”);
- Norwegian Directorate for Minerals Management (Norwegian: *Direktoratet for mineralforvaltning,* “DMF”);
- Norwegian road authority (Norwegian: *Statens vegvesen*)
- Norwegian forest authority (Norwegian: *Statsskog*);
- Joma Gruver management and employees;
- Landowners (landplots 73/9, 73/81, 73/82, 73/83); and
- Other concerned local citizens.

Stakeholder meetings have been held in Røyrvik 13/08/2019, 09/03/2021 and 27/05/2021. Residents in the immediate area have also been invited to these meetings. No affected state or regional authorities have notified objections to the plan, but comments were received from 7 public authorities noted above and a private individual as of the time of writing the zoning plan in May 2021. Clear and open dialogue has been maintained throughout the preparation of the zoning plan according to Multiconsult in their stakeholder engagement summary report (Multiconsult Norge AS, 2018b) and zoning plan document (Multiconsult Norge AS, 2021a).

19.6 Opportunities and Benefits

SRK has identified a number of key opportunities and benefits the Project could have on various stakeholders, as shown below.

19.6.1 Socio-economic benefits

The following socio-economic benefits are expected to arise from the execution of the project:

- Employment created directly at the mine (direct employment):
  - Population and the labour market have demonstrated a steep downward trend during recent decades. The Company assumed as part of the zoning plan that the planned operations could result in approximately 115 direct employment opportunities at full production and including contractors and sub-contractors.
  - Assessment calculated base case relocation of 58 employees will trigger a settlement potential of 130 people in the municipality (between 65 and 195 for lower and upper cases, respectively).
- Employment created in the local economy (indirect employment):
  - Additional indirect employment opportunities will be created via subcontractors and service industries in the surrounding communities. This in turn will lead to increased local economic activity and increased taxes and revenue for the public sector.
  - Base case scenario from zoning plan showed the potential for revenue growth is calculated at around NOK 30 m, which corresponds to 6 to 8 new jobs (between three and 11 for lower and upper cases, respectively). In addition, further jobs in education and healthcare would be required to cater for the increased number of children.
- Local economic activity increase.
- Taxes and other revenue for the public sector increase:
  - infrastructure such as roads and energy supply infrastructure improved; and
  - municipal services such as education, health care and other public services improved.
- Improved international exposure of the region for other investors, including other mining companies.
- Demographic and other social parameters will improve through the movement of workers and their families into the area.
- Availability of goods, services and operations in the region improve.
- Tourism (post-mining) may benefit from improved and increased housing and infrastructure in tourist centres.

19.6.2 Industrial zone

The deposit was mined by between 1972 and 1988 and the Joma area remains an industrial zone. This includes the tailings facility on the lake shore and mining/processing buildings. This means the area has already been significantly modified for industrial purposes. This will be taken into consideration during the discharge/pollution permitting phase of the Project.

19.6.3 Decarbonisation

Decarbonisation is the reduction of carbon dioxide (CO_2) emissions (and other contributing greenhouses gasses ("GHG") such as methane and nitrous oxide) through changes in design to avoid emissions and the use of low-emission technology, achieving a lower output of GHG into the atmosphere. To meet expected national and global expectations regarding GHG emissions, new projects will need to show how their designs have considered decarbonisation of the construction and operations processes. Best available technology and methodologies for decarbonisation are advancing rapidly.

Mining activities consume significant quantities of fossil-fuels for transport, processing and power. In Sweden, due to the dominance of hydroelectric power, there is a lower reliance on fossil fuels from the grid compared to most countries globally. This allows the Project to have a relatively low carbon footprint if electrification of equipment is considered. Currently, electrification of large-scale mining vehicles is in the development and research phase but is developing quickly. Electrification will undoubtedly have a key role in reducing the carbon footprint of the mining operation when electric vehicles become available.

Three categories of emissions require assessment and strategies for reduction:

- Scope 1: direct emissions by the Company from processes on-site and activities controlled by the Company; for example, fuel usage of vehicles and generators along with other sources of emissions source as explosives.
- Scope 2: indirect emissions required for the operation; for example, electricity or heat generation purchased from the grid.
- Scope 3: all other emissions related to the Company's activities, services and products within the entire supply chain; such as downstream (customers, sub-contractors) and upstream (consumables, equipment providers and manufacturers). These are harder to quantify, but these can be further investigated during the PFS by requesting equipment suppliers to provide GHG emission information as part of their tender processes.

As with the actions on reducing environmental and social impacts, there is a clear mitigation hierarchy as to how to action change, as stated below:

- Avoid: this is the highest priority and is considered the best strategy.
- Mitigate: if an impact cannot be avoided, reduce the impact through mitigation strategies.
- Compensate (or offset): if an impact cannot be avoided or mitigated to the point of being negligible, the last strategy is compensating or offsetting for the impact.

Table 19-1 describes a number of possible approaches (as envisaged now) to decarbonising the Project; this list is not exhaustive and is intended to provide a brief overview of some areas that can be considered during the next phase of project development. The options will have capital and operating cost implications, which SRK is currently unable to assess but can be addressed in more detail as part of the PFS.

In addition to the national and EU requirements to lower GHG emissions to meet this target, the Company has the vision of constructing a low-impact Project. As stated on the Bluelake Minerals website, the Company strives "*to conduct a maximum resource and environmentally efficient operation during the period up to the mine start, during mining and after mining operations have ended*".

Table 19-1: Strategies for decarbonisation

Area	Strategy*	Comment
Power Supply	Green Tariff (S2)	Northern Norway has an abundance of renewable energy sources and a "green tariff" will be sought.
	Power demand reduction (S1/S2)	The aim will be to utilise the most effective technology to reduce power consumption.
	Back-up power generation (S1)	Traditionally these would be diesel generators, but biodiesel could be used or a battery system (a battery system has higher upfront capital requirements).
	Energy trade-offs (S1/S2)	Across the project as part of the PFS there will need to be trade-off studies to identify the lowest emissions options for various functions and processes (e.g., inclusion of conveyors versus trucks). There will also be capital and operating cost implications. In this PEA, road-haulage is assumed – this does not impact power supply although charging of electric trucks will add additional burden to the power supply.
	Site specific renewables (S1)	The installation of wind turbines to provide energy to ancillary infrastructure can be explored.
Heating and hot water	Alternative fuels (S1)	Significant amounts of heating and hot water will be required. Alternatives include biomass fuel, electrical power (under a green tariff) etc.
Construction	Alternative fuelled construction equipment (S1)	Battery electric / hydrogen fuel cell powered construction equipment is being developed and may be available for construction.
	Low carbon building materials (S1)	Sweden is a world leader in the advancing "green steel" production industry (replacing coking coal, traditionally needed for steel making, with fossil-free electricity and hydrogen). Use of fossil-free steel and low carbon concrete ('green cement') will need to be explored in more detail.
	Re-use of site won materials (S1)	Reduce, re-use, recycle will be a key driver in the design work to optimise costs, reduce wastage, optimise footprints.
	Low-Carbon Building Materials (S1)	There are many initiatives into low carbon building materials including use of building materials made from recycled materials.
	Repurposing construction for permanent infrastructure (S1)	For example, construction office being repurposed to operations offices; this will reduce capital cost and wastage.
Transportation (Product)	Alternative fuels (S1)	Sweden is at the forefront of battery electric vehicle technology and is reported to have a circa 35% penetration into the vehicle market. The option for battery electric trucks is considered in the report. Other options include hydrogen fuel cell or biodiesel. In recent years, northern Scandinavia has transformed into a region of innovation and growth and green hydrogen and green steel is a key part of this.
	Maximise export by rail (S1)	Rail transport is understood to in general reduce emissions compared to road haulage (diesel trucks). The Project will where possible utilise the rail system for export.
Supply Chain	Maximise importation by rail (S1)	The Project will utilise railway where possible instead of road transport.
	Load optimisation at railhead (S1)	Use of the export trucks for backhaul of consumables from the railhead will optimise emissions
	Low-emission suppliers (S3)	Influence other companies in the supply chain to reduce emissions and preferentially selecting suppliers/customers on their own emission reduction strategies.
Offsetting	Norway carbon tax	Norway has separate carbon taxation scheme[15]. The tax is "applies to GHG emissions from all sectors with some exemptions". As of 2020, a price of NOK 544/tonne CO_2 is recommended (USD 62/t using NOK 8.8:1 USD). This is directly applicable to industries and individuals burning fossil fuels and is therefore included in the TEM for the non-electric scenarios as part of this PEA.

**S1, S2 and S3 relate to Scope 1, Scope 2 and Scope 3.*

[15]Norway carbon tax: Carbon Pricing Dashboard | Up-to-date overview of carbon pricing initiatives (worldbank.org)

19.6.4 Adaptation

Along with reduction in impacts associated with the Project, climate change is already modifying local climate conditions and will continue to do so for the foreseeable future. As a result, it is important for a major infrastructure project, such as a mine, to embed climate change adaptation into the project design. Predictions on future changes to climate are provided in Section 4.2.5.

This changing climate may require adaptations in design of the Project, particularly for assuring long term stability of remaining infrastructure post-operation, such as the Waste Rock Storage Facility ("WRSF") and Tailings Management Facility ("TMF"). This includes considering the impact of elevated temperatures on the duration of ice and snow cover along with increased quantity and pattern of precipitation that may require management.

19.7 Salient Issues and Material Risks

The salient environmental and social issues along with material risks to the Project identified through a review of the zoning plan and associated ESIA studies and other available data are summarized below, with the exception of mine closure and rehabilitation which is discussed in Section 19.8.

Salient issues are described as issues that could potentially cause harm to the people, the environment and flora and fauna. Material risks are considered as those issues that may cause financial or reputational loss as a result.

The below summarises SRK's understanding of the salient issues and potential material risks for the Project along with some preliminary thoughts on potential management solutions. It is recommended they provide the main focus of the further E&S studies for the discharge permit to understand in detail and develop management processes.

19.7.1 Water management

The Project is within a complex hydrological region with numerous lakes, rivers, streams, and swamps present. The historical mine is completely flooded and the water overflows into the Orasselva river and ultimately Østre Hudningsvatnet lake. It is noted by previous studies, for example (Sjobakk, et al., 1997), that the water bodies of Orvatnet and Orvasselva, Hudningsvatnet and Hudningsvassdraget river have been negatively impacted by previous mining operations (heavy metal contamination); however, it is also noted that significant measures have been taken to restore the watercourse nature.

A summary of the main conclusions relating to potential impacts on water from the Zoning Plan studies is provided below:

- Water quality:
  - Entire former underground mine system (including ventilation shafts) and open pit are filled with water that flows into the Orvasselva stream (then into Hudningsvatnet lake).
  - Western part of the Østre Hudningsvatnet lake (to west of dam/causeway, see Figure 4-5) was used as a TMF for waste materials during previous mining operations and was then heavily polluted, especially by suspended matter. During the mining operation, measures were taken to stop pollution of the surrounding watercourses by cutting off flow between eastern Hudningsvatnet and the Orvasselva and Renselelva rivers and from the western part of the lake (Vestre Hudningsvatnet). As of December 2021, the lakes are connected.
  - Water quality information was provided in Section 4.2.2.
- Water purification:
  - Total amount of water in the mine is 3 Mm^3 with 1 Mm^3 in the open pit and in the upper parts of the underground mine which can be emptied without pumping and 2 Mm^3 in the underground mine that needs to be pumped to the water treatment plant.
  - Water purification capacity of 1.5 Mm^3 per year during the emptying phase is envisaged for the mine water and also running water and contaminated surface water from waste material.
  - Conventional pH adjustment with slaked lime and purification by flocculation / precipitation (High Density Sludge, "HDS") could be considered.
- Water supply:
  - Water for the processing plant and mine will be abstracted from Østre Hudningsvatnet lake or Orvasselva river. The Orvasselva has a catchment area of 17 km^2 and an annual water flow of 20.52 Mm^3.
  - Based on water consumption in the 1970s, it is estimated that water consumption can be up to 2 Mm^3 a year. Processing plant will also for significant proportion to be recycled and reused; therefore, annual water intake is therefore significantly less than 2 Mm^3. Multiconsult advises that water from the dewatering process can be used in the processing plant when operational.
  - Section 10 of the Water Resources Act (2000) states that normal low-water flow must be returned after extraction. If more water is extracted, the withdrawal is subject to a separate abstraction permit.
  - Sewage and wastewater must be treated by the Company prior to release into the lake/river. There is no public sewage treatment system in the vicinity of the Project.
  - Drinking water can be taken from a groundwater well that is drilled in the loose material deposits near the Orvasselva river.

- Flood risk assessment:
  - Flood risk calculation performed for 9 different points to calculate the water level in Hudningsvatnet and to find a solution for flood diversion for the TMF.
  - Norwegian Water Resources and Energy Directorate (Norwegian: *Noregs vassdrags- og energidirektorat*, "NVE") climate projections show that no increase in water flow is expected until the year 2100 for Renselelva, Hudningsvatnet and Hudningselva, while for Orvasselva and the small streams a climate surcharge of 40% is recommended due to increased precipitation. This calculation has a high level of uncertainty due to the lack of available data.
  - For the tailings deposition area, two alternatives have been considered for flood diversion. Alternative 1 leads the water through two different culverts to Hudningsvatnet, while alternative 2 leads the streams in a ditch / canal to the west before they are led through a larger culvert through the landfill and out into Hudningsvatnet. Both solutions are considered appropriate by Multiconsult to mitigate flood risk.

19.7.2 Transport emissions

Although the plan has yet to be finalized, it is likely the concentrate will be trucked to the port at Namsos. This will be mainly on public roads and will cause disruption to existing traffic along with create emissions such as dust, noise and vibrations for local residents and flora/fauna.

Detailed studies will be conducted as part of the discharge and operating permit applications to investigate these issues in further detail.

A summary of the main conclusions relating to potential impacts from emissions from the Zoning Plan studies is provided below:

- Dust:
  - Dust concentrations will be highest close to construction machinery, crushers and sorting plants and decrease with distance to dusty activity. Multiconsult considers dust concentrations will be far below hazardous concentrations for residents and people who use the area for hiking and recreation.
  - During the summer, it will be natural to use water as a binder to mitigate dust. During periods of dry weather, it may be relevant to water piles before loading. In winter, there may be challenges in using water as dust suppression due to the risk of ice formation.
  - During periods of prolonged dry weather and high winds, routines will need to be established for irrigation and / or cleaning of the road surface.
  - For any potential open pit operation, a vegetation screen around the outer boundary of the open pit is conceptualised.

- Noise:
  - Four main areas of noise have been identified: processing plant, open pit (periodic operation), ventilation shafts and road traffic.
  - Three categories of noise zones are required to be defined according to Norwegian noise guidelines in spatial planning, T-1442[16]:
    - Red zone: closest to the noise source, indicates an area that is not suitable for noise-sensitive uses, and the establishment of new noise-sensitive buildings must be avoided.
    - Yellow zone: where noise-sensitive buildings can be erected if mitigating measures provide satisfactory noise conditions.
    - White zone: no restrictions on noise are required.
  - Assessment concluded:
    - No residences near the plant building will have noise levels above the limit stated in T-1442.
    - One cabin will have noise levels above the limit value when drilling in the open pit, and an approximate area of 4500 km^2 will have noise above the recommended level for recreational areas according to T-1442. Multiconsult recommended limiting the hours of drilling per day and on which days drilling should be allowed.
    - Noise from the ventilation shafts can be significantly reduced with good sound-reduction measures on the fans. Multiconsult recommended to build a small shelter on top of the fresh air shaft outlet with sound-absorbing louvers.
    - The yellow noise zone will increase due to increased traffic to and from the mine with a number of houses along road Fv.7024 included in the yellow zone. Although, the traffic is quite low on the road, Multiconsult concluded that measures may need to be implemented after consultation with residents.

19.7.3 Conservation importance of the area

As stated in Section 4.2.3, the project footprint will impact on areas of high natural value and biodiversity. This includes the protected Orklumpen Vest Forest to the north of the mining area, the large number of wading birds in the wetland around Orasselva and Orvatnet along with breeding ground for protected species such as the willow grouse and bean goose. It may also interrupt migratory routes for moose. The TMF would displace natural high value birch forest and encroach upon other land users in the adjacent land plots.

Detailed studies will be conducted as part of the discharge and operating permit applications to investigate these issues in further detail. In particular, integrating biodiversity gain into the engineering design.

[16] *Noise regulations (Retningslinje for behandling av støy i arealplanlegging):* 540393.DOCX (regjeringen.no)

A summary of the main conclusions relating to potential impacts on biodiversity and nature from the Zoning Plan studies is provided below:

- Aquatic environment particularly of Orvasselva, Orvatnet and Østre Hudningsvatnet has been negatively impacted by previous mining operation with contamination, particularly by cadmium.
- Multiconsult concluded that the condition of Orvasselva and Orvatnet can be improved by starting up new mining operations as the heavy metal impact on the watercourse will be less due to cutting off discharge from shaft (Norwegian: *Stigort*) number 4 following dewatering.
- Mining using open pit methodology will have a larger negative impact compared to underground. This is particularly for one important habitat type (referred to as Elveør on the western riverbank of Orvasselva adjacent to the open pit), important bird areas including the bogs of Mitidalen and forest ecosystems will also be degraded. Mining using underground methods only is considered more preferable in terms of limiting environmental degradation.
- Planned TMF at the industrial site is in conflict with an important natural habitat for rich forest types including a small area of 'perennial spruce forest' included in the Norwegian red list for habitats. It is envisaged that the streams flowing through the industrial area will be enclosed in culverts during the mining period.
- Vestre Hudningsvatnet contains a population of bean goose (*Anser fabalis*) between April to May. It is considered as a 'vulnerable species' according to Norwegian red list for species and classified as Least Concern ("LC") according to the IUCN Red List. Increased traffic through the Hudningsdalen valley in the spring may have a negatively impact on the preferred habitats for the bean goose. Multiconsult suggest compensating measures, such as speed reduction, are introduced.
- Sub-areas with medium to high value have been registered in and around the planning area. The open pit considered by Muticonsult to provide the most influential negative impact. Formation of TMF and adaptation to existing terrain, as well as revegetation of area are considered by Multiconsult to be the measures that will have the most positive impact.

19.7.4 Land use

The land surrounding the Project is used for a number of different activities. The most significant is the Sámi reindeer herding community.

A summary of the main conclusions relating to potential impacts on land use from the Zoning Plan studies is provided below:

- Reindeer husbandry and Sámi culture:

  - Impact assessment completed using Handbook v712 guidance and Norwegian Directorate of Agriculture and Food (Norwegian: *Landbruksdirektoratet*) guide for impact assessments for the reindeer husbandry industry pursuant to the Planning and Building Act (2008)[17].
  - Project within Tjåehkere Sijte (Østre Namdal) reindeer district with the operating group of Joma (Dærga). There has been regular communication between Joma Gruver, Multiconsult and Tjåehkere Sijte throughout the impact assessment.
  - Project area is used as a grazing area from April to December and is also an important area for spring and autumn migration. The mine area is used as a calving area and is thus a special value area for Tjåhkere Sijte.
  - Impact assessment by Multiconsult concluded that open pit mining would have the greatest negative consequences for reindeer husbandry, particularly if the open pit reaches the maximum possible boundary analysed in the study. It also concluded that any industrial activity would have a negative effect on reindeer husbandry, primarily due to noise and with respect to autumn grazing in the rich birch forests.
- Cultural heritage:
  - No automatically protected Sami cultural monuments or archaeological cultural monuments were identified in the Project area.
  - Four sub-areas outside but adjacent to the Project were identified as of cultural significance and protected under the Cultural Heritage Act (1978):
    - Finnhushaugan - Sámi settlement 1 km southwest of planned TMF.
    - Storfloen - stone age settlement on northern shore of Østre Hudningsvatnet, 1 km northwest of industrial area.
    - Nygård - SEFRAK[18] buildings in Renselelva valley close to Østre Hudningsvatnet, 1.5 km north of industrial area.
    - Kjærnes - SEFRAK buildings in Renselelva valley close to Østre Hudningsvatnet, 2.5 km northwest of industrial area.
  - TMF considered by Muticonsult to provide the most influential negative impact on cultural monument of Finnhushaugan. No control measures have been recommended by Multiconsult.

[17] *Guide for impact assessments for the reindeer husbandry: REINDRIFT KONSEKVENSUTREDNINGER*
[18] *Sekretariatet for Registrering av Faste Kulturminne i Noreg (SEFRAK).*

- Outdoor recreation:
  - Outdoor recreation is directly affected by interventions in hiking areas, local hiking terrain, beach zones / watercourses, and indirectly by noise resulting in a poorer quality and experience value as a hiking area.
  - Specific to land plot 73/9/Røyrvik (see Figure 3-4) that surrounds the mine and industrial areas. Landowner was engaged during the assessment.
  - Impact of operations on hunting, fishing and outdoor life were assessed.
  - Multiconsult concluded the largest impacts would be possible loss of experience value (noise, visible encroachment on nature, visual impact), lost income and disadvantages due to changed access road to the mountain. Impact of open pit was considered to be the most negative avoidable aspect.
  - Multiconsult suggested the following possible mitigation measures: rerouting access road, construction of new car park, noise shielding of ventilation shafts, close dialogue with landowner.
  - TMF and open pit are considered by Muticonsult to provide the most negative impact.
- Ports:
  - Study into preferable solutions for port location. Multiconsult concluded the port of Namsos is preferable to Mosjøen due to:
    - slightly shorter road section (12 km less);
    - equal travel time;
    - better road standard, with lower probability of traffic accidents;
    - lower toll costs (as of September 2020);
    - larger port with more opportunities for receiving product; and
    - shorter sailing distance if concentrate transported south to Europe and beyond.
- Roads:
  - Study into road conditions that concluded increase in transport both to and from Joma will cause an increase in wear of the roads.
  - Current condition and classification of roads not appropriate for the additional load and upgrading will be required. This needs further study to confirm due to the lack of current information.
  - Digital design tools with tracking simulations for the performing trucks can be used as part of detailed studies in future.

19.7.5 Historical liabilities

Mining activities between 1972 and 1999 have left an environmental legacy in the area. The responsibility for monitoring of the water bodies surrounding the mine and industrial site falls to NIVA, who monitor the following sites:

- Joma mine: both the underground and small open pit mines were allowed to be flooded naturally and are still completely flooded.
- Orasselva river: adjacent to the mine site.
- Orvatnet: across the Orasselva river valley from the mine site.
- Østre Hudningsvatnet: split into the southwest area close to the processing plant where tailings were historically discharged and the northeast area that is unaffected by historical tailings.
- Vestre Hudningsvatnet: western end of the lake to check contamination spread.

A summary of the historical closure plan and the resulting implantation is provided below:

- Industrial area buildings: decommissioning and removal of processing plant and infrastructure. This included the ore silos, maintenance workshop, boathouse, explosive storage, cold storage, lubricant shed, diesel plant, drainage and pumping stations, temporary storage buildings.
  - This was partly completed with major of equipment sold off. Main buildings and some equipment remains on site (as shown in Figure 4-2).
  - There is scrap, equipment, and hazardous waste both inside and outside the buildings. Some of this material was dumped illegally after the previous operators had closed the site. Several buildings are dilapidated, with broken walls and roofs.
- Waste rock dump (“WRD”): revegetating the WRD located in the east of the industrial site. It is noted that a large quantity of the waste rock produced during historical mining was used in the construction of the dam/causeway to impound the tailings.
  - WRD has been revegetated (as shown in Figure 4-3).
- Tailings impoundment: at the peak of production, 600 ktpa of tailings was produced and deposited into the Østre Hudningsvatnet lake. A total of approximately 10 Mt of tailings was deposited over the 1972 to 1998 mining period.
  - After contamination was observed by NIVA, pollution prevention techniques were installed including building the dam/causeway to separate Østre and Vestre Hudningsvatnet.

- Underground mine: 2.2 km main development tunnel from industrial area to main mine area. A total of 56 km of tunnelling development were completed during the historical operation (all now flooded). The closure plan simply assumed all equipment would be removed and the mine would be flooded. Based on the understanding of the characteristics or the ore and waste rock material (including high lime content) and the surrounding environment, the 1996 closure study concluded there was little chance of acid-generation. The only mitigation for acid-formation considered in the closure plan was to allow the mine to flood to prevent oxidation of sulphide minerals.
  - Mine flooded with 6 m thick concrete plug blocking the main tunnel 800 m from the industrial site.
  - Equipment was removed and sold/disposed of prior to flooding.
- Crusher: located close to the industrial site in the main tunnel. Crusher to be dismantled and sold.
  - Crusher was dismantled and sold.
- Ventilation shafts: there are 7 ventilation shafts within the vicinity and to the west of the open pit. Ventilation equipment including fans, electrical cables and cabinets was to be removed and the shaft openings covered using steel caps.
  - The equipment was removed, and caps are in place.
- Open pit: approximately 350,000 t were mined from the open pit resulting in a pit 120 m long, 40 m wide and 17 m deep with a surface area of 4,800 m^2. Equipment was to be removed and the pit flooded.
  - All equipment was removed, and pit flooded.

The closure plan also stated that post-closure monitoring must be undertaken for three years after closure; this was completed by NIVA. The results of recent monitoring show that, although levels have improved since the mining period, heavy metal contamination remains (especially zinc, but also copper and cadmium) in soil and streams that flow through the industrial area into Østre Hudningsvatnet (Multiconsult Norge AS, 2020b).

There were no specific requirements relating to social transition including retrenchment costs for staff or reskilling for other industries or careers.

The historical liabilities relating to the previous operation may cause ongoing issues for the Company, particularly with respect to dewatering of the now flooded mines. The water quality and levels will require extensive monitoring during pumping to ensure the impact is kept to a minimum.

19.7.6 Summary

A summary of SRK's understanding of the key environmental and social issues along with potential management/mitigation solutions is provided below:

- Reindeer husbandry and Sámi culture:
  - Main issues: mining and processing will have a negative impact on reindeer through noise, increased traffic and construction of the TMF. Open pit mining is seen as the biggest potential threat, with underground mining only scenario preferable.
  - Potential management solutions: significant discussion has been ongoing with Sámi representatives during the ESIA. Continued engagement is critical as the Project continues to ensure impact avoidance and mitigation is engineered into the design.
- Water quality:
  - Main issues: current plan to deposit tailings into a temporary facility adjacent to the lake and industrial area for the first 2 to 3 years of production may cause further degradation of the lake water quality however any seepage water will be collected and treated prior to discharge. Also, the quality of the mine water is not well measured and additional sampling and testwork is required to confirm the required treatment.
  - Potential management solutions: detailed studies will be conducted as part of the discharge and operating permit applications to investigate these issues in further detail.
- Biodiversity and nature values:
  - Main issues: the project footprint may negatively impact areas of high natural value and biodiversity. This includes the protected Orklumpen Vest forest to the north of the mining area, the large number of wading birds in the wetland around Orasselva and Orvatnet along with breeding ground for protected species such as the willow grouse and bean goose.
  - Potential management solutions: partly mitigated by the Project being a brownfield previous operation and designated for industrial use. Surface footprint of project is being minimized taking cognisance of the sensitive environmental setting.
- Noise, vibrations and dust**:**
  - Main issues: construction, operations and product transport produce emissions that impact surrounding people, flora and fauna.
  - Potential management solutions: dust suppression, noise barriers (for example waste dumps on pit edges), working hour restrictions.
- Outdoor recreational activities:
  - Main issues: loss of recreational opportunity through noise and land disturbance are expected.
  - Potential management solutions: compensation could be offered to those directly impacted. This is likely to be the case for the landowner of plot 73/9/Røyrvik that surrounds the mine and industrial areas;

19.8 Closure Plan

For the purposes of the zoning plan, there is no requirement to present a detailed closure plan; however, the next stage in permitting to gain an operation permit requires a closure plan to be produced as part of the application. Currently, the level of closure planning is limited to a plan released in 1996 on behalf of Norsulfid AS (Haugen, 1996); no further plans have been produced to SRK's knowledge.

A new plan will be required as part of the ongoing permitting process. The closure plan should be developed using proven technologies and methods as it would facilitate the permitting process and improve the level of confidence in the cost estimates.

SRK has provided a brief overview below of the elements of a closure plan that will be required in order to generate a closure cost for the PEA.

19.8.1 Mine

As with the 1996 closure plan, the mine will likely require flooding to prevent oxidation of remaining sulphide minerals that could cause large quantities of acid mine water to be produced. Before flooding, all equipment will need to be removed and, if possible, sold.

Shafts will require capping with a concrete slab following the removal of all surface infrastructure such as fans, fan housings, associated buildings and infrastructure.

19.8.2 Processing plant

The equipment used for processing should be decommissioned and removed from site. Where possible this should be sold to third parties to reduce wastage and provide some revenue.

19.8.3 Waste

Closure of the WRD will require stable slopes for the long term. It is often good practice to ensure the WRD slopes generated during ongoing mining are engineered to consider closure and long-term stability. Slope of 3(horizontal):1(vertical) are often adopted for final slopes for a WRD. In addition, WRD are often revegetated (in naturally vegetated areas) to reduce likelihood of slope failure, reduce erosion and improve aesthetics.

Plans for a future temporary TMF are in development and, as such, it is difficult to comment on the likely methodologies required for closure however the Company has plans to move and store all tailings underground at the end of the mine life.

19.8.4 Infrastructure, facilities and equipment

All infrastructure should be decommissioned and removed (and sold if possible) where required by the local authorities. It may be decided to ensure the buildings are maintained and upgraded for use in a new activity or industry.

A list of the likely infrastructure, facilities and equipment that will require decommissioning and removal is listed in Table 19-2.

Table 19-2: Infrastructure, facilities and equipment

Process plant	Industrial Site	Exploration	Administration	Mine
Crushers and mills	Concentrate storage	Drilling equipment	Administrative offices	Trucks & excavators
Concentrator(s)	Maintenance workshops	Drillholes and pads	Technical offices	Other mobile equipment (such as graders)
Additional equipment (such as compressors, pumps, conveyors)	Warehouses	Laboratory building and equipment	Change house	Fixed equipment (such as compressors, pumps, conveyors)
Reagent and chemical storage	Tailings discharge facilities	Core storage area	Communication (telephones, internet, GPS)	Roads (haul and access)
Fuel storage tanks	Scrapyard		Car parks	Weighbridge
Water supply equipment	Fuel storage tanks		Gates, fences and signage	Cables and electrical equipment
Water treatment plant	Water supply equipment			Water supply equipment
Fire station	Pipelines			Stockpile areas
Powerhouse and transformers	Electricity network			WRD & TMF
				Explosives magazine

19.8.5 Port

Truck offloading, storage and ship loading facilities for concentrate will be required. These facilities will be decontaminated and returned to the Port Authorities at closure.

19.8.6 Decontamination and monitoring

The industrial areas used as part of the operation must be decontaminated prior to handover to the authorities or new owner of the property.

A monitoring programme must be developed and undertaken by the Company. The specific details of this programme will be governed by the local authorities, the NEA and NIVA. It is recommended that the site is continuously monitored for at least five years after closure of the site. Soil, surface and ground water monitoring along with visual site inspections of decommissioned and closed areas will form part of this monitoring plan.

19.8.7 Social transition

A social closure impact assessment must be prepared to define the expected impacts from closure and propose management measures to mitigate negative effects and maximize positive benefits from mine closure. This should include a plan must be developed to ensure the employees are re-skilled and sufficiently compensated for lack of employment through retrenchment payments. This social transition is a key part of gaining a social license to operate in the area.

19.8.8 Cost estimate

For the purposes of the PEA and to ensure an appropriate cost is assigned in the TEM, SRK has used an order of magnitude cost of USD 10m over the LoM to cover post-operational closure and rehabilitation costs. Technical and cost assumptions supporting the closure plan should be refined during the next level of study

19.9 Permitting Strategy

Environmental and social studies are underway as part of the Zoning Plan as described above. Once the zoning plan has been agreed, the next stage in environmental permitting is to apply for a discharge permit. This requires a detailed waste management plan in addition to the ESIA studies completed for the zoning plan. After a discharge permit is received, an operating permit can be applied for. The details of the requirements were provided in Section 3.5.

20 CAPITAL AND OPERATING COSTS

20.1 Introduction

The PEA capital and operating cost estimate assumes an Owner-Operator approach for the future operations at the Joma mine and process facilities in Norway and the Stekenjokk and Levi mines in Sweden. The capital and operating cost estimates were based on a number of sources of data including:

- benchmark data with the application of modifying factors as necessary; and
- estimate of plant and equipment requirements from the technical work completed and applied to the development and mining schedule.

Contractor mining costs are assumed for the following activities with assumed rates for development and rehabilitation shown in Table 20-1:

- Rehabilitation of the existing mine access and developments to re-establish access.
- Shaft or raise development for ventilation.
- Excavate Boxcuts and portal preparations for new mine access.

SRK investigated the typical salary and wage rates for staff and workers which have been applied to the combined mine and mill personnel for Joma and Stekenjokk-Levi over the LOM (Figure 20-1) in the operating cost estimate. These rates have been applied to the estimates of personnel requirements on an annual basis in line with the mining schedule.

A total closure cost provision of USD 20m has been assumed for the PEA.

Table 20-1: Assumed Contractor rates for development and rehabilitation

Contractor Rates	Units	Value
Develop_Decline (5mWx5mH)	USD/m of Devt	2,500
Develop_Level X-Cut (5mWx5mH)	USD/m of Devt	2,500
Develop_FW Development (5mWx5mH)	USD/m of Devt	2,500
Develop_Ore Development (4.5mWx4.5mH)	USD/m of Devt	2,250
Develop_Slot Raise (1.0m dia)	USD/m of Devt	1,500
Rehab_Decline (5mWx5mH)	USD/m of Devt	750
Rehab_Level X-Cut (5mWx5mH)	USD/m of Devt	750
Rehab_FW Development (5mWx5mH)	USD/m of Devt	750
Rehab_Ore Development (4.5mWx4.5mH)	USD/m of Devt	675

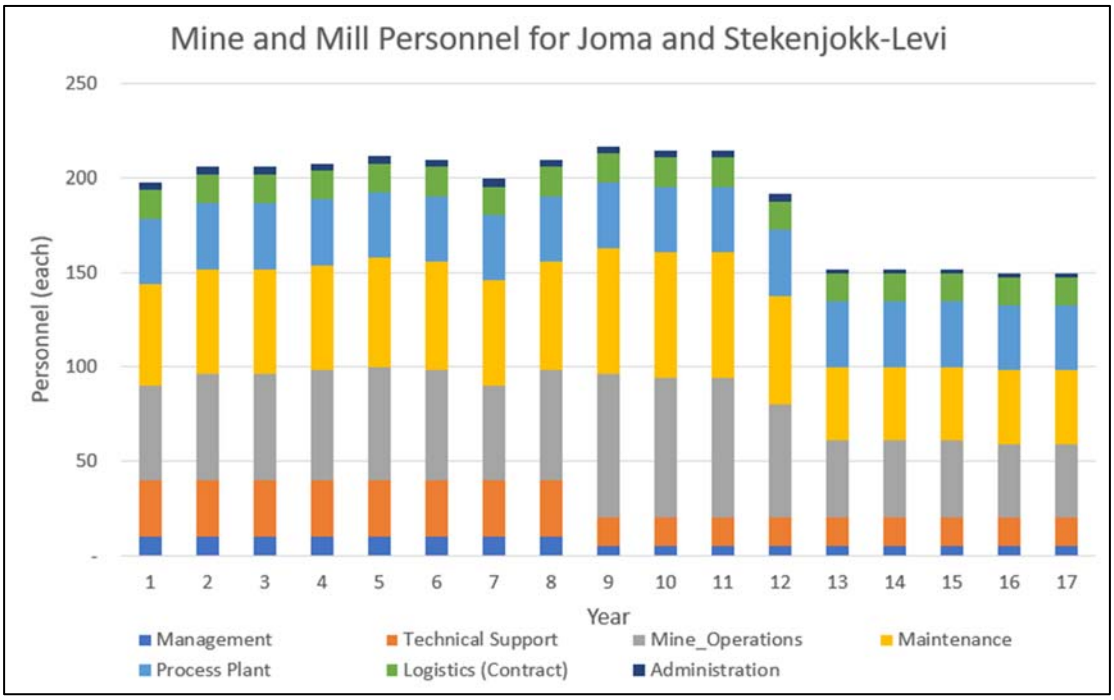


Figure 20-1: Combined mine and mill personnel for Joma and Stekenjokk-Levi over the LOM

20.2 Capital Cost Estimate

The capital cost summary for the Joma mine is provided in Table 20-2. The capital cost summary for the Stekenjokk and Levi mines is provided in Table 20-3 which considers shared surface facilities and equipment over the LOM. Table 20-4 provides a summary of the capital cost for the Joma Process Facilities and Backfill Plant. The annual capital cost estimate over the LOM is shown in Figure 20-2 with the initial 2-year period of preproduction and a provision for closure costs at the end of the mine life.

Table 20-2: Joma Mine Life of Mine Capital Summary

Capital Cost - Joma Mine		
Contract Development	USDm	2.6
Mine Equipment & Material Handling	USDm	14.7
Mine Equipment Overhaul	USDm	4.5
Development Ground Support	USDm	0.1
Development Services	USDm	0.0
Development Drill & Blast	USDm	0.1
Mine Water Management	USDm	0.3
Technical Equipment & Software	USDm	1.3
Surface Facilities	USDm	3.8
Working Capital	USDm	2.1
Engineering & Management	USDm	2.0
Total Joma Capital Cost	**USDm**	**31.7**

Table 20-3: Stekenjokk and Levi Mines Life of Mine Capital Summary

<table>
<tr><th>Capital Cost - Summary</th><th></th><th>Stekenjokk Mine</th><th>Levi Mine</th><th>Total</th></tr>
<tr><td>Contract Development</td><td>USDm</td><td>7.0</td><td>0.9</td><td>7.9</td></tr>
<tr><td>Mine Equipment & Material Handling</td><td>USDm</td><td colspan="2">32.0</td><td>32.0</td></tr>
<tr><td>Mine Equipment Overhaul</td><td>USDm</td><td>7.6</td><td>3.2</td><td>10.9</td></tr>
<tr><td>Development Ground Support</td><td>USDm</td><td>2.5</td><td>0.9</td><td>3.4</td></tr>
<tr><td>Development Services</td><td>USDm</td><td>1.4</td><td>0.5</td><td>1.9</td></tr>
<tr><td>Development Drill & Blast</td><td>USDm</td><td>3.2</td><td>1.2</td><td>4.3</td></tr>
<tr><td>Mine Water Management</td><td>USDm</td><td>1.1</td><td>0.8</td><td>1.9</td></tr>
<tr><td>Technical Equipment & Software</td><td>USDm</td><td colspan="2">1.4</td><td>1.4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Surface Facilities</td><td>USDm</td><td colspan="2">10.0</td><td>10.0</td></tr>
<tr><td>Working Capital</td><td>USDm</td><td colspan="2">3.3</td><td>3.3</td></tr>
<tr><td>Engineering & Management</td><td>USDm</td><td colspan="2">5.3</td><td>5.3</td></tr>
<tr><td></td><td></td><td></td><td></td><td>0.0</td></tr>
<tr><td>Total Capital Cost</td><td>USDm</td><td>22.7</td><td>59.5</td><td>82.2</td></tr>
</table>

Table 20-4: Joma Process Facilities and Backfill Plant Life of Mine Capital Summary

Process Facilities		
Equipment	USDm	12.6
Installation Labour	USDm	9.8
Concrete	USDm	0.0
Piping	USDm	4.3
Structural Steel	USDm	0.0
Insulation	USDm	0.0
Instrumentation	USDm	2.6
Electrical	USDm	1.3
Coatings & Sealants	USDm	0.2
Mill Buildings/Surface Facilities	USDm	1.5
Initial Tailings Facility	USDm	0.0
Engineering & Design	USDm	7.1
Construction Management	USDm	5.1
Contingency	USDm	9.3
Working Capital	USDm	2.4
Total Processing Capital Cost	**USDm**	**56.0**
Backfill Plant		
Backfill Plant	USDm	8.0
Total Backfill Plant Capital Cost	**USDm**	**8.0**

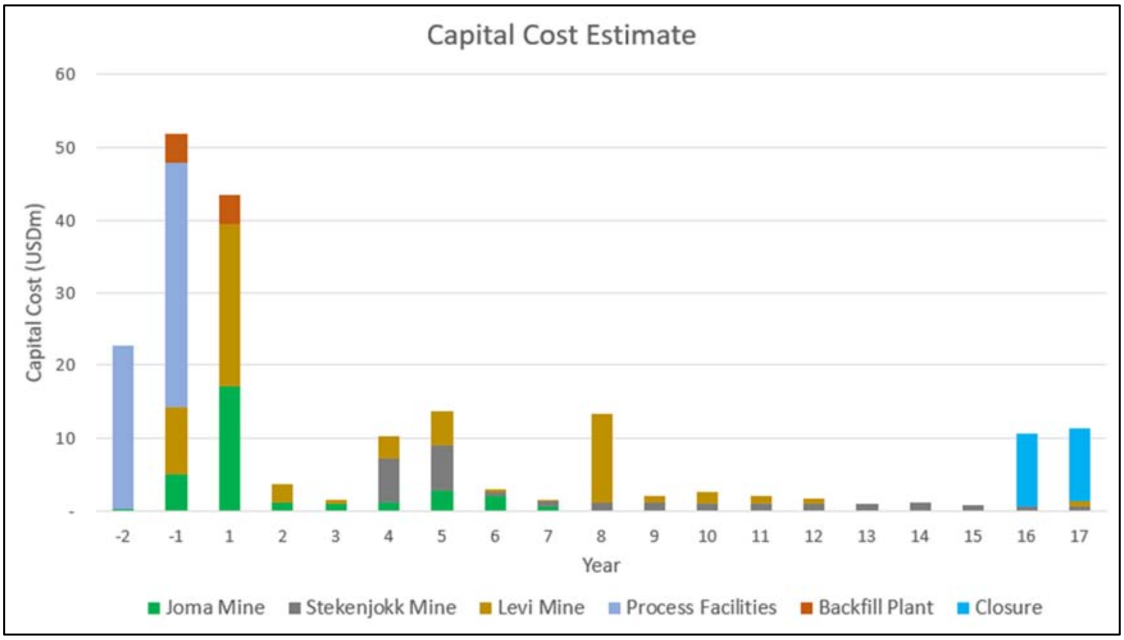


Figure 20-2: Capital Cost estimate over the LOM

20.3 Operating Cost Estimate

The annual operating cost estimate over the LOM is shown in Figure 20-3, with an initial production rate of 750 ktpa in Year 1, ramping down to 500 ktpa after Year 11 to the end of the mine life. The operating cost is variable based on the underground truck haulage distance which typically increases with the depth of mining and additional costs for transport of ROM from the Stekenjokk-Levi mines to the Joma processing facility. Figure 20-4 shows the annual split of unit operating cost (USD/t_{ROM}) over the LOM and Table 20-5 provides the LOM average.

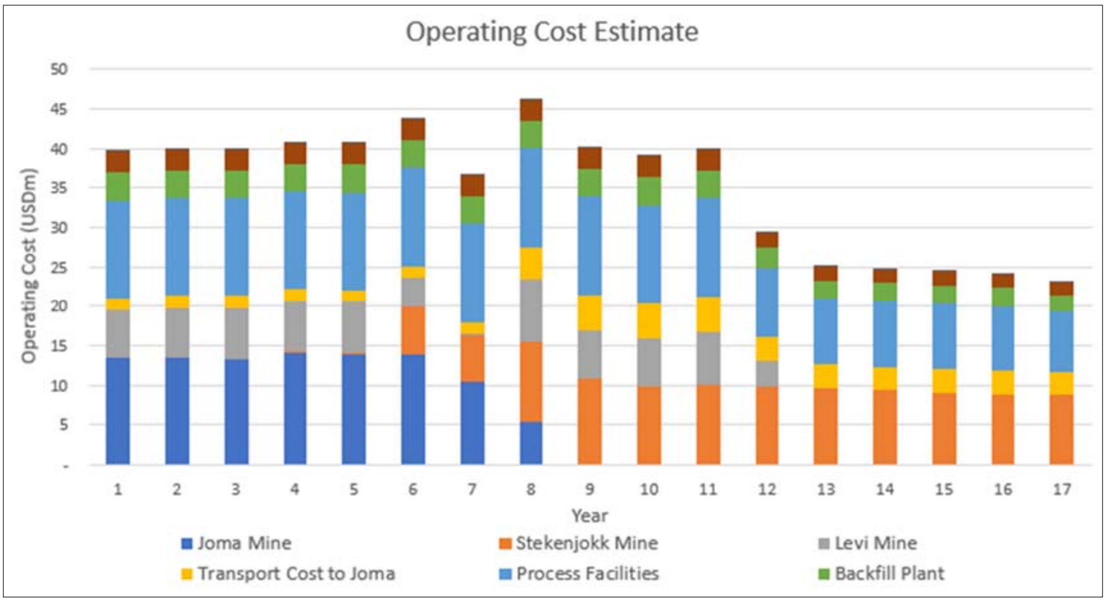


Figure 20-3: Operating cost estimate over LOM

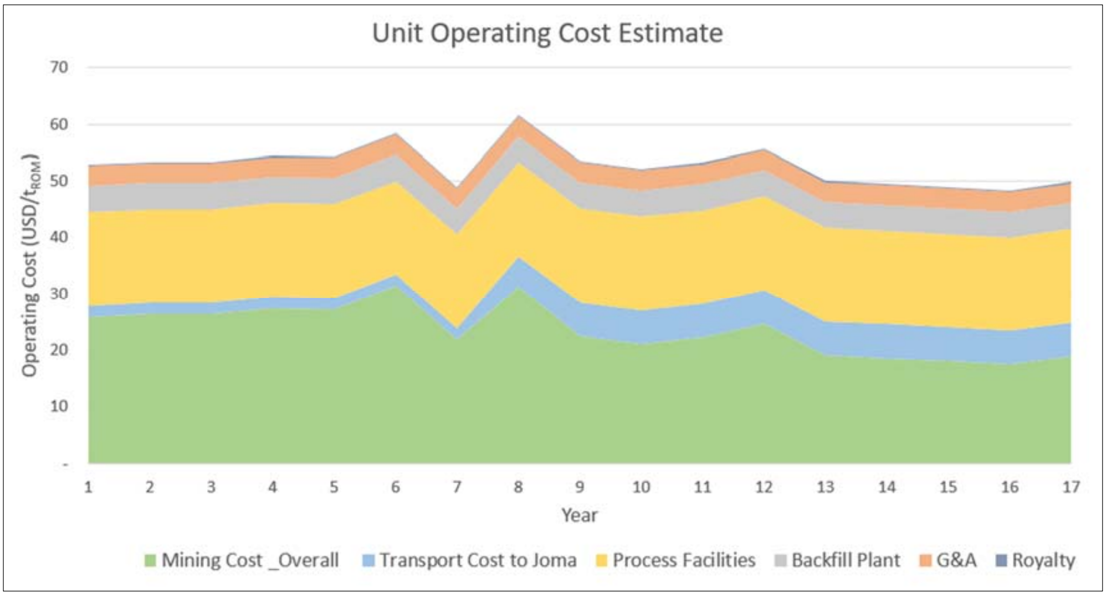


Figure 20-4: Unit operating cost estimate

Table 20-5: Life of Mine Unit Operating Cost Summary

Joma Mine	USD/ t_{ROM}	**27.5**
Stekenjokk Mine	USD/ t_{ROM}	**20.7**
Levi Mine	USD/ t_{ROM}	**29.1**
Mining Cost _Overall	USD/ t_{ROM}	**24.6**
Transport Cost to Joma	USD/ t_{ROM}	**4.1**
Process Facilities	USD/ t_{ROM}	**16.6**
Backfill Plant	USD/ t_{ROM}	**4.6**
G&A	USD/ t_{ROM}	**3.5**
Royalty	USD/ t_{ROM}	**0.3**
Total Operating Cost	**USD/ t_{ROM}**	**53.7**

21 ECONOMIC ANALYSIS

21.1 Introduction

This PEA is preliminary in nature. It includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorised as Mineral Reserves. There is no certainty that the PEA will be realised. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

21.2 Scope of the Analysis

The PEA is based on the combined production from the Joma and Stekenjokk-Levi underground mines over a 17-year period following a 2-year pre-production period for construction, development, and commissioning activities.

The PEA assumes that a single beneficiation plant will be built on the site of the previous Joma concentrator. The Joma process facility has a planned production rate of 750 ktpa for the first 11 years, ramping down to 500 ktpa to the end of the mine life. Due to differing head grades and historical metallurgical responses, the ores from Joma, Stekenjokk and Levi mines will be processed in individual campaigns. In addition, as the Stekenjokk and Levi mines will only operate during the winter season and ore from all three mines will be separately stockpiled ahead of the concentrator.

The flowsheet will consist of crushing and grinding ahead of flotation to produce separate concentrates. Joma ore will produce copper and zinc concentrates, and Stekenjokk and Levi ore will produce copper, zinc and lead concentrates. Precious metals (gold and silver) will report to the different concentrates according to their specific metallurgical responses.

The flotation tailings will be processed through a precious-metals leach circuit for additional gold and silver recovery to doré.

The mine plan for Joma also considers storage underground of all future tailings from the process facilities as a paste backfill in the historical (and future) mining voids. This also includes future ROM processed from the Stekenjokk-Levi deposits at the Joma process facility.

21.3 Key Inputs and Assumptions

The following general assumptions have been applied in the PEA:

- All costs and revenues are in USD and are in real money terms.
- Any cash flows prior to the start of construction are considered sunk and have been excluded from the analysis.
- A discount rate of 8% has been applied for NPV calculations.
- Commercial smelter terms for each mine and product are summarised in Table 21-1.
- Diesel fuel prices are based on average prices and exchange rates during 2021, with an allowance for tax reduction, resulting in USD1.3/litre for Sweden and Norway.
- Electricity prices are based on average prices and exchange rates during 2021, resulting in USD0.05/kWh for Sweden and USD0.08/kWh for Norway.

- For the purposes of the PEA an all-inclusive material handling and truck transport cost of USD 0.10/t of concentrate per kilometre has been assumed for moving ROM from the future Stekenjokk-Levi mine to the Joma processing facilities.
- Mine water quality and treatment requirements are not well defined and have not been considered in the economic assessment.
- Royalties payable are based on 0.2% of the NSR.
- The cash flow model is post-tax (average corporate tax rate of 21.7%) and pre-finance.

Table 21-1: Commercial Smelter Terms

Commercial Terms	Units	Joma ROM	Stekenjokk ROM	Levi ROM
Copper Concentrate				
Payable Metal				
Cu	(%)	95.8%	95.6%	95.6%
Au	(%)	90.0%	90.0%	90.0%
Ag	(%)	90.0%	90.0%	90.0%
Unit Treatment/Freight/Refining Charges				
Cu TC	(USD/t)	60.0	60.0	60.0
Cu con freight	(USD/t)	40.5	40.5	40.5
Cu RC	(USD/lb payable)	0.06	0.06	0.06
Au RC	(USD/oz payable)	5.0	5.0	5.0
Ag RC	(USD/oz payable)	0.5	0.5	0.5
Zinc Concentrate				
Payable Metal / Smelter Recovery				
Zn	(%)	84.6%	84.9%	84.9%
Unit Treatment Charges/Freight				
Zn TC	(USD/t)	155.0	155.0	155.0
Zn con freight	(USD/t)	20.2	20.2	20.2
Lead Concentrate				
Payable Metal / Smelter Recovery				
Pb	(%)	-	85.0%	85.0%
Unit Treatment Charges/Freight				
Pb TC	(USD/t)	140.0	140.0	140.0
Pb con freight	(USD/t)	20.2	20.2	20.2
Dore				
Payable Metal / Smelter Recovery				
Au	(%)	99.5%	99.5%	99.5%
Ag	(%)	99.6%	99.6%	99.6%
Unit Freight/Refining Charges				
Au Freight	(USD/kg)	10.0	10.0	10.0
Ag Freight	(USD/kg)	10.0	10.0	10.0
Au RC	(USD/oz payable)	0.25	0.25	0.25
Ag RC	(USD/oz payable)	0.35	0.35	0.35

21.3.1 Commodity prices

The commodity price scenarios applied in the PEA (see Table 21-2) are described as follows:

- **LTC Case:** considers median long term consensus market forecast prices during Q2 2022.
- **Strategic Case:** considers spot metal prices in Q1 2022 discounted by 12% based on the view of Bluelake Mineral management that metal prices will remain at these levels for an extended period.

Table 21-2: PEA Metal Price Scenarios

Commodity Prices	Units	LTC Case	Strategic Case
Copper Price	USD/t Cu	7,700	8,620
Zinc Price	USD/t Zn	2,250	3,692
Lead Price	USD/t Pb	1,950	2,002
Gold Price	USD/oz Au	1,400	1,659
Silver Price	USD/oz Ag	18.25	20

21.4 LTC Case

The annualised and cumulative post-tax cashflow for the LTC Case is provided in Figure 21-1 with an average annual post-tax cashflow of USD 21.7 m during the production Years 1 to 17 and payback in Year 6. The cashflow is variable mainly based on the annual production rate, grade variation, operating costs and ROM tonnage transported from Stekenjokk-Levi to the Joma processing facilities. The percentage of gross revenue by metal is provided in Figure 21-2, with approximately 58.9% estimated for copper, 22.5% from zinc, 8.8% from silver, 5.5% from lead and 4.3% from gold.

A summary of the post-tax cashflow analysis results from the PEA including Net Present Value ("NPV") and Internal Rate of Return ("IRR") is provided in Table 21-3. Figure 21-3 provides a sensitivity of the NPV for the LTC Case Copper price, Capital and Operating costs for the Project.

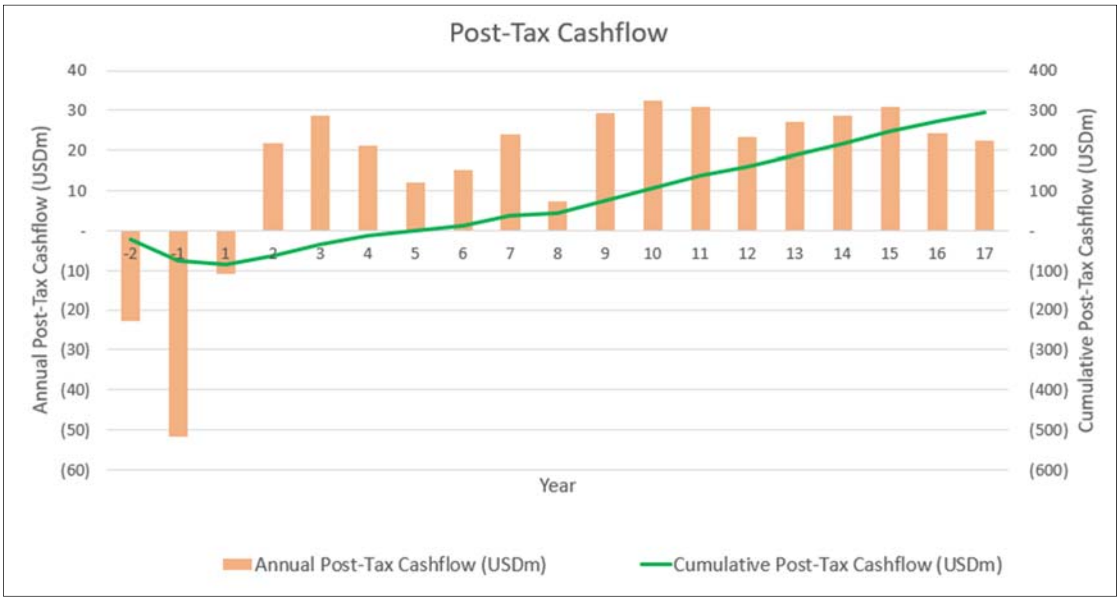


Figure 21-1: Base Case: Post-Tax Cashflow

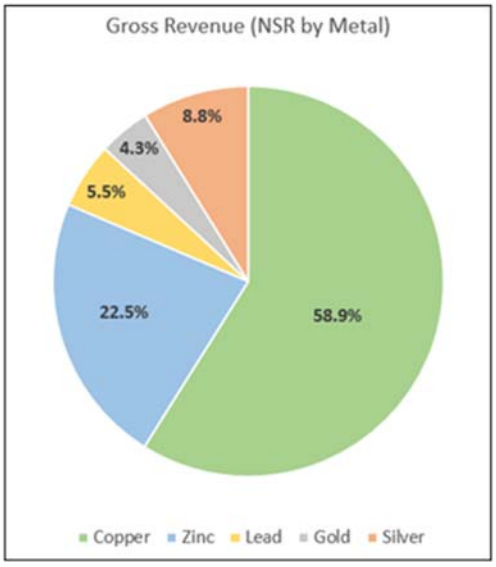


Figure 21-2: LTC Case: Percentage of Gross Revenue by Metal

Table 21-3: LTC Case: PEA post-tax cashflow analysis results

PEA Summary - LTC Case	Units	Value
Net Free Cash	USDm	294.3
NPV (8%)	USDm	87
IRR	%	19.8%

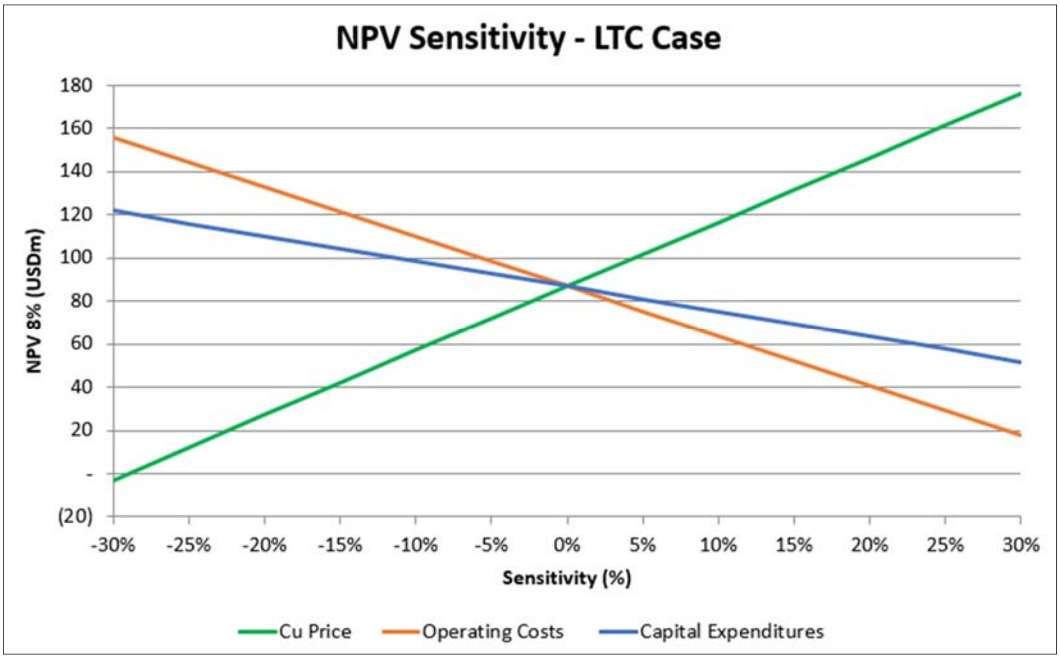


Figure 21-3: LTC Case: NPV Sensitivity Analysis

21.5 Strategic Case

The annualised and cumulative post-tax cashflow for the Strategic Case is provided in Figure 21-4 with an average annual post-tax cashflow of USD 36.3 m during the production Years 1 to 17 and payback in Year 3. The cashflow is variable mainly based on the annual production rate, grade variation, operating costs and ROM tonnage transported from Stekenjokk-Levi to the Joma processing facilities. The percentage of gross revenue by metal is provided in Figure 21-5, with approximately 52.5% estimated for copper, 31.5% from zinc, 7.6% from silver, 4.4% from lead and 4.0% from gold.

A summary of the post-tax cashflow analysis results from the PEA including NPV and IRR is provided in Table 21-4. Figure 21-6 provides a sensitivity of the NPV for the Strategic Case Copper price, Capital and Operating costs for the Project.

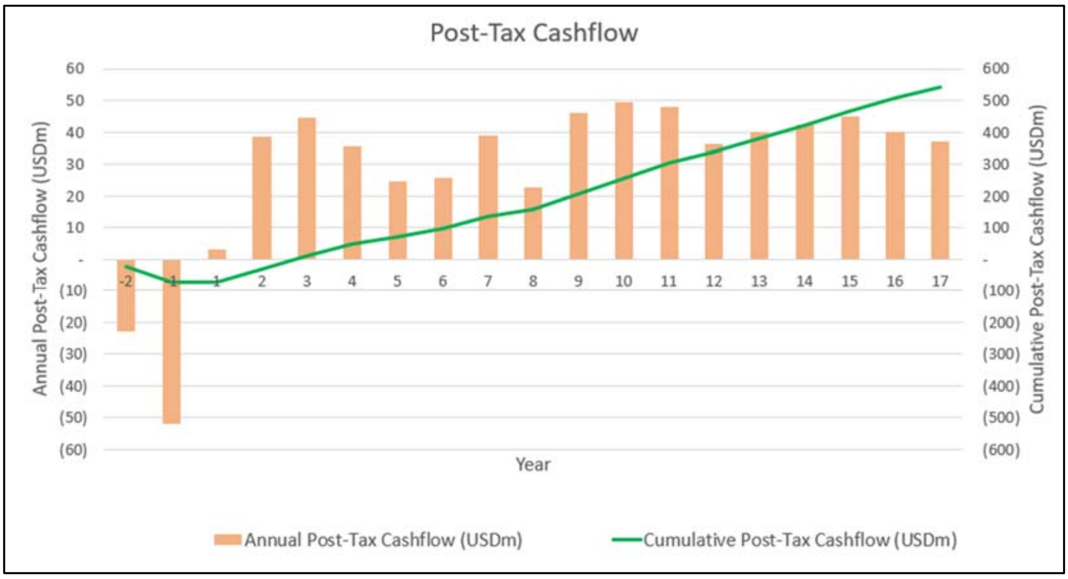


Figure 21-4: Strategic Case: Post-Tax Cashflow

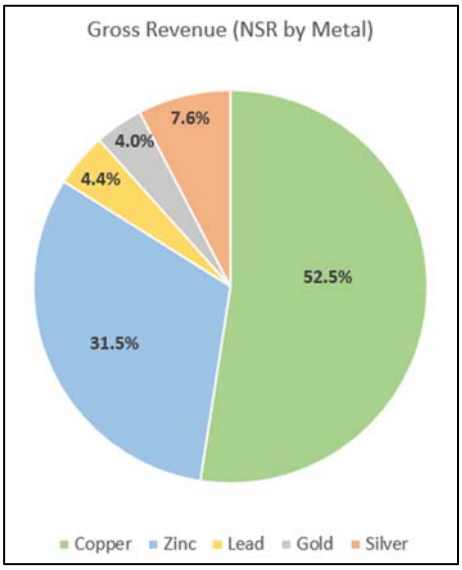


Figure 21-5: Strategic Case: Percentage of Gross Revenue by Metal

Table 21-4: Strategic Case: PEA post-tax cashflow analysis results

PEA Summary - Strategic Case	Units	Value
Net Free Cash	USDm	543
NPV (8%)	USDm	201
IRR	%	34.0%

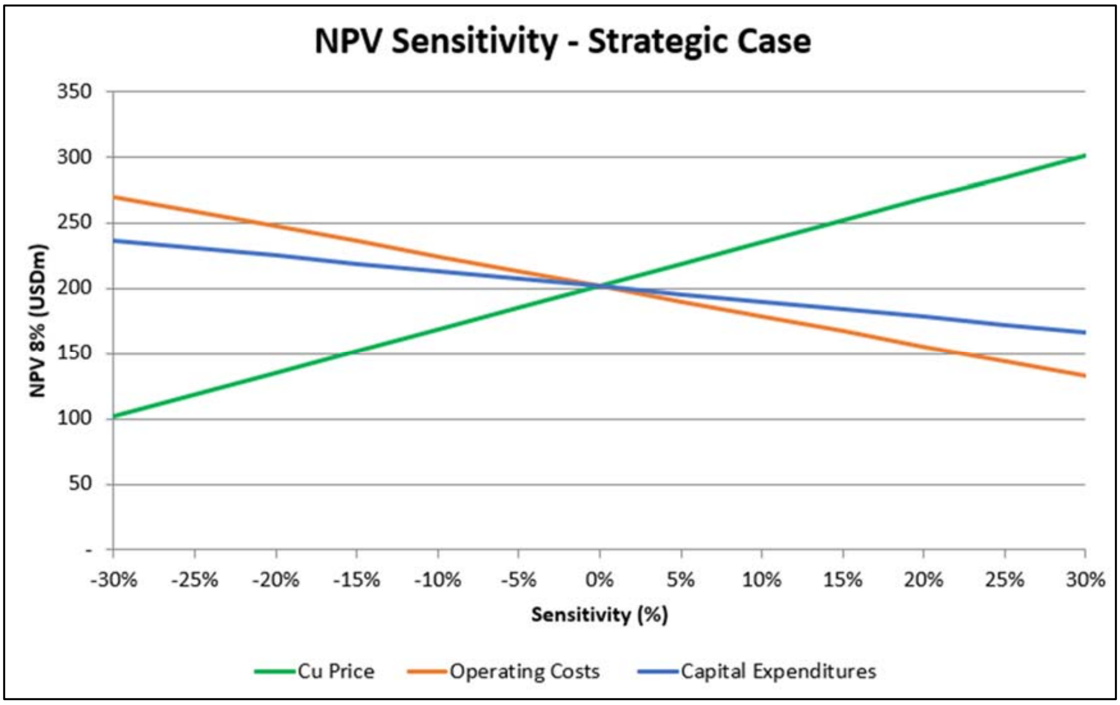


Figure 21-6: Strategic Case: NPV Sensitivity Analysis

21.6 Conclusions

The PEA economic analysis for the LTC and Strategic cases indicate that the Joma Project has good economic potential and warrants continued development. Generic sensitivities on the copper price, operating costs, and capital expenditure show that the project economics are most sensitive to the copper prices.

22 ADJACENT PROPERTIES

22.1 Historical Production and Exploration Properties

Joma lies within a zone of significant historical importance for Cu-Zn mineralisation both within Norway and within the Caledonides. Four mines historically operated in the region, including Stekenjokk, Skorovas, Gjersvik and Joma, with a total combined production of 24.5 Mt between 1952 and 1998. A number of other deposits are known in the region, but few have been explored within the last 20 years.

The following sections provide a brief summary of the major deposits in the region, and Table 22-1 provides a list of all deposits and occurrences included in the Norwegian "FODD" database for the Grong-Stekenjokk metallogenic area. Additional information of these deposits is available in GTK (2012).

22.1.1 Skorovas

The Skorovas deposit was discovered in 1873 and was operated between 1952 and 1984 with a total production of 5.6 Mt. The deposit was primarily mined for pyrite, with pyritic ore dominating production between 1952 and 1976. In the last 8 years of the mine, Cu and Zn mineralisation was exploited, and an estimated 1.3 Mt of material is thought to remain.

The deposit comprises an *en echelon* array of closely spaced, elongated, flat lying massive sulphide lenses. Minor mineralised lenses occur between the main lenses within strongly sheared rocks, representing transportation within larger nappe structures. Cu and Zn mineralisation displays strong zonation, and a high degree of metamorphism.

22.1.2 Gjersvik

Bluelake Mineral currently holds an exploration permit over the Gjersvik mine area.

Gjersvik was discovered in 1909 but was not put into full operation until 1993. Historical "reserves" were estimated at 1.6 Mt at 1.7% Cu and 1.0% Zn; however, production was based on a high-grade target of 0.5 Mt at 2.15% Cu and 0.6% Zn. The deposit was operated as a satellite to the Joma Project, and also closed in 1998.

Mineralisation consists of a series of massive sulphide lenses forming a package up to 8 m thick. The mineralisation has been complexly folded into an asymmetrical trough or spoon shape, with tight recumbent to isoclinal folds within the deposit.

22.1.3 Stekenjokk-Levi

Bluelake Mineral currently holds exploration permits for the Stekkenjokk mine area, as well as the adjacent Levimalmen ("Levi") deposit.

Stekenjokk is located in the Swedish section of the Grong-Stekkenjokk metallogenic area. The deposit was first identified in the early 20th century and was operated between 1975 and 1988. Total production was 7 Mt, with the mine eventually closing due to low metal prices. In 2006, IGE Nordic reported combined resources and reserves for Stekenjokk and Levi of 10 Mt. Almost no mining has occurred at Levi.

The deposits have been stratigraphically linked and consist of two different types of mineralisation; a massive stratabound pyrite, and an irregularly disseminated pyrrhotitic zone. Mineralisation and host rocks have been folded multiple times into their present geometry.

Table 22-1: Deposits and occurrences in Grong-Stekenjokk area (after GTK, 2012)

Deposit	Tonnage (Mt)		Cu %	Zn %	Pb %	Ni %	When Mined
	Total	Mined					
Joma	22.5	11.453	1.49*	1.45*			1972–1998
Skorovas	6.9	5.6	1.14*	2.71*			1952–1984
Gjersvik	1.62	0.5	2.15*	0.5*			1993–1998
Skiftesmyr	2.75		1.23	1.86			
Visletten	0.78		0.92	3.86			
Godejord	0.1		0.8	6.9	0.2		
Stormyrplutten	0.2		0.5			0.08	
Stekenjokk	17.1	7	1.35	3.22	0.36		1976-1988
Jormlien	0	0.00002	0.4	6	0.1		1919
Levimalmen	5		1.4	1.6	0.1		
Unna Gaisartjåkko	1		0.8	0.5	-		
Ankarvattnet	0.8		0.5	5.5	0.37		
Remdalen	0.7		1.43	2.74	0.04		
Usmeten	0.25		1.28	0.31	-		
Skidträskbäcken	0.23		0.71	1.53	0.04		
Beitsetjenjunje	0.2		0.97	1	0.16		
Tjokkola	0.17		0.89	2.2	0.1		
Tjåter	0.15		1	4.8	1.9		
Storbäcksdalen Västra	0.15		1.2	6.3	2.4		
Rikarbäcken	0.15		0.8	4.3	1.1		
Skidträskbäcken N	0.14		0.46	0.10	0.07		
Björkvattnet	0.13		0.73	0.4	0.05		
Abelvattnet	0.07		0.9	0.07	-		
Daningen	0.05		9.85	0.6	0		
Njeretjakke	10					0.28	

22.2 Modern Exploration

In October 2019, ALX Resources acquired 10 of exploration permits in the Grong region, including six permits west and adjacent to the Joma Project (Figure 22-1). Three separate areas are included in the Draco VMS project; Valkyrie, Fero, and Vektor, identified through review of mineral occurrence data and historical airborne magnetic and electromagnetic survey data. Images published from this review include Joma, and perhaps indicate additional exploration potential to the southwest of the Joma Project (Figure 22-2). To date, no significant exploration has been reported and it appears that the Project is not a high priority for the Company.

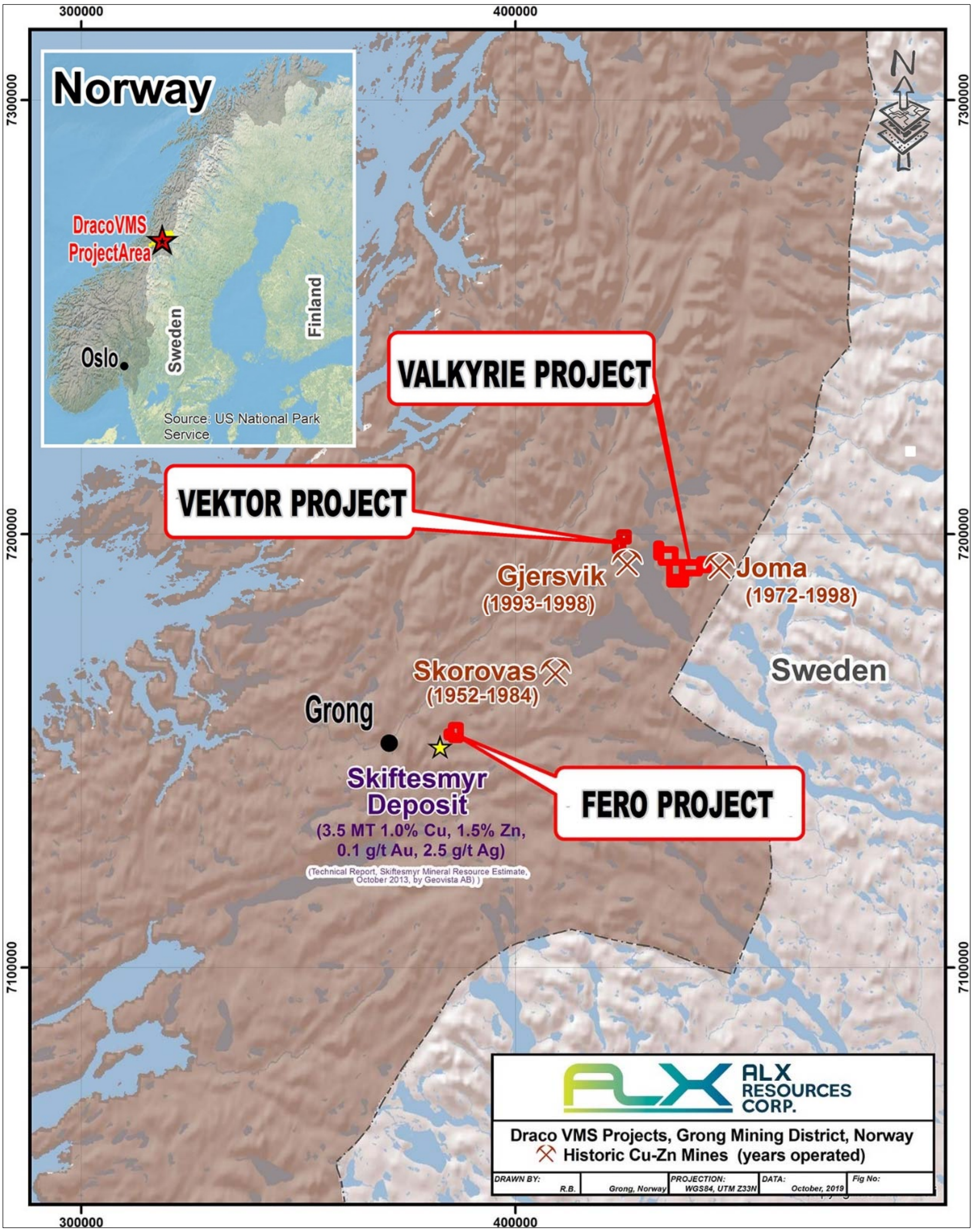


Figure 22-1: Draco VMS Project Permits (Source: (ALX Resources, 2021))

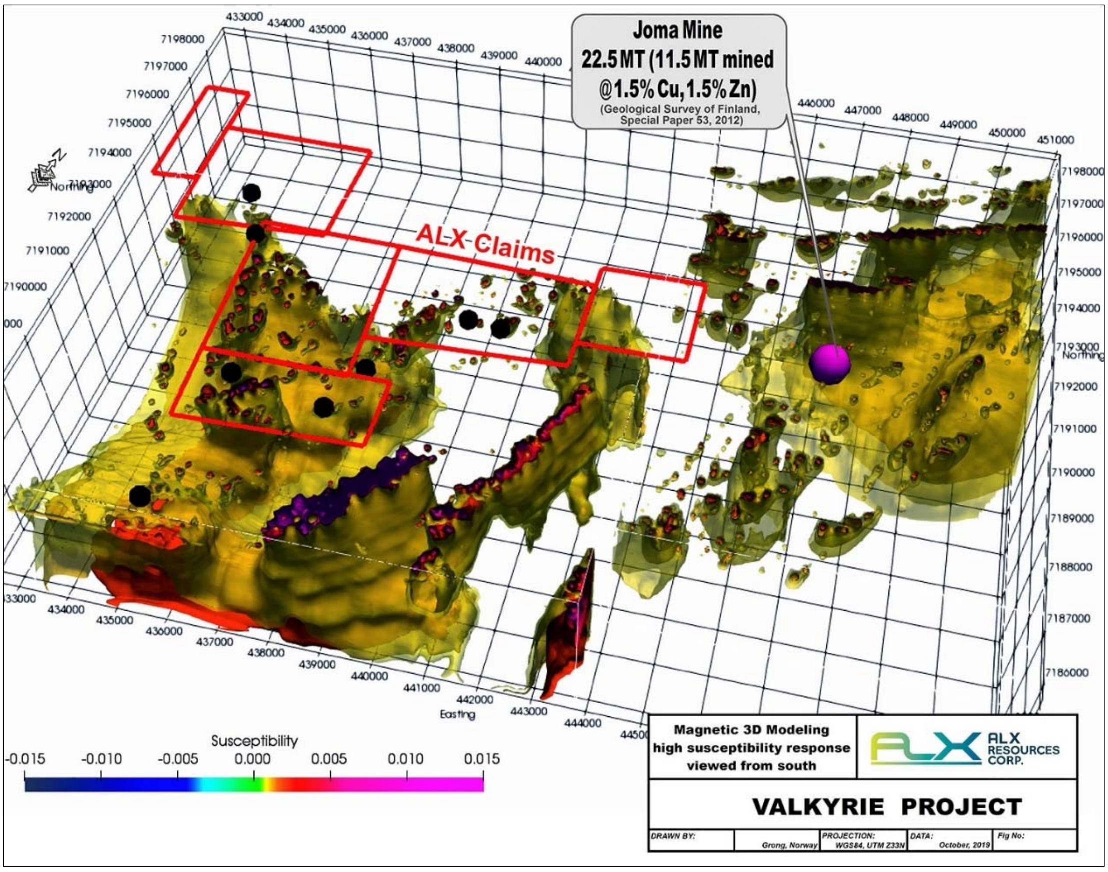


Figure 22-2: 3D Magnetic modelling including Joma Project (Source: (ALX Resources, 2021))

23 OTHER RELEVANT DATA AND INFORMATION

23.1 Green Case Assessment

23.1.1 Introduction

Demonstrating good ESG practice is central to Bluelake Mineral's vision of the Project. The Joma and Stekenjokk-Levi deposits have the potential to provide a secure, local source of low-carbon intensity critical raw materials to a rapidly expanding green technology manufacturing industry in northern Europe. The Company's directives which have impact on the Project are mostly focused on: the green mine philosophy with a focus on lowest environmental impact as possible.

The PEA is based on a conventional underground approach using a combination of electric-powered equipment (such as Jumbo and Longhole Drills) and diesel-powered mobile equipment (such as loaders and trucks). An additional concept-level 'Green Case' has been assessed to understand the early-stage potential for a fully-electric mine utilising developing battery-electric technologies for underground loaders and trucks with a provision for charging stations.

23.1.2 Atmospheric contaminants from mining activities

The main atmospheric contaminants from underground mining are emissions from diesel powered equipment, primarily loaders and trucks. Table 23-1 provides a summary estimate of the LOM diesel fuel and lubricant usage for each mine.

Figure 23-1 shows a high-level estimate of the carbon dioxide and sulphur dioxide emissions from the diesel equipment and emulsion explosive usage over the PEA mine plan for Joma and Stekenjokk-Levi.

The replacement of diesel with battery-electric equipment provides the opportunity to significantly reduce these emissions from mining activities.

Table 23-1: Summary of diesel fuel and lubricant usage over LOM

Diesel Fuel Usage			
	Joma Mine	M.Litres	7.1
	Stekenjokk Mine	M.Litres	14.1
	Levi Mine	M.Litres	5.8
	Total	**M.Litres**	**27.0**
		t	**22,490**
Lubricant Usage			
	Joma Mine	kL	534
	Stekenjokk Mine	kL	709
	Levi Mine	kL	341
	Total	**kL**	**1,584**

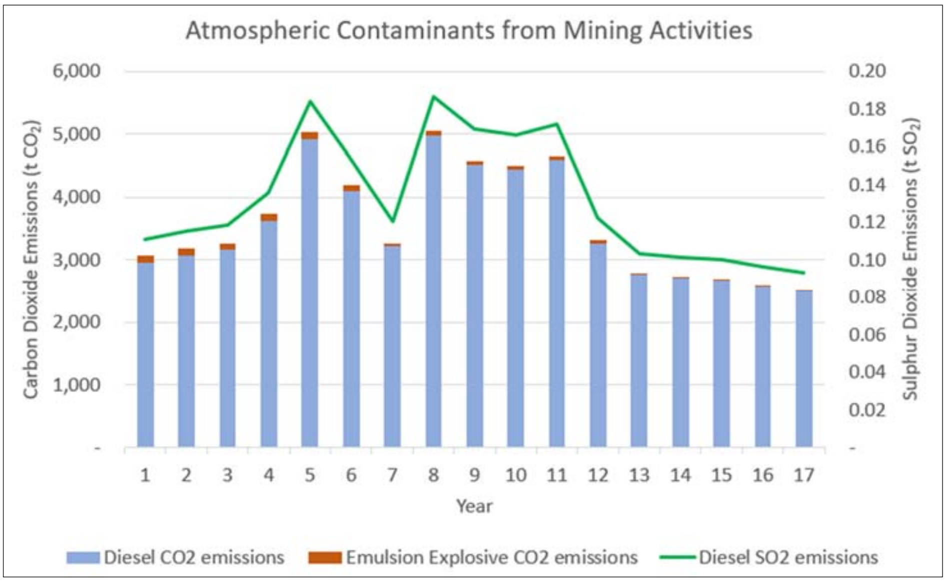


Figure 23-1: Atmospheric Contaminants from Mining Activities

23.1.3 Approach

The Green Case was prepared by adjusting the diesel equipment fleet (loaders, trucks, charge up wagon and ancillary equipment), including capital and operating costs using the conversion factors shown in Table 23-2. It is assumed that the battery-electrical equipment has the same performance and productivity as the diesel equipment and notes that there are likely to be additional benefits which are not quantified including reduced labour and ancillary equipment (service trucks) for maintenance activities. Additional operating costs are included for battery-as-a-service ("BAAS").

Table 23-2: Conversion factors

Diesel Vs Electric Parameters	Units	Value
Maintenance Parts Reduction	%	10.0%
Lube Reduction	%	50.0%
Battery Operating Cost Increase	USD/kW/hr	0.125
Convert to Electric Power Usage	kWh/hr per kW Rating	0.350
Capital Cost Increase	%	25.0%

23.1.4 Results

The comparison of the maximum power load and usage over the LOM for a diesel versus an electric mine approach is provided in Table 23-3. Table 23-4 provides a comparison of the capital and operating costs which indicates higher capital costs for the electric mine approach but opportunities for a lower operating cost over the LOM.

The results provide an early indication of the potential for reducing atmospheric contaminants in the mine plan for Joma and Stekenjokk-Levi and the indicative costs. It is recommended that future more detailed planning is undertaken with consultation with equipment suppliers to understand the requirements (and costs) of reducing diesel-powered mobile equipment and practically implementing developing battery-electric and trolley assist technologies at the individual mines.

Table 23-3: LOM Power Load and Usage Comparison

	Max Power Load (MW)	LOM Power Usage (MWh)
Diesel Mine		
Joma Mine	4.4	11,191
Stekenjokk Mine	2.5	5,144
Levi Mine	1.9	2,743
Total	**6.8**	**13,846**
Electric Mine		
Joma Mine	14.2	21,802
Stekenjokk Mine	10.4	17,226
Levi Mine	7.4	10,106
Total	**24.7**	**33,777**

Table 23-4: LOM Capital and Operating Cost Comparison

		LOM CAPEX	LOM OPEX	TOTAL (CAPEX+OPEX)
Diesel Mine				
Joma Mine	USDm	14.7	29.5	**44.2**
Stekenjokk Mine	USDm	32.0	39.3	**89.5**
Levi Mine	USDm		18.2	
Total	**USDm**	**46.7**	**87.0**	**133.7**
Electric Mine				
Joma Mine	USDm	17.0	31.9	**48.8**
Stekenjokk Mine	USDm	37.8	22.2	**79.3**
Levi Mine	USDm		19.4	
Total	**USDm**	**54.7**	**73.4**	**128.1**

24 INTERPRETATION AND CONCLUSIONS

24.1 Project Economics

The PEA economic analysis for the LTC and Strategic cases indicate that the Joma Project has good economic potential and warrants continued development.

24.2 Geology and Mineral Resources

The Joma Project is at an advanced stage of exploration and geological understanding. Infill drilling from surface and underground, digitising of underground geological maps and geological modelling in 3D has added further geological confidence to the local scale geometry of the mineralisation and grade distributions in the resultant Mineral Resources.

The geological interpretation used to generate the Mineral Resource presented herein is generally considered to be robust; however, there are areas of lower geological confidence, classified as Inferred Mineral Resources, which may be subject to further revision in the future. SRK notes that the there is a degree of uncertainty associated with depletion survey volume and that these underground workings are currently flooded.

SRK has declared a Mineral Resource Statement for the Joma Project. The declared Mineral Resources are constrained by MSO optimised stopes, which reflects reasonable assumptions regarding potential mining, processing, and other associated costs. SRK stresses that the optimisation exercise completed was purely to determine the material which could be declared as a Mineral Resource and, as such, cannot be used for the declaration of Mineral Reserves.

The Mineral Resources, as declared for the Joma Project, as at an effective date of 09 December 2021, amount to:

- Indicated Mineral Resources of some 6.0 Mt with a mean Cu and Zn grade of 1.00% and 1.66%, respectively; and
- Inferred Mineral Resources of some 1.2 Mt with a mean Cu and Zn grade of 1.2% and 0.7%, respectively.

24.3 Mining Including Geotechnical and Hydrogeological Aspects

With respect to re-establishing underground mining of the Joma deposit, SRK concludes that R&P is an appropriate mining method with longhole benching in thicker zones. The proposed mining methods and equipment are regularly utilised in the Nordic region.

The main challenges to mining at Joma Project will be to understand the ground and water conditions ahead of development and mining activities so that adequate preparation can take place to manage potential challenges. Only a limited amount of site-specific investigation has been carried out and collection of more data and detailed analysis is required.

Dewatering activities are going to be a long-term cost and efforts should be directed at designing an efficient system with low operating costs. Options to contain water inflow at the source need to be well understood and managed.

24.4 Metallurgy

Future testing of variability composites across the Joma and Stekenjokk-Levi deposits and pilot plant testing of larger bulk samples will be required to confirm processing requirements and projected recoveries for the mineralisation's.

24.5 Environmental, Social and Governance

The Project represents an opportunity to improve local employment and establish a source of copper and zinc in northern Europe through a brownfield operation with a small surface footprint.

Impacts to the natural environment in the vicinity of the Project are expected to be minimised through underground mining and waste and water management strategies. Once the mine has closed and are rehabilitated, impacts are envisaged to largely cease, although some risks remain associated with the flooded underground workings.

The Project area includes areas of national interest for three purposes: reindeer husbandry, valuable deposits for mineral supply, and outdoor activities. Regarding reindeer herding, through dialogue with the local Sámi village of Tjåehkere Sijte, the engineering and design of the Project can be adjusted to enable their considerations to be incorporated. This has the potential to impact on the Project in the future as even if government support is obtained. If social license to operate is not achieved with the Sámi, then protests may result in delays to project implementation and/or influence investment decisions by other parties.

Notwithstanding the above, social and economic impacts are largely positive particularly through new job creation, increased economy of the region and increased tax revenue to local authorities. Potential negative impacts mainly stem from the transporting materials: increased transport on roads, safety and disturbances from mining activities are other potential social impacts. In addition, the sulphide-rich nature of the ore represents a challenge to ensure the acid-generating potential is minimised.

The population density is low and aged with mainly summer vacation dwellings within the area. Reindeer herding and recreation are the most important economic sectors active in the area.

The Project is close to an area designated as environmentally protected (Orklumpen Vest Forest). In addition, there are a number of vulnerable species in the area that may require robust management and monitoring.

SRK has not deemed any of the ESG risks and issues noted in this section as of significant risk to impact reporting of Mineral Resources according to the RPEEE criteria; however, SRK is aware there is a vocal opposition, particularly regarding concerns attributed to the potential impact on the Sámi reindeer husbandry, and significant effort will be required to ensure all potential negative impacts are assessed, avoided, minimised and/or mitigated. Prior to start-up of operations, additional environmental permits are required following approval of the Zoning Plan, including the discharge permit and operating license. SRK expects the timescales for determination of all authorisations for this Project will be extended to the limit of the regulatory timescales due to number of stakeholders involved.

25 RECOMMENDATIONS

25.1 Introduction

SRK recommends that once access is obtained to the Joma mine, given that the workings are currently flooded, all areas are accurately resurveyed to confirm these volumes. During this survey, the Company should also assess which areas of the workings have been backfilled as this will impact on future mine planning and geotechnical assessments.

Based on the work carried out for the Joma Project, SRK recommends that consideration is given to advancing the Project to a PFS level of study using this PEA as a basis for the refining and optimising the approach. Further investigation and technical work, as detailed in the following sections, is required to provide sufficient confidence in the Project to advance towards eventual development. The additional work will include continuation of exploration, geotechnical and hydrogeological investigation, environmental baseline, socioeconomic and engineering studies to support environmental assessment and project evaluation.

25.2 Geology and Mineral Resources

SRK considers there to be opportunity to improve confidence in the understanding of the geological and grade continuity in the reported Mineral Resources at the Joma Project.

In relation to near mine exploration, SRK recommends the following:

- Drilling the Target 3 EM and gravity anomalies (shallow and deep) identified in 2013.

In relation to drilling and sampling, SRK recommends the following:

- Verification of outlying sample interval lengths.
- Re-logging and/or visual assessment of available drillcore to better understand sampling strategy and interval selection.
- Continue ongoing verification of historical database through comparison of drillholes against original paper sections.
- Re-assessment of available sections and plans to identify missing collar locations.

In relation to geometallurgical testwork, SRK recommends the following:

- Metallurgical testing from a selection of available drillcore to support any future studies as the current metallurgical assumptions are based on the historical mining and processing and it may be possible to improve these.

In relation to the depletion survey, SRK recommends the following:

- Once access is available, accurately resurvey all workings using a total station and a laser scanner. This can then be used to accurately deplete the model and as an input into the mine planning process. This will also help to identify any areas which have been backfilled.

In relation to the classification of the Mineral Resources, SRK recommends the following:

- Additional diamond drilling at Joma Main to upgrade material classified as Inferred to Indicated.
- Additional diamond drilling at Joma South to upgrade material currently unclassified to Inferred, and to upgrade material classified as Inferred to Indicated.

25.3 Mining

The following aspects should be considered for advancing the mining aspects of Joma Project:

1. Improve the geotechnical information available on the rock types for determination of localised extraction ratios and pillar requirements.
2. Further investigation into the potential for open pit mining.
3. Materials handling trade-off studies considering the potential for BEV and trolley-assist technologies to reduce reliance on fossil fuels and also to reduce greenhouse gas and carbon emissions.
4. Ground treatment requirements for boxcut/portal, underground access and ventilation raise requirements.
5. Once more information is available on the geotechnical and hydrogeological aspects of the Project then further detailed mine planning work can take place to identify opportunities for increasing the stope extraction ratios.

With respect to the placement of backfill underground, SRK recommends that the following work should be undertaken in further detailed studies by the Company:

1. The mine design and schedule should be completed in sufficient detail to determine piping and barricade requirements to a sufficient level of detail.
2. The backfill plant location needs to be determined.
3. Confirm type(s), quantity and cost of backfill.
4. The barricade concept and dewatering system will require detailed work.

The mine design and schedule should be completed in line with the increased confidence of future mineral resources classification and in sufficient detail to provide accurate mine production rate estimates. Future more detailed planning is undertaken with consultation with equipment suppliers to understand the requirements (and costs) of reducing diesel-powered mobile equipment and practically implementing developing battery-electric and trolley assist technologies at the individual mines.

SRK recommends that future detailed geotechnical and hydrogeological investigation is undertaken on the location of ventilation raises to get a clearer understanding of the ground control requirements and costs.

25.4 Mineral Processing

The following process related recommendations should be considered as the Project advances to the next stage of study:

1. Drilling of additional metallurgical drill holes to provide variability composites across the deposit for a follow-up test program.

2. Process testwork to understand the opportunities for pre-concentration in the mine to reduce waste movement and potentially reduce processing costs.

3. Testing of an overall composite prepared from the variability composites to optimise flotation conditions and reagent additions and to confirm the optimum mesh-of-grind.

4. Performing grindability and lock cycle testing of variability composites across the deposit to quantify semi-autogenous grinding characteristics and quantify any potential grinding variability and variability of metallurgical recoveries and concentrate grades.

5. Conducting pilot plant testing of representative mill feed to test the selected flotation process under steady-state conditions.

6. Completing further studies to determine the marketability of the copper, zinc and lead concentrates.

25.5 Tailings Management and Storage on Surface

Progression to PFS will necessitate investigation the potential for surface tailings management and potential storage capacity, temporary and/or permanent.

Conceptual closure scenarios should be developed at the later Feasibility stage of the Project with more comprehensive data gathering and analysis.

25.6 Water Management and Treatment

Further work is recommended on the water management and treatments aspects of Joma Project considering:

1. Geochemical investigation, analysis and modelling to estimate dewatering water quality and treatment requirements prior to discharge.

2. Investigation into water quality of non-contact and potential contact waters as these will dictate the necessity for water treatment.

3. A dewatering strategy to promote the recovery of non-contact water and thereby minimise contact waters.

4. Advance the hydrogeological analysis for Project and complete a suitably detailed water balance covering all aspects related to mining, processing, tailings and backfill.

25.7 Environmental, Social and Governance

As the Project advances, Bluelake Mineral must ensure that ESG factors are considered in the assessment and selection of project design alternatives, particularly the siting of infrastructure and waste management facilities. Early ESG input can maximise opportunities for stakeholder engagement and avoiding key impacts and risks on the surrounding environment. This will require two-way communication between the project engineers and environmental and social specialists. Key recommendations include:

- Assess all opportunities for climate change considerations to be embedded in Project design. Design alternatives and option selection should take into consideration energy efficiency, energy supply, water use, and project footprint to demonstrate the lowest practical carbon intensity for the overall project design. The Company should look to commit to a ‘net zero’ carbon footprint.
- Other factors likely to be important for gaining social license to operate will be interactions with other land uses (particularly Sámi and reindeer husbandry and outdoor recreation), populated places and biodiversity. The risks and opportunities need to be considered in light of increased focus on key receptors and viewed from the perspective of environmental and human rights.
- Detailed studies of waste (waste rock and tailings) needs to be conducted and material that meets the criteria of ‘extractive wastes’ by the State, a waste management plan will be required, as will permitting of an extractive waste facility.
- Detailed modelling of the water balance, including how groundwater and surface water flow will be influenced by the Project, need to be undertaken.
- Detailed modelling of airborne particulate matter and emissions are required.
- Detailed biodiversity mitigation and management measures are recommended to demonstrate a net positive impact from the project in the long term. A detailed biodiversity action plan is a likely requirement as part of the final suite of management plans arising from the ESIA commitments.
- Local and national level stakeholders should be identified and mapped, appropriate engagement methods identified, and a stakeholder engagement strategy developed. Measures should be employed to improve local community’s understanding and awareness of the project (including the positive and negative impacts of the Project) through regular interactions and various methods of communication including local media.
- Stakeholder engagement and meetings should be recorded and documented. Issues and concerns raised need to be formally documented, progress tracked, and a commitment made to feedback to the communities on these issues. This process can help improve the understanding of the positive and negative impacts on the social environment.
- Formal grievance process should also be developed and implemented in line with the UN Guiding Principles of Business and Human Rights. A formal grievance register should be kept with clear documentation on the grievance made, the steps taken to resolve the grievance and an option for third party resolution for any unresolved disputes.
- Anti-mining sentiment indicates a need for specific consideration on human rights, multi-stakeholder engagement platforms with open and transparent communication and dialogue, combined with increased capacity to mitigate any ongoing community opposition.

25.8 Closure

A detailed closure plan and associated cost estimate should be compiled as part of the PFS and must form part of the operating license application. This allows for a higher level of accuracy in the TEM and a more detailed understanding of the Project to be communicated to stakeholders.

25.9 Future Work

Based on the results of this PEA, the Company intends to advance the consolidated Joma and Stekenjokk-Levi projects to the confidence level of a Prefeasibility Study (PFS) while continuing its ongoing permitting and stakeholder engagement activities at both projects. The PFS will require further mining technical studies and in parallel detailed ESIA studies for final permitting approval. The key aspects of the future work program include:

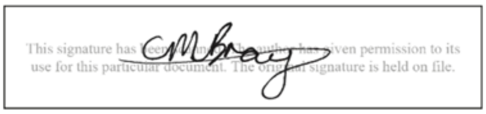
1. Update the Mineral Resource Estimates to convert a strategic amount of the current inferred resource to Indicated confidence level for the PFS.
    c) To include a drilling program and drill core re-logging.
    d) Drill program to include data collection for the PFS including geotechnical, hydrogeology and metallurgical testwork samples.
2. PFS to increase confidence levels in mine planning, ore processing, costs, and to include;
    d) Process testwork on representative samples to identify opportunities to improve process recoveries. This also extends to ore sorting to reduce material transport costs from Stekenjokk-Levi to Joma.
    e) Geochemical investigation, analysis and modelling to estimate dewatering water quality and treatment requirements prior to discharge.
    f) Identify engineering solutions and complete trade-off studies to reduce reliance on fossil fuels and the carbon footprint of the project considering opportunities for electrification of the equipment fleet through battery-electric and trolley assist technologies.
3. ESIA Studies to advance during the PFS technical studies;
    c) Baseline environmental and social studies
    d) Impact assessment of the project to include closure plan

The PFS and supporting investigation and technical work will be used as a basis for future permitting applications that must be obtained after the zoning plan has been adopted:

- Operating license from the Directorate for Mineral Management.
- Emission permit from the Norwegian Environment Agency.
- Building application (framework application and IG) from Røyrvik municipality.

The PEA will be used as a basis for detailed project planning and estimating the cost of future studies (including the ESIA) and permitting for the Project.

For and on behalf of SRK Consulting (UK) Limited



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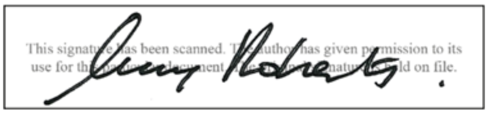

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GLOSSARY, ABBREVIATIONS, UNITS

Glossary – Technical Studies

Feasibility Study	Means a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.
Pre-Feasibility Study	The CIM Definition Standards requires the completion of a Pre-Feasibility Study as the minimum prerequisite for the conversion of Mineral Resources to Mineral Reserves. A Pre-Feasibility Study is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Qualified Person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Mineral Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.

Glossary – Mineral Resources and Mineral Reserves

Mineral Reserves	Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve. A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at pre-feasibility or feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.
Proven Mineral Reserves	A Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors. Application of the Proven Mineral Reserve category implies that the Qualified Person has the highest degree of confidence in the estimate with the consequent expectation in the minds of the readers of the report. The term should be restricted to that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect the potential economic viability of the deposit. Proven Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study.
Probable Mineral Reserves	A Probable Mineral Reserve is the economically mineable part of an

indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve. The Qualified Person(s) may elect, to convert Measured Mineral Resources to Probable Mineral Reserves if the confidence in the Modifying Factors is lower than that applied to a Proven Mineral Reserve. Probable Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study.

Mineral Resource

A concentration or occurrence of solid material of economic interest in or on the earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

Measured Mineral Resource

That part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

Indicated Mineral Resource

That part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Inferred Mineral Resource

That part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Glossary – Development Status

Adjacent Property

Means a property (a) in which the issuer does not have an interest (b) that has a boundary reasonably proximate to the property being reported on, and (c) that has geological characteristics similar to those of the property being reported on.

Advanced Property	
	Means a property that has (a) mineral reserves, or (b) mineral resources the potential economic viability of which is supported by a preliminary economic assessment, a pre-feasibility study or a feasibility study.
Early-Stage Exploration Property	
	Means a property for which the technical report being filed has (a) no current mineral resources or mineral reserves defined, and (b) no drilling or trenching proposed.
Advanced Exploration Property	
	Properties where considerable exploration has been undertaken and specific targets have been identified that warrant further detailed evaluation, usually by drill testing, trenching or some other form of detailed geological sampling. A Mineral Resource estimate may or may not have been made, but sufficient work will have been undertaken on at least one prospect to provide both a good understanding of the type of mineralisation present and encouragement that further work will elevate one or more of the prospects to the resource category.
Pre-Development Property	
	Properties where Mineral Resources have been identified and their extent estimated (possibly incompletely) but where a decision to proceed with development has not been made. Properties at the early assessment stage, properties for which a decision has been made not to proceed with development, properties on care and maintenance and properties held on retention titles are included in this category if Mineral Resources have been identified, even if no further Valuation, Technical Assessment, delineation or advanced exploration is being undertaken.
Development Property	Properties for which a decision has been made to proceed with construction and/or production, but which are not yet commissioned or are not yet operating at design levels,
Operating Mines	Mineral properties, particularly mines and processing plants that have been commissioned and are in production.
Care and Maintenance/Closed Properties	
	Mineral properties, particularly mines and processing plants which have been either decommissioned or placed on care and maintenance pending an improvement in economic and/or technical operating environments.

Abbreviations

AA-EQS	Annual Averaged Environmental Quality Standards
ARD	Acid Rock Drainage
asbuilts	historically mined areas
BAAS	battery-as-a-service
Bluelake Mineral	Bluelake Mineral AB
Boliden	Boliden Mineral AB
CAB	County Administrative Board
CBAM	carbon border adjustment mechanism
CIM	Canadian Institute of Mining and Metallurgy
Client	Bluelake Mineral
CMF	consensus market forecast
Company	Bluelake Mineral
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
DMF	Norwegian Directorate for Mineral Management (Norwegian: Direktoatet for mineralforvaltning)
DN	Directorate for Nature Management (Norwegian:; Direktoratet for naturforvaltning)
DOH	direct operating hours
EEA	European Economic Area
EFTA	European Free Trade Association
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EN	endangered
ESIA	Environmental and Social Impact Assessment
EU	European Union
GHG	Greenhouse Gas
Golder	Golder Associates AB
HDS	high density sludge
HV	High voltage
ICMM	International Council on Mining and Metals
IDW^2	Inverse Distance power 2
IED	Industrial Emissions Directive
IGE	International Gold Exploration AB
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
IUCN	International Union for the Conservation of Nature
Joma Gruver AS	a company in the Bluelake Mineral Group
Joma Main	Joma Main mineralisation
Joma South	Joma South mineralisation
JORC Code	The 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia
KPI	Key performance indicator
LC	Least Concern
LHOS	Longhole Open Stoping
LoM	Life of Mine
LOMP	Life of Mine Plan
LTC	Long Term Consensus
LV	Low voltage
MORB	Mid-ocean-ridge-basalt
MRE	Mineral Resource Estimate
MSO	mineable stope optimiser
MSO	mineable stope optimiser
Multiconsult	Multiconsult Norge AS
NEA	Norwegian Environment Agency (Norwegian: Miljødirektoratet)
NGM Nordic SME	Nordic Growth Market Small-Medium Enterprise stock exchange
NGU	Geological Survey of Norway (Norwegian: Norge Geologiske Undersøkelse)

NI 43-101	National Instrument 43-101 Report
NIVA	Norwegian Institute for Water research (Norwegian: Norsk institutt for vannforskning)
NPV	Net Present Value
NSR	Net Smelter Return
NT	near threatened
NVE	Norwegian Water Resources and Energy Directorate (Norwegian: Noregs vassdrags- og energidirektorat)
OK	Ordinary Kriging
PEA	Preliminary Economic Assessment
PFS	Prefeasibility Study
Project	Joma deposit, located in Norway and the Stekenjokk-Levi deposit, located in Sweden
QA/QC	Quality Assurance Quality Control
QKNA	Quantitative Kriging Neighbourhood Analysis
QP	Qualified Person
R&P	Room and Pillar mining method
RMR	Rock Mass Ratio
ROM	Run of Mine
ROS	risk and vulnerability analysis (Norwegian: risiko- og sårbarhetsanalyse)
RPEEE	Reasonable Prospects for Eventual Economic Extraction
SG	Specific Gravity
SGU	Geological Survey of Sweden (Swedish: Svenska Geologiska Undersökning)
SQKF	Stekenjokk Quartz-Keratophyre Formation
SRK	SRK Consulting (Sweden) AB
SRK Group	SRK Consulting (Global) Limited
SRKES	SRK Exploration Services Ltd
SveMin	Swedish Mining Association
TEM	technical-economic model
TEP	Technical Economic Parameters
TMF	Tailings Management Facility
TSM	Towards Sustainable Mining
UNECE	United Nations Economic Commission for Europe
USGS	US Geological Survey
UTM	Universal Transverse Mercator
Vilhelmina Mineral	Vilhelmina Mineral AB
VMS	volcanogenic massive sulfide
WPB	within-plate-basalt
WRD	Waste rock dump
WRSF	Waste Rock Storage Facility

Units

%	percent
°C	Degrees centigrade
cm	centimetre
dev m adv	development metres advance
g	gram
g/t	grams per tonne
hr	hour
kg	kilogram
kL	thousand litres
km	kilometre
km^2	kilometre squared (area)
koz	thousand ounces (troy)
kt	thousand tonnes
ktpa	thousand tonnes per annum
kVA	Apparent Power in kilo-watts
kW	Actual Power in kilo-watts
kWh	kilo-watt hour
L	litres
lb	pound (weight)
m	metre
M.Litres	million litres
m/s	metres per second
m^2	square metre (area)
m^3	cubic metre (volume)
m^3/s	cubic metres per second
masl	metres above sea level
mH	metres high
mm	millimetre
mRL	metres reduced level
Mt	million tonnes
Mt	million tonnes
Mtpa	million tonnes per annum
MW	Actual Power in mega-watts
mW	metres wide
MWh	mega-watt hour
NOK	Norwegian Kroner
oz	troy ounce
s	second
t	tonne
t/m^3	tonnes per cubic metre (density)
tkm	tonne-kilometre
tpa	tonnes per annum
tph	tonnes per hour
USD	United States Dollar
USDm	million USD
V	volt

APPENDIX

A STEKENJOKK-LEVI PEA REPORT

PRELIMINARY ECONOMIC ASSESSMENT FOR THE STEKENJOKK-LEVI PROJECT, SWEDEN

Prepared For

Joma Gruver AS

A company in the Bluelake Mineral Group

Report Prepared by

srk consulting

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GLOSSARY, ABBREVIATIONS, UNITS 1

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PRELIMINARY ECONOMIC ASSESSMENT FOR THE STEKENJOKK-LEVI PROJECT, SWEDEN

1 INTRODUCTION

SRK Consulting (Sweden) AB ("SRK") is an associate company of the international group holding company, SRK Consulting (Global) Limited (the "SRK Group"). SRK was commissioned by Joma Gruver AS, a company in the Bluelake Mineral Group ("Bluelake Mineral", hereinafter also referred to as the "Company" or the "Client") to prepare a Preliminary Economic Assessment ("PEA") on the the Stekenjokk-Levi deposit, located in Sweden (the "Project") and on the Joma deposit, located in Norway.

The Stekenjokk-Levi deposit is located in the Vilhelmina area of northwestern Sweden on the border between Västerbotten and Jämtland counties (Swedish: *län*), approximately 25 km west of the town of Klimpfjäll, 150 km northwest of the nearest major town of Vilhelmina and 650 km north-northwest of the capital city of Stockholm (Figure 1-1) and the Joma deposit is located approximately 570 km north of Norway's capital, Oslo, and 230 km northeast of the closest major city, Trondheim.

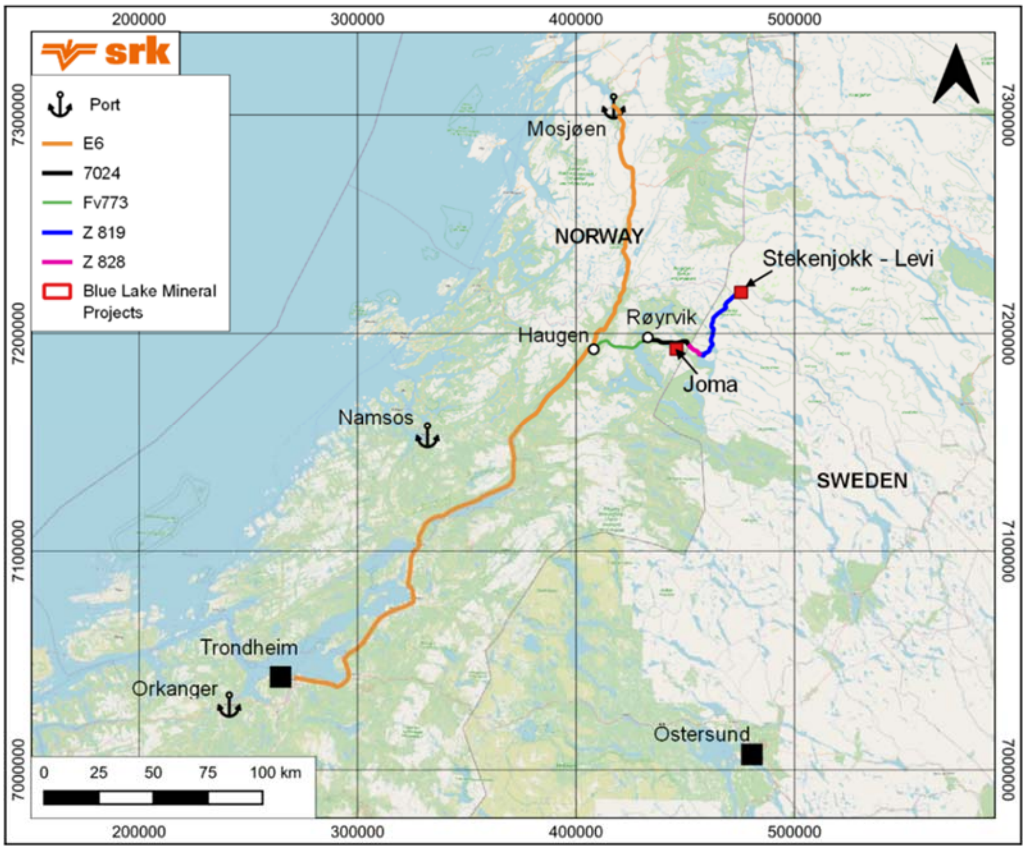

Figure 1-1: Location of Stekenjokk-Levi deposit in Sweden and Joma deposit in Norway

The Stekenjokk-Levi deposit is a brownfields project with Zn-Cu-Pb-Ag-Au mineralisation of Caledonian VMS style. This project was a historical underground mining producer during the period 1976 to 1988 (Boliden Mineral AB). The ore is shallow dipping to flat with thickness between 2 and 20 m. All mining took place underground as cut-and-fill mining using the coarse fraction of the flotation tailings as back-fill material with high percentage ore recovery achieved. Flatter areas used the room and pillar (“R&P”) method with the coarse tailings backfill as a working floor in thicker areas. Unmined zones of this deposit have been the topic of previous historical resource estimates.

The Joma deposit is a brownfields project with Cu-Zn mineralisation of Caledonian VMS style. The individual lenses vary greatly in thickness and length with the massive zone attaining a maximum thickness of about 50 m. The orebody forms a folded, plate-like body that dips steeply to the west-southwest from the surface and flattens out at depth. This project was a historical underground mine in production during the period 1972 to 1998 (Grong Gruber AS). Residual and unmined zones of this deposit have been the topic of previous historical resource estimates.

The Company has consolidated the ownership of these two assets which are approximately 60 km apart by paved road, with the intention evaluating and implementing a re-start of the two historical mines utilising a single ore processing plant at the Joma Project location. Future campaign mine production at Stekenjokk will be considered during winter months only.

SRK completed the Mineral Resource Estimates (“MRE”) for the Stekenjokk-Levi and the Joma deposits in a separate engagement with the Company which is used as a basis for the PEA.

The PEA is based on the combined production from the Joma and Stekenjokk-Levi underground mines with a single beneficiation plant to be built on the site of the previous Joma concentrator with a target production rate of 750 ktpa. Due to differing head grades and historical metallurgical responses, the ores from Joma, Stekenjokk and Levi will be processed in individual campaigns with ore from all three mines to be separately stockpiled ahead of the concentrator. In addition, the Stekenjokk and Levi mines will only operate during the winter season.

The flowsheet will consist of crushing and grinding ahead of flotation to produce separate concentrates. Joma ore will produce copper and zinc concentrates, and Stekenjokk and Levi will produce copper, zinc and lead concentrates. Precious metals (gold and silver) will report to the different concentrates according to their specific metallurgical responses.

The mine plan for Joma also considers storage underground of all future tailings from the process facilities as a paste backfill in the historic (and future) mining voids. This also includes future ore processed from the Stekenjokk and Levi deposits at the Joma process facility.

This PEA report covers only the Stekenjokk-Levi deposit including the MRE and Life of Mine Plan (“LOMP”) and is an appendix to the main Joma PEA report which includes the overall processing schedule and economic assessment.

The PEA is preliminary in nature. It includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorised as Mineral Reserves. There is no certainty that the PEA will be realised.

1.1 PEA Approach

The PEA is based on a conventional underground approach using a combination of electric-powered equipment such as Jumbo and Longhole Drills) and diesel-powered mobile equipment (such as loaders and trucks).

An additional concept-level ‘Green Case’ is assessed to understand the early-stage potential for a fully-electric mine utilising developing battery-electric technologies for underground loaders and trucks with a provision for charging stations (covered in the separate main Joma PEA report).

This PEA report only covers the LOMP for the Stekenjokk-Levi deposit. The Mineral Processing, Capital and Operating Costs and Economic Assessment are covered in the separate main Joma PEA Report.

1.2 The Stekenjokk-Levi Project

The Project comprises the previously operating mine of Stekenjokk and the along-strike extension of the same mineralisation referred to as Levi. It is located on the border between the Vilhelmina municipality (Swedish: *kommun*) in Västerbotten County (Swedish: *län*) and Strömsund municipality of Jämtland county. The Project is 650 km north-northwest of Stockholm, and 310 km northwest of Umeå and 15 km west of the village of Klimpfjäll. The volcanogenic massive sulphide (“VMS”) deposit was mined historically between 1976 and 1988 by Boliden Mineral AB (“Boliden”) primarily for zinc, copper and silver. During this production period, an estimated 8 Mt of material was mined.

The Project is within the rugged Scandinavian (or Nordic) mountains close to the border with Norway. It is accessible by road with the major E45 highway approximately 115 km to the east and minor roads (Z824 Jormvägen) running through the Project area between the villages of Klimpfjäll 15 km to the east and Ankarvattnet 25 km to the southwest.

The Deposit and Mineral Resource statement herein is covered by three exploration licences that are currently valid and held 100% by Joma Gruver AS’ parent company Vilhelmina Mineral AB (“Vilhelmina Mineral”). The Project is at a conceptual stage, but it is currently envisaged it will comprise an underground operation feeding a processing operation producing a sulphide concentrate.

1.3 Terms of Reference

The effective date of the PEA Technical Report is 04 May 2022 (the “Effective Date”) with reliance on:

- the Mineral Resource statement, with an effective date of 19 November 2021, reported in accordance with the NI 43-101 guidelines and the 2014 Canadian Institute of Mining and Metallurgy (“CIM”) definition standards for reporting Mineral Resources and Mineral Reserves (the “2014 CIM Definition Standards”) as at 22 May 2019; and
- an opinion on the reasonableness of the technical-economic inputs into the LOMP, specifically: saleable product, operating expenditure and capital expenditure.

Currency is expressed in United States dollars (“USD”) unless stated otherwise; units presented are typically metric units, such as metric tonnes, unless otherwise noted.

1.4 Report Contributors

The work undertaken by SRK in compiling this report has been managed by Mr Chris Bray (MAusIMM(CP) who is a Qualified Persons ("QP") as defined in CIM Definition Standards. In addition, the MRE which forms the basis of the PEA study was completed by QP Dr Lucy Roberts MAusIMM(CP) of SRK. The details of the various contributing authors and their respective areas of technical responsibility are presented in Table 1-1 below.

As part of this work, SRK has undertaken site visits and made first-hand observations of the core, collection and core logging procedures employed and reviewed all the Project data available. The site visits were undertaken by Mr Harri Rees of SRK Exploration Services Ltd ("SRKES") in September 2021 and by Mr Tony Lund, who is a mining engineer working for Lund Mining Services and sub-contracted to SRK, in October 2021.

Table 1-1: Contributing authors and respective area of technical responsibility

Qualified Persons Responsible for the Preparation of this Technical report						
Qualified Person	**Position**	**Company**	**Independent of Bluelake Mineral**	**Date of Last Site Visit**	**Professional Designation**	**Sections of the Report**
Christopher Bray	Principal Consultant (Mining Engineer)	SRK UK	Yes	No Visit	BEng, MAusIMM(CP)	All Sections and overall Project Management
Dr Lucy Roberts	Principal Consultant (Resource Geology)	SRK UK	Yes	No Visit	BSc (Hons), MSc, PhD, MAusIMM (CP)	Section 12 and 14
Other Experts who assisted the Qualified Persons						
Expert	**Position**	**Company**	**Independent of Bluelake Mineral**	**Date of Last Site Visit**	**Sections of the Report**	
Tony Lund	Consultant (Mining Engineer)	SRK Associate	Yes	October, 2021	Mine Design, Scheduling and Ventilation, Section 16	
Neil Marshall	Corporate Consultant (Geotechnical)	SRK UK	Yes	No visit	Geotechnical, Section 16.2	
James Bellin	Principal Consultant (Water Management)	SRK UK	Yes	No visit	Water Management, Section 18.3	
Dr John Willis	Principal Consultant (Mineral Processing)	SRK UK	Yes	No visit	Processing and Metallurgy, Sections 17 and 18	
Ben Lepley	Environmental Consultant (ESG)	SRK UK	Yes	No visit	Environmental, Social & Governance, Section 20	
Inge Moors	Senior Consultant (Due Diligence)	SRK UK	Yes	No visit	Economic Analysis, Section 22	

1.5 Reporting Standards

The Client is listed on the Nordic Growth Market Small-Medium Enterprise stock exchange ("NGM Nordic SME") based in Stockholm trading under the ticker 'BLUE'. The NGM Nordic SME does not have any requirements in terms of Mineral Resource or Mineral Reserve reporting standards. The Client has requested that work undertaken, and the report produced, is based on the PEA definitions produced by the Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and the Mineral Resource is reported according to CIM Definition Standards on Mineral Resources and Reserves ("CIM Definition Standards"). These standards are internationally recognised and allow the reader to compare to similar Projects. The definitions and requirements within the CIM Definition Standards and NI 43-101 are aligned with the Committee for Mineral Reserves International Reporting Standards ("CRIRSCO") reporting template and as such is an internationally recognised reporting standard comparable to other recognised international reporting codes such as the SAMREC code of South Africa and the JORC Code of Australia.

1.6 Limitations, Reliance on SRK, Declaration, Consent, Copyright and Cautionary Statements

1.6.1 Limitations

SRK's opinion contained herein, and effective 04 May 2022 is based on information collected and completed by SRK throughout the course of the PEA, which in turn reflect various technical and economic conditions at the time of writing. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

1.6.2 Reliance on information

SRK has relied upon the accuracy and completeness of technical, financial and legal information and data furnished by or through the Company.

Whilst SRK has exercised all due care in reviewing the supplied information, SRK does not accept responsibility for finding any errors or omissions contained therein and disclaims liability for any consequences of such errors or omissions.

SRK's assessment of the Company's Mineral Resources, technical-economic parameters ("TEP"), and the LOMP for the PEA is based on information provided by the Company throughout the course of SRK's investigations, which, in turn, reflect various technical and economic conditions prevailing at the date of this report. These TEP can change significantly over relatively short periods of time. Should these change materially the TEP could be materially different in these changed circumstances.

This PEA Technical Report specifically excludes all aspects of legal issues, marketing, commercial and financing matters, insurance, land titles and usage agreements, and any other agreements and/or contracts the Company may have entered into.

This report may include technical information that requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK understands that the PEA Technical Report will be used in discussions with future potential investors and partners and will not be used as a listing document.

1.6.3 Declaration

SRK will receive a fee for the preparation of this report in accordance with normal professional consulting practices. This fee is not dependent on the findings of this Technical Report and SRK will receive no other benefit for the preparation of this Technical Report. SRK does not have any pecuniary or other interests that could reasonably be regarded as capable of affecting its ability to provide an unbiased opinion in relation to the TEP, the LOMP for the Project and the projections and assumptions included in the various technical studies completed by Company, opined upon by SRK and reported herein.

2 RELIANCE ON OTHER EXPERTS

SRK has relied on information generated from many sources to compile this PEA in addition to technical work completed by SRK specialists. The principal sources of external information are:

Discussions and meetings with Company staff and its associated consultants, contractors and business partners.

Internal memos and reports by the Company and its subsidiaries.

Previous technical reports:

- SRK MRE report for Stekenjokk-Joma (SRK Consulting (Sweden) AB, 2021).
- Mining concession application documents (Golder Associates AB, 2017) and (Golder Associates AB, 2018).
- Reports produced by and on behalf of previous owners Boliden.

Publicly available information and reports, including:

- US Geological Survey (USGS) geological model (USGS, 2010).
- Other freely available GIS data, satellite imagery and media articles.

SRK has also confirmed that the Mineral Resources reported herein are within the extraction permit boundaries given below and that the extraction permit as presented by the Company reflect the publicly available information at the Swedish Geological Survey. SRK has not, however, conducted any legal due diligence on the ownership of the exploration permits or exploitation concessions themselves, and compliance with the conditions therein.

3 PROPERTY DESCRIPTION AND LOCATION

The following section outlines the location and description of the Project, including permitting.

3.1 Property Description

The Project comprises a VMS deposit with economically interesting grades of copper (Cu), zinc (Zn), lead (Pb), silver (Ag) and gold (Au). The Stekenjokk part of the deposit was mined in the 1970s and 1980s and the site has a prominent historical legacy both underground and on the surface.

Stekenjokk was primarily mined using underground methods by Boliden between 1976 and 1988, but also with a small open pit in the Stekenjokk North area. The mine was eventually closed due to the depletion of material that was economic at the time, at which point the mine was closed and allowed to flood. Many of the office buildings, workshops and processing facilities still stand, but are in a varying state of disrepair and much of the processing equipment and mining plant was sold.

The Project is currently covered by three exploration permits covering a total area of 2,172 ha (21.72 km^2) enclosed with areas of national interest for mineral development of 2,994 ha (29.94 km^2). Two exploitation concessions currently under application cover an area of 489 ha (4.89 km^2). Maps are provided in Figure 3-1 and Figure 4-8.

Following on from the PEA, Bluelake Mineral intends to advance the consolidated Joma and Stekenjokk-Levi projects to the confidence level of a Prefeasibility Study (“PFS”) while continuing its ongoing permitting and stakeholder engagement activities at both projects. The PFS will require further mining technical studies and in parallel detailed environmental and social impact assessment (“ESIA”) studies for final permitting approval.

3.2 Location

The Project is located in the Vilhelmina area of northwestern Sweden on the border between Västerbotten and Jämtland counties (Swedish: *län*), approximately 25 km west of the town of Klimpfjäll, 150 km northwest of the nearest major town of Vilhelmina and 650 km north-northwest of the capital city of Stockholm. The Levi deposit area is located 2 km north of the historical Stekenjokk mine. A map showing the location of the Project in relation to Joma and within Sweden is provided in Figure 3-1.

3.3 Coordinate Systems

Unless otherwise specified, the coordinates used for the Project are in SWEREF99 (SWEREF99/RT90 2.5gonV; EPSG:3006). This system replaced the previously used RT90 coordinate system in Sweden in 2003. The RT-90 coordinate system has an accuracy of 1m, and all data used in the MRE reported herein are expressed in the RT-90 coordinate system.

Longitude/latitude coordinates for the Stekenjokk deposit are approximately 65° 5' 57.8"N, 14° 27' 28.2" E and Levi are 65° 7' 0.62"N, 14° 26' 8.6" E (WGS84).

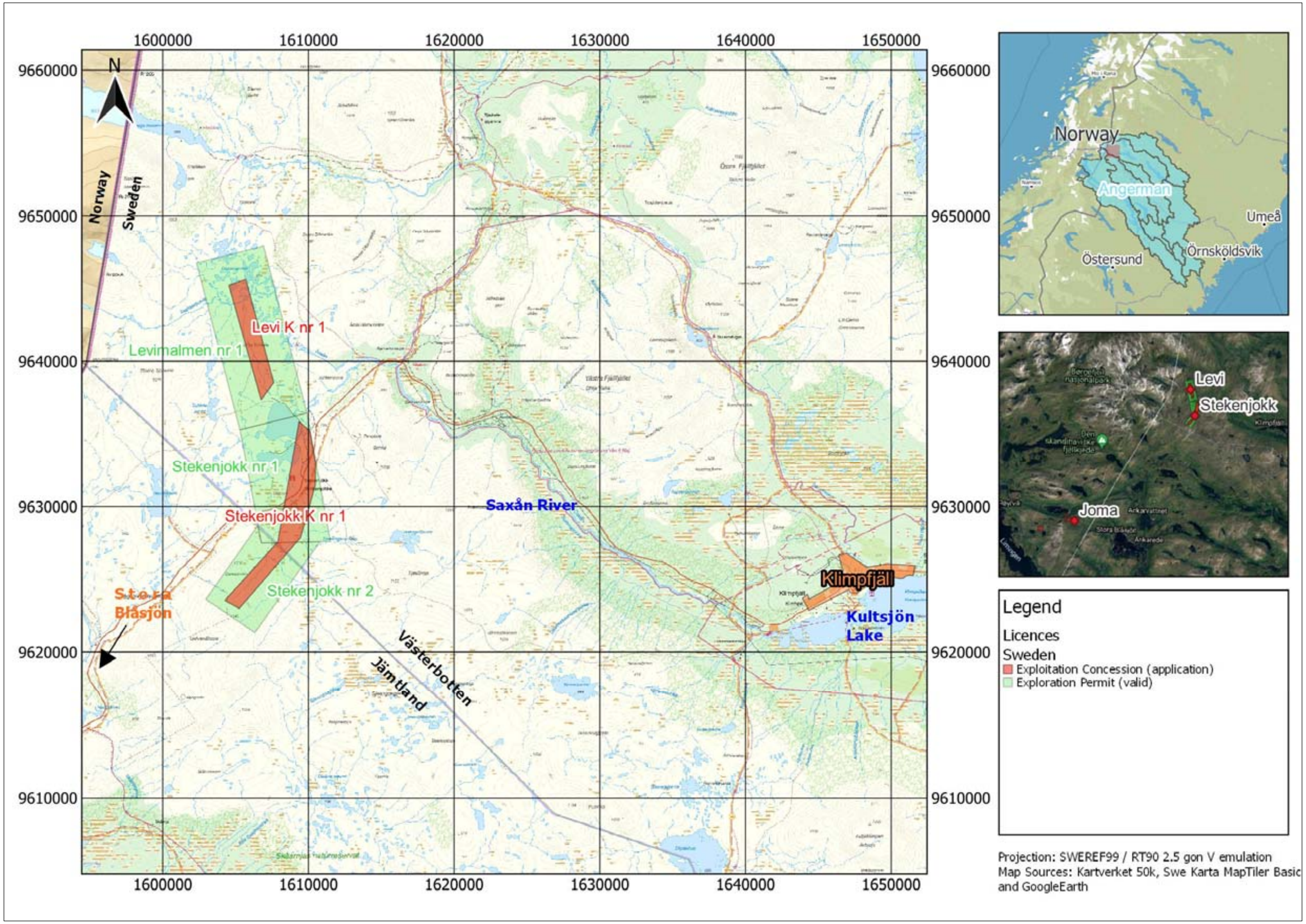

Figure 3-1: Location of Stekenjokk-Levi Project and licence boundaries

3.4 Permitting

Rules and regulations pertaining to mining exploration in Sweden are outlined in the latest (2006) 'Guide to Mineral Legislation and Regulations in Sweden' by the Geological Survey of Sweden (Swedish: *Svenska Geologiska Undersökning, "SGU"*[1]). The Mining Inspectorate of Sweden (Swedish: *Bergsstaten*) also provides clear directives, available from the Mining Inspectorate website (www.bergsstaten.se), for conducting exploration. Another useful link that summarizes these laws and guidelines is 'A Guide to Mineral Legislation and Regulations in Sweden' published in 1995[2].

3.4.1 Sweden legislation

The key Swedish legislation relevant to mine development is outlined in Table 3-1. Sweden is a member of the European Union and as such is subject to the Directives and Regulations of the European Parliament and its Commission. European Directives must be transposed into member states legislation that often merely reference the text of the Directives. Key directives applicable to the project and details of their requirements are outlined in Table 3-2

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[1] *SGU Website: www.sgu.se*
[2] *Geonord Website: www.geonord.org/law/minlageng.html*

Table 3-1: Legislation pertinent to mining projects

Law	Summary	Responsible Authorities
Minerals Act, *Minerallag* (1991:45) last amended 01 March 2021 (law 2021:120)	Applicable to the exploration and exploitation stages of mine development. The Minerals Act is administered by Mining Inspectorate with input from local government and the environmental courts.	Ministry of Economic Affairs (Swedish: *Näringsdepartementet RSN)* Chief Mining Inspector at the Mining Inspectorate *(Swedish: Bergstaten)*
Minerals Regulation, *Mineralförordning* (1992:285)	Instructions for use with the Minerals Act for guiding the proponent in the process of applying for exploration permits and exploitation concessions along with the requirements and obligations if approved.	
Environmental Code, *Miljöbalk* (1998:808) last amended 01 January 2021 (law 2020:1174)	Purpose of this Code is to promote sustainable development that will assure a healthy and sound environment for present and future generations. The procedure and requirements for environmental impact assessments, plans and planning documents should follow this Code. The applicant is obliged to consult County Administrative Board ("CAB", Swedish: *Länsstyrelsen*) or the local Environmental and Public Health Committee (Swedish: *Miljö- och folkhälsokommittén*) before submitting an application for an environmental permit and a public hearing is often held.	Ministry of the Environment (Swedish: *Miljödepartementet*); Environmental Protection Agency (Swedish: *Naturvårdsverket*); County (Västerbotten/Jämtland) CAB; Land and Environmental Court (Swedish: *Mark- och miljödomstolen*)
Environmental Assessment Regulation, *Miljöbedömningsförordning (2017:966)*	Instructions for use with the Environmental Code and Minerals Act with regard to ESIA. Specifically updates the requirement to undertake stakeholder engagement prior to awarding of exploitation concessions	
Reindeer Husbandry Act, *Rennäringslag* (1971:437) last amended 25 May 2018	Law relating to reindeer husbandry (Swedish: *Rennäring*) including the interaction with other land uses.	Ministry of Economic Affairs
Planning and Building Act, *Plan- och bygglag* (2010:900) last amended 02 August 2021 (law 2021:785)	Once the Land and Environmental Court has granted permission to begin operations, a construction permit is required by the local municipality. A construction permit normally takes between four and eight weeks to process and covers buildings and other facilities that need to be constructed in connection with the mining project.	Ministry of Finance (Swedish: *Finansdepartementet SPN BB*)

Table 3-2: Key EU Directives applicable to ESG in mining

Directive	Summary
EIA Directive	Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. This was amended by Directive 2014/52/EU on 16 April 2014. Transposition of the Directive into national law was required by 16 May 2017. The developer may request the competent authority to say what should be covered by the EIA information to be provided by the developer (scoping). The developer must provide information on the environmental impact (report). The Environmental Authorities and the public (and affected Member States) must be informed and consulted, and the Competent Authority decides, taking into consideration the results of the consultations. The public must be informed of the decision and can challenge the decision before the courts.
Public Participation Directive	Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment. It amends requirements relating to public participation and access to justice from Council Directives 85/337/EEC (assessment of the effects of certain public and private projects on the environment) and 96/61/EC (concerning integrated pollution prevention and control)
Habitats Directive	Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora. The Habitats Directive alongside the Birds Directive establishes the Natura 2000 Network across Europe. The network consists of protected areas across the continent and ensures the conservation of rare, threatened or endemic animal and plant species. Over 200 habitat types are targeted for conservation in their own right, and over 1,000 species.
Birds Directive	Council Directive 2009/147/EC on the conservation of wild birds – replaces Council Directive 79/409/EEC of 2 April 1979.
Water Framework Directive (WFD) Daughter directives: Environmental Quality Standards Directive (also referred to as the "Priority Substances Directive"); and Groundwater Directive	Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for community action in the field of water policy. The WFD pulls together a number of different legacy pieces of legislation. The Directive requires the development of River Basin Management Plans ("RBMP") for each river basin district. It requires surface waters be managed or improved to good ecological and chemical status, and that groundwater should not be polluted. Priority Substances: The Water Framework Directive provides for a list of Priority Substances (in Annex X). The Environmental Quality Standards (EQS) Directive, a daughter directive of the Water Framework Directive (officially named "Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy") set the quality standards as required by Article 16(8) of the Water Framework Directive. The Groundwater Directive (Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration) is the other daughter directive of the Water Framework Directive. Annex II sets forth threshold values for groundwater pollutants and indicators of pollution and was amended by Directive 2014/80/EU of 20 June 2014.
Floods Directive	Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks. The Directive requires governments to assess flood risk, to produce flood risk maps and instigate management plans.
Drinking Water Directive	Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption. The Directive sets minimum drinking water quality standards based on World Health Organisation ("WHO") guidelines, measured at the tap.

Directive	Summary
Mine Waste Directive	Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries. (Note this directive also amends Directive 2004/35/EC – the Environmental Liability Directive.) Several decisions have also been published implementing the requirements of the Mine Waste Directive, including: • 2009/337/EC on Criteria for the classification of waste facilities in accordance with Annex III • 2009/335/EC on Technical guidelines for the establishment of the financial guarantee • 2009/360/EC on technical requirements for waste classification • 2009/359/EC on Definition of inert waste in implementation of Article 22 • 2009/358/EC on the Harmonisation, the regular transmission of the information and the questionnaire referred to in Articles 22(1)(a) and 18. Mining Waste Facilities are those in which extractive wastes are stored for a time period (a time period is not applicable to higher risk facilities) and are required to apply for and maintain a permit. Material destined for such a facility must be adequately characterised prior to deposition.
Waste Framework Directive	Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
Industrial Emissions Directive	Directive 2010/75/EU of the European Parliament and the Council on industrial emissions is the main EU instrument regulating pollutant emissions from industrial installations. The Directive requires Operators apply Best Available Techniques, including technology, management systems and emission limits decided at a European community level.
Ambient Air Quality Directive Daughter directive: Directive 2004/107/EC	Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.
Environmental Noise Directive	Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise.
Major Accidents (Seveso Directive III)	Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances.
Environmental Liability Directive	Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage. This applies to serious environmental damage to land, water and to species and habitats.
EU Emission Trading Scheme Directive	Directive 87/2002/EC of the European Parliament establishes a trading scheme for greenhouse gas emissions across the EU. The flagship carbon directive for the EU it was the first of its kind internationally. Phase IV began in January 2021.
Energy Efficiency Directive	Directive 2012/27/EU is an EU directive that mandates energy efficiency in the EU and includes energy efficiency targets, building renovation, energy efficiency obligation schemes, energy audits, promotion of energy efficiency in heating and cooling and other rights
REACH	Registration, evaluation and authorisation of chemicals. The Regulations require essentially all products coming into the EU to be registered and is the most comprehensive and wide-reaching supplier requirement ever constructed by the EU.

Directive	Summary
European Green Deal	A raft of legislation and guidance was produced and is in progress support the EU with its ‘European Green Deal’ as launched in 2019. This includes the following key items relevant to mining and battery metals: • EU taxonomy (Regulation (EU) 2020/852) - a classification system, establishing a list of environmentally sustainable economic activities. • Carbon Border Adjustment Mechanism (“CBAM” – not yet legislated – this will put a carbon price on imports of a targeted selection of products so that climate action in Europe does not lead to ‘carbon leakage’ where carbon-intensive production to moved to outside Europe. • Battery Minerals Regulation (not yet legislated) – aiming to modernise EU legislation on batteries to ensure the sustainability and competitiveness of EU battery value chains.

3.4.2 Swedish permitting summary

There are four types of permits necessary to develop a metal mine in Sweden from the exploration stage to the development and operational stage: exploration permits, exploitation (mining) concessions, environmental permits and building permits. In addition to the permits, land designation must be approved for use of land for the requested purposes (such as tailings, waste rock, supporting infrastructure). These processes are described in more detail below.

For the purpose of reporting a Mineral Resource and the PEA, the currently valid exploration permits provide the Company with exclusive mineral rights to the Project.

The permits are issued by the local authority, with main permitting stages for a mining operation in Sweden graphically illustrated in Figure 3-2. SRK notes that the Natura 2000 framework has become part of the Swedish regulations under the 'Additional legal framework'.

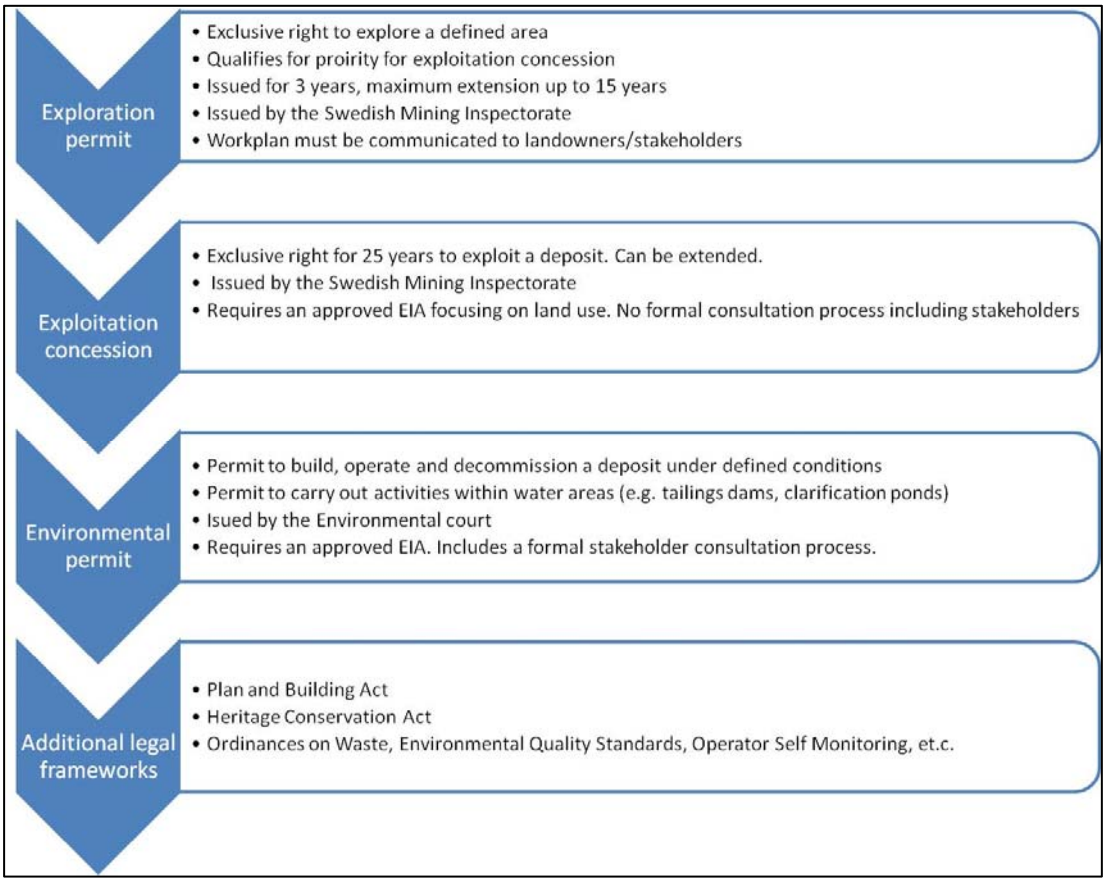


Figure 3-2: Swedish mine permitting process

Exploration Permits

Under the Minerals Act (1991:45) exploration permits (Swedish: U*ndersökningstillstånd*) are issued by the Mining Inspectorate of Sweden (Swedish: *Bergsstaten*). An exploration permit allows the holder exclusive (no other parties permitted) access to land for exploration work that does not damage the environment or the land use. It does not entitle the holder to undertake exploration work in contravention of any environmental regulations that apply to the area. Applications for exemptions relating to environmental regulations are normally made to the CAB (Swedish: *Länsstyrelsen*). The exploration permit holder has the obligation to outline a work programme and gain permission from landholders prior to accessing the properties, and to provide compensation for any ground-disturbing work conducted.

Exploration permits are granted for a period of three years. They may be extended by application to 11 years and can be further extended to a maximum period of 15 years, but only in exceptional circumstances. According to Section 3 of the Minerals Act (1991, last amended 2021) a holder of an exploration permit may have priority in applying for an exploitation concession. A minimal financial assurance must be provided and guaranteed to provide for any damage and restoration. Should exploration terminate and the project not progress to mining, the exploration permit holder may have to provide a report to the Swedish Government (the "State") on the minerals explored and results.

Exploration permits cannot be granted for land within a protected zone (National or International protection for environmental or cultural reasons) including a buffer of 1,000 m and including the following restrictions:

- must be more than 30 m from transport infrastructure such as roads and railways;
- must be more than 200 m from an inhabited building;
- cannot be on electrical infrastructure sites;
- must be more than 200 m from churches, assembly halls, hotels, hospitals or anywhere accommodating more than 50 people;
- must not be in areas of fortification;
- must not be in churchyards or burial grounds;
- must not be in certain specified mountain areas in Sweden; and
- must not be in National Parks.

SRK notes these exclusions do not apply to Natura 2000 areas. According to the Environmental Code, if an activity is located near or within a Natura 2000 area, the operator must demonstrate that the activity will not affect the environment in a significant way. This is relevant to the Stekenjokk-Levi Project, as shown in Section 4.2.4.

Exploitation Concessions

Exploitation of a property for minerals requires an exploitation concession (Swedish: *Bearbetningskoncession*) under the Minerals Act (1991, last amended 2021), which is issued by the Mining Inspectorate. A pre-requisite for the granting of a concession is that Chapters 3 and 4 of the Environmental Code (1998:808, Swedish: *Miljöbalken*) relating to suitability of land use versus other interests (basic and special provisions respectively for the management of land and water) are complied with. Applications for a exploitation concession must be accompanied by a preliminary ESIA (Swedish: *miljökonsekvensbeskrivning 1,* or "*MKB1"),* including an assessment on the impact on reindeer herding.

The applications are made to the Mining Inspectorate to be evaluated for approval by the local CAB. An exploitation concession is granted if there is a probability for economic exploitation of the deposit and if the site is considered appropriate from a mining and environmental point of view. Concessions are granted for a period of 25 years but if exploitation is ongoing the concession may roll-over without the need to submit additional applications.

The CAB has to complete the following before approving concessions:

- assess compatibility with Chapters 3 and 4 in the Environmental Code;

- decide if the environmental impact statement (MKB1) is acceptable;
- consult with and obtain opinion from local municipality (in this case Storuman);
- consult with and obtain opinion from local residents; and
- consult with and obtain opinion from local Sámi villages (in this case Vilhelmina Södra and Voernese).

There is no requirement to legally survey the boundaries of exploitation concessions in Sweden; instead, boundaries are assigned Swedish SWEREF99 (SWEREF99/RT90 2.5gonV) coordinates by the Mining Inspectorate on granting.

Environmental Permits

In addition to an exploitation concession, mining activities require an environmental permit (Swedish: *miljötillstånd*) under the Swedish Environmental Code. They are issued by the Land and Environmental Court (Swedish: *Mark- och miljödomstolen*) and regulated by the Swedish Environmental Protection Agency (Swedish: *Naturvårdsverket*) in conjunction with the Västerbotten/Jämtland CAB (in the case of Stekenjokk-Levi). The permit will define the conditions for the design, building, operation and closure of a mining installation. The permit application must be supported by a comprehensive ESIA (referred to as "MKB2"), which includes formal consultations with stakeholders.

Decisions by the Environmental Court may (with leave to appeal) be appealed to the Environmental Court of Appeal and further to the Supreme Court.

Construction activities within water areas (such as tailings dam, clarification pond), requires special considerations in the application for an environmental permit. One such consideration is the right of disposition of the water, which the Company must have before the application is submitted. Right of disposition of the water is normally obtained by acquisition of the land where the water works will take place or through an easement granted either by the landowner or by an authority.

Building Permits

A building permit is also needed under the terms of the Planning and Building Act (2010:900; Swedish: *Plan- och bygglag*).

Land Designation

In addition to the above-mentioned permits, mining activities require an agreement with the landowner(s) or a decision by the Mining Inspectorate regarding designation of land above ground to be used for the activities.

A legal proceeding for designation of land (Swedish: '*markanvisning*') is held at the request and cost of the concession-holder (Minerals Act (1991, last amended 2021) Chapter 9 Section 20). This designates land within the concession area that the concession-holder may use for exploitation of the mineral deposit. A decision is also taken regarding the land, within or outside the concession area, that the concession-holder may use for activities related to the exploitation. In this connection the nature of the activity shall be stated, such as tailings storage, waste rock or supporting infrastructure.

Water

Demonstration of the right to water directly impacted by drawdown is required as a prerequisite for submittal of the environmental permit application to the Environmental Court. Demonstration of the land access agreements for all lands required for a project, including land within the exploitation concession and land required for project infrastructure if outside the exploitation concession (known as land designation, Swedish: *markanvisning*) is required before a permit can be validated. As such, it is planned that water rights will be in place in advance of submitting the environmental permit application

3.4.3 Permit status

The deposit is currently covered under three contiguous exploration permits. In addition, two separate exploitation concessions covering Stekenjokk and Levi were applied for in 2011, as shown in Table 3-3.

Table 3-3: Exploration permit and exploitation concession summary details

Permit Name	Permit Type	Grant Date	Expiration Date	Area (ha)
Stekenjokk nr 1	Exploration	31/10/2005	31/10/2014*	709
Stekenjokk nr 2		31/10/2005	31/10/2014*	465
Levimalmen nr 1		19/09/2005	31/10/2014*	998
Stekenjokk K nr 1	Exploitation	29/07/2011	Pending approval	325
Levi K nr 1		29/07/2011	Pending approval	164

**Note: the exploration licence remains valid whilst the exploitation concession application decision is finalised.*

A timeline of events relating to the mineral permitting is provided below:

- **2005**: successful application of three exploration permits by International Gold Exploration AB ("IGE").
- **2008**: successful 1st extension of exploration permits by IGE.
- **2011**: successful 2nd extension of exploration permits to current expiration date and purchase of permits by Northfield Exploration AB ("Northfield") from IGE. Application for two exploitation concessions submitted (during the time the exploitation concessions are being assessed the exploration permits remain valid). Northfield changes name to Vilhelmina Mineral AB.
- **2012**: SGU classified the Stekenjokk-Levi Project as an "Area of National Interest for Mineral Extraction" (Swedish: *Riksintressen Mineral*) on 10 December 2012.
- **2013**: applications rejected by Mining Inspectorate on the basis that the proposed mining and processing method would have a detrimental impact on surface water along with conflict with reindeer herding interests.
- **2014**: Vilhelmina Mineral appealed the decision to the Government who referred the matter back to the Mining Inspectorate. They asked for further work to be completed to reduce the impact of the Project on the local area (particularly water bodies).
- **2017-2018**: Vilhelmina Mineral undertook further technical work and an environmental impact assessment (MKB) to update the application with a new method of extraction and processing. This included forming the joint venture with Joma Näringspark AS to form operational company Joma Gruver AS to allow for a combined Project to be assessed.
- **2019**: applications re-submitted to Mining Inspectorate including new plan to mine in winter only and process in Norway at Joma facilities.
- **2020**: although the Jämtland CAB agreed to authorising the Stekenjokk K nr 1 permit, the Västerbotten CAB requested Vilhelmina Mineral to conduct more detailed environmental studies into the impact of the Project on the Natura 2000 protected area of Vardo-, Laster- och Fjällfjällen.
- **2021**: application for Natura 2000 permit to Västerbotten CAB in accordance with Swedish Environmental Code.

To conclude, the Company currently has the right to exploration on the property whilst the application for the exploitation concessions is assessed by regulators following the Natura 2000 permit application. No other permits or approvals have been yet applied for, including environmental, water abstraction or building permits.

3.4.4 Surface rights

As long as the project proponent holds either an exploration or exploitation authorisation, it is permitted entry over that land for the purposes of the activities outlined in their authorisation; however, activities that cause damage to that property must be paid for; either in terms of payment for damage to the landowner, or outright purchase of the property if the damage is extensive. Surface rights and rights of access to the property and other required land must be purchased or leased. Although the landowner is not considered to have a right to the sub-soil of their land, the Minerals Act (1991, last amended 2021) makes it clear that '*0.15% of the value of the mineralized rock*' must be paid to the landowner in compensation. In the event there is more than one landowner this must be shared amongst them.

Notwithstanding this, SRK notes the final access to land and water areas is a process of negotiation that the Company will need to undertake and must be finalized before filing an application for an environmental permit.

The Company has not yet developed plans for further invasive exploration on the Project and so has not engaged with local landowners.

3.5 Payments

SRK is not aware of any special royalties, back-in-rights, payments or any other agreements associated with the Rönnbäcken Project in addition to the 0.20% royalties prescribed by the Swedish Mining Act (1991, last amended 2021).

3.6 Ownership

The mineral rights covering the Stekenjokk-Levi deposit are held by Vilhelmina Mineral AB. In 2020, 94.7% of Vilhelmina Mineral AB shares were purchased by Bluelake Mineral AB (previously Nickel Mountain Resources AB), increased to 99% in 2021. Figure 3-3 shows the organisational chart for the Project ownership.

The Joma Project is covered by permits owned by Norwegian subsidiary Joma Gruver AS.

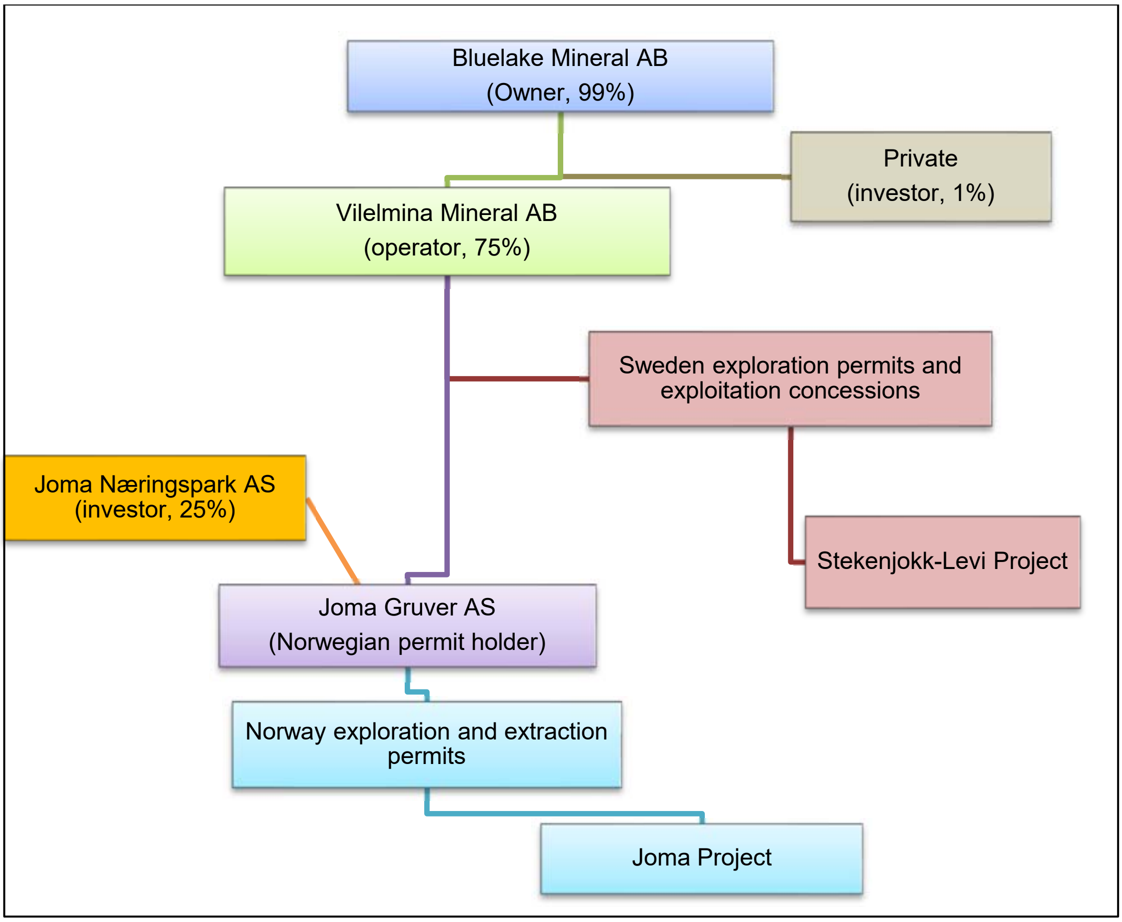


Figure 3-3: Stekenjokk-Levi Project Ownership

4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

This section provides a summary of the relevant parts of the environmental and social setting of the Project that may influence the statement of Mineral Resources and the preliminary design concepts outlined in this PEA.

4.1 Property Access

The Project is accessed by well-paved roads into Norway to the west and towards Vilhelmina to the east, as shown in Figure 4-1. The main route is the country road AC1067, also known as the Stekenjokkvägen, which is part of the Wilderness Road (Swedish: *Vildmarksvägen*) that runs northwest from Vilhelmina to the Project area via the village of Klimpfjäll. The Stekenjokkvägen was constructed specifically for the previously operating mine. This road turns into the Z824 after entering Jämtland heading southwest to the village of Stora Blåsjön. From Stora Blåsjön the Z828 road (known as Hudningsdalveien) heads northwest into Norway (becoming the Fv7024 in Norway) and past the Joma Project area. The Vildmarksvägen is a popular tourist drive during summer months but the section between Klimpfjäll and Stora Blåsjön is closed in winter currently due to heavy snowfall.

The closest railway in Sweden, the inland railway line (Swedish: *Inlandsbanen*), is located approximately 115 km east of the Project, with the town of Vilhelmina the nearest station. The closest railway is in Norway approximately 60 km west of the Project, with Haugen the nearest station some 100 km by road. This railway line follows the route of the E6 road between Trondheim in the south and Fauske in the north. The line is not electrified and is used for both passenger and freight rail (Norway Trains, 2021).

The closest port facilities are located at Orkanger (Norway), approximately 40 km west of Trondheim by road.

The nearest airport to the Project is the South Lapland Airport close to the town on Vilhelmina and some 150 km southeast of the Project. The airport has daily flights to and from Stockholm depending on the season.

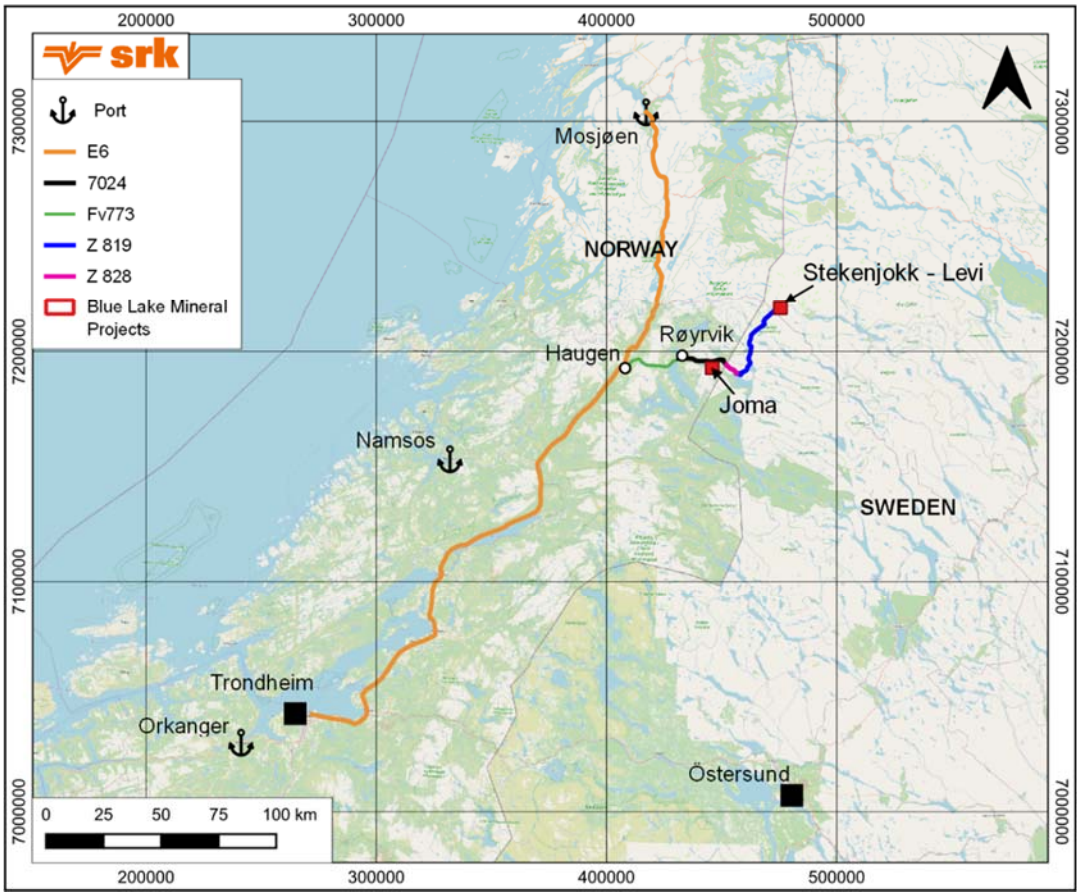


Figure 4-1: Primary access routes to Stekenjokk-Levi Project

4.2 Physiography and Climate

4.2.1 Topography & elevation

The Stekenjokk-Levi Project is located approximately 800 to 900 m above sea level ("masl") on an elevated plateau forming part of the Caledonian (Nordic) Mountains. To the east and southeast, the Project is surrounded by taller mountain peaks of Stikken (1035 masl), Tjallingen (1121 masal) and Gervenåkko (1141 masl). To the west and southwest is Sipmeke (1424 masl), Jetneme (1000 masal) and Stuore Tjukkele (1206 masl).

Figure 4-2 shows a general view of the terrain surrounding the project with elevated peaks and scrub vegetation. Figure 4-3 shows a photo taken on an old rock waste dump ("WRD") showing the lake used as a tailing management facility (TMF") by Boliden.

Figure 4-2: General Project area

Figure 4-3: Boliden tailings management facility and waste rock dump

4.2.2 Water

Water Bodies

The Project sits on an elevated plateau drained towards the northeast via the Stekenjokken (Stikkenjukke) stream, which flows through the historic mining area, including the TMF, and into the Saxån River. The Saxån is a tributary to the Ångerman River (Swedish: *Ångermanälven*) that flows southeast into the Baltic Sea with the mouth at Nyland, eastern Sweden.

On a local level, the Stekenjokken stream flows into the Saxån and this in turn flows into Kultsjön lake. Another important river that flows into Kultsjön is Ransarån, which has its source in Lake Ransarn (Bijjie Raentsere) on the border between Sweden and Norway. From Lake Ransarn, the river flows east towards Gikasjön and finally empties into Kultsjön at the Sámi church town of Fatmomakke. The Kultsjöån stream flows between the lakes Kultsjön and Malgomaj, via the lakes Bijjie Lijhtie and Vuelie Lijhtie. A map showing these main water bodies is shown in Figure 4-4.

Water Quality

In 2007, Boliden compiled an assessment of the TMF 15 years after closure of the operation. The main concern after closure was the development of acid rock drainage ("ARD") from the sulphide material in the tailings. Their monitoring programme included chemical analysis of TMF effluent water flow and quality, water level fluctuations, re-suspension of tailings and breakwater stability, in addition to re-vegetation, dam safety issues and biological monitoring (mainly focussed on the establishment of fish in the TMF). Their assessment was published in an International Council on Mining and Metals ("ICMM") article that describes the work undertaken by Boliden on closure (Boliden Mineral AB, 2007). The article concludes the affected land - and particularly the TMF - has been well rehabilitated with reindeer grazing once again and no ARD issues exist.

The MKB1 study completed as part of the exploitation concession application (Golder Associates AB, 2011) contained a brief discussion on water quality pertaining to a survey of benthic fauna and fish. This noted an increase in cadmium (Cd) in particular but also Zn, Cu and Pb. No signs of acidification were identified, and fauna surveys showed no material differences pre- and post-mining. The updated Natura 2000 permit application (Golder Associates AB, 2020) also has a brief discussion on water quality with additional water chemistry results (pertaining to copper values) from Boliden's monitoring programme up to 2018. No detailed analysis was provided.

4.2.3 Ecology and biodiversity

The ecology and biodiversity of the area is described in the MKB1 study (Golder Associates AB, 2011); a summary of the key points is provided below.

The Stekenjokk-Levi area falls within the 'Scandinavian Montane Birch Forest and grasslands' Ecoregion[3]. The area is within a high nature value area with Natura 2000 and nature reserve wilderness surrounding the deposit (see Section 4.2.4). The area is considered important as it contains a variety of habitats specific to the Swedish alpine region. The dominant habitats being alpine heaths, salix scrub vegetation, vegetation in rocky slopes and screes, coniferous forest, Nordic sub-alpine downy birch (*Betulapubescens ssp czerepanovii*) forest, alpine rivers, lakes and bogs/wetlands. The topography is varied with sub-alpine birch in the valleys and alpine areas in-between. The alpine areas house a variety of alpine and boreal heaths and grasslands.

The area's priority conservation values are the large mountain areas with a variety of habitats, abundant bird life, and the presence of Arctic foxes, lynx and wolverines. The Stekenjokk area, in particular, is home to the Arctic fox (*Vulpes lagopus*), which is classified by the International Union for the Conservation of Nature ("IUCN"[4]) Red List for vulnerable species under the category 'least concern' ("LC") but is protected within the Natura 2000 network. Close to Stekenjokk (12 km east), at Rapstenjaure, there is an area designated to protect the rare Brudkulla orchid (*Gymnadenia runei*) classified by the IUCN under the category 'near-threatened' ("NT").

As part of further MKB2 studies required for the environmental permit, biodiversity (species and habitat) on land will be mapped within the proposed planning area. Furthermore, indirect effects on land and in the aquatic environment within the area of influence of the underground ore mines will be investigated. Impacts and possible consequences on the aquatic environment and watercourse nature are recognised as a salient issue that will require management and monitoring if the Project proceeds.

[3] *Ecoregions website: Ecoregions 2017 ©*
[4] *International Union for the Conservation of Nature (IUCN) Red List: IUCN Red List of Threatened Species*

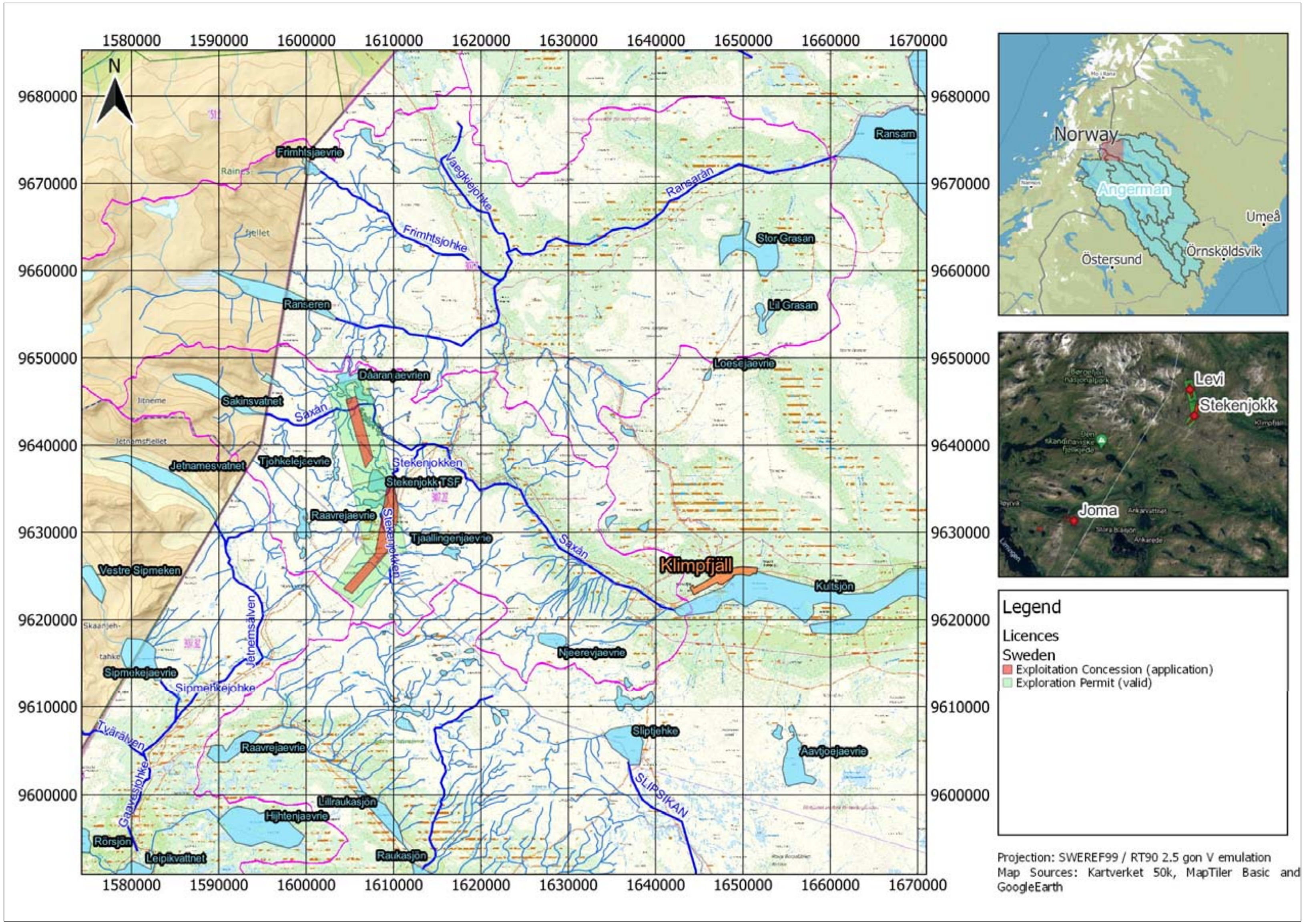


Figure 4-4: Location of water bodies surrounding Stekenjokk-Levi Project (pink lines = main river catchment boundaries)

4.2.4 Protected areas

Figure 4-5 shows the protected areas surrounding the Project, namely the Skåarnja nature reserve (Swedish: *Vildmarksområde*) in Jämtland, which is classified as a Wilderness Area as defined by the IUCN protected area category 1b[5]. In addition, there are two Natura 2000 areas surrounding the Project - Vardo-, Laster- och Fjällfjällen in Västerbotten and the smaller Stikkenjukke (Saxån) in Jämtland.

The Vardo-, Laster- och Fjällfjällen area is protected due to '*Vast areas with a large variation and many representative habitats of the Swedish alpine region and low human impact*', according to the Natura 2000 description[6]. It is also covered by the special provisions in the Swedish Environmental Code (*Chapter 4: Special provisions concerning land and water management in certain areas in Sweden*), which includes the mountain areas between Transtrandsfjällen in the south and Treriksröset in the north (including the Project area). The provisions mean that limited development can be undertaken unless they uphold existing cultural activities and do not '*significantly damage the natural and cultural assets*' in these areas. Preference is given to '*the interests of tourism and outdoor recreation, in particular outdoor recreational exercise, when assessing the permissibility of development projects or other environmental intrusion*' (according to the Environmental Code).

The Stikkenjukke area is protected thanks to the unique '*alpine watercourse with herbaceous beach vegetation*'[7]. This is upstream of the existing mine workings.

[5] *IUCN Category 1b: Protected areas that are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition* Category Ib: Wilderness Area | IUCN

[6] *Vardo-, Laster- och Fjällfjällen Natura 2000 description:* N2K SE0810394 dataforms (europa.eu)

[7] *Stikkenjukke (Saxån) Natura 2000 description:* N2K SE0720296 dataforms (europa.eu)

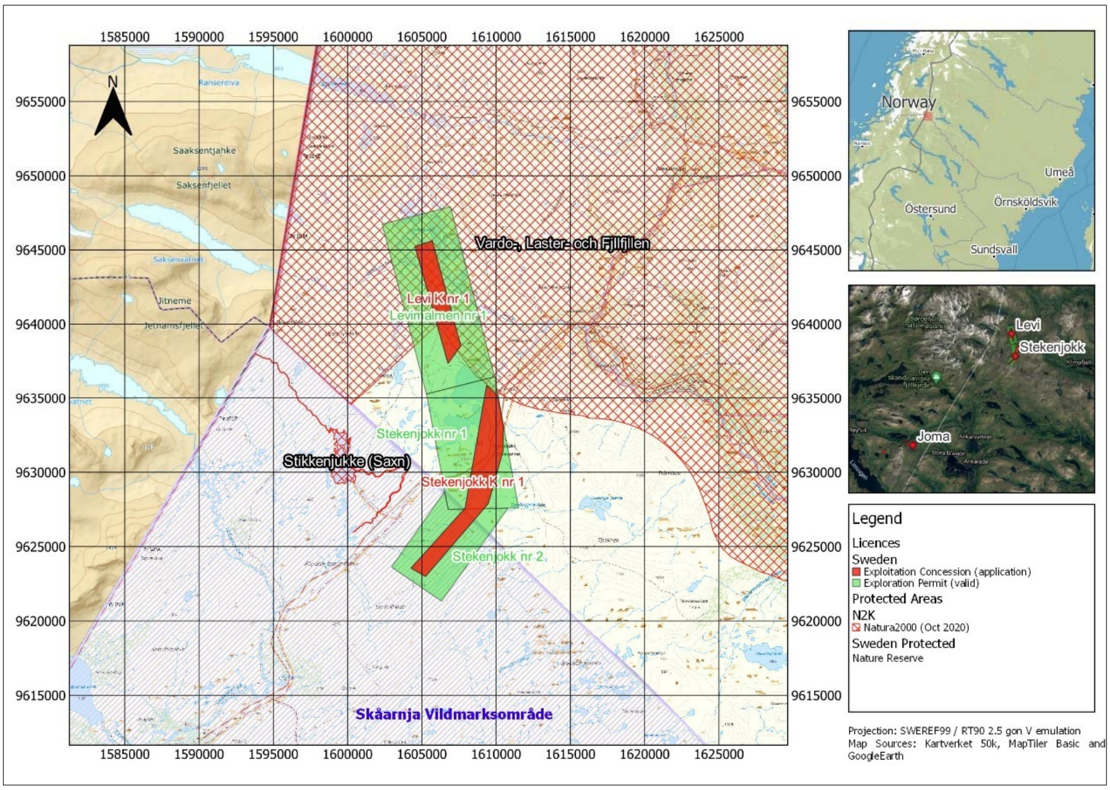


Figure 4-5: Location of Natura 2000 areas (red hatch) and Nature Reserve (purple)

4.2.5 Climate

Historical Climate

Under the Köppen Climate Classification system, Västerbotten and Jämtland counties are primarily classified as Dfc (Subarctic), where the coldest month averages below 0°C, and 1 to 3 months averaging above 10°C. There is no significant difference in precipitation between seasons.

Historical temperature and rainfall graphs are shown in Figure 4-6. The coldest months are January and February with lows of -10 to -20°C, and warmest in July with highs of 15 to 18°C. Precipitation is consistent through the year but is lowest between April and May. Permanent snow coverage is common between October and June. Daylight hours are highly variable, ranging from lows of 3.5 hours per day in December through to 22 hours per day in June.

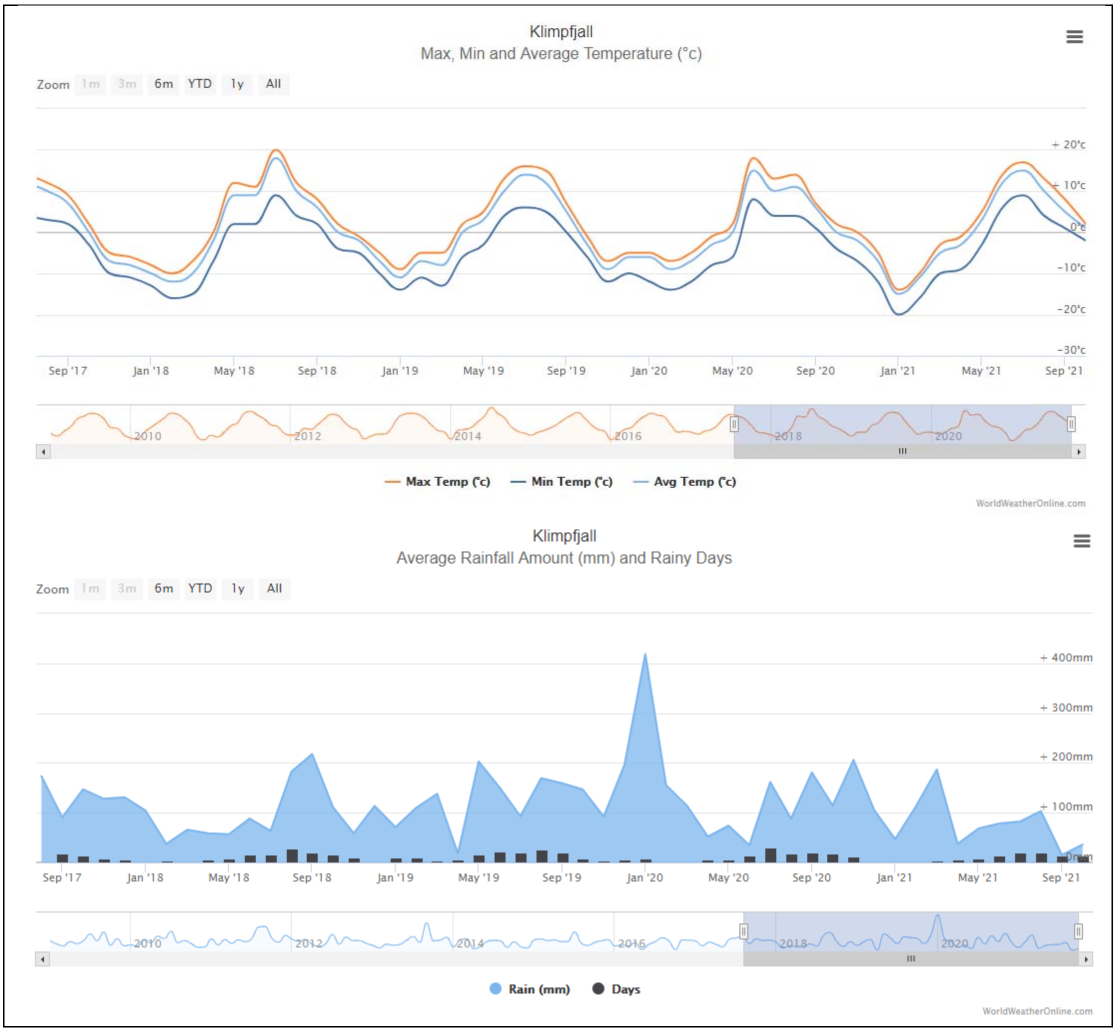


Figure 4-6: Temperature and precipitation averages for Klimpfjäll[8]

Climate Change

Predicting future climate changes is challenging and not within SRK's scope of work; however, it is clear from reports from the Intergovernmental Panel on Climate Change ("IPCC") that the northern Europe regions are predicted to warm at a higher rate than other regions globally and are predicted to experience increased annual precipitation, as described in the IPCC 4th report (Intergovernmental Panel on Climate Change, 2007) and shown in Figure 4-7. These expected changes will need to be considered in the design of operational infrastructure, particularly that associated with water management, and in closure planning.

Sweden, as a signatory of the 2015 United Nations Paris Agreement[9], has committed to reducing human-induced climate change and to keep global warming to below 1.5°C above pre-industrial age levels.

[8] *World Weather Online: Klimpfjall, Vasterbottens Lan, Sweden | World Weather Online*
[9] Paris Agreement: The Paris Agreement | UNFCCC

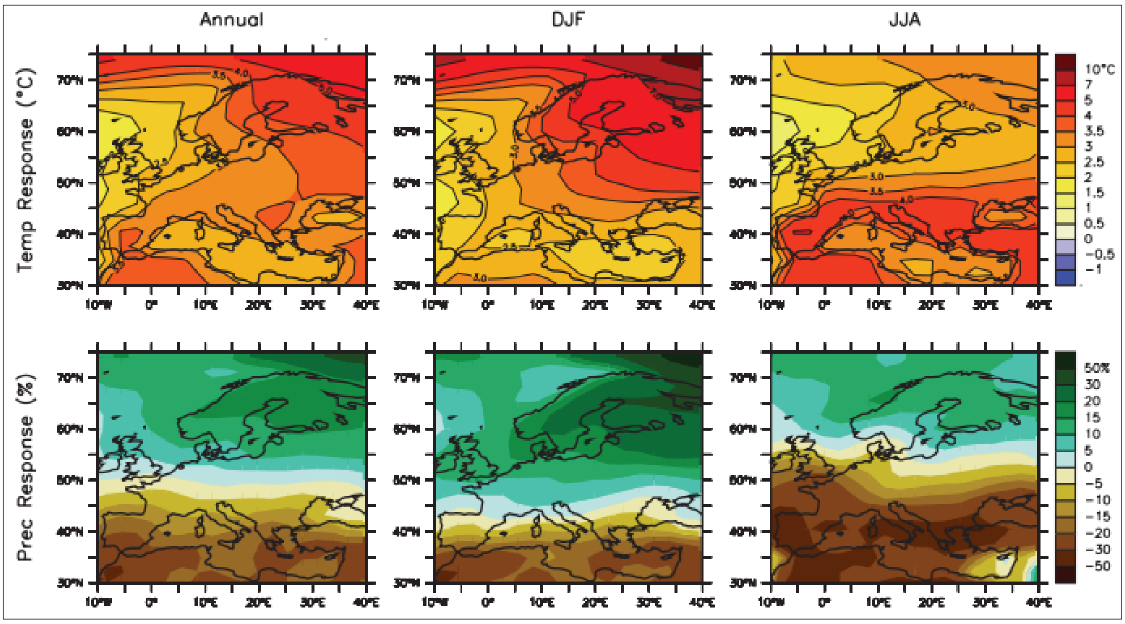


Figure 4-7: IPCC Climate Change projections (Source: (Intergovernmental Panel on Climate Change, 2007)[10])*

*Notes: DJF = December-February average, JJA = June-August average

4.3 Infrastructure

The primary transport route considered for the Project goes south from Stekenjokk to Stora Blåsjön for 42 km where it turns west into Norway for 16 km to the Joma processing facility. The road at Stekenjokk is part of Vildmarksvägen, which is one of Sweden's highest situated roads and is located in northern Jämtland and southern Lapland. It was built in the late 1960s to handle transport to and from the Stekenjokk mine. Vildmarksvägen is located on the bare mountain at 875 masl and is currently open only during the bare ground period (July to September).

Grid electrical power (20 kV) is supplied to the mine, with a transformer located on the mine site.

A groundwater well is present on the old mine site, 42 m deep with an estimated extraction capacity of 4.6 m^3/h. This well was used for the drinking water supply at the Stekenjokk mine when it was in operation.

Whilst it is likely there is a wired telecommunications line to the mine buildings, it is unknown if this line is still serviceable.

[10]From IPCC: *Area-averaged temperature and precipitation changes are presented from the coordinated set of climate model simulations archived at the Program for Climate Model Diagnosis and Intercomparison (PCMDI; subsequently called the multi-model data set or MMD)*

4.4 Local Resources

The current land use in the planned mining area and in the immediate area consists primarily of reindeer husbandry, as well as recreation, tourism and outdoor life, including hunting and fishing. In addition, the infrastructure related to the previous mining operation is still in place.

There are a few small villages in the area, both in Norway and in Sweden, that should be able to provide basic supplies; however, the majority of supplies will likely need to be organised in Vilhelmina or one of the larger towns in Sweden or Norway. The local population is small, and it is highly likely that any development of a mine in the future would require an external workforce to be housed on site.

There are no dwellings close to the Project area; the closest settlements to the Project are described below:

- Renvaktarstuga: isolated dwelling 3.5 km northeast of Stekenjokk K nr 1 concession boundary.
- Renslakteri: cluster of dwellings 5.5 km east of Stekenjokk K nr 1 concession boundary.
- Klimpfjäll: village 15 km east of Project (population: 132 in 2005).
- Vilhelmina: town 115 km southeast (population: 3,657 in 2010).

4.5 Cultural Heritage

There are no known protected cultural sites within the vicinity of the Project; however, the area is considered as important grazing land for Såmi culture. The area between Stekenjokk and Stora Blåsjön is located within the Vilhelmina Södra and Voernese Sámi villages. The area is an important grazing land and for the calving, marking and collection of reindeer. Rutting, as well as the autumn slaughter and reindeer separation take place here. The Stekenjok area is considered by the Sámi villages as a key area, as described in the MKB1 studies (further detail in Section 19).

4.6 Land Use Priority (National Interests)

Sweden has a system in place for activities or industries to be given land use priority depending on whether they are considered as important at a national level, these are so-called national interests (Swedish: *Riksintressen*).

Notably, the SGU classified the Stekenjokk-Levi Project area as an "Area of National Interest for Mineral Extraction" (Swedish: *Riksintressen Mineral*) on 10 December 2012 (Figure 4-8) and remains in place as of December 2021. Areas of National Interest are assessed and selected by SGU with reference to certain criteria relating to, for example, community development and emergency supply preparedness. Chapter 3 (Section 7, Paragraph 2) of the Environmental Code states that for such areas, '*the extraction interest shall be protected against measures that may be prejudicial to extraction*'.

In addition to the area being designated for mineral extraction, some of the Project area has also been designated for several other activities by the Vilhelmina municipality (Figure 4-9) and Strömsund municipality (Figure 4-10). This includes water, nature conservation and Natura 2000, along with reindeer herding and other outdoor activities/tourism.

According to the Strömsund municipality master plan, despite coincident national interests: “Strömsund municipality intends to prioritize the designated national interest for mineral mining in Stekenjokk” (Swedish verbatim: “Strömsunds kommun att prioritera det utpekade riksintresset för mineralbrytning i Stekenjokk” (Strömsunds Kommun, 2014)). The Vilhelmina municipality master plan, however, suggests detailed studies are required and no preference is stated: “mineral interest is considered to be able to coexist with other interests (in this case outdoor life/tourism, reindeer herding and nature conservation), provided that accurate impact assessments of a mining operation can support this assumption” (Swedish verbatim: “Mineralintresset anses kunna samexistera med övriga intressen under förutsättning att noggranna konsekvensbedömningar av en gruvetablering kan styrka detta antagande” (Vilhelmina Kommun, 2018)).

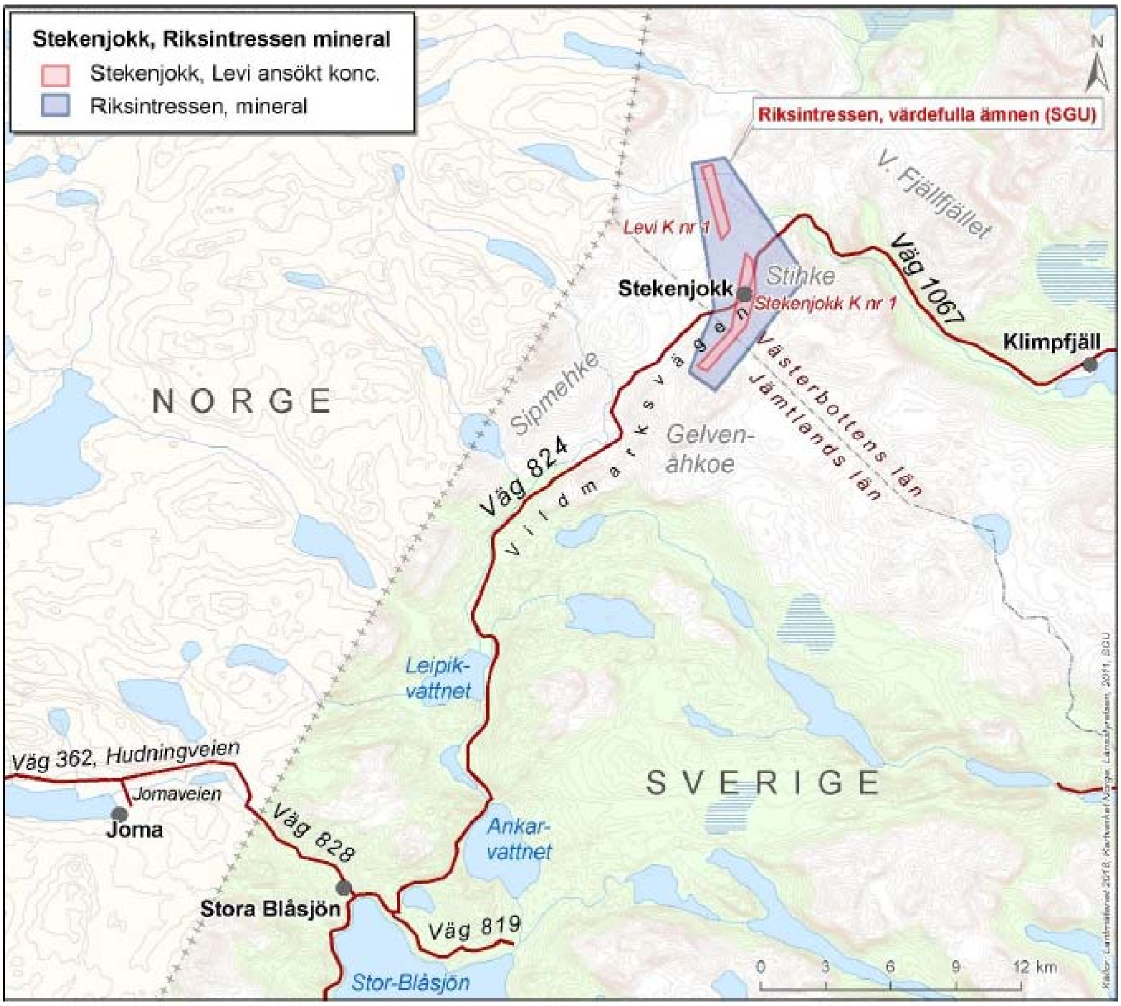


Figure 4-8: Location of Stekenjokk-Levi and Joma deposits, mineral national interest boundaries and local infrastructure (Golder Associates AB, 2018)

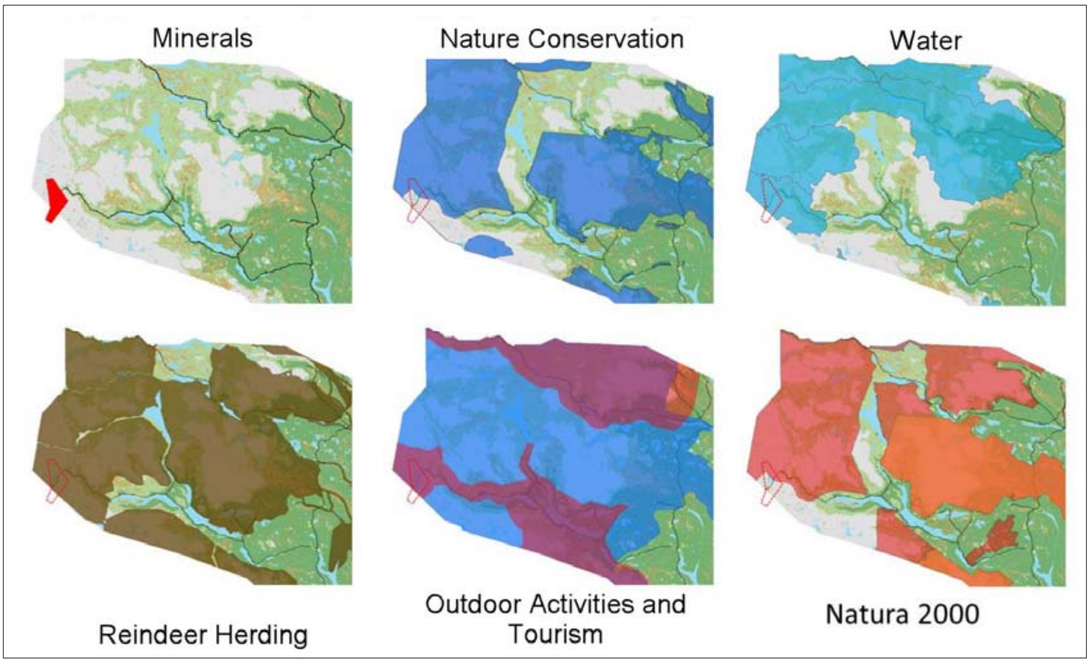


Figure 4-9: Maps of Vilhelmina municipality showing the various national interests; red outline shows mineral interest (Vilhelmina Kommun, 2018)

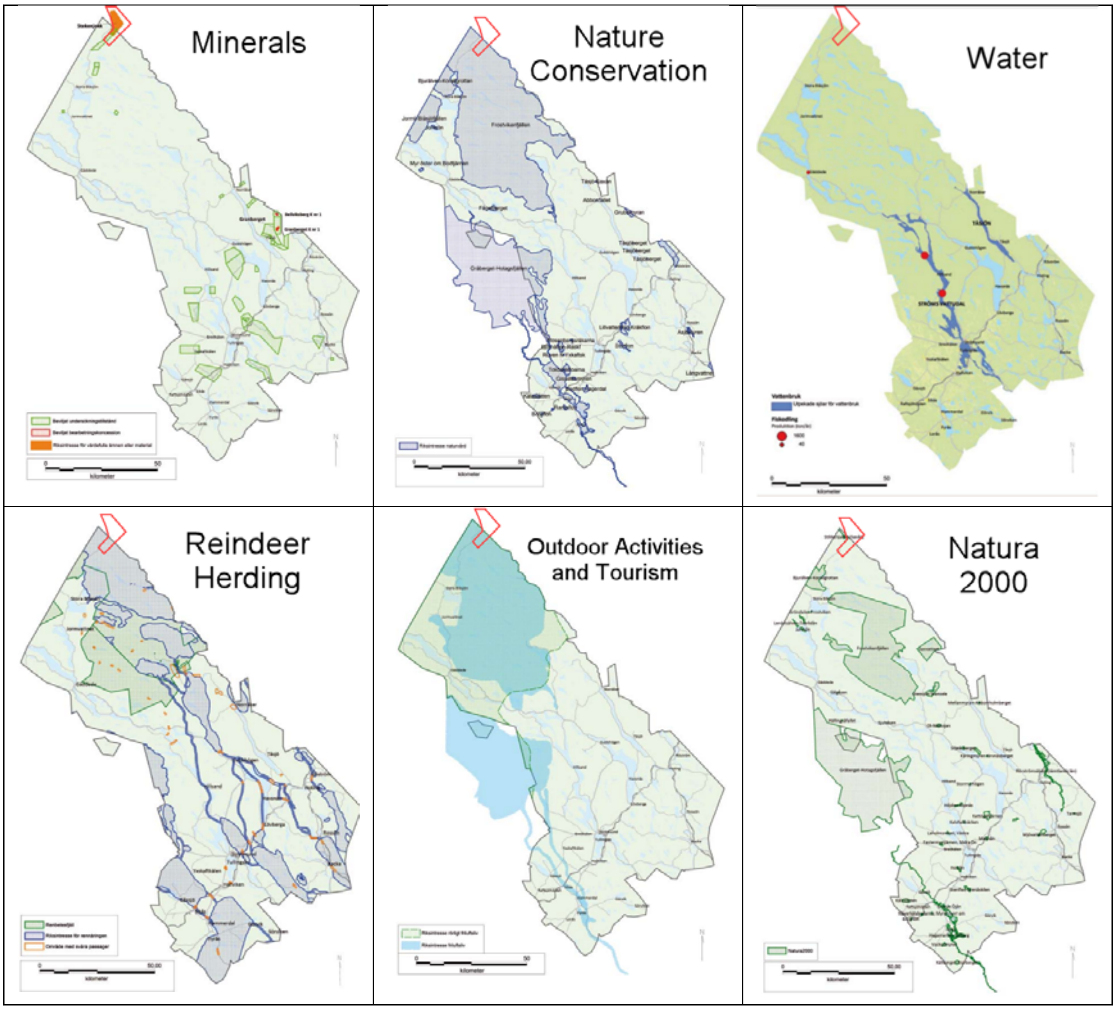


Figure 4-10: Maps of Strömsund municipality showing the various national interests; red outline shows mineral interest (Strömsunds Kommun, 2014)

5 HISTORY

The following chapter is an abridged version of the history of the Project, with more detail found in the 2021 MRE technical report.

5.1 Discovery and Exploration

Mineralisation at Stekenjokk was discovered in 1918 by the SGU, following the identification of several sulphide-mineralised blocks and an outcrop in a small river. A period of initial geological investigations followed between 1918 and 1921, including geological mapping, electrical measurements, trenching and diamond drilling (Zachrisson, 1971).

The Stekenjokk Project remained dormant until 1952, at which point the SGU commenced a programme of further work at Stekenjokk including geological mapping, block searching, electromagnetic ground measurements and underground excavations. Diamond drilling commenced in 1953 and led to the discovery of Levi approximately 2 km north of Stekenjokk. Diamond drilling continued at Stekenjokk and Levi throughout the 1950s and 1960s and geochemical prospecting was included in the programme from 1959.

Surface drilling was used as a primary exploration tool, with limited underground development and drilling used where existing development allowed. Boliden developed a drift, from which some production along the southern mineralised zone at Stekenjokk occurred and a significant amount of underground core drilling was undertaken. During post-1950 exploration and operation of the mine, over 620 holes were drilled totalling over 125 km, and with over 2,700 drillhole samples collected and assayed. Drilling at Stekenjokk-Levi is discussed in more detail in Section 9.1.

An underground survey of Stekenjokk was ordered by the Bureau of Mines and undertaken by Boliden between 1963 and 1966, which assisted the understanding of the complex structural geology of mineralisation. Several academic studies were published on Stekenjokk-Levi between 1970 and 1984, including the results of geological mapping and drill cross sections (Zachrisson, 1971; 1984) and detailed geochemical and petrographic analysis of ore samples (Juve 1977; 1984).

No known exploration has been undertaken at Stekenjokk-Levi since closure of the Stekenjokk mine in 1988.

5.2 Historical Grade and Tonnage Estimates

A number of historical grade and tonnage estimates have been completed on the Project:

- In 1966, SGU reported resources (referred to as 'reserves') at Stekenjokk of some 15.1 Mt containing an average of 3.03% Zn, 1.46% Cu, 0.3% Pb, 20.1% S, 0.25 g/t Au and 53 g/t Ag. It should be noted that this estimate was undertaken prior to mining at Stekenjokk, and therefore represents pre-mining resources. Reported resources for Levi in 1966 were 4.6 Mt, at an average grade of 1.55% Zn, 1.16% Cu, <0.1% Pb, 16.1% S, <0.1 g/t Au and 20 g/t Ag (Zachrisson, 1971).
- In 1988, upon closure of the Stekenjokk mine, Boliden reported that a Mineral Resource of 1.2 Mt containing 4% Zn, 1.5% Cu, 0.6% Pb, 0.3 g/t Au and 63 g/t Ag remained in pillars and unmined stopes at Stekenjokk. This estimate excludes mineralisation at Levi and likely excludes mineralisation south of the mined-out area of the Stekenjokk mine (Boman, 2007).
- In 2007, IGE Nordic AB undertook an MRE at Stekenjokk-Levi using a sectional method (Boman, 2007). The resulting MRE for Stekenjokk consisted of an Indicated resource of 3.49 Mt at 4.17% Zn, 1.04% Cu, 0.78% Pb and 71 g/t Ag and an Inferred resource of 1.47 Mt at 4.24% Zn, 0.79% Cu, 0.63% Pb and 62 g/t Ag. The resulting MRE at Levi comprised a Measured resource of 985.1 kt at 2.17% Zn, 1.12% Cu, 0.21% Pb and 26 g/t Ag, an Indicated resource of 2.89 Mt at 1.88% Zn, 1.35% Cu, 0.13% Pb and 25 g/t Ag, and an Inferred resource of 1.27 Mt at 1.46% Zn, 1.11% Cu, 0.11% Pb and 21 g/t Ag.

5.3 Historical Mining Production

During operation of the Stekenjokk mine between 1976 and 1988, a total of 7.1 Mt of material was mined and milled, grading at an average of 3.5 % Zn, 1.5 % Cu, 0.3 % Pb, 43 g/t Ag and 0.4 g/t Au. A summary of annual historical production was reported upon closure of the mine and is provided in Table 5-1. Mining was primarily underground and focussed on the northern part of the Stekenjokk deposit closest to the surface, although a small open pit was also excavated. The mine was operated by Boliden Mineral AB and owned by the Swedish state.

The operation commenced with the mining of 400,000 t of ore per year, which was subsequently increased to 600,000 t per year for profitability reasons. Almost all production was from the Stekenjokk North deposit. The Levi deposit was test mined in 1982, when a total of 10,000 t of material was extracted. Mined material was processed at on on-site enrichment plant to produce a Cu concentrate and a Zn concentrate. No Pb concentrate was produced during operation of the mine.

Table 5-1: Historical production summary for the Stekenjokk-Levi Project Geological Setting and Mineralization

Year	Ore Mined (ton)*		Enriched ore mined (t)	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Cu Concentrate							Zn Concentrate					
	Stekenjokk	Levi						Cu Recovery (%)	t	Cu (%)	Pb (%)	Zn (%)	S (%)	Ag (ppm)	Zn Recovery (%)	t	Cu (%)	Pb (%)	Zn (%)	S (%)
1976	371,087		371,087	1.21	nd	3.10	38	76.7	16,648	20.7	nd	nd	nd	288	56.3	12,875	nd	nd	50.3	nd
1977	575,818		575,818	1.34	nd	3.21	36	88.9	32,909	21.0	nd	nd	nd	260	63.9	23,579	nd	nd	50.1	nd
1978	607,789		607,789	1.35	nd	3.74	40	87.0	34,332	20.8	nd	nd	nd	312	71.4	31,569	nd	nd	51.4	nd
1979	551,185		551,185	1.39	nd	3.83	44	85.8	34,579	19.0	nd	nd	nd	328	67.9	27,576	nd	nd	52.0	nd
1980	567,827		567,827	1.39	nd	3.89	48	83.8	36,526	18.1	nd	nd	nd	334	59.1	25,533	nd	nd	51.1	nd
1981	615,386		612,318	1.54	nd	4.14	50	84.7	46,473	17.2	nd	nd	nd	311	61.3	30,175	nd	nd	51.5	nd
1982	605,920	10,000	610,925	1.54	0.29	4.06	45	87.4	40,951	20.1	2.9	6.6	32.6	312	75.7	37,193	0.9	0.4	50.5	32.0
1983	622,452		631,352	1.58	0.26	3.57	43	85.2	40,076	21.3	1.9	5.7	28.7	285	71.2	31,656	0.6	0.8	50.7	32.1
1984	612,000		612,000	1.58	0.29	3.38	41	85.3	36,287	22.7	2.7	6.1	29.6	318	71.7	28,200	0.5	0.8	52.6	31.5
1985	619,400		619,400	1.58	0.30	3.33	44	84.3	36,312	22.7	3.1	7.1	30.7	349	71.8	28,700	0.6	0.6	51.6	31.5
1986	540,600		540,600	1.58	0.26	2.92	39	89.4	33,986	22.5	2.6	6.6	31.6	319	71.6	21,700	0.3	0.4	52.1	32.1
1987	522,400		522,400	1.67	0.34	3.28	45	90.1	35,798	22.0	3.1	6.9	31.7	338	73.0	23,700	0.3	0.4	52.8	32.5
1988	305,600		305,600	1.60	0.44	3.17	nd	83.6	19,200	21.3	4.5	6.9	30.6	nd	69.0	12,500	0.2	0.6	53.5	31.3
Total	**7,117,464**	**10,000**	**7,128,301**						**444,077**							**334,956**				

* In some cases, assumed = enriched ore nd= no data

6 GEOLOGICAL SETTING AND MINERALISATION

The following section is an abridged description of the geology and mineralisation of the Stekenjokk-Levi deposit, with a full description found in the 2021 MRE technical report.

6.1 Regional Geology

The Grong-Stekenjokk area of central Norway and west-central Sweden is one of the most important areas for Cu-Zn-Pb VMS deposits in the Caledonides. Four mines have historically been operated in the area: Stekenjokk, Skorovas, Joma, and Gjersvik, with a total combined production of approximately 24.5 Mt between 1952 and 1998 (GTK, 2012).

These deposits are hosted within a Cambrian to Silurian-age succession of the Scandinavian Caledonides, which represents an ancient and deeply eroded mountain belt. The Caledonides comprise a series of nappes (sheets of rock thrust laterally over neighbouring strata) overlying Palaeoproterozoic rocks of the Fennoscandian Shield and form the northernmost section of the composite Caledonian-Appalachian belt that can be traced into eastern North America and into Western and Central Europe (PorterGeo, 2012).

The Grong-Stekenjokk district deposits are located in the Køli Nappe Complex, which comprises high-grade metamorphic continental rocks, interpreted as the tectonically shortened outermost margin of the Baltic palaeocontinent, and lower grade metamorphic terranes comprising ophiolitic volcano-sedimentary rocks from the adjacent (and now closed) Iapetus Ocean (PorterGeo, 2012).

VMS deposits at Stekenjokk-Levi occur near the top of the Stekenjokk Quartz-Keratophyre Formation (“SQKF”), in the lower part of the Silurian-age Lasterfjäll Group. A summary geological map of the Stekenjokk-Levi area is shown in Figure 6-1. The SQKF comprises an alternating sequence of felsic and lesser mafic volcanic and subvolcanic rocks, interleaved with tuffs, graphitic and limey phyllite and limestone, and is interpreted to have formed in a felsic-dominated rifted arc setting associated with closure of the Iapetus Ocean. Stratabound VMS mineralisation at Stekenjokk-Levi occurs in the uppermost part of the SQKF, principally at the contact between felsic volcanic rocks and a graphitic phyllite intruded by gabbro.

The sequence is structurally overturned and deformed, with at least three distinct phases of deformation recognised. Rocks in the area have been subject to greenschist-facies regional metamorphism (Juve, 1977).

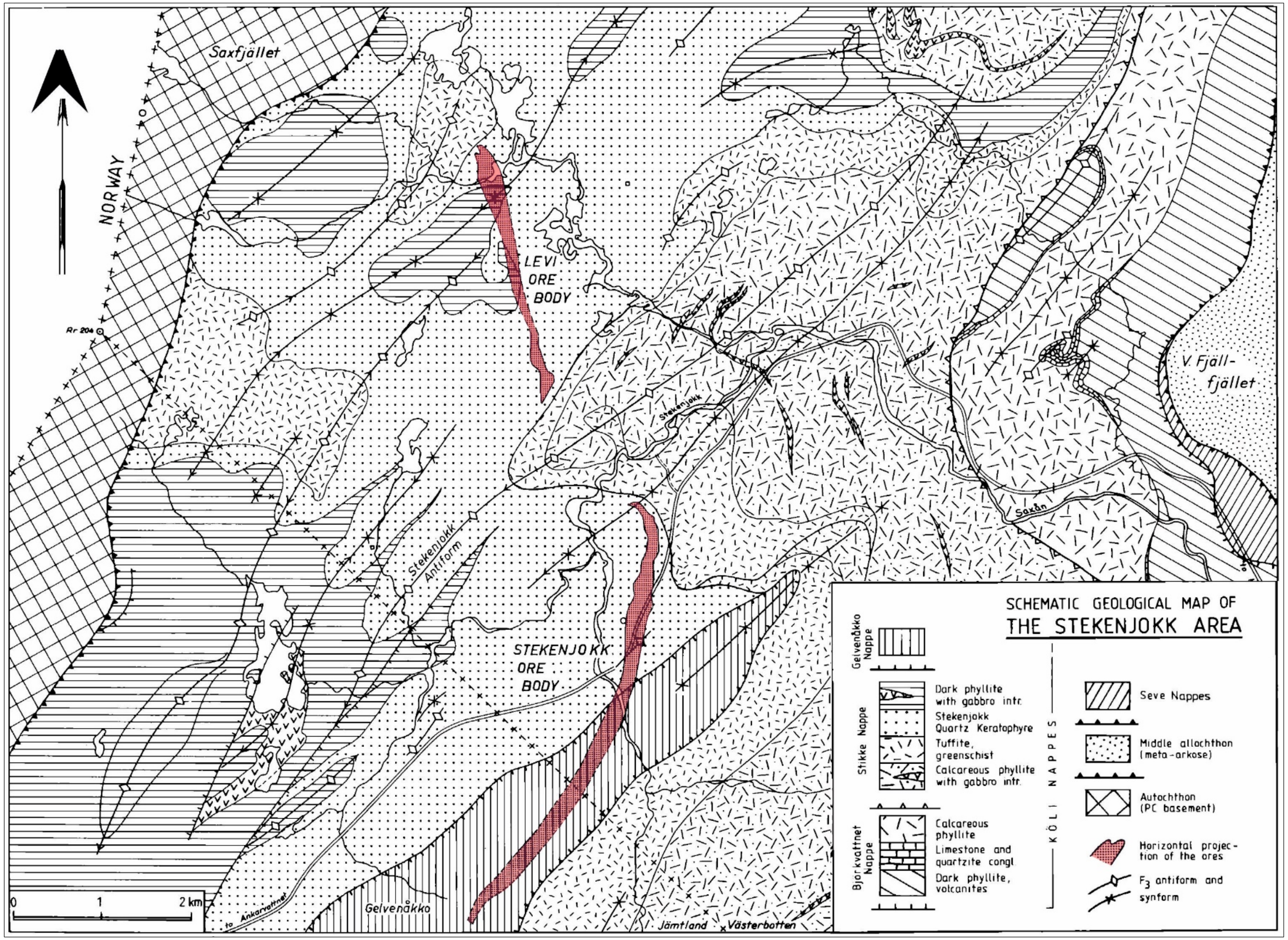


Figure 6-1: Summary geological map of the Stekenjokk area (Source: Zachrisson, 1984)

6.2 Property Geology

There are limited primary geological data available for the Stekenjokk-Levi Project and as such, the following descriptions are primarily sourced from published reports.

6.2.1 Overview

Massive sulphide mineralisation at Stekenjokk-Levi is hosted by a sequence of metamorphosed quartz keratophyre, graphitic phyllite, gabbro, tuffs and minor limestone that have been subject to multiple deformation events. Mineralisation occurs as a series of markedly elongate, tabular bodies, which have been suggested as originally constituting a single elongate body that has been dissected into multiple segments. Sulphide mineralisation is typically stratabound and has been deformed and metamorphosed in the same manner as host-rocks and is therefore considered to be pre-tectonic in nature. Mineralised zones at Stekenjokk occur as two principal offset bodies, Stekenjokk North and Stekenjokk South, whereas Levi has been interpreted as comprising a single mineralised body (Figure 6-2).

Mineralised bodies at Stekenjokk-Levi exhibit a complex refolded structure that is attributed to two major deformation events, which also dominate the structural pattern of the region. This includes a set of isoclinal-recumbent, eastward-facing folds with north-south to north-northeast south-southwest trending axes, and an overprinting set of metre to kilometre-scale folds with vertical-subvertical axial planes. Mineralisation at Stekenjokk-Levi displays evidence of selective metamorphic mobilisation of both sulphide and gangue minerals and redeposition of the most mobile phases in stress-minimum zones (that is, the thickened parts of folds, along cleavage/foliation planes and along small cracks and fissures).

6.2.2 Stekenjokk north

The Stekenjokk North mineralised zone has a length of roughly 2,500 m, a width of up to 250 m, a thickness of 5 to 10 m and dips gently towards south from its northern extent, where it outcrops at the surface. Folding and faulting has resulted in a complex, strongly folded mineralised body comprising gently south-dipping isoclinal folds (F_2) and overprinting F_3 folding with steeply dipping axial planes.

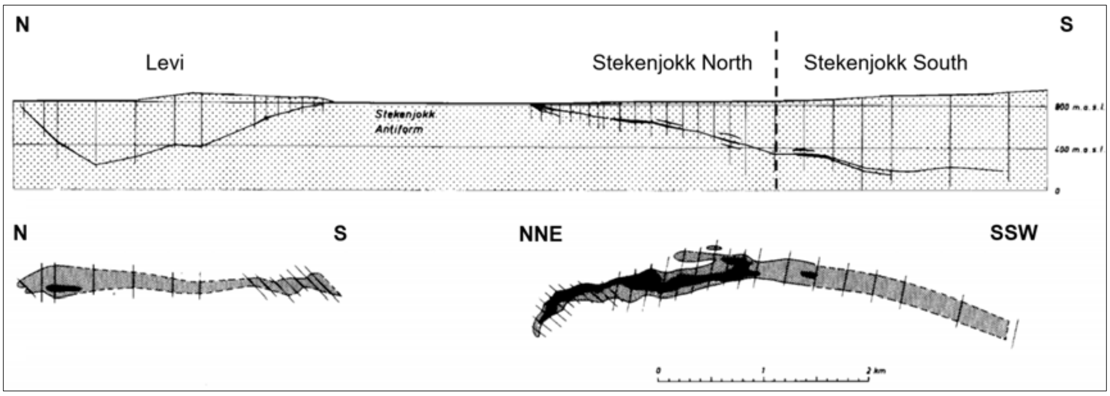


Figure 6-2: Longitudinal section and horizontal projection of the Stekenjokk-Levi mineralised bodies. Thin black lines represent drilling sections, grey shading shows >2 m and black areas show >10 m vertical ore thickness

6.2.3 Stekenjokk south

The Stekenjokk South mineralised zone starts close to the southern extent of Stekenjokk North at about 400 m depth and extends 3 km in a southwest direction to a depth of 600 m, where it flattens out and becomes sub-horizontal (Figure 6-2). Mineralisation has a width of between 50 and 150 m and a thickness typically between 2 and 5 m.

6.2.4 Levi

The Levi deposit occurs as a thin, oblong, ruler-shaped body, approximately 100 to 150 m in width, 3 km in length and 0.5 to 3 m in thickness and exhibits a less deformed geometry compared to Stekenjokk. The Levi deposit outcrops approximately 1.5 km north of Stekenjokk North, where it plunges at 15° northwards to 200 m depth, before continuing to 600 m depth at a shallower angle, after which is rises back to 50 m below surface, about 3,200 m from its outcrop location in the south (Figure 6-2).

6.2.5 Mineralisation

Massive sulphide mineralisation at Stekenjokk-Levi, the so-called *Kompaktmalm* (massive sulphide), is dominated by pyrite with impregnations of pyrrhotite, chalcopyrite, sphalerite and galena, in addition to minor amounts of arsenopyrite, bornite, cubanite and covellite.

Mineralisation at Stekenjokk-Levi displays both vertical and lateral zonation. Massive sulphide in lower stratigraphic units is Cu-rich, whereas upper units tend to be Pb- and Zn- rich. The margins of the graphitic phyllite unit commonly exhibit remobilised chalcopyrite along fractures and in impregnations.

Lateral zonation is demonstrated at Stekenjokk, whereby Zn, Pb and Ag increase towards the south, whilst pyrite and chalcopyrite decrease in abundance. In the southern part of Stekenjokk, an increased content of limestone is associated with elevated levels of Zn and Ag.

Historically, four contrasting “mineralisation types” have been distinguished based on sulphide mineralogy and texture. These are described as follows (after Juve, 1974):

- **Type 1A:** Massive, banded fine-grained pyritic ore ± chalcopyrite ± sphalerite.
- **Type 1B:** Massive to disseminated, brecciated pyrrhotite-chalcopyrite ore ± pyrite.
- **Type 2A:** Disseminations in light-coloured rocks.
- **Type 2B:** Other disseminated ores, in black phyllites, often adjacent to massive ores, or in tuffitic rocks.

The disseminated ore types (2A and 2B) have been interpreted as representing a stringer ore system, whereas massive ore types (1A and 1B) have been attributed to the exhalative stage(s) of mineralisation.

7 DEPOSIT TYPE

The following section is an abridged description of the deposit type of the Stekenjokk-Levi deposit, with a full description found in the 2021 MRE technical report.

Based on the available descriptions of the deposit, host rock lithologies and the interpreted tectonic setting of formation, Stekenjokk-Levi is considered to be a siliciclastic-felsic type VMS deposit. Previous classification systems used for VMS deposits would classify the deposit as either Kuroko-type or siliciclastic-felsic type (USGS, 2010).

Siliciclastic-felsic type VMS deposits are interpreted to form in continental margin to back-arc environments. These deposits form at or near the seafloor where circulating hydrothermal fluids are driven by magmatic heat and result in large hydrothermal convection currents (Figure 7-1). These currents draw cool fluids downwards into the crust, where they can interact with wall rocks at high temperatures, causing an enrichment in metal ions within circulating hydrothermal fluids. Heated, metalliferous fluids at depth rise back along structural pathways towards the seafloor, commonly along pre-existing major faults, where they are quenched by ambient seawater and/or porewaters in near seafloor lithologies. This causes mineral precipitation from hydrothermal fluids and the formation of “black smokers” and associated mineralisation.

The resultant massive sulphide lenses vary widely in shape and size and may be pod-like or sheet-like. They are generally stratiform and can occur as multiple lenses. The dominant mineral in siliciclastic-felsic VMS deposits is pyrite or pyrrhotite, which occurs alongside variable amounts of chalcopyrite and sphalerite and significant galena and tetrahedrite. Minerals are typically dispersed proximal to a vent, leading to the development of mineralised “blankets”. The primary lenses of the deposit are frequently underlain by a mineralised and highly altered stockwork composed of quartz and sulphide with variable degrees of chlorite and sericite alteration.

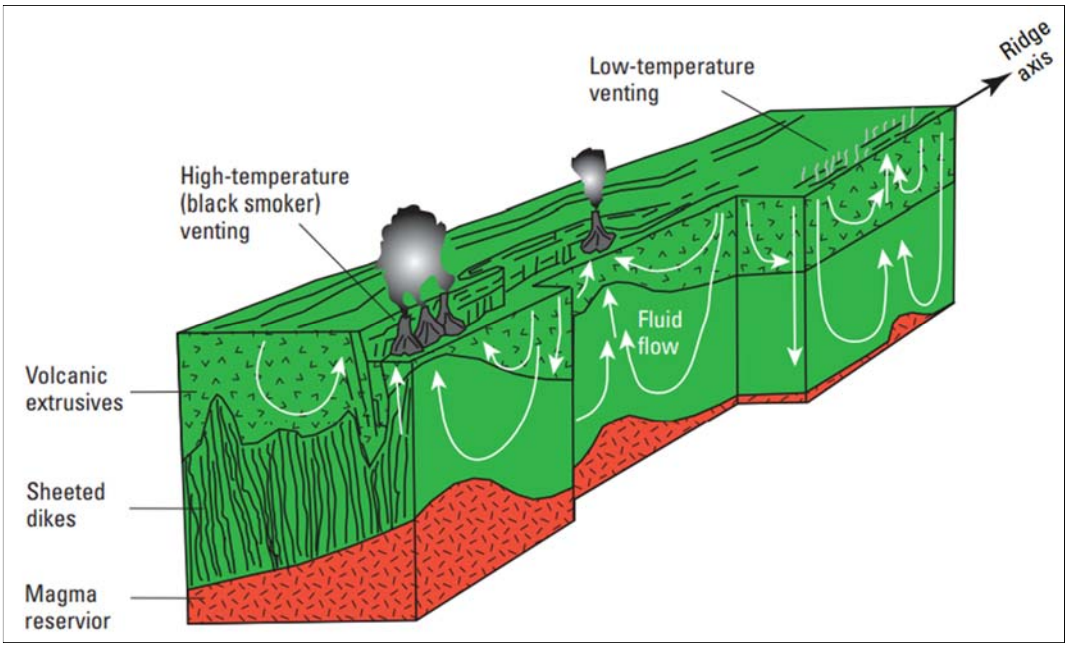


Figure 7-1: Idealised fluid flow model for black smoker and VMS formation (Source: USGS, 2010)

8 EXPLORATION

No exploration has been undertaken by the current owners of the Stekenjokk-Levi Project. A brief history of the exploration undertaken by previous explorers is outlined in Section 5.1 with further details provided in the 2021 MRE technical report.

9 DRILLING

The following section is an abridged version of the drilling undertaken at the Stekenjokk-Levi deposit, with a full description found in the 2021 MRE technical report.

9.1 Historical Drilling

Although Stekenjokk-Levi has been subject to a significant amount of drilling, much of the related source data and procedures used are not available for review. An early phase of diamond drilling was undertaken by SGU between 1918 and 1921; however, no data are available for this drilling and the locations of these drillhole collars are unknown.

A summary of the known drilling undertaken at Stekenjokk-Levi is given in Table 9-1. Figure 9-1 shows the relative locations of surface and underground drill traces in plan and long view. The available drilling database contains data relating to the drilling undertaken at Stekenjokk-Levi between 1953 and 1983 by SGU and Boliden. It should be noted that this database is not considered complete and potentially contains transcription errors.

The database consists of 629 drillholes totalling a drilling length of 125,589 m, comprising 140 surface drillholes from Levi, 206 surface drillholes from Stekenjokk and 283 underground holes from Stekenjokk. Approximately 4% (4,760 m) of the drilled metres have historical assay results. At Stekenjokk, 177 surface drillholes and 78 underground drillholes are from the mined-out area of Stekenjokk North, considered to be all Stekenjokk drillholes collared north of the RT90 northing 7220265, in addition to drillhole 61016.3, based on data provided by the Client.

At Levi, surface drillholes have a drillhole spacing that varies from 30 to 50 m in the south and north of the deposit, to 200 m in the central, deepest portion of the deposit. Drillholes at Levi are typically vertically inclined or steeply inclined and have lengths between 13.2 m and 725.9 m, with an average length of 210.3 m.

Surface drillholes at Stekenjokk have a drillhole spacing that varies from 30 to 50 m along sections and 140 m between sections in the northeast, to 60 m along sections and 600 m between drill sections in the southwest. The southernmost part of Stekenjokk is very sparsely drilled, with a zone of 1,150 m strike length only intersected by 12 drillholes. Surface drillhole lengths at Stekenjokk vary between 17.5 m and 906.5 m, with an average length of 288.4 m, and drillholes are typically vertically inclined.

Underground drillholes at Stekenjokk are assumed to have been drilled primarily for development, grade control and mine planning, although exploration holes have also been drilled from an exploration drift towards the south. Underground drillholes were drilled in a series of drill fans comprising between 2 to 12 drillholes. The spacing between drill fans varies considerably between 20 m and 245 m and drillhole lengths range between 20.0 m and 649.5 m, with an average length of 129.8 m.

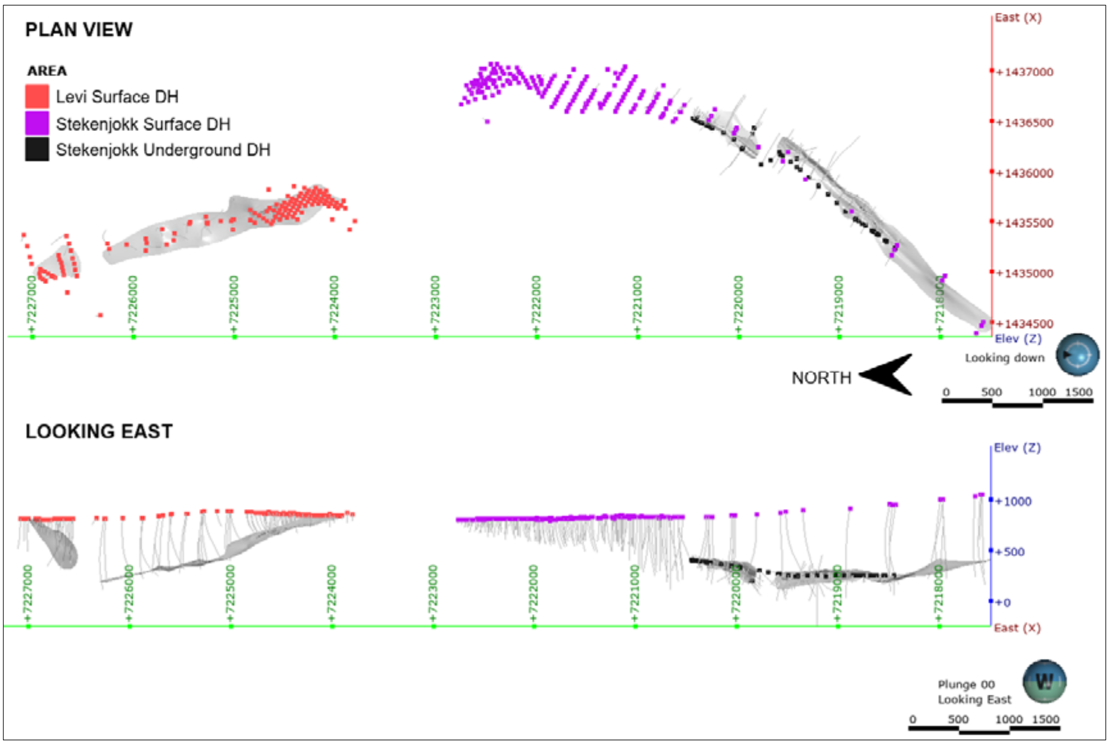


Figure 9-1: Historical drillhole locations coloured by collar location and shown in 'plan view' (top) and 'long view' looking east (bottom)

Table 9-1: Historical drilling summary

Hole Location	Holes Drilled	Meters Drilled	Samples	Total Sampled Length (m)
Stekenjokk Mined Out				
Underground	78	6,169.25	446	1,116.07
Surface	177	42,078.75	1,229	1,828.84
Stekenjokk				
Underground	205	30,561.35	521	1,236.12
Surface	29	17,332.14	123	136.35
Levi				
Surface	140	29,447.51	380	443.19
Grand Total	629	125,589	2,699	4,760.57

9.2 Historical Sampling

No sampling protocols or documents have been provided for review from the historical drilling programme. Based on conversations with geologists at the Company, sampling at Stekenjokk-Levi was highly selective and based on visual analysis.

The length of sampled intervals, where assay data are reported, is highly variable and ranges from as little as 0.08 m to as much as 15.1 m, with an average sample length of 1.76 m.

Drillcore samples have been selectively assayed for various elements. Out of the total of 2699 assayed samples, 99.7% have S data, 99.6% have Cu data, 99.4% have Zn data, 89.3% have Pb data, 74.6% have Ag data, and 45.7% have Au data. Specific gravity ("SG") data are provided for 99.3% of assayed intervals.

9.3 Recent Drilling

No known drilling has been undertaken at Stekenjokk-Levi since closure of the Stekenjokk mine in 1988.

10 SAMPLE PREPARATION, ANALYSES, AND SECURITY

The following chapter is an abridged version, with a full description found in the 2021 MRE technical report.

10.1 Historical Drilling Samples

No details of the sample preparation, analysis or security has been provided for review. Based on similar project experience, SRK assumes that the samples would have been prepared for analysis through drying, crushing, splitting, and grinding at an onsite facility, followed by analysis either at an onsite laboratory or elsewhere. The Client considers that analysis would likely have been completed using a titration method.

10.2 2021 Resampling Program

Core samples were submitted as quarter-core to ALS Malå, Sweden for preparation. Samples underwent a standard processing route, involving drying, weighing, crushing, splitting, and pulverising.

The Specific Gravity of samples was measured by water submersion using ALS method OA-GRA08. Following preparation, samples were shipped to ALS Loughrea (Ireland) for multi-element analysis, where they were analysed for a suite of 19 elements by ALS method ME-ICPORE and also to ALS Rosia Montana (Romania) for gold analysis using the fire assay method AA23 with Atomic Adsorption Spectroscopy finish.

11 DATA VERIFICATION

SRK undertook a site visit between 30 August and 02 September 2021. The site visit was conducted by Mr Harri Rees, a Senior Exploration Geologist with SRK Exploration Services Ltd. The site visit allowed SRK to examine core stored at Malå, inspect the Stekenjokk mine site, discuss the Project with relevant personnel and collect further information.

The following additional data verification steps were taken:

- Database verification: checks on the data entry compared to original/raw copies.
- Digital database integrity: checking database contains valid information including inspecting for missing assay values and unsampled intervals.
- Sample verification: re-sampling of available drillcore to verify the historical sample database, for which no quality assurance/quality control (“QA/QC”) data are available and limited core is available.
- Assaying QA/QC data of resampled core samples, including blanks, reference material and duplicates.
- Assessment of check sample analysis comparing historical to recent assay grades.

In addition to the verification work described above, the Company conducted digitisation of historical mine workings so that modelling could be undertaken in areas that are not known to have been depleted. SRK has not been able to verify the accuracy of this work as the mine workings are flooded. Significant work on delineating the 3D geometry of the underground workings will be required prior to commencing operations.

Overall, SRK's assessment of the available data indicates the assay data for the drilling and sampling to date are appropriately accurate and precise and it is the QP's opinion that the data can be used in an MRE.

12 MINERAL PROCESSING AND METALLURGICAL TESTING

SRK understands that no modern mineral processing studies and metallurgical studies have been undertaken by the Client or any former owners since the closure of the mine in 1988.

No information has been provided on historical processing circuits used by the mine, although it is likely that some of this information is available in Swedish. For the purposes of this study, historical recoveries, as calculated from available production statistics, have been assumed from the mine's production records. SRK considers the historical grade and recovery figures to be reasonable for ore of the head grades shown and indicate that the metallurgical response of the ore seems straightforward. Additional metallurgical testing is recommended to support any further technical studies undertaken for the Stekenjokk-Levi Project.

The historical production records from 1972 to 1998 indicate that the average Cu recovery from the Cu concentrate is 86% and the average Cu concentrate grade is 21%. The average Zn recovery from the Zn concentrate is 68% and concentrate grade is 52%.

SRK is unaware of any deleterious elements that may affect processing performance or product quality. Typical deleterious elements in copper concentrates are arsenic, antimony, mercury, bismuth and lead and zinc; and for zinc concentrates are cadmium, mercury, iron, silica and lead.

13 MINERAL RESOURCE ESTIMATE

The following chapter is an abridged version of the MRE completed for the Stekenjokk-Levi deposit by SRK in 2021. A full description can be found in the 2021 MRE technical report.

13.1 Introduction

The Stekenjokk-Levi Mineral Resource Statement presented herein represents the latest MRE. As requested by the Client, the MRE is prepared in accordance with the NI 43-101 and according to the CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines, 29 November 2019. The database used as a basis of the MRE was reviewed and verified by SRK. SRK considers that the estimates reported herein are a sound representation of the in situ Cu, Zn, Pb, Ag and Au content, as found in the deposit, given the current level of sampling.

The estimate, as prepared by SRK, utilises some 58,279.76 m of drilling from a total of 280 drillholes. SRK notes that the database includes drillholes in mined out areas of the Stekenjokk mine, which is not modelled as part of this MRE, as well as two drillholes with incorrect collar locations and drillholes for which no assay data are available; these drillholes have been excluded from the current MRE. The Mineral Resource estimate was completed by Mr James Williams and Dr Jamie Price and was overseen by Dr Lucy Roberts. All three are full time employees of SRK. Dr Lucy Roberts is considered a QP for Mineral Resource reporting and has supervised the preparation of the Mineral Resource estimates summarised herein. Dr Roberts is a is Chartered Professional member of the MAusIMM. A site visit was conducted by Mr Harri Rees of SRK Exploration Services, on behalf of Dr Roberts. The site visit was undertaken between 30 August and 2 September 2021.

The MRE has an effective date of 19 November 2021, which is aligned with the reporting of Mineral Resources via a draft memorandum. The MRE has been determined incorporating drilling and geological models and Mineral Resources have been depleted to reflect the understanding of the status of the operation at the closure of the mine. Leapfrog Geo was used to review and define the relevant estimation domains, prepare assay data for geostatistical analysis, construct the block model, and estimate metal grades. Snowden Supervisor software was used to analyse grade continuity and validate the estimates where applicable.

13.2 Mineral Resource Estimation Procedures

The resource estimation methodology involved the following workflow:

- database compilation and review;
- geological modelling;
- definition of estimation domains;
- exclusion of mined-out areas from estimation domains;
- statistical analysis and grade continuity analysis;
- block model construction and grade interpolation;
- block model validation;
- Mineral Resource classification;
- assessment of “reasonable prospects for economic extraction” and selection of appropriate reporting cut-off grades; and
- preparation of the Mineral Resource Statement.

13.2.1 Geological modelling

SRK considered it necessary to model the deposit from first principles, using the available historical cross sections as a guide alongside other available data (i.e., geological logging, assays etc.). A geological model of the Stekenjokk-Levi deposits was not available and not within the remit of this study based on the quality of the drilling database available. Following a statistical review, SRK selected a lower modelling cut-off of 0.35% Cu+Zn (sum of assay results). This was not considered a hard modelling rule, with any obvious “changes” in grade profile along the drillhole also used to inform interval (wireframe) selection boundaries. A grade change was sometimes observed at 0.20% Cu+Zn, which was then used to guide the modelling. SRK notes that the 0.35% and 0.20% Cu+Zn lower modelling thresholds are observed in the combined Cu+Zn log histogram.

For the Levi deposit, SRK elected to model using the vein modelling tool of Leapfrog Geo 2021, in combination with the use of additional polylines and points to guide wireframes, thus creating a semi-implicit model.

For the Stekenjokk deposit, SRK decided to use the deposit modelling tool of Leapfrog Geo 2021.1 as this was considered the best means of modelling the structural complexity and tight folding exhibited by some parts of the mineralised zones at Stekenjokk.

At Stekenjokk, two primary lenses of mineralisation have been interpreted and modelled (referred to as domains 100 and 200 for Stekenjokk South and Stekenjokk North, respectively). At Levi, two primary lenses of mineralisation have been interpreted and modelled (referred to as domains 300 and 400), which exhibit a more simple geometry compared to the strongly deformed mineralised lenses at Stekenjokk. Figure 13-1 shows a plan view and sectional view of the primary modelled mineralised bodies at Stekenjokk-Levi.

Domain 100 at Stekenjokk South and domain 300 at Levi were selected for high-grade sub-domaining defined by Zn grade distribution. Sub-domain 110 at Stekenjokk was defined using a cut-off grade of 4.5% Zn, although several intervals at >4.0% Zn were included to enable along-strike continuity. Sub-domain 310 at Levi was defined using a cut-off grade of 3.0% Zn. The remaining primary domains were smaller and comprised lower sample populations, which prevented suitable statistical support for defining sub-domains. Table 13-1 provides a summary of each modelled domain with their respective assigned identification codes.

For both Stekenjokk and Levi, a 2 m composite length was chosen as most appropriate to retain much of the inherent variability and to account for the extreme selective sampling approach employed during historical drilling. SRK chose to merge any small composite length (less than 0.1 m) by distributing them with the previous composites for each specific drillhole, where these shorter intervals are typically created at domain boundaries.

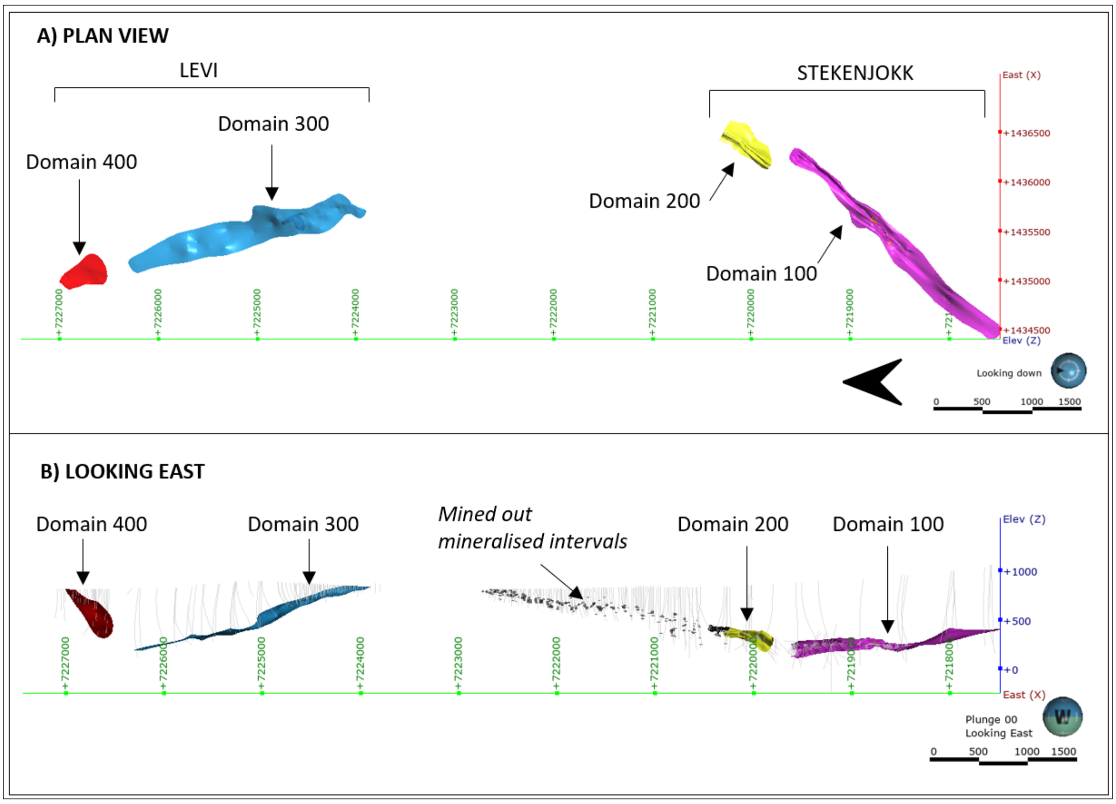


Figure 13-1: Stekenjokk-Levi modelled mineralised domains: A) shows the domains in plan view and B) shows the domains in longitudinal section, looking east

Table 13-1: Descriptions and equivalent codes for modelled domains at Stekenjokk-Levi

Domain Code	Domain Description
100	Stekenjokk South sulphide mineralisation < 4.5% Zn
110	Stekenjokk South sulphide mineralisation > 4.5% Zn
200	Stekenjokk North sulphide mineralisation
300	Levi South sulphide mineralisation < 3% Zn
310	Levi South sulphide mineralisation > 3% Zn
400	Levi North sulphide mineralisation

SRK investigated the presence of high-grade outliers for Au, Ag, Cu, Pb, S, Zn and SG by observing the grade distributions of composited assay data for each domain on histograms and log-probability plots. SRK chose to cap only extremely high Ag, Zn and SG grade composites in Domain 100 and high Ag, Pb and Zn grade composites in Domain 110. High-grade distance restrictions were applied to selected elements in domains 100, 110, 200 and 300 to spatially limit the influence of grades above a given threshold that is lower than cap values, if applied. SRK decided to use a 20 m distance restriction for all domains where a distance restriction was warranted, as this represents the most closely spaced drillhole spacing at Stekenjokk and Levi.

A geostatistical study was undertaken to investigate the grade continuity and derive parameters for grade interpolation for Ag, Au, Cu, Pb, S, Zn, and SG. 3-D variogram analysis was undertaken on all drillholes within the modelled wireframes at Stekenjokk and Levi. SRK has undertaken a geostatistical assessment on the modelled domains where there are sufficient data to model a robust variogram. It was only possible to model omni-directional variograms for some elements in all domains at Stekenjokk and Levi, likely due to the prominence of selective sampling across the Project, the wide spaced drilling for several domains and the tightly folded nature of mineralisation at Stekenjokk.

13.2.2 Block model and grade estimation

Two block models were created for the Stekenjokk and Levi mineralised bodies. The Levi block model was non-rotated, whereas the Stekenjokk block model was rotated to a 030° azimuth, based on the general strike of the wireframes. Block model parameters were chosen to reflect the average drillhole spacing in each area and to appropriately reflect the grade variability within the modelled mineralised domains.

To improve the geometric representation of the geological model, sub-blocking was allowed along the boundaries to a minimum of 0.5 x 0.5 x 0.15 m (x, y, and z) for both block models. A summary of the block model dimensions used for the Stekenjokk and Levi block models are given in Table 13-2 and Table 13-3, respectively.

Table 13-2: Details of the Stekenjokk block model dimensions for grade estimation

Dimension	Origin (RT-90)	Parent Block Size	Number of Blocks	Min Sub-blocking (m)	Rotation (°)
X	1432500	50	79	0.5	030˚
Y	7217400	50	103	0.5	
Z	-250	50	29	0.15	

Table 13-3: Details of the Levi block model dimensions for grade estimation

Dimension	Origin (RT-90)	Parent Block Size	Number of Blocks	Min Sub-blocking (m)	Rotation (°)
X	1433750	50	67	0.5	No rotation applied
Y	7223150	50	96	0.5	
Z	-150	50	29	0.15	

The sensitivity of the estimates to the block dimensions within the modelled domains was tested using qualitative kriging neighbourhood analysis (“QKNA”) in Leapfrog software by conducting repeated test estimates and reviewing results. The QKNA analysis was undertaken on a sub-set of data, specifically the Cu grades in Domain 100. Several parameters were changed during QKNA analysis, including the minimum and maximum number of samples, search parameters and the use of sector searches. SRK notes that the effectiveness of QKNA depends on the quality of the modelled variograms, which, are generally poor. SRK have visually reviewed the final estimation results to ensure that the parameters chosen during the QKNA analysis are appropriate.

The estimation methodology was based on the following:

- capped 2 m composited data;
- hard boundary conditions, where only composites from within individual mineralisation model domains were used to estimate blocks within those domains;
- Ag, Au, Cu, Pb, S and Zn grades and SG values were estimated by Ordinary Kriging (“OK”) for all domains at Stekenjokk and Levi;
- sub-block grades were assigned the grade of the parent block; and
- a discretization level of 8 x 8 x 8 was set for all estimates within the parent blocks within the estimation domains; and
- block sizing was generally based on drillhole spacing, the degree of structural complexity at Stekenjokk, as well as to provide a good representation of the mineralised geometry and an acceptable level of smoothing of the estimates. The search neighbourhood was guided by the general geometry of the overall modelled domains, drillhole spacing and grade continuity and was chosen following repeated test estimates conducted by SRK.

The grade estimation for all domains at Stekenjokk and Levi involved four successive passes using the parameters detailed in Table 13-4. For domains estimated using a high-grade distance restriction, a 20 m maximum distance was selected by SRK. SRK notes that all blocks in the block models were estimated using the given parameters and there were no un-estimated blocks within the domains.

Table 13-4: Search ellipsoids and sample selection parameters for Zn, Cu, Pb, Ag, Au, and density estimation

Domain	Pass	Major (m)	Semi-Major (m)	Minor (m)	Min. Samples	Max. Samples	Sector Search			Max. Samples per Drillhole
							Method	Max. Samples per Sector	Max. Empty Sectors	
Stekenjokk (100, 110 200)	1	100	100	15	5	12	Quadrant	9	2	3
	2	200	200	30	5	12	Quadrant	9	2	3
	3	600	600	150	5	12	-	-	-	3
	4	1000	1000	250	5	12	-	-	-	3
Levi (300, 310, 400)	1	100	100	15	5	12	-	-	-	3
	2	200	200	30	5	12	-	-	-	3
	3	600	600	150	5	12	-	-	-	3
	4	1000	1000	250	5	12	-	-	-	3

For all domains at Stekenjokk and Levi, density was interpolated into the block models using OK. The origin of the SG data in the Stekenjokk-Levi drilling database is unknown; however, following resampling and testwork, historical SG data have been shown to be comparable with new data and therefore SRK has deemed these data appropriate to be used in the MRE.

The block models were validated by completing the following checks:

- local validation using visual inspections on sections and plans, viewing composites versus block grades;
- global validation by comparison of composite grade statistics versus block grade statistics; and
- local validation by comparison of average composite grades with average block grades along different directions (swath plots).

Composites, coloured by Cu, Pb and Zn grade, were viewed on sections and plans and compared to the block models. These inspections confirmed that the estimates locally conform to the composites. Figure 13-2 is an example of the visual validation for Cu conducted by SRK on the Stekenjokk block model.

Following further validation through visual inspection, SRK is comfortable that the global estimates for each element are a reasonable representation of the input composites, and that no global biases have been introduced. There is generally a higher degree of correlation between input composites and modelled grades for the well-supported domains, and a poorer degree of correlation observed in domains that are less well supported by samples and/or only contain samples in certain portions of the modelled domains.

In general, the mean composite grades and the mean estimated block grades follow similar trends in all directions. The estimates are somewhat smoother than the composite grades, particularly where there are limited samples or very high-grade composite samples.

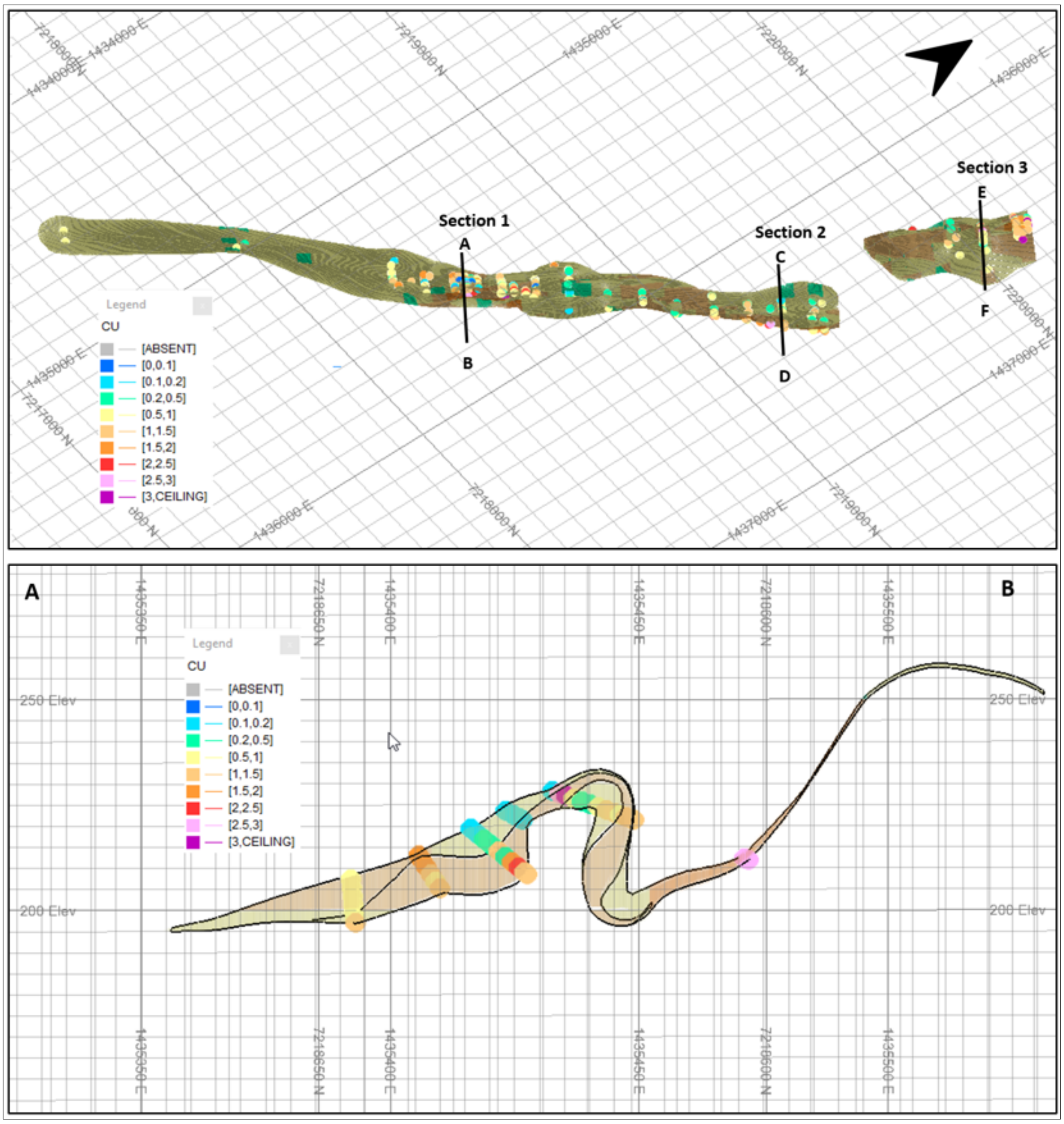


Figure 13-2: Plan view map (top) and cross-sectional view (bottom) of the Stekenjokk block model and capped composite drillhole file coloured by Cu

13.3 Mineral Resource Classification

The block models were classified using the guidelines and terminology according to the CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines, 29 November 2019. Mineral Resource classification is typically a subjective concept; industry best practice requires that classification should consider both the confidence in the geological continuity of the mineralised structures, the quality and quantity of exploration data supporting the estimates and the confidence in the tonnage and grade estimates. Classification should integrate all concepts to delineate regular areas of similar confidence.

The Stekenjokk and Levi Mineral Resource estimates have been classified according to a range of factors. The classification applied reflects the confidence in the geological and grade continuity, the data quantity and quality, and the quality of the block model estimates. These factors include highly variable drillhole spacing, structural complexity at Stekenjokk, short-scale variability in variograms, markedly selective sampling, the absence of historical QA/QC data and the completeness of the historical drilling database.

SRK has reviewed the drillhole spacing for each domain, with respect to geological and grade continuity, and has noted which blocks are being estimated from multiple drillhole intercepts. In areas supported by multiple drillholes at distances of up to 100 m apart. SRK considers this to be appropriate for Inferred classification. This classification has been applied at 100 m from the last interval, unless drilling spacing is 125 to 200 m, in which case Inferred material has been extended halfway between drillholes. No Measured or Indicated material has been classified by SRK.

The Inferred portions of the model require infill drilling to improve the quality of the geological interpretation and local block grade estimation and increase the confidence of the resulting estimate. Twin-drilling would also improve confidence in the historical data. SRK recommends that a depletion survey is required to ascertain the extents of the depleted areas of the historic Stekenjokk mine. The resulting Mineral Resource classification for Stekenjokk and Levi is illustrated in Figure 13-2.

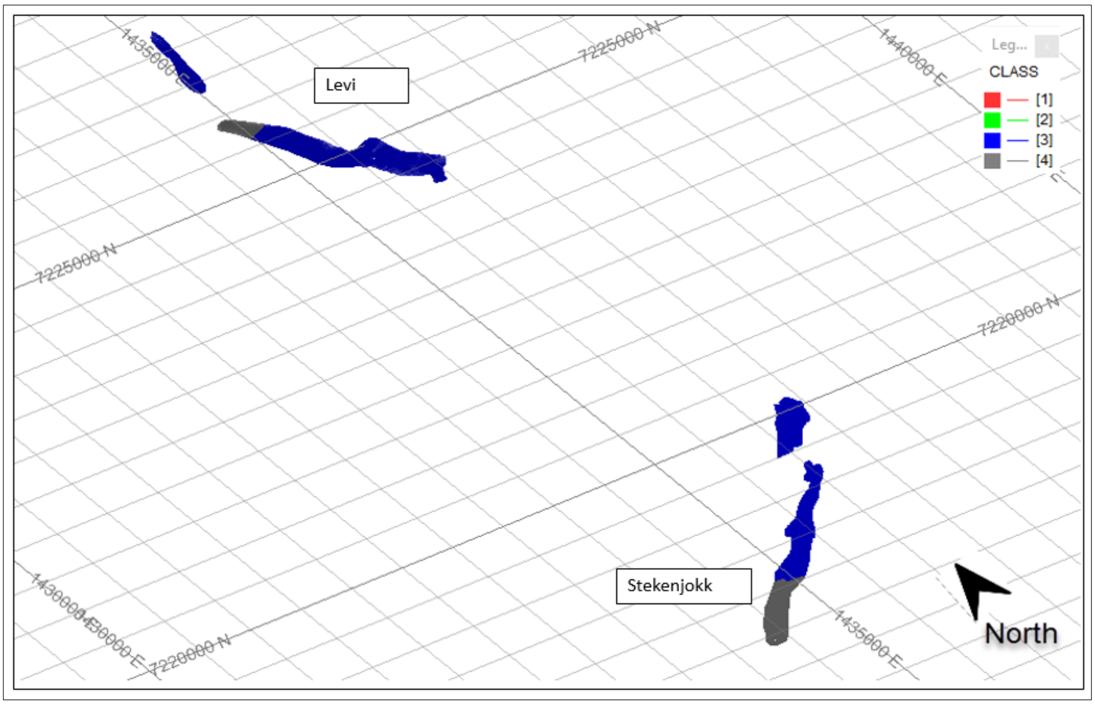


Figure 13-2: Plan view of the Stekenjokk and Levi block models, coloured by Classification. Blue = Inferred material, grey = unclassified.

13.4 Depletion

SRK depleted the model by excluding the areas known to be depleted at the historical Stekenjokk mine, excluding a minor exploration adit that extends into the model.

The depleted ("mined-out") areas of the Stekenjokk mine were coded by collars in the provided drilling database. The modelled domain at Stekenjokk North (domain 200) was extended three drillhole fences into depleted collars, in order for the correlation of structures and grade at the northern extent of this domain. Subsequently, the northern extent of domain 200 was modified to exclude the three depleted drillhole fences and extends halfway between the southernmost depleted drillhole fence and the northernmost available drillhole fence. No remnants, pillars or similar within Stekenjokk North are estimated or included in the MRE.

SRK recommends that a depletion survey is undertaken at the Stekenjokk mine, to determine accurately the areas of the mine that have been depleted.

13.5 Reconciliation

Due to the lack of depletion survey at the Stekenjokk mine, and as only the areas outside of the depleted areas of the mine were modelled as part of this MRE, SRK was unable to undertake reconciliation between the model and historical production.

13.6 Economic and Technical Input Parameters for Mineral Resource Reporting

In order to determine the quantities of material offering "...reasonable prospects for eventual economic extraction", according to CIM requirements, by underground mining methods, SRK has prepared mining and processing assumptions to estimate net-smelter return ('NSR') values into the resource block model and apply an appropriate reporting cut off value.

The input parameters are based on discussions with the Company and benchmarked against similar projects, where appropriate. Historical production records were used to provide the processing parameters. The parameters associated with the NSR calculation are provided in Table 13-5. The metal prices for Mineral Resource reporting are based on 2021 long-term consensus market forecast data obtained by SRK, plus a 30% premium, and therefore include a certain degree of optimism, and support the "reasonable" and "eventual" components for reporting of Mineral Resources.

In conjunction with this, SRK has generated practical mining shapes, based on the dip and width of the mineralisation and underground mining practices related to such factors, such as mining method (combination of long hole open stoping and R&P approaches), minimum mining width/height and resulting planned dilution. The resultant shapes were filtered using a NSR cut off value and used to constrain the reporting of the Mineral Resource.

Table 13-5: Mineral Resource reporting: technical and economic assumptions for Stekenjokk-Levi

Input Summary	Units	Copper Circuit	Zinc circuit	Lead circuit
Metal Price				
Cu	USD/t	9,100		
Zn	USD/t	2,800		
Pb	USD/t	2,400		
Au	USD/oz	1,790		
Ag	USD/oz	25		
Processing				
Cu Recovery	%	90		
Zn Recovery	%	5	75	
Pb Recovery	%			60
Au Recovery	%	32		
Ag Recovery	%	25		
Smelter				
Cu Payable	%	95.8		
Zn Payable	%		84.9	
Pb Payable	%			85
Au Payable	%	90		
Ag Payable	%	90		
Concentrate freight	USD/t_{conc}	40.5	20.2	20.2
Treatment costs	USD/t_{conc}	80	140	140
Refining charges		0.08 USD/lb Cu		
		5 USD/oz Au		
		0.5 USD/oz Ag		
Operating Costs				
Mining Cost In-Situ	(USD/t_{ROM})	31.8		
Transport Run of Mine (“ROM”)	(USD/t_{ROM})	11.3		
Processing	(USD/t_{ROM})	11.5		
G&A	(USD/t_{ROM})	3.5		
Mineral Resource NSR Reporting Cut-Off (after rounding)				
In situ cut-off value	USD/t_{ROM}	60		

13.7 Mineral Resource Statement

The SRK 2021 Mineral Resource Statement for the Stekenjokk-Levi VMS deposits is presented in Table 13-6 and has an effective date of 19 November 2021. As requested by the Client, the statement is reported and classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) and NI43-101 Standards of Disclosure for Mineral Projects (May 2016). The Stekenjokk-Levi in situ Mineral Resources Statement is limited to material falling within the defined mineable shapes above a NSR value of 60 USD/t_{ore}, which amounts to:

- No Measured Mineral Resources.
- No Indicated Mineral Resources.
- Inferred Mineral Resources of 11.8 Mt at a mean grade of 0.9% Cu, 2.1% Zn 0.4% Pb, 50 g/t Ag and 0.2 g/t Au.

Table 13-6: SRK Mineral Resource Statement for the Stekenjokk-Levi Project, Sweden*

Area	Classification	Tonnes (Mt)	Cu %	Zn %	Pb %	Ag g/t	Au g/t	NSR (USD/t ore)	Contained Metal: Cu (kt)	Contained Metal: Zn (kt)	Contained Metal: Pb (kt)	Contained Metal: Ag (koz)	Contained Metal: Au (koz)
Stekenjokk	**Measured** Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Inferred Mineral Resources	6.7	0.9	2.7	0.6	55	0.2	128	60	181	40	11,783	43
Levi	**Measured** Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated Mineral Resources	-	-	-	-	-	-	-	-	-	-	-	-
	Inferred Mineral Resources	5.1	1	1.5	0.1	22	0.2	105	51	77	5	3,640	33

**In reporting the Mineral Resource Statements, SRK notes the following:*

- *Mineral Resources have an effective date of 19 November 2021.*
- *Qualified Person for the declaration of Mineral Resources is Dr Lucy Roberts, MAusIMM(CP), of SRK Consulting (UK) Ltd. The MRE was authored by a team of consultants from SRK.*
- *Four primary lenses of mineralisation were interpreted and modelled, alongside two smaller lenses. The two smaller lenses are interpreted as internal high-grade domains in the larger lenses and are associated with elevated Cu and Zn grades. For reporting the Mineral Resource, SRK has combined all of the modelled domains across the entire deposit*
- *Mineral Resources are reported in situ and undiluted. It is assumed that all mineralised material will be transported 75 km to the future Joma process facilities in Norway. The Mineral Resources are reported within mineable shapes, generated using a net smelter return of 60 USD/t¬ ROM, with a minimum mining width of 2m where the dip of the mineralisation is in excess of 40° and a minimum mining width of 3m where the dip of the mineralisation is less than of 40°. The Cu, Zn, Pb, Ag and Au prices used in the NSR calculation were of 9,100 USD/t, 2,800 USD/t, 2,400 USD/t, 2,600USD/t, 25/oz and 1,790/oz respectively and include royalty reductions. Given these parameters, SRK considers there to be reasonable prospects for eventual economic extraction, and as such, fulfil the requirements for reporting a Mineral Resource.*
- *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability, nor have any mining modifying factors been applied.*
- *SRK is unaware of any issues at Stekenjokk-Levi which could materially affect the reporting of Mineral Resources by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors*
- *Tonnages are reported in metric units, with metal grades in percent (%) and grams per tonne (g/t). Tonnages and grades are rounded appropriately. Rounding, as required by reporting guidelines, may result in apparent summation differences between tonnes, grade and contained metal content. Where these occur, SRK does not consider these to be material.*

13.8 Sensitivity Analysis

The Mineral Resources of the Stekenjokk-Levi Project are sensitive to the selection of the reporting cut-off used. To illustrate this sensitivity, the modelled tonnages and grades for Inferred Mineral Resources at Stekenjokk and Levi at different NSR cut-off values are presented in Figure 13-3 to Figure 13-4. The reader is cautioned that the figures presented in these charts should not be misconstrued with a Mineral Resource statement and are presented to show the sensitivity of the block model estimates to the selection of the NSR cut-off value.

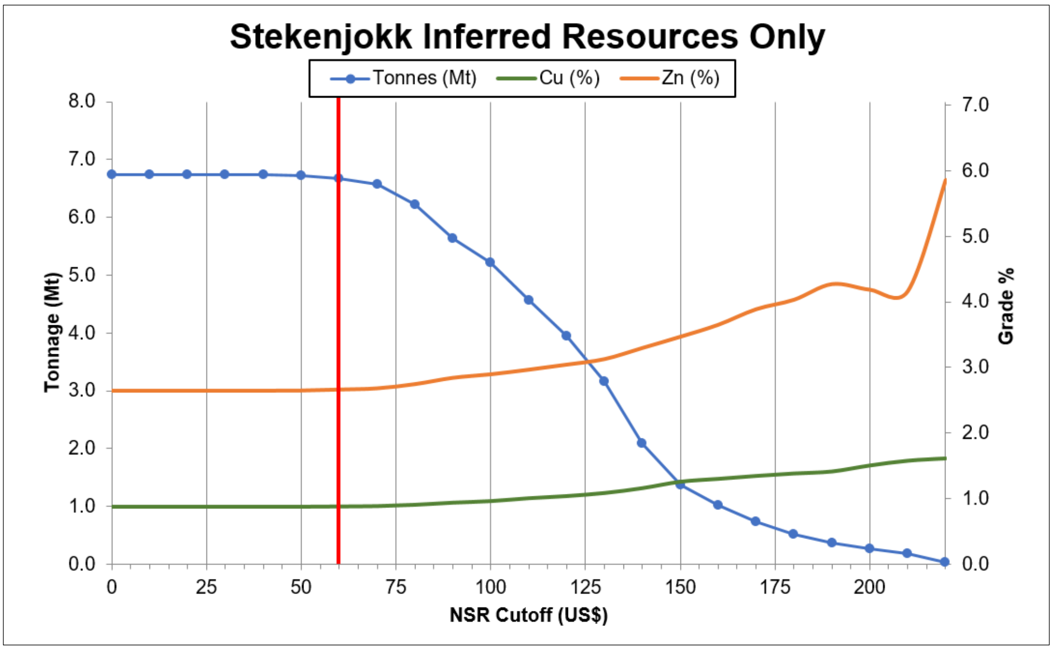


Figure 13-3: Grade-tonnage curves for Inferred material at Stekenjokk (NSR reporting CoG = red line)

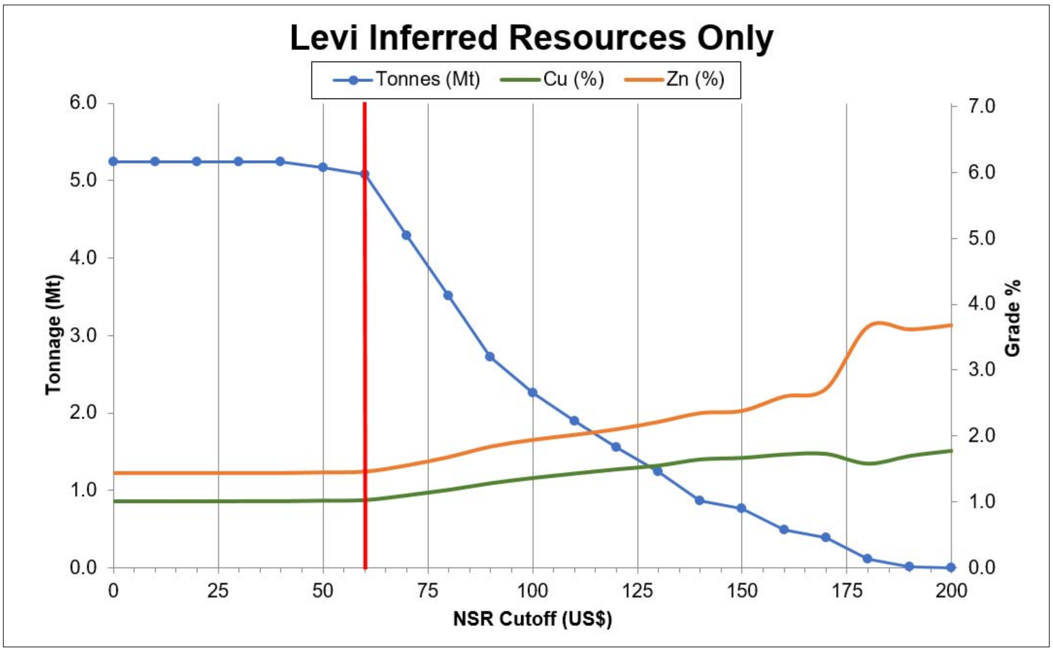


Figure 13-4: Grade-tonnage curves for Inferred material at Levi (NSR reporting CoG = red line)

13.9 Comparison to Previous Estimates

SRK is unaware of any Mineral Resource statements, reported in accordance with an internationally recognised reporting code for the Stekenjokk-Levi Project, prior to this study. Several previous estimates are known to have been undertaken:

- SGU (1966): reported resources at Levi were 4.6 Mt containing 1.16% Cu, 1.55% Zn, , <0.1% Pb, 16.1% S, <0.1 g/t Au and 20 g/t Ag.
  - The SRK 2021 Levi MRE differs from the SGU 1966 estimate by 0.5 Mt, -0.16% Cu, -0.05% Zn and 2 g/t Ag, which is equivalent to a 11% increase in tonnes, 14% decrease in Cu grade, 3% decrease in Zn grade and 10% decrease in Ag grade.
- IGE Nordic (2007): reported total Mineral Resources at Stekenjokk of 5.0 Mt at a mean grade of 1.0% Cu, 4.2% Zn, 0.7% Pb and 68 g/t Ag.
  - The SRK 2021 Stekenjokk MRE differs from the IGE Nordic 2007 estimate by 1.7 Mt, -0.1% Cu, -1.5% Zn, -0.1% Pb and -13 g/t Ag, which is equivalent to a 34% increase in tonnes, 10% decrease in Cu grade, 36% decrease in Zn grade, 14% decrease in Pb grade and 19% decrease in Ag grade.
- IGE Nordic (2007): reported total Mineral Resources at Levi of 5.1 Mt of material, at a mean grade of 1.3% Cu, 1.8% Zn, 0.1% Pb and 24 g/t Ag.
  - The SRK 2021 Levi MRE differs from the IGE Nordic 2007 estimate by 0 Mt, -0.3% Cu, -0.3% Zn, 0% Pb and -2 g/t Ag, which is equivalent to the same tonnage, a 23% decrease in Cu grade, 17% decrease in Zn grade, the same Pb grade and an 8% decrease in Ag grade.

In summary, the SRK estimate is within the reported total tonnages of the SGU and IGE Nordic estimates. The grade ranges of the SRK estimate are generally lower than the IGE Nordic estimate and the classification of resources for the SRK estimate comprises Inferred Mineral Resources, whereas the IGE Nordic 2007 estimate included Inferred, Indicated and Measured Resources. This may be due to the IGE Nordic estimate including remnants or pillars in the Stekenjokk North area which are excluded from the SRK MRE.

14 MINERAL RESERVE ESTIMATES

Due to the stage of the Project, no Mineral Reserves have been declared as part of this PEA. In order to declare Mineral Reserves, a PFS level of study is required for all modifying factors and Mineral Resources of Indicated or Measured classification category. This is not currently the case and a PFS is planned to commence as soon as possible after financing allows.

15 MINING METHODS

15.1 Introduction

The Stekenjokk-Levi deposit is a brownfields project with Cu-Zn mineralization of Caledonian VMS style. This Stekenjokk deposit was historically mined underground during the period 1976 to 1988 with approximately 7 Mt of processed ore (Boliden). The ore is typically shallow dipping to flat with thickness between 2 and 20 m.

All mining took place underground as cut-and-fill mining using the coarse fraction of the flotation tailings as back-fill material with high percentage ore recovery achieved. Flatter areas used the R&P method with the coarse tailings backfill as a working floor in thicker areas. Unmined zones of this deposit have been the topic of previous historical resource estimates.

The Stekenjokk-Levi deposit is separated into two mines with shared surface infrastructure for the PEA. All future ROM from the Stekenjokk and Levi mines will be transported from Sweden 60 km to the Joma process facilities in Norway. All tailings from the processing of Stekenjokk-Levi will be stored underground as a paste backfill in the substantial historical voids at the Joma mine.

15.2 Mining Methods

Mining method selection is an objective process, whereby the most suitable mining method is determined by the physical characteristics of the orebody. By evaluation and then ranking these characteristics, the mining method is selected. The Nicholas stoping selection method (Hustrulid 1982) quantifies this process, which is the typical basis for method selection.

The method selection process is included here for completeness, and to provide justification for the chosen method for areas of the Stekenjokk and Levi deposits which are flat dipping (Section 15.2.1) and steep dipping (Section 15.2.2).

15.2.1 Mining method selection for flat dipping zones

Table 15-1 summarises the input requirements for the mining method selection process for the flat dipping ore zones and both mining areas.

The method provides each characteristic with a rank for each method dependent on its appropriateness and suitability. By giving consideration to all the input parameters with approximate weighting, an overall picture of the most suitable method is obtained. This is represented in Table 15-2 for flat dip and intermediate ore widths.

From the rankings it can be seen that Room and Pillar stoping is by far the most suitable mining method given the ore body geometry and ground conditions. This is further supported from history stoping void model and production documents.

Table 15-1: Nicholas Mining Method Selection for Flat Dipping Zone

Parameters	Type
Ranking of Geometry/Grade Distribution	
General Shape	Tabular or Platy
Ore Thickness	Intermediate
Ore Plunge	Flat
Grade Distribution	Uniform
Ore Zone	
Rock substance strength	Strong
Fracture Spacing	Wide
Fracture Strength	Moderate
Hangingwall	
Rock substance strength	Strong
Fracture Spacing	Wide
Fracture Strength	Moderate
Footwall	
Rock substance strength	Strong
Fracture Spacing	Wide
Fracture Strength	Moderate

Table 15-2: Stoping Method for Flat Dipping, Intermediate Ore Widths

Mining Method	Ranking of Geometry/Grade distrabution	Rock Mechanics Characteristics			Total	Final Weighted Score
		Ore Zone	Hangingwall	Footwall		
Room & Pillar Mining	13	8	8	10	39	37
Cut & Fill Stoping	11	7	7	8	33	31
Sublevel Caving	9	9	6	9	33	31
Shrinkage Stoping	9	9	6	8	32	30
Top Slicing	11	7	6	8	32	30
Square Set Stoping	11	6	7	8	32	30
Block Caving	9	7	6	9	31	29
Sublevel Stoping	9	7	7	7	30	29
Longwall Mining	12	3	5	10	30	28

15.2.2 Mining method selection for steep dipping zones

Table 15-3 summarises the input requirements for the mining method selection process for the steep dipping ore zones and both mining areas.

The method provides each characteristic with a rank for each method dependant on its appropriateness and suitability. By giving consideration to all the input parameters with approximate weighting, an overall picture of the most suitable method is obtained. This is represented in Table 15-4 for steep dip and intermediate ore widths.

From the rankings it can be seen that Sublevel stoping is the most suitable mining method given the ore body geometry and ground conditions. This is further supported from the historical stoping void model and production documents for the Stekenjokk mine.

Table 15-3: Nicholas Mining Method Selection for Steep Dipping Zones

Parameters	Type
Ranking of Geometry/Grade Distribution	
General Shape	Tabular or Platy
Ore Thickness	Intermediate
Ore Plunge	Steep
Grade Distribution	Uniform
Ore Zone	
Rock substance strength	Strong
Fracture Spacing	Very Wide
Fracture Strength	Moderate
Hangingwall	
Rock substance strength	Strong
Fracture Spacing	Very Wide
Fracture Strength	Moderate
Footwall	
Rock substance strength	Strong
Fracture Spacing	Very Wide
Fracture Strength	Moderate

Table 15-4: Stoping Method for Steep Dipping, Intermediate Ore Widths

Mining Method	Ranking of Geometry/Grade distribution	Rock Mechanics Characteristics			Total	Final Weighted Score
		Ore Zone	Hangingwall	Footwall		
Sublevel Stoping	11	10	10	9	40	38
Room & Pillar Mining	9	10	10	10	39	37
Cut & Fill Stoping	15	7	7	8	37	35
Sublevel Caving	12	9	4	10	35	33
Square Set Stoping	12	5	7	8	32	30
Shrinkage Stoping	11	10	3	7	31	30
Top Slicing	9	9	3	8	29	27
Block Caving	10	4	3	9	26	24
Longwall Mining	12	3	5	10	30	28

15.2.3 Mining method approach

The range of key orebody parameters for Levi North, Levi South and Stekenjokk, relatively low grade and strong rock mass conditions have resulted in the selection and application of the underground mining methods summarised in Table 15-5. The mining methods proposed are a combination of R&P method adjusted for alternative thicknesses and dips and longhole open stoping ("LHOS") with allowances to leave pillars in place for support of the mine.

Non-fill methods utilise permanent pillars to maintain safe and stable working environments and the fill method (paste fill) can be used to stabilise the existing voids to enable access and mining around them or in the case of virgin or unmined areas to achieve higher extraction rates.

Table 15-5: Summary of Mining Methods Applied

Mining Method	Deposit Characteristics		
	Thickness/Width		Dip Range
	Min (m)	Max (m)	(deg)
Classic Room & Pillar	2	15	0 to 15°
Step Room & Pillar	2	5	15 to 40°
Longhole Open Stoping	2	30	>40°

The classic R&P method shown in Figure 15-1 can be applied to a deposit thickness up to approximately 15 m and dip up to 15°.

A Step R&P Layout (Figure 15-2) is proposed for sections of the deposit which are 2 to 5 m thick with a dip of 15 to 30°. Step R&P is an adaption of trackless mining to orebodies with too steep a dip for rubber tyre machines to operate in a classic R&P layout. Haulage drifts and stopes are therefore angled diagonally across the dip, to create access to work areas with level floors at an angle suitable for trackless equipment.

LHOS (Figure 15-3) can be applied to inclined orebodies with a dip greater than 40° and large vertical stope heights which is applicable to Levi North and the majority of Stekenjokk. The LHOS mining method without fill will require sill and rib pillars to be left in situ

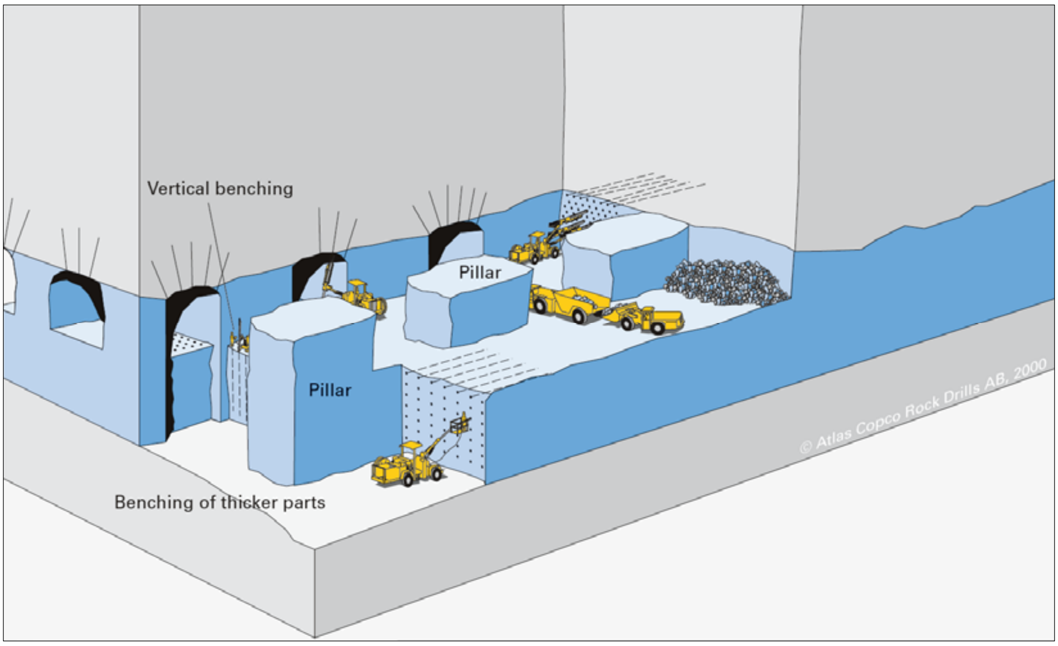


Figure 15-1: Classic R&P Method for dip of 2 to 20° and layer thickness <15 m (Source: Atlas Copco)

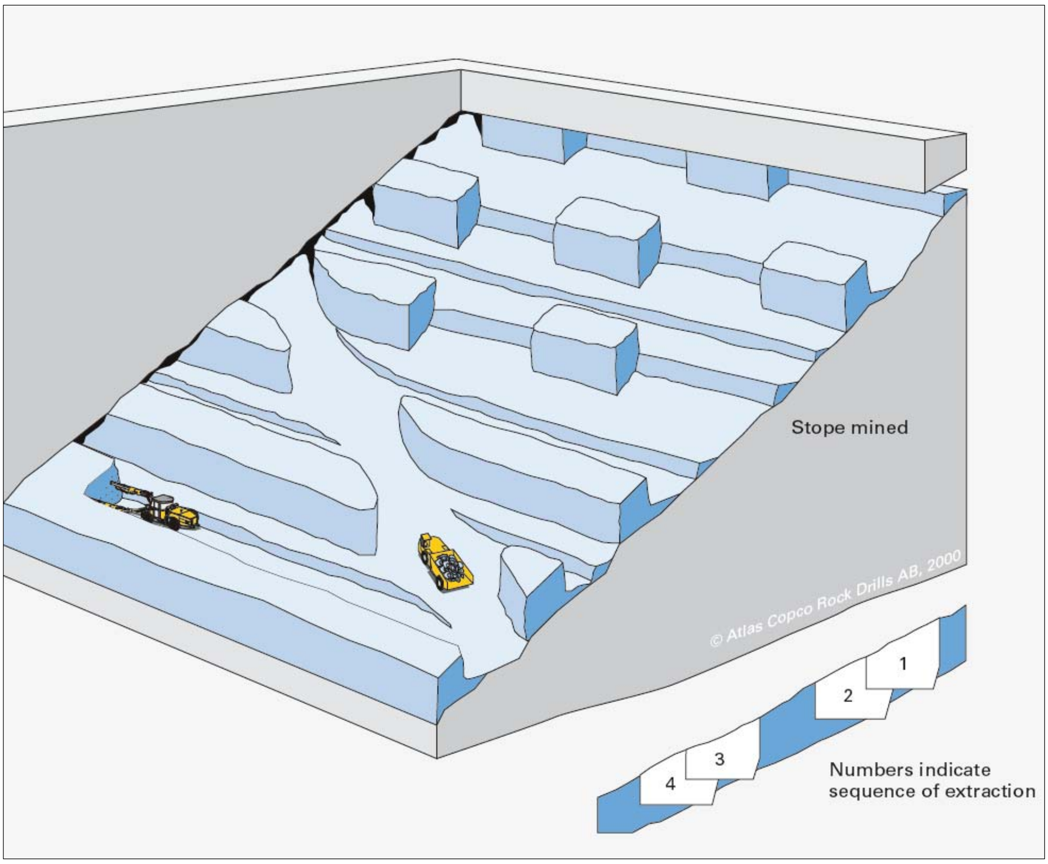


Figure 15-2: Step Room & Pillar Method for dip 15 to 30° and layer thickness 2 to 5 m (Source: Atlas Copco)

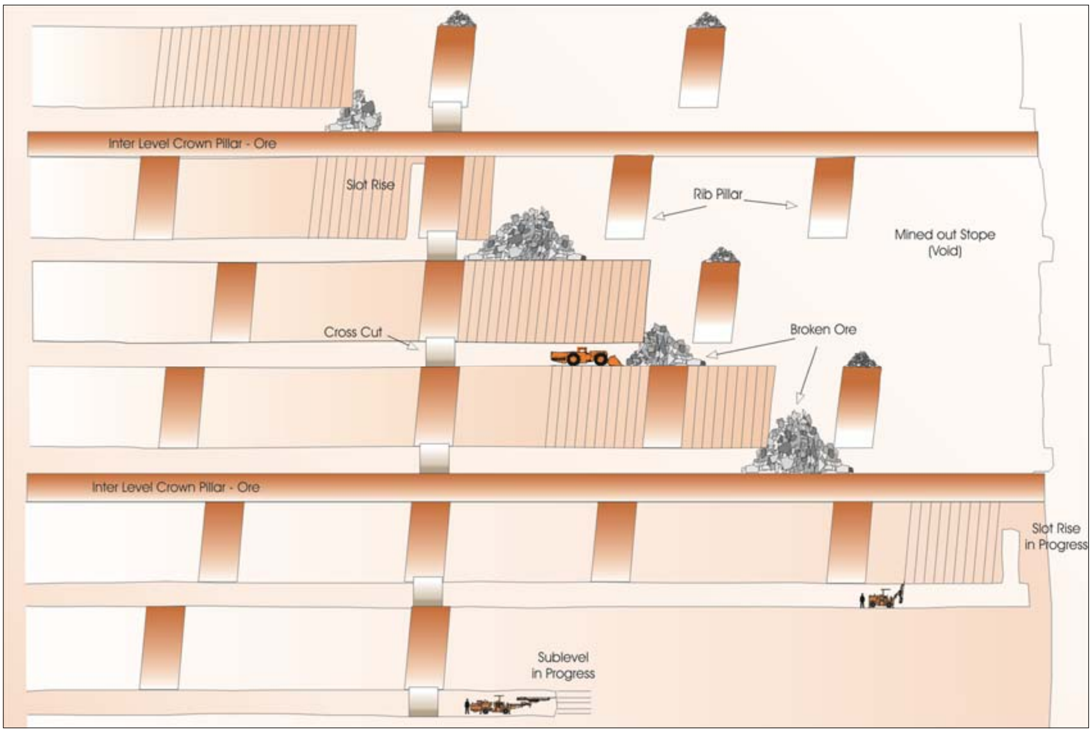


Figure 15-3: Longhole Stoping Method for dip >40° and orebody widths 3 to 30 m

15.3 Mine Geotechnical

Despite the long history of underground mining, no specific geotechnical information is available to characterise the rock mass for this PEA. Based on the geological context of the deposits, the various lithologies which constrain the mining units, and the type of mining methods historically used, it is inferred that the rock mass within which permanent and extractive development will be excavated has a rock mass quality that can be characterised as good to very good. Mining method selection geotechnical inputs describe a strong footwall, orebody and hangingwall comprising very wide fracture spacing with moderate fracture strength. Based on this description, SRK estimates that the Q rock mass rating will lie in the range 20 to 80 with the equivalent Bieniawski Rock Mass Ratio ("RMR") lying in the range 70 to 80.

In this type of rock, rock mass performance is likely to be kinematically controlled; that is, loosening and movement of rock blocks from sidewalls and roof of development and stope walls. For the longhole stoping method, significant stable stope spans may be possible and dilution should be low. For R&P mining and variants thereof, relatively small pillars and wide rooms should be achievable, although the design of these mine elements must take into account the requirement to limit or prevent surface subsidence.

Care should be taken when rehabilitating existing development for the recommencement of mining. All development should be scaled of loose rock and rock support appropriate to the duty requirement of the development should be installed. In modern mining environments rock support is installed in all development where personnel and machinery operate irrespective of rock mass quality and strength. Based on the assumed rock mass conditions of good to very good, the industry standard support regime for a nominal 5 m wide by 5 m high development profile should comprise either:

- 2.4 m long rock bolts (split sets would appropriate for this rock mass) at a spacing of 1.8 m with weld mesh installed to the drive shoulders; or
- 2.4 m long rock bolts (split sets would appropriate for this rock mass) at a spacing of 2.5 m with 50 mm thick fibre reinforced shotcrete installed to the drive shoulders.

For support of the main access decline, split set bolts should be galvanised.

For the PFS, more detailed characterisation of the rock mass forming the orebody, footwall and hangingwall will be required to develop numerical inputs for stope dimensioning and dilution estimates and support requirements for permanent and extractive development to a level of confidence appropriate for the study stage. These data should be generated from a combination of the following:

- detailed assessment of historical geology and mining documents to identify information that can be used to inform rock mass and structural geotechnical characteristics;
- geotechnical logging of existing un-cut resource borehole core;
- geotechnical logging of core photographs;
- drilling and logging of specific geotechnical boreholes or new resource/exploration boreholes; and
- collecting fresh samples of intact rock for laboratory strength and deformation testing.

15.4 Net Smelter Return and Cut-off

NSR values were estimated into the block model using lower CMF prices of 7,000 USD/t for copper, 2,150 USD/t for zinc, 1,850 USD/t for lead, 1,380 USD/oz for gold and 19.3 USD/oz for silver. The NSR cut-off for the Stekenjokk-Levi underground stope shapes was estimated at 60 USD/t_{ROM} using the preliminary estimate of cost, recovery and payability parameters summarised in Table 15-6.

Table 15-6: Technical and economic assumptions for MSO and cut-off grade

Input Summary	Units	Copper Circuit	Zinc Circuit	Lead circuit
Metal Price				
Cu	USD/t	7,000		
Zn	USD/t	2,150		
Pb	USD/t	1,850		
Au	USD/oz	1,380		
Ag	USD/oz	19.3		
Processing				
Cu Recovery	%	90	-	-
Zn Recovery	%	5	75	-
Pb Recovery	%	-	-	70
Au Recovery	%	32	-	-
Ag Recovery	%	25	-	-
Payability				
Cu Payable	%	95.6	-	-
Zn Payable	%	-	84.9	-
Pb Payable	%	45.9	-	85
Au Payable	%	90	-	-
Ag Payable	%	90	-	-
Operating Costs				
Mining Cost In-Situ	USD/t_{ROM}	31.8		
Transport to Joma Plant	USD/t_{ROM}	11.3		
Processing	USD/t_{ROM}	14.5		
G&A	USD/t_{ROM}	3.5		
NSR Reporting Cut-Off (after rounding)				
NSR Mining Cut-off	USD/t_{ore}	60		

15.5 Mineable Stope Shapes and Mine Inventory

The mining inventory for both the Stekenjokk and Levi mines were estimated using a similar approach as for the mineral resources. Mineable stope shapes were defined using a minimum mining width of 2 m where the dip of the mineralisation is in excess of 40° and a minimum mining width of 3 m where the dip of the mineralisation is less than of 40°with an NSR cut-off of 60 USD/t_{ROM}.

15.5.1 Mine inventory – Stekenjokk deposit

Figure 15-4 and Figure 15-5 provide plan and long views, respectively, of the Stekenjokk mining inventory by method as well as existing development that will need to be rehabilitated to restart mining and future planned development. The historical Stekenjokk mine is currently flooded and a staged dewatering program is required during the preproduction period. Materials handling at Stekenjokk considers truck haulage to surface prior to contract transportation to the Joma process facilities.

The mining inventory for Stekenjokk (Table 15-7) totals 5.4 Mt with a combination of R&P and longhole open stoping mining methods applied with modifying factors of 5% dilution and 15% losses.

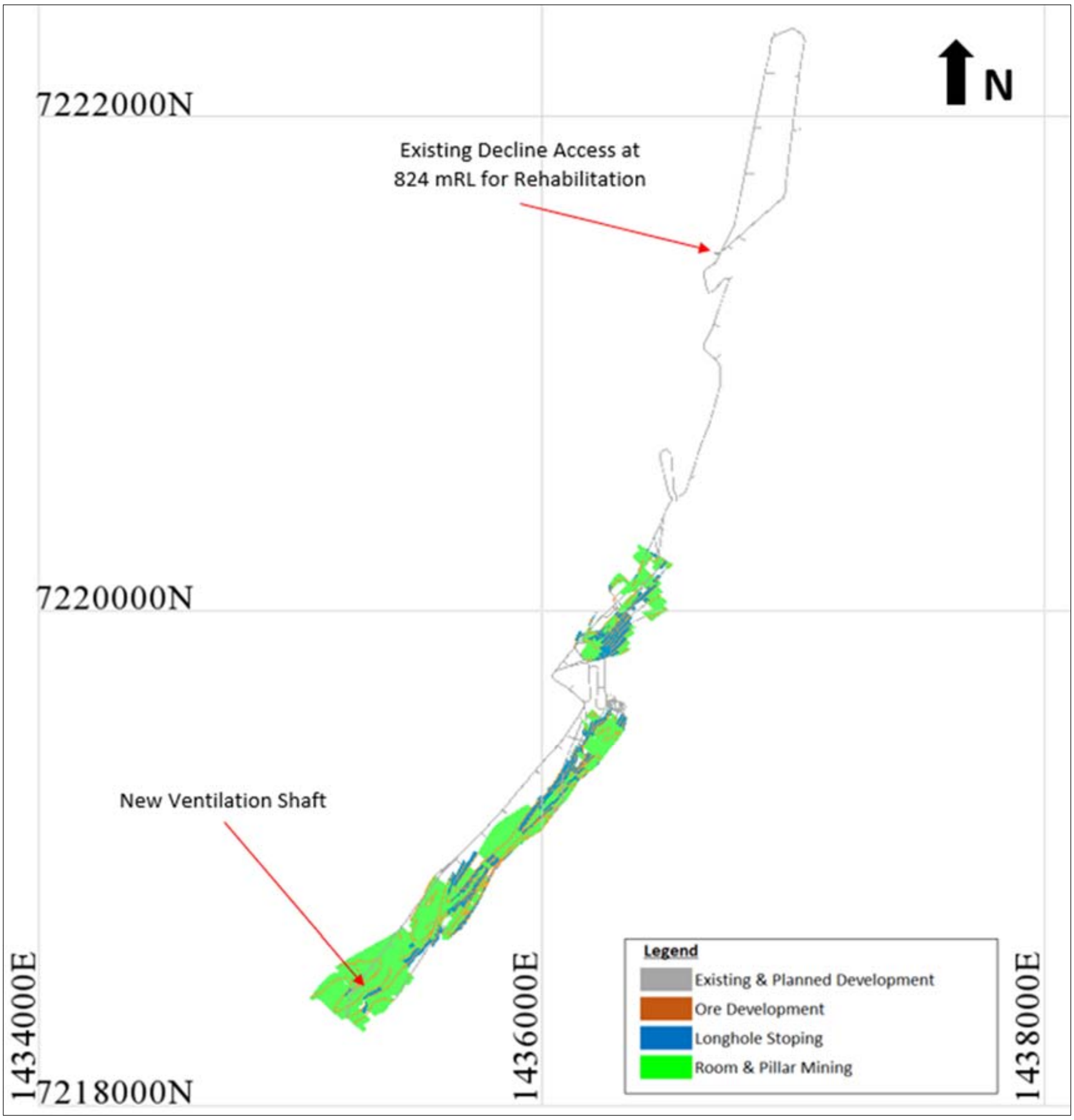


Figure 15-4: Plan view of the Stekenjokk Mining Inventory by mining method and existing and planned development

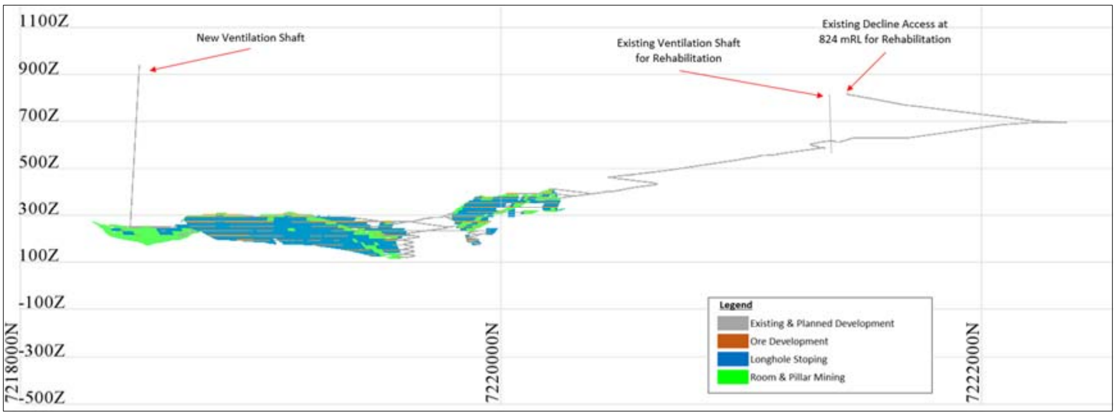


Figure 15-5: Long view of the Stekenjokk Mining Inventory by mining method and existing and planned development, looking northwest

Table 15-7: Stekenjokk Mining Inventory

Mining Inventory		Grade					Contained Metal				
Units	kt	% Cu	% Zn	% Pb	g/t Au	g/t Ag	t Cu	t Zn	t Pb	koz Au	koz Ag
Level 390	17	1.00	1.92	0.21	0.28	31.29	167	322	35	0.1	16.8
Level 370	148	0.88	2.19	0.20	0.23	29.93	1,300	3,241	298	1.1	142.7
Level 350	218	0.88	2.07	0.20	0.24	28.30	1,913	4,506	442	1.7	198.0
Level 330	183	0.85	2.23	0.24	0.22	29.58	1,557	4,088	433	1.3	174.3
Level 310	287	0.86	2.16	0.23	0.22	29.52	2,486	6,209	668	2.1	272.8
Level 290	518	0.84	2.45	0.65	0.19	50.04	4,331	12,707	3,374	3.2	833.2
Level 270	672	0.83	2.56	0.73	0.19	54.74	5,563	17,214	4,897	4.1	1,182.9
Level 250	654	0.78	2.51	0.68	0.20	53.40	5,104	16,433	4,462	4.3	1,123.3
Level 230	798	0.88	2.52	0.67	0.24	53.85	7,024	20,137	5,336	6.1	1,381.9
Level 210	781	0.89	2.59	0.75	0.25	61.08	6,934	20,205	5,840	6.3	1,533.9
Level 190	742	0.90	3.15	0.75	0.27	69.55	6,695	23,328	5,565	6.5	1,658.3
Level 170	281	0.93	3.13	0.78	0.30	71.17	2,605	8,813	2,187	2.7	643.8
Level 150	66	1.12	3.09	0.84	0.28	68.19	733	2,026	552	0.6	143.6
Level 130	31	1.07	2.99	0.96	0.28	58.36	335	938	300	0.3	58.8
Level 120	11	0.96	2.94	0.62	0.36	49.45	104	319	67	0.1	17.3
Total	**5,408**	**0.87**	**2.60**	**0.64**	**0.23**	**53.96**	**46,851**	**140,486**	**34,456**	**40.4**	**9,381.6**

15.5.2 Mine inventory – Levi deposit

Figure 15-6 and Figure 15-7 provide respective plan and long views of the Levi (North and South) mining inventory by method as well as the future planned development through decline access at Levi South due to anticipated permitting constraints associated with the designated Natura 2000 boundary. Materials handling at Levi considers truck haulage to surface prior to contract transportation to the Joma process facilities.

The mining inventory for Levi (Table 15-8) totals 2.3 Mt (57% tonnes from Levi South and 43% tonnes from Levi North) with the following mining methods and modifying factors applied:

- R&P method (67% of mining inventory) with no additional external dilution and 35% losses.
- LHOS (32% of mining inventory) with 5% dilution and 15% losses.

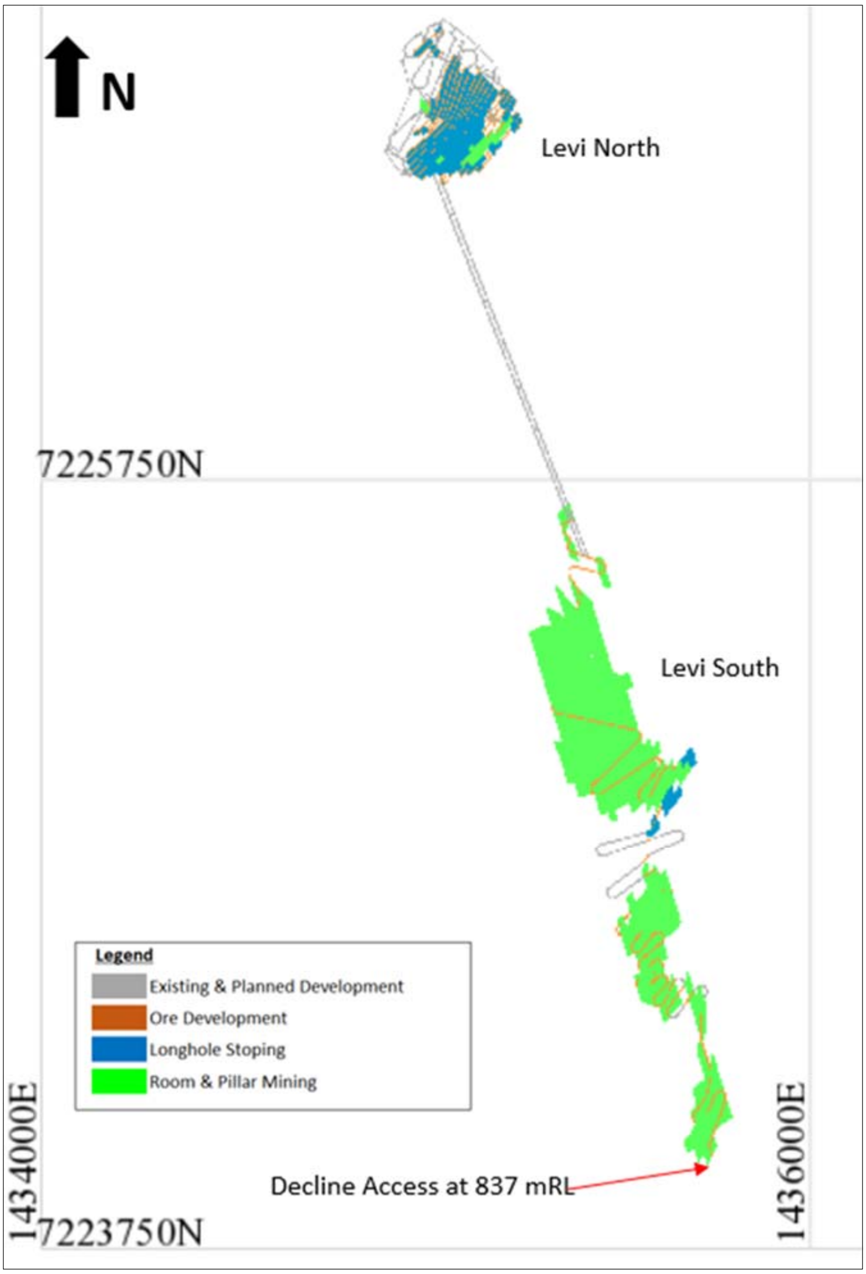


Figure 15-6: Plan view of the Levi Mining Inventory by mining method and existing and planned development

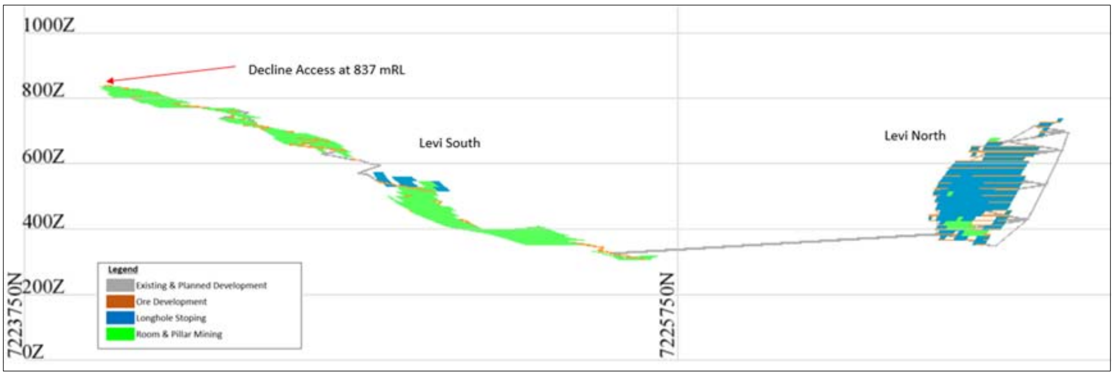


Figure 15-7: Long view of the Levi Mining Inventory by mining method and existing and planned development, looking southwest

Table 15-8: Levi Mining Inventory

Mining Inventory			Grade						Contained Metal				
Area	Units	kt	% Cu	% Zn	% Pb	g/t Au	g/t Ag	t Cu	t Zn	t Pb	koz Au	koz Ag
Levi South	SZone1	99	1.19	2.10	0.10	0.21	27.2	1,173	2,070	97	0.7	86.0
	SZone2	99	1.09	1.93	0.14	0.21	31.2	1,076	1,905	134	0.7	99.0
	SZone3	261	1.01	2.05	0.14	0.19	29.7	2,634	5,346	365	1.6	248.7
	SZone4	269	1.49	2.09	0.14	0.16	29.5	4,012	5,628	372	1.4	255.1
	SZone5	493	1.37	1.70	0.11	0.16	21.4	6,750	8,376	542	2.5	339.7
	SZone6	86	0.77	1.06	0.07	0.15	15.1	661	910	64	0.4	41.8
Levi North	Level 350	10	0.81	0.95	0.11	0.15	21.2	79	92	11	0.0	6.6
	Level 365	30	0.79	0.98	0.16	0.17	24.8	238	295	49	0.2	24.1
	Level 380	53	0.77	1.03	0.18	0.18	25.9	412	546	97	0.3	44.2
	Level 395	60	0.89	1.12	0.13	0.17	22.6	534	672	80	0.3	43.6
	Level 395	53	0.90	1.16	0.13	0.18	21.9	471	608	69	0.3	36.9
	Level 425	53	0.81	1.12	0.15	0.19	22.5	429	593	81	0.3	38.2
	Level 440	56	0.88	1.16	0.14	0.18	21.7	489	645	76	0.3	39.0
	Level 455	132	1.08	1.23	0.09	0.16	20.3	1,424	1,624	114	0.7	86.2
	Level 480	116	1.13	1.19	0.08	0.16	19.7	1,313	1,377	90	0.6	73.5
	Level 500	93	1.10	1.28	0.06	0.15	17.9	1,026	1,186	55	0.4	53.3
	Level 520	80	1.20	1.38	0.07	0.16	19.9	967	1,109	54	0.4	51.3
	Level 540	59	1.18	1.36	0.07	0.16	19.9	699	808	41	0.3	38.0
	Level 560	53	1.11	1.35	0.08	0.15	19.9	591	720	45	0.3	34.1
	Level 585	36	1.05	1.36	0.12	0.17	22.6	382	492	43	0.2	26.3
	Level 605	13	0.90	1.27	0.15	0.20	26.2	113	159	19	0.1	10.6
	Level 620	17	0.93	1.26	0.15	0.20	27.1	157	211	26	0.1	14.6
	Level 635	26	0.96	1.23	0.15	0.18	26.0	247	318	40	0.1	21.6
	Level 650	9	0.86	0.92	0.14	0.19	25.4	79	86	13	0.1	7.6
	Level 665	7	0.83	0.78	0.16	0.18	25.1	57	54	11	0.0	5.6
	Level 680	2	0.93	0.51	0.04	0.22	20.1	20	11	1	0.0	1.4
	Level 695	2	0.99	0.54	0.04	0.23	21.2	19	10	1	0.0	1.3
	Level 710	6	0.97	0.54	0.04	0.24	21.2	58	32	2	0.0	4.0
	Level 725	2	1.06	0.74	0.05	0.26	24.1	22	15	1	0.0	1.6
Total		**2,274**	**1.15**	**1.58**	**0.11**	**0.17**	**23.7**	**26,131**	**35,897**	**2,592**	**12.4**	**1,734.0**

15.6 Mine Design

15.6.1 Levi mine

The Levi South orebody daylights on surface and the planned mine access decline drives straight into the ore with allowance for two ventilation portals at either extent of the R&P stoping panels.

The Levi North orebody does not daylight on surface due it being within a Natura 2000 area which requires it to be accessed through the Levi South mine, which adds significantly to the haulage distance and cost including additional development and ventilation infrastructure.

15.6.2 Stekenjokk mine

The Stekenjokkk South orebody does not daylight on surface and is connected via an existing decline and exploration drill drive to surface. This requires significant rehabilitation and development enlargement will be required prior to production.

15.7 Mine Production

The production drill and blast design for the Stekenjokk and Levi mine has been based on standard industry practice. Within the development and traditional R&P areas 45 mm Jumbo holes will be used in the mining process. LHOS is assumed in the wider and more steeply dipping parts of the deposit with an allowance for 76 and 89 mm blast holes.

15.8 Mine Backfill

Backfill is not current part of the selected mining methods and mined stopes will only be used to store development waste to minimise haulage requirements. Future studies may consider backfill as an opportunity to increase resource extraction through pillar recovery.

15.9 Mining Equipment

The equipment required to undertake mining activities at the Stekenjokk and Levi mines were selected based on practical experience of working in similar mining environments including working mines in the Nordic region.

Table 15-9 provides the main list of primary and secondary support equipment considered in the mine plan and unit productivities used to determine equipment requirements over the LOM noting that the mine operation is permit constrained to 6 months of the year (annual productivities were prorated to 6 months). Table 15-10 provides the equipment operating factors used to estimate operating costs and throughout the LOM (annual operating factors were prorated to 6 months).

The trucking requirements (50 t capacity) have been assessed based on estimates of the haul distances by level and material type, provided for Stekenjokk (Table 15-11) and Levi (Table 15-12). It is assumed that development waste is stored underground in the historic or newly created mining voids as fill. Table 15-13 shows the truck productivity parameters applied over the LOM (annual productivities were prorated to 6 months).

Table 15-9: Mine Equipment and Productivity Assumptions

Fleet	Units	Productivity		
		per annum	per month	Notes
Twin Boom Jumbo	dev m adv	6,504	542	Based on Twin Boom Jumbo development metres
Development Loader - 17t	t/hr	467,597	38,966	Based on Loader tonnes
Raisebore	raise m	1,095	91	
Production Loader - 17t	t/hr	818,294	68,191	Based on Loader tonnes
Longhole Drill	drill m	90,024	7,502	Based on LH drill metres
Truck 1 - 50t capacity				Based on TKM calculations
Chargeup wagon	tonnes charged	600,000	50,000	Based on Production Rate
Cemented Pastefill Carrier - Agitator	kt tails	250	21	Based on combined tailings transported at Joma
Grader	tpa	1,500,000	125,000	Production rate based; 1 x Grader at all times
Service (Fuel/Lube) Truck	Drills	7	7	1 x Service Truck for every 7 Drills
Integrated Toolcarrier	tpa	250,000	20,833	Production rate based; 1 x Integrated Toolcarrier at all times
Grade Control/Probe Drill	drill m	15,000	1,250	Based on grade control metres (production rate based)
Light Vehicle				Based on staff, shifts and crews
Personnel carrier				Based on shifts and crews

Table 15-10: Mine Equipment Operating Factors

Fleet	Availability (%)	Use of Availability (%)	Operator Efficiency (%)	Effective Utilisation (%)	Direct Operating Hours (DOH)	
					per year	per shift
Twin Boom Jumbo	83%	65%	100%	54%	4,661	6.5
Development Loader - 17t	82%	55%	100%	45%	3,897	5.4
Raisebore	80%	50%	100%	40%	3,456	4.8
Production Loader - 17t	82%	77%	100%	63%	5,455	7.6
Longhole Drill	85%	49%	100%	42%	3,599	5.0
Truck 1 - 50t capacity	85%	53%	100%	45%	3,892	5.4
Chargeup wagon	83%	50%	100%	42%	3,586	5.0
Cemented Pastefill Carrier - Agitator	80%	50%	100%	40%	3,456	4.8
Grader	82%	55%	100%	45%	3,897	5.4
Service (Fuel/Lube) Truck	80%	50%	100%	40%	3,456	4.8
Integrated Toolcarrier	80%	50%	100%	40%	3,456	4.8
Grade Control/Probe Drill	80%	50%	100%	40%	3,456	4.8
Light Vehicle	80%	20%	100%	16%	1,382	1.9
Personnel carrier	80%	30%	100%	24%	2,074	2.9

Table 15-11: Stekenjokk Haulage Distances

TKMs Average Haul	Average Haul Waste (km)	Average Haul Ore (km)
Level 390	1.5	4.0
Level 370	1.7	4.1
Level 350	1.9	4.3
Level 330	2.1	4.5
Level 310	2.3	5.2
Level 290	2.5	5.1
Level 270	2.3	5.3
Level 250	2.1	5.4
Level 230	1.9	5.4
Level 210	1.7	5.5
Level 190	1.5	5.6
Level 170	1.3	5.6
Level 150	1.1	5.6
Level 130	1.0	5.7
Level 120	1.0	5.8

Table 15-12: Levi Haulage Distances

TKMs Average Haul	Average Haul Waste (km)	Average Haul Ore (km)
SZone1	0.5	0.3
SZone2	0.5	1.0
SZone3	0.5	2.0
SZone4	0.5	3.2
SZone5	0.5	4.2
SZone6	0.5	4.4
Level 350	1.5	5.5
Level 365	1.5	5.4
Level 380	0.5	6.4
Level 395	0.5	6.5
Level 395	0.5	6.6
Level 425	0.5	6.8
Level 440	0.5	6.9
Level 455	0.5	7.0
Level 480	0.5	7.2
Level 500	0.5	7.4
Level 520	0.5	7.5
Level 540	0.5	7.7
Level 560	0.5	7.8
Level 585	0.5	7.9
Level 605	0.5	8.1
Level 620	0.5	8.2
Level 635	0.5	8.3
Level 650	0.5	8.4
Level 665	0.5	8.5
Level 680	0.5	8.6
Level 695	0.5	8.7
Level 710	0.5	8.9
Level 725	1.5	8.9

Table 15-13: Truck Productivity Parameters

Trucking TKM Cycle	Units	Value
Truck Availability	%	85.0%
Truck Utilisation	%	53.0%
Truck Capacity (50t)	m3	27.0
Loader Capacity	m3	7.0
Speed up Ramp	km/hr	10.0
Speed down Ramp	km/hr	12.0
Loading time 7m3 LHD	hrs	0.2
Dumping time	hrs	0.1
Capacity @ 90% Tray Fill	m3	24.3
SG loose	t/m3	2.1
Capacity	t	50.0
Trucks Hours per Year	hrs/year	2,946.3

15.10 Mine Personnel

The professional staff (including management), workforce, and maintenance personnel for the underground mine is estimated based on the typical levels for this size of operation, operating 2 x 12-hour shifts, 24 hours per day, and 7 days per week. The maintenance, underground operator, and labour estimates are based on the annual equipment estimates (prorated to 6 months).

The majority of underground positions are based on three rostered crews working a 2-shift, 6-day rotation. A majority of the management and staff work only day shift. The initial workforce for the Stekenjokk mine will comprise of skilled mining contractors who will take a lead role in rehabilitating the mine access and ore drives to re-establish production.

15.11 Life of Mine Planning

15.11.1 Development and mining sequence

Table 15-14 provides a summary of the key Stekenjokk and Levi access and development milestones required to commence mining at Levi South. The Stekenjokk mine comes into production as Levi South is exhausted with an initial two years of pre-production dewatering and rehabilitation and development. An appropriate contractor (or contractors) will be engaged to provide the necessary equipment and skills to achieve the required rehabilitation and development to establish production at the mines. All other underground development and production activities will be completed by the owner's mining team.

For the purpose of the PEA, it is assumed that the mining contractor will provide their own equipment, consumables, personnel and management and these costs are incorporated into the contractor rates and mobilisation costs in the economic modelling.

Table 15-14: Access Rehabilitation and Development for the Stekenjokk and Levi Deposits

Development by Mine	Units	Quantity	Profile	Start	Complete	Rate (m/month)
Stekenjokk Mine						
Decline Rehabilitation	m	3,798	5mWx5mH	start Year 4	end Year 4	320
Shaft Rehabilition	m	280	4.0m dia	start Year 4	end Year 5	75
Diamond Drill Drive Stripping	m	2,575	5mWx5mH	start Year 4	end Year 5	250
Truck Decline	m	2,627	5mWx5mH	start Year 5	end Year 16	20
Shaft Excavation	m	695	4.0m dia	start Year 5	end Year 5	120
Levi South						
Portal Box Cut	USD	300,000		start Year -1	end Year -1	
Vent Adit 1	USD	300,000		start Year -1	end Year -1	
Vent Adit 2	USD	300,000		start Year -1	end Year -1	
Levi North						
Connection Drive from Levi South	m	1,090	5mWx5mH	start Year 8	end Year 8	91
Return Vent Drive	m	930	5mWx5mH	start Year 8	end Year 8	78

15.11.2 Schedule methodology

The mining inventory utilised as a basis for the development and production scheduling is presented by the designated levels as shown in Table 15-7. SRK prepared a simplified semi-automated spreadsheet approach for scheduling the required rehabilitation and development to each level. The mine inventory was scheduled for each level in an ordered sequence based on development access and assumed dewatering in order to achieve the production target rate of 0.25 Mtpa (achieved within a 6-month operating period per year.)

The annual production schedule is used to derive an equipment fleet schedule including commissioning and replacement periods for the duration of the operation. Labour requirements for each period are also estimated based in the development, production and equipment estimates.

15.11.3 Schedule results – Stekenjokk mine

Figure 15-8 shows the annual combined development and production ROM tonnes and grade schedule for the Stekenjokk mine achieving a sustainable production rate of 0.5 Mtpa over a 9-year period. The annual mine schedule physicals and key performance indicator (“KPI”) breakdown over the LOMP for Stekenjokk are presented as follows:

- mine physicals including ROM production and grade, development, rehabilitation, drilling, truck haulage and emulsion explosive usage (Table 15-15);
- primary and auxiliary mine equipment including ventilation fans (Table 15-16);
- mine personnel requirements for the underground operation (Table 15-17); and
- provision for mine water management (Table 15-18).

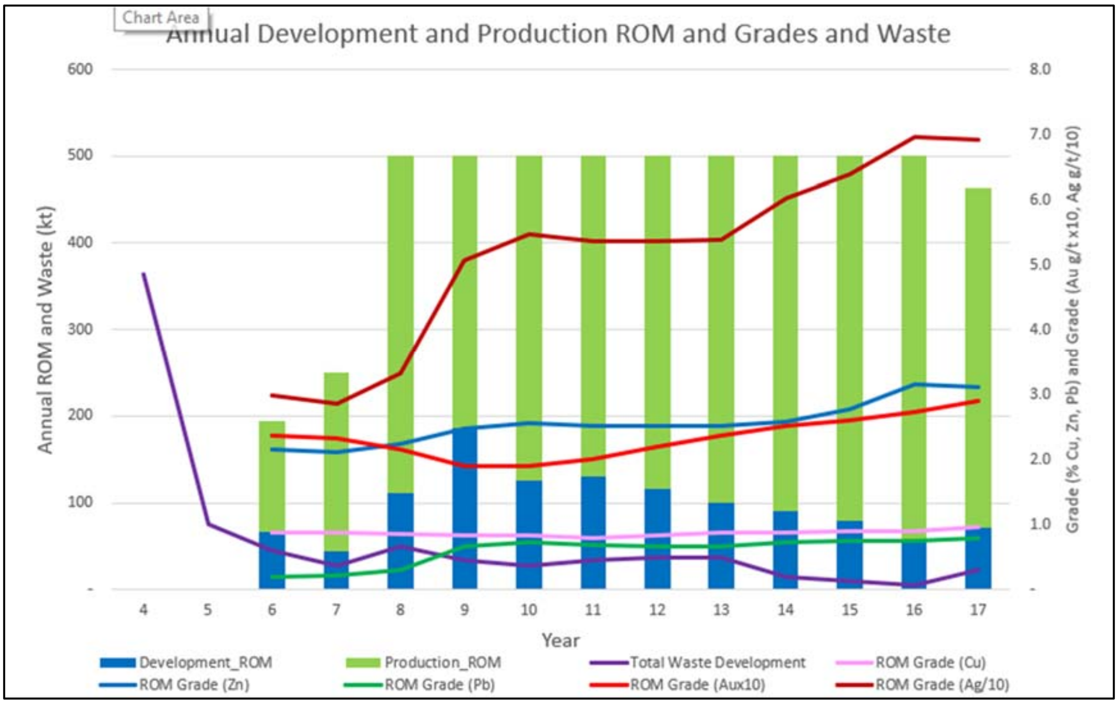


Figure 15-8: Stekenjokk Annual Development and Production ROM and Grade

Table 15-15: Stekenjokk Mine Physicals Schedule

Mine Schedule Physicals	Units	Total	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
ROM Production Profile																
Development_ROM	kt	**1,183**	-	-	67	45	112	186	125	130	116	101	91	79	59	72
Production_ROM	kt	**4,225**	-	-	127	205	388	314	375	370	384	399	409	421	441	392
Total ROM (Underground)	**kt**	**5,408**	-	-	**194**	**250**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**464**
Grade																
ROM Grade (Cu)	% Cu	**0.87**	-	-	0.89	0.87	0.86	0.83	0.83	0.79	0.83	0.88	0.89	0.89	0.90	0.96
ROM Grade (Zn)	% Zn	**2.60**	-	-	2.15	2.11	2.23	2.47	2.56	2.52	2.52	2.52	2.58	2.77	3.15	3.11
ROM Grade (Pb)	% Pb	**0.64**	-	-	0.20	0.21	0.31	0.66	0.73	0.69	0.68	0.67	0.74	0.75	0.75	0.79
ROM Grade (Au)	g/t Au	**0.23**	-	-	0.24	0.23	0.22	0.19	0.19	0.20	0.22	0.24	0.25	0.26	0.27	0.29
ROM Grade (Ag)	g/t Ag	**53.96**	-	-	29.8	28.6	33.3	50.7	54.7	53.7	53.6	53.8	60.3	63.9	69.6	69.1
Total Waste Development	**kt**	**783**	-	**272**	**61**	**44**	**67**	**52**	**44**	**52**	**54**	**54**	**31**	**25**	**6**	**23**
Lateral & Vertical Rehabilitation																
Rehab_Access + Stripping	m	**6,373**	3,798	2,575	-	-	-	-	-	-	-	-	-	-	-	-
Rehab_Shaft	m	**280**	225	55	-	-	-	-	-	-	-	-	-	-	-	-
Total Rehabilitation	**m**	**6,653**	**4,023**	**2,630**	-	-	-	-	-	-	-	-	-	-	-	-
Lateral Development																
Truck Decline	m	**2,627**	-	240	240	240	240	240	240	240	240	240	240	227	-	-
Level_X-Cut	m	**1,869**	-	-	74	139	144	243	187	175	235	299	104	64	28	178
Level_FW	m	**2,390**	-	-	503	212	512	154	156	279	251	192	64	38	14	15
Level_Vent	m	**420**	-	-	43	24	37	21	30	30	28	25	26	26	27	104
Level_Ore Dev	m	**19,474**	-	-	1,098	736	1,835	3,067	2,060	2,148	1,917	1,657	1,494	1,306	970	1,187
Total Level Development	**m**	**26,780**	-	**240**	**1,957**	**1,351**	**2,768**	**3,725**	**2,672**	**2,873**	**2,671**	**2,412**	**1,928**	**1,661**	**1,039**	**1,483**
Vertical Development																
Shaft Excavation	m	**695**	-	695	-	-	-	-	-	-	-	-	-	-	-	-
Level_Vent Raise	m	**475**	-	-	32	18	57	156	22	23	21	19	19	20	20	68
Total Vertical Development	**m**	**1,170**	-	**695**	**32**	**18**	**57**	**156**	**22**	**23**	**21**	**19**	**19**	**20**	**20**	**68**
Drilling																
Production Drilling	km	**368**	-	-	13	17	34	34	34	34	34	34	34	34	34	32
Grade Control Drilling	km	**68**	-	-	2	3	6	6	6	6	6	6	6	6	6	6
Truck Haulage (ROM + Waste)																
Schedule Tonnes	kt	**7,374**	-	272	322	338	679	738	669	682	670	654	622	605	564	559
Schedule TKMs	tkm/1000	**30,946**	-	1,387	899	1,178	2,665	2,690	2,752	2,777	2,787	2,790	2,806	2,807	2,796	2,611
Average Haul Distance	km	**4.2**	-	5.1	2.8	3.5	3.9	3.6	4.1	4.1	4.2	4.3	4.5	4.6	5.0	4.7
Explosive Consumption																
Emulsion Usage	t	**3,451**	-	23	206	175	346	400	330	346	334	317	276	257	208	233

Table 15-16: Stekenjokk Mine Equipment Schedule

Mining Equipment	Units	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
Twin Boom Jumbo	each	2	1	1	1	1	2	1	1	1	1	1	1	1	1
Loader - 17t	each	1	2	2	2	4	4	4	4	4	3	3	3	3	3
Production Drill	each	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Truck - 50t capacity	each	-	5	4	4	9	9	9	9	9	9	9	9	9	9
Chargeup wagon	each	1	1	1	1	2	2	2	2	2	2	2	2	1	1
Auxiliary Equipment															
Grader	each	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Service (Fuel/Lube) Truck	each	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Integrated Toolcarrier	each	1	2	2	2	3	3	3	3	3	3	3	3	3	3
Grade Control/Probe Drill	each	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Light Vehicle	each	4	6	11	11	15	15	15	15	15	15	15	15	15	15
Personnel carrier	each	2	2	4	4	5	5	5	5	5	5	5	5	5	5
Mine Ventilation															
Primary Fan (344 kW)	each	-	-	1	1	2	2	2	2	2	2	2	2	2	2
Development Fans (180 kW)	each	1	3	2	1	2	2	2	2	2	2	1	1	1	1
Stope Fans (110 kW)	each	-	-	3	4	7	7	7	7	7	7	7	7	7	7

Table 15-17: Stekenjokk Mine Personnel Schedule

Mine Personnel	Units	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
Management	each	1	1	5	5	5	5	5	5	5	5	5	5	5	5
Technical Support	each	4	4	15	15	15	15	15	15	15	15	15	15	15	15
Mine_Operations	each	13	23	27	27	43	45	43	43	43	41	41	41	39	39
Maintenance	each	6	10	28	28	39	39	39	39	39	39	39	39	39	39
Administration	each	-	-	2	2	2	2	2	2	2	2	2	2	2	2
Total Mine Personnel	**each**	**24**	**38**	**77**	**77**	**104**	**106**	**104**	**104**	**104**	**102**	**102**	**102**	**100**	**100**

Table 15-18: Stekenjokk Mine Water Management

Mine Dewatering	Units	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
Surface Level	mRL	818	818	818	818	818	818	818	818	818	818	818	818	818	818
Lowest Depth of Mining	mRL	600	400	350	330	290	270	270	250	230	230	210	190	190	120
Lowest Level of Mining	level	Level 600	Level 400	Level 350	Level 330	Level 290	Level 270	Level 270	Level 250	Level 230	Level 230	Level 210	Level 190	Level 190	Level 120
Pumping Head	m	218	418	468	488	528	548	548	568	588	588	608	628	628	698
Pumping Head (rounded)	m	300	500	500	500	600	600	600	600	600	600	700	700	700	700
Pumping Head (max)	m	300	500	500	500	600	600	600	600	600	600	700	700	700	700
Pumping Infrastructure and Equipment															
Primary Pump Station	each	2	3	3	3	3	3	3	3	3	3	4	4	4	4
Secondary Pumps	each	10	10	10	10	10	10	10	10	10	10	10	10	10	10

15.11.4 Schedule results – Levi mine

Figure 15-9 shows the annual combined development and production ROM tonnes and grade schedule achieving a target production rate of 0.25 Mtpa for Levi South (Year 1 to 6) and Levi North (Year 8 to 12). The annual mine schedule physicals and KPI breakdown over the LOMP for Levi are presented as follows:

- mine physicals including ROM production and grade, development, rehabilitation, drilling, truck haulage and emulsion explosive usage (Table 15-19)
- primary and auxiliary mine equipment including ventilation fans (Table 15-20);
- mine personnel requirements for the underground operation (Table 15-21); and
- provision for Mine Water Management (Table 15-22).

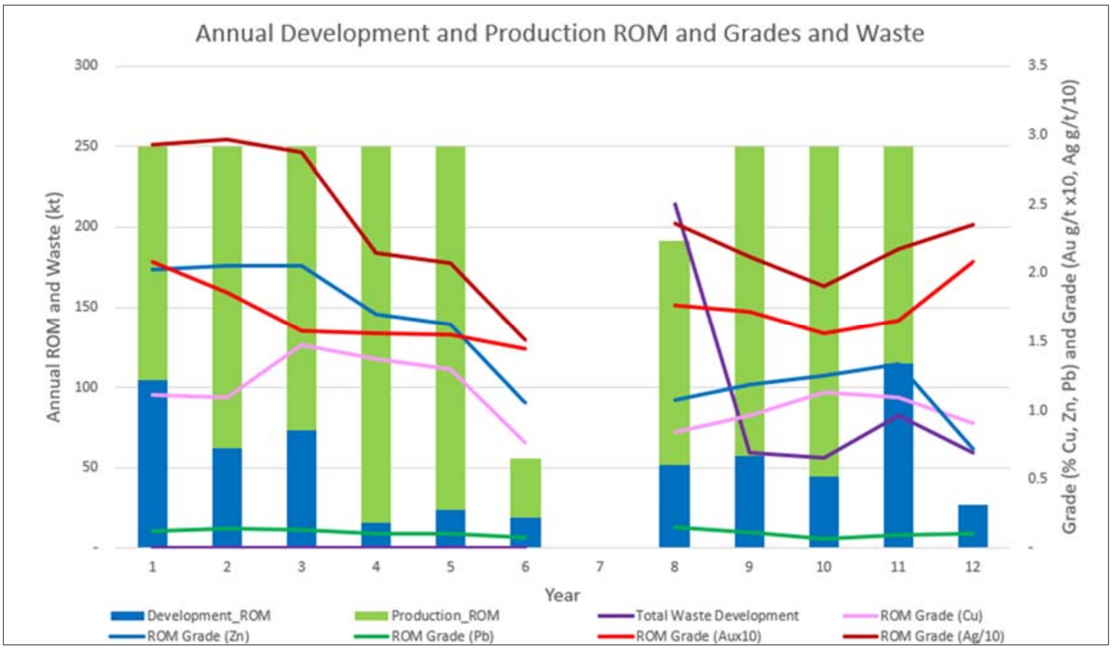


Figure 15-9: Levi Annual Development and Production ROM and Grade

Table 15-19: Levi Mine Physicals Schedule

Mine Schedule Physicals	Units	Total	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12
ROM Production Profile														
Development_ROM	kt	593	104	62	73	16	24	19	-	52	57	44	115	27
Production_ROM	kt	1,681	146	188	177	234	226	37	-	139	193	206	135	
Total ROM (Underground)	**kt**	**2,274**	**250**	**250**	**250**	**250**	**250**	**56**	**-**	**191**	**250**	**250**	**250**	**27**
Grade														
ROM Grade (Cu)	% Cu	1.15	1.11	1.09	1.48	1.37	1.30	0.77	-	0.84	0.97	1.13	1.09	0.91
ROM Grade (Zn)	% Zn	1.58	2.02	2.06	2.05	1.70	1.62	1.06	-	1.07	1.19	1.25	1.33	0.72
ROM Grade (Pb)	% Pb	0.11	0.12	0.14	0.14	0.11	0.11	0.07	-	0.15	0.11	0.07	0.10	0.10
ROM Grade (Au)	g/t Au	0.17	0.21	0.19	0.16	0.16	0.15	0.15	-	0.18	0.17	0.16	0.17	0.21
ROM Grade (Ag)	g/t Ag	23.72	29.28	29.63	28.74	21.45	20.69	15.13	-	23.63	21.19	19.04	21.77	23.54
Total Waste Development	**kt**	**472**	-	-	-	-	-	-	-	**214**	**59**	**56**	**83**	**60**
Lateral Development														
Truck Decline	m	2,638	-	-	-	-	-	-	-	528	528	528	528	527
Connection Drive	m	1,090	-	-	-	-	-	-	-	1,090	-	-	-	-
Return Vent Drive	m	930	-	-	-	-	-	-	-	930	-	-	-	-
Level_X-Cut	m	1,374	-	-	-	-	-	-	-	343	232	188	403	208
Level_Vent	m	225	-	-	-	-	-	-	-	45	23	23	68	68
Level_Ore Dev	m	9,757	1,719	1,028	1,203	255	390	307	-	858	938	730	1,886	443
Total Level Development	**m**	**16,014**	**1,719**	**1,028**	**1,203**	**255**	**390**	**307**	**-**	**3,794**	**1,720**	**1,468**	**2,885**	**1,246**
Vertical Development														
Level_Slots	m	2,335	-	-	-	-	-	-	-	376	461	379	944	174
Level_Vent Raise	m	970	-	-	-	-	-	-	-	253	129	127	363	97
Total Vertical Development	**m**	**3,305**	-	-	-	-	-	-	-	**629**	**591**	**506**	**1,307**	**271**
Drilling														
Production Drilling	km	604	82	105	99	131	127	21	-	11	13	15		
Grade Control Drilling	km	33	4	5	4	6	6	1	-	2	2	3	1	
Truck Haulage (ROM + Waste)														
Schedule Tonnes	kt	2,746	250	250	250	250	250	56	-	406	309	306	333	86
Schedule TKMs	tkm/1000	11,313	235	556	829	1,045	1,053	247	-	1,484	1,748	1,856	2,001	259
Average Haul Distance	km	4.1	0.9	2.2	3.3	4.2	4.2	4.4	-	3.7	5.7	6.1	6.0	3.0
Explosive Consumption														
Emulsion Usage	t	2,747	320	315	316	309	310	71	-	389	204	188	233	94

Table 15-20: Levi Mine Equipment Schedule

Mining Equipment	Units	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12
Twin Boom Jumbo	each	1	1	1	1	1	1	-	2	1	1	1	1
Loader - 17t	each	2	2	2	2	2	2	-	3	2	2	3	1
Production Drill	each	2	3	3	3	3	1	-	1	1	1	-	-
Truck - 50t capacity	each	2	3	3	4	4	1	-	5	6	6	6	1
Chargeup wagon	each	1	1	1	1	1	1	-	1	1	1	1	1
Auxiliary Equipment													
Grader	each	1	1	1	1	1	1	-	1	1	1	1	1
Service (Fuel/Lube) Truck	each	1	1	1	1	1	1	-	1	1	1	1	1
Integrated Toolcarrier	each	1	1	1	1	1	1	-	2	2	2	2	1
Grade Control/Probe Drill	each	1	1	1	1	1	1	-	1	1	1	1	-
Light Vehicle	each	11	12	12	12	12	9	-	13	12	12	12	9
Personnel carrier	each	4	4	4	4	4	3	-	5	4	4	4	3
Mine Ventilation													
Primary Fan (344 kW)	each	1	1	1	1	1	1	-	1	1	1	1	1
Development Fans (180 kW)	each	1	1	1	1	1	1	-	3	1	1	2	1
Stope Fans (110 kW)	each	2	3	3	4	4	1	-	2	3	3	2	-

Table 15-21: Levi Mine Personnel Schedule

Mine Personnel	Units	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12
Management	each	5	5	5	5	5	5	-	5	5	5	5	5
Technical Support	each	15	15	15	15	15	15	-	15	15	15	15	15
Mine_Operations	each	25	29	29	31	31	21	-	33	31	31	31	17
Maintenance	each	26	28	28	28	28	21	-	32	28	28	28	19
Administration	each	2	2	2	2	2	2	-	2	2	2	2	2
Total Mine Personnel	**each**	**73**	**79**	**79**	**81**	**81**	**64**	**-**	**87**	**81**	**81**	**81**	**58**

Table 15-22: Levi Mine Water Management

Mine Dewatering	Units	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12
Surface Level	mRL	837	837	837	837	837	837	837	837	837	837	837	837
Lowest Depth of Mining	mRL	667	432	353	353	307	307	307	395	455	520	620	620
Lowest Level of Mining	level	Zone 3	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6		Level 395	Level 455	Level 520	Level 620	Level 620
Pumping Head	m	170	405	484	484	530	530	530	442	382	317	217	217
Pumping Head (rounded)	m	200	500	500	500	600	600	600	500	400	400	300	300
Pumping Head (max)	m	200	500	500	500	600	600	600	600	600	600	600	600
Pumping Infrastructure and Equipment													
Primary Pump Station	each	1	3	3	3	3	3	3	3	3	3	3	3
Secondary Pumps	each	10	10	10	10	10	10	10	10	10	10	10	10

15.12 Underground Mine Infrastructure

15.12.1 Introduction

The historical Stekenjokk mine is currently flooded and has been on care and maintenance since closing in 1988. Future detailed mine planning and studies will need to assess the dewatering and rehabilitation requirements as well as the existing infrastructure to incorporate the new shared infrastructure for both the Stekenjokk and Levi mines required to re-start the operations considering (but not limited to):

- establish new accesses and dewater and rehabilitate existing access(s);
- underground materials handling;
- ventilation shafts;
- dewatering system;
- service and fresh water supply; and
- other underground facilities for maintenance, explosive storage, lunchrooms.

15.12.2 Mine electrical

The electrical distribution system will utilise a High Voltage (“HV”) network. Power will be reticulated by ring main units installed in or adjacent to mining substations. From here Low Voltage (“LV”) will be reticulated to Distribution Boards and then to Gate-End boxes for use by electrical equipment. The initial supply will be delivered to the Levi South underground via the decline access from the main transformer located at the mine site. This will then be reticulated to underground via the internal ramps. The maximum power demand for the underground Levi mine is estimated to be in the order of 1.9 MVA with up to 2.5 MVA power demand required for the Stekenjokk mine (combined demand up to 4.3 MVA over the LOM schedule).

Power will be supplied to the mine portal area at a supply voltage of HV. From the portal, power will initially be delivered along the adit for development at LV for rehabilitation works. When development has progressed far enough to reach the first substation location underground, an HV line will be installed.

Power will be reticulated by armoured HV cable suspended from the development backs to substations where it will be stepped down to LV and distributed to working areas for use by mining equipment.

The maximum LV run is approximately 450 m and this determines the requirements for substation relocations.

15.12.3 Mine communications

Communications for the mine are assumed to be a radio-based communications system. This system is installed in stages and extends with progress of the main decline development and will provide all voice and data communications within the mine.

15.12.4 Mine dewatering

The dewatering system has been assessed separately for Stekenjokk and Levi mines to provide an early-stage approach and preliminary estimate of cost using the high-level assumptions shown in Table 15-23. Future exploration will need to collect additional geotechnical and hydrogeological data which will be used to refine the approach to dewatering and water management in future detailed studies.

Further investigation and test work is required to establish the most appropriate dewatering system design; however, this study broadly outlines a practical solution based on the known parameters and comparison with similar operating mines.

The pumped mine water will be contact water and will likely require some form of water treatment prior to discharge and this will be determined at a later stage of study.

Table 15-23: Mine Dewatering Assumptions

Pumping Station or Equipment	Units	Value
Pumping station duty capacity	L/s	20
Pumping station standby capacity	L/s	20
Maintenance costs	USD per L	0.00006
Maintenance costs per station @ 20 L/s	USD per year	37,843
Challenge WT104 20L/s @ 200m	USD	100,000
Total cost per pumping station incl. build	USD	260,000

Pumping Station or Equipment	Units	Unit Capital Cost
Primary Pump Station	USD	260,000
Secondary Pumps	USD	5,000

Pumping Head (m)	Primary Pump Station (each)	Secondary Pumps (each)	Annual Operating Cost Primary (USD/annum)	Annual Operating Cost Secondary (USD/annum)
-	1	-	74,509	-
100	1	10	74,509	50,000
200	1	10	74,509	50,000
300	2	10	111,175	50,000
400	2	10	111,175	50,000
500	3	10	147,841	50,000
600	3	10	147,841	50,000
700	4	10	184,507	50,000
800	4	10	184,507	50,000
900	5	10	221,172	50,000
1,000	5	10	221,172	50,000

15.13 Mine Ventilation

15.13.1 Introduction

Separate high-level assessments of the primary ventilation requirements have been undertaken for the Stekenjokk and Levi mines to operate the mine practically and efficiently.

15.13.2 Ventilation design approach

The approach taken for the ventilation design comprised:

- Review the total vent requirements for the proposed underground fleet.
- Determine the secondary vent requirements, including fan and ducting size and type, development size and required flow rates.
- Size and cost primary and secondary fans requirements, ducting and associated development.
- Ventilation Requirements.
- The ventilation requirements are estimated from first principles and the equipment list provided indicates a total airflow of 150 m^3/s.

15.13.3 Stekenjokk mine

The proposed mine primary ventilation system for the Stekenjokk mine is shown in Figure 15-10. The primary underground vent network includes the main decline intake with the primary exhaust through internal raises located as part of the ramp systems and up the main exhaust raise at the end of the historical exploration drive.

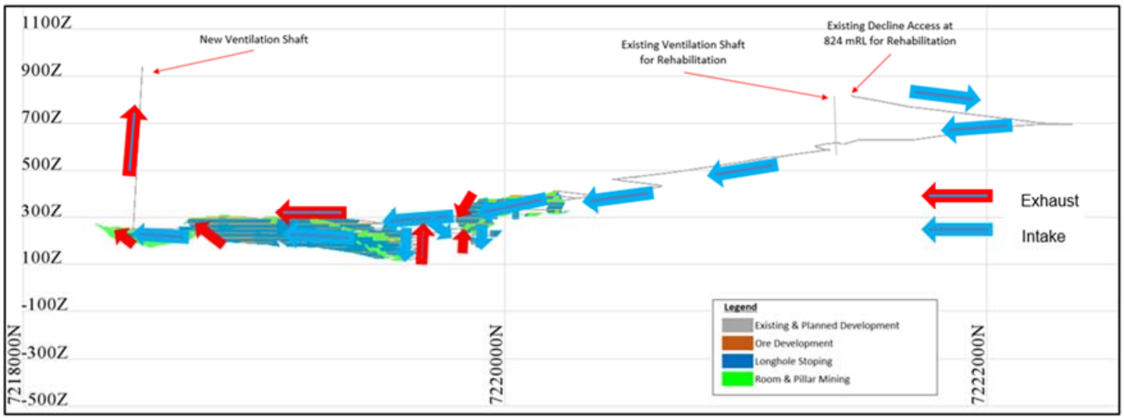


Figure 15-10: Stekenjokk Primary ventilation Layout

15.13.4 Levi mine

The proposed mine primary ventilation system for the Levi mine (South and North) is shown in Figure 15-11. The primary underground vent network includes the main decline intake with the primary exhaust through exhaust drifts and raises located at or outside the ore extents.

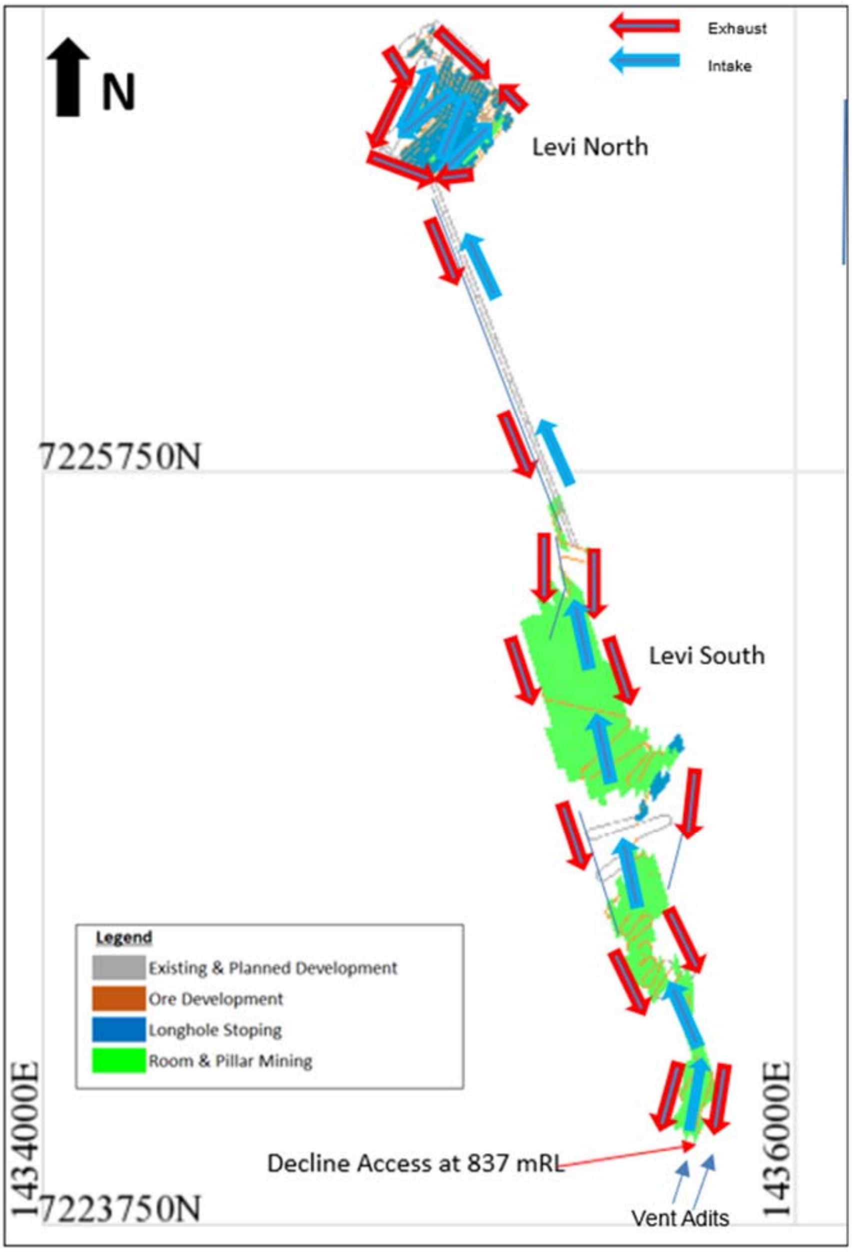


Figure 15-11: Levi Primary ventilation Layout

15.13.5 Connection of primary vent circuit for the Stekenjokk and Levi mines

The exhaust fans are to be connected to the mined development at the exit to the surface adits and vent shafts stoppings used to direct the vent flow in the main mine areas to where it is required. The new exhaust adits for the Levi mine and the Stekenjokk shaft will have primary fans mounted of the required size.

15.13.6 Ramp requirements

To minimise the required secondary vent for advancing the ramp and to allow development rehabilitation to progress at a faster rate, it is recommended that the internal exhaust raise be developed concurrently with the decline.

The decline will require secondary ventilation ahead of the establishment of the primary ventilation system and must provide enough airflow to clear diesel and noxious fumes from the decline face in a timely fashion. It is estimated that the minimum requirement for the delivery of sufficient airflow quantity to operate a truck and a loader is 26 m^3/s.

The fan consider for this task is estimated at 180 kW (twin 90 kW fans in series) with 1,400 mm diameter ducting.

The number of fans and the associated costs have been modelled within the economic evaluation.

15.13.7 Secondary ventilation requirements

Secondary ventilation is conducted in both the footwall ramps and ore drives through the use of 110 kW electric powered fans and 1,200 mm PVC vent ducting. At every junction to a working level, fresh intake air from the ramp is force ventilated into the working level. This will be the initial requirement until the drive network breaks through into the exhaust raises at the end of the stope panel.

16 RECOVERY METHODS

The Process Recovery aspects of the Project are summarised in the separate overall PEA report for the Joma Project.

17 PROJECT INFRASTRUCTURE

The historical Stekenjokk mine has been on care and maintenance since closing in 1988 and SRK understands that there is limited infrastructure onsite. Grid electrical power (20 kV) is supplied to the mine, with a transformer located on the mine site.

Future detailed mine planning and studies will need to assess if any of the historical infrastructure can be utilised and to incorporate the new shared infrastructure required to re-start the mine operations considering (but not limited to):

- Site Layout, Access and Logistics.
- Surface Mine Infrastructure:
  - water supply and treatment facilities; and
  - buildings (stores, offices, change house etc.) and maintenance workshops.
- Underground Mine Infrastructure:
  - dewater and rehabilitate existing access(s);
  - underground materials handling;
  - ventilation shafts;
  - dewatering system; and
  - other underground facilities for maintenance, explosive storage, lunchrooms.

The primary transport route considered for the Project goes south from Stekenjokk to Stora Blåsjön for 42 km where it turns west into Norway for 16 km to the Joma processing facility. The road at Stekenjokk is part of Vildmarksvägen, which is one of Sweden's highest situated roads and is located in northern Jämtland and southern Lapland. It was built in the late 1960s to handle transport to and from the Stekenjokk mine. Vildmarksvägen is located on the bare mountain at 875 masl and is currently open only during the bare ground period (July to September).

18 MARKET STUDIES AND CONTRACTS

No market studies were undertaken. The metal price assumptions are based on recent CMF pricing. Recoveries and grades for copper, zinc and lead concentrates (including gold and silver where applicable) assumed in this study are based on those achieved at the historical Joma and Stekenjokk mines. Payability terms for concentrates and precious metals are based on recent subscription updates from recognised sources.

There are no contracts in place or under negotiation relevant to the sale of concentrate from the Joma or Stekenjokk-Levi Project.

19 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section highlights the potential salient issues and material risks identified for the environmental, social and governance (“ESG”) aspects of the Project. The main source of information is the preliminary Environmental Impact Assessment (“EIA”) reports (Swedish: *Miljökonsekvensbeskrivning*, ‘MKB’) completed between 2011 and 2020. Golder Associates AB (“Golder”) acted as the environmental consultant to assist previous owner IGE, and subsequently the current owner Vilhelmina Mineral, complete environmental studies (Golder Associates AB, 2011), (Golder Associates AB, 2017), (Golder Associates AB, 2018), (Golder Associates AB, 2019) and (Golder Associates AB, 2020). This is supplemented with information primarily from SRK’s site visit in September 2021 and information available in the public domain.

SRK’s comments on the status of these issues and risks is given along with an indication of whether they impact Reasonable Prospects for Eventual Economic Extraction (“RPEEE”) for reporting Mineral Resources, are considered material to the Project and how they are planned to be managed.

19.1 Permitting Status, Land and Water Access Rights

The permitting status was discussed in Section 3.4. Whilst land and water rights are not currently an issue for the Project, a number of processes will need to be undertaken during the next phase of development to obtain approval to mine and to demonstrate confirmation of right of access to water and land. Water rights for those areas directly impacted by drawdown of water from the mine must be obtained prior to submission of the environmental permit application, whilst land access rights must be obtained before construction commences.

19.2 Governance Standards

Bluelake Mineral is a publicly listed entity on the NGM Nordic SME. This exchange is not a regulated market and as such has limited requirements in terms of governance and required filings.

Bluelake is a member of SveMin (Swedish Mining Association) and follows the industry organisation's ethical rules including environmental protection policy[11].

19.3 Approaches to Environmental, Health and Safety and Social Management

The Company is yet to conduct active exploration in the Project area and does not currently have a technical team on the ground. On completion of the PEA – and assuming funding is available – the Company aims to create a team to run the Project including the MKB2 and PFS studies along with active stakeholder engagement.

With no field work being undertaken, Vilhelmina does not currently have an environmental management system ("EMS") or a health and safety management system in place, nor are associated management plans in place. SRK understands that during the next stage of development and prior to any teams mobilising to site, the necessary environment, waste, water, health and safety, stakeholder engagement and energy efficiency programmes would be developed. Construction, operational and closure management requirements would be developed based on the outcome of future development studies and associated ESIAs.

19.4 Stakeholder Engagement

Vilhelmina is in dialogue with a number of key stakeholders, including the local authorities, local communities, investors and partners, and will continue to do so as the Project progresses. No formal stakeholder engagement plan is currently in place and formal records of engagements are not kept. As noted below, stakeholder engagement is a required part of future ESIA processes.

19.5 Environmental and Social Studies

Limited information regarding E&S studies undertaken during the operational period under previous operator Boliden is available. A study was released in 2007 summarising the closure and rehabilitation work completed by Boliden from 1992 to 2007.

[11] SweMin position statements: Statements arkiv - Svemin

The following studies pertaining to E&S matters at Stekenjokk-Levi have completed recently:

- 2011: exploitation concession application including MKB1– as part of the exploitation concession application a land-use focused ESIA (MKB1) was completed on behalf of previous owner Northfield Exploration AB (Golder Associates AB, 2011).
- 2013: MKB1 supplementary information: Mining Inspectorate requested more information following the first concession application. Supplementary information was provided including more detailed noise surveys.
- 2014: rejection: Mining Inspectorate rejected application due to impacts on water and land use (mainly reindeer herding and Natura 2000).
- 2017: MKB1 update: Alternative scenarios were investigated and the MKB1 updated on behalf of current owner Vilhelmina (Golder Associates AB, 2017).
- 2019: second exploitation concession application: The application was updated based on an updated plan (Golder Associates AB, 2019).
- 2020: MKB1 update supplementary information: Mining Inspectorate requested more information following the second concession application. Supplementary information was provided in 2020 including more detailed studies on the impact on Natura 2000 areas (Golder Associates AB, 2020).

19.6 Opportunities and Benefits

SRK has identified a number of opportunities and benefits the Project could have on various stakeholders.

19.6.1 Socio-economic benefits

The following socio-economic benefits are expected to arise from the execution of the Project:

- Employment created directly at the mine (direct employment). The MKB1 studies assumed the planned operations could result in approximately 150 direct employment opportunities at full production, including contractors and sub-contractors (higher during construction).
- Employment created in the local economy (indirect employment) via subcontractors and service industries in the surrounding communities. Although given the remote location of the Project, it is likely that labour will be supplemented from outside the local region.
- Local economic activity increase.
- Taxes and other revenue for the public sector increase, which may be used to improve:
  - infrastructure such as roads and energy supply infrastructure; and
  - municipal services such as education, health care and other public services.
- Demographic and other social parameters may improve through the movement of workers and their families into the area.
- Availability of goods, services and operations in the region improve particularly if the road into Norway becomes open through winter due to the operation.
- Tourism (post-mining) may benefit from improved and increased housing and infrastructure in tourist centres around Klimpfjäll.

According to the MKB1 studies, the impact of the operations on the social economy has been assessed to be positive; although SRK notes they were completed in 2011 and require updating as part of MKB2.

19.6.2 Governmental support

The Project has already received support from governmental organisations, including the SGU and Jämtland CAB. Through the updated exploitation concession applications, the Company hopes the additional work completed in incorporating concerns from both reindeer herding and Natura 2000 authorities will allow for further support from the Västerbotten CAB and the Mining Inspectorate.

19.6.3 Decarbonisation

The introduction of the European Green Deal announced by the European Commission in 2020 is significant for the Project. The aim of the Green Deal is to facilitate the energy transition, decarbonising technology, combat climate change and reduce environmental degradation with promises including ensuring the EU provides '*globally competitive and resilient industry'.* Part of this green deal is a focus on sourcing of raw materials for low-carbon technologies, such as batteries, through building secure supply chains within Europe and specially the EU.

The Project is well-placed within the EU to provide metals used for the energy transition, such as copper and zinc, to the EU market. In particular, the European battery factory is rapidly expanding with approximately 30 projects either planned or in construction as of late 2021. The demand for metals relating to low-carbon technologies is expected to increase significantly once the battery factory production increases.

Decarbonisation is the reduction of carbon dioxide (CO_2) emissions (and other contributing greenhouses gases ("GHG") such as methane and nitrous oxide) through the use of low-emission technology, achieving a lower output of GHG into the atmosphere. To meet expected national and global expectations regarding GHG emissions, new projects will need to show how their designs have considered decarbonisation of the construction and operations processes. Best available technology and methodologies for decarbonisation are advancing rapidly.

Mining activities consume significant quantities of fossil-fuels for transport, processing and power. In Sweden, due to the dominance of hydroelectric power, there is a lower reliance on fossil fuels from the grid compared to most countries globally. This allows the Project to have a low carbon footprint if electrification of equipment is considered. Currently, electrification of mining vehicles is in the development and research phase but is developing quickly. Electrification will undoubtedly have a key role in reducing the carbon footprint of the mining operation when electric vehicles become available.

Three categories of emissions require assessment and strategies for reduction:

- Scope 1: direct emissions by the Company from processes on-site and activities controlled by the Company; for example, fuel usage of vehicles and generators along with other sources of emissions source as explosives.
- Scope 2: indirect emissions required for the operation; for example, electricity or heat generation purchased from the grid.
- Scope 3: all other emissions related to the Company's activities, services and products within the entire supply chain; such as downstream (customers, sub-contractors), and/or upstream (equipment providers and manufacturers). These are harder to quantify, but these can be further investigated during the feasibility study by requesting equipment suppliers to provide GHG emission information as part of their tender processes.

As with the actions on reducing environmental and social impacts, there is a clear mitigation hierarchy as to how to action change, as stated below:

- Avoid: this is the highest priority and is considered the best strategy (see above comments).
- Mitigate: if an impact cannot be avoided, reduce the impact through mitigation strategies.
- Compensate (or offset): if an impact cannot be avoided or mitigated to the point of being negligible, the last strategy is compensating or offsetting for the impact.

Table 19-1 describes the future approach (as envisaged now) to decarbonising the Project; this list is not exhaustive and is intended to provide a brief overview of some areas that can be considered during the next phase of project development. The options will have capital and operating cost implications, which SRK is currently unable to assess but which can be addressed in more detail as part of the PFS.

In addition to the national and EU requirements to lower GHG emissions to meet this target, the Company has the vision of constructing a low-impact Project. As stated on the Bluelake website, the Company strives "*to conduct a maximum resource and environmentally efficient operation during the period up to the mine start, during mining and after mining operations have ended*".

Table 19-1: Strategies for decarbonisation

Area	Strategy*	Comment
Power Supply	Green Tariff (S2)	Northern Sweden has an abundance of renewable energy sources, and a "green tariff" will be sought.
	Power demand reduction (S1/S2)	The aim will be to utilise the most effective technology to reduce power consumption.
	Back-up power generation (S1)	Traditionally these would be diesel generators, but biodiesel could be used or a battery system (a battery system has higher upfront capital requirements).
	Energy trade-offs (S1/S2)	Across the project as part of the PFS there will need to be trade-off studies to identify the lowest emissions options for various functions and processes (e.g. inclusion of conveyors versus trucks). There will also be capital and operating cost implications. In this PEA, road-haulage is assumed – this does not impact power supply although charging of electric trucks will add additional burden to the power supply.
	Site specific renewables (S1)	The installation of wind turbines to provide energy to ancillary infrastructure can be explored.

Area	Strategy*	Comment
Heating and hot water	Alternative fuels (S1)	Significant amounts of heating and hot water will be required. Alternatives include biomass fuel, electrical power (under a green tariff) etc.
Construction	Alternative fuelled construction equipment (S1)	Battery electric / hydrogen fuel cell powered construction equipment is being developed and may be available for construction.
	Low carbon building materials (S1)	Sweden is a world leader in the advancing “green steel” production industry (replacing coking coal, traditionally needed for steel making, with fossil-free electricity and hydrogen). Use of fossil-free steel and low carbon concrete (‘green cement’) will need to be explored in more detail.
	Re-use of site won materials (S1)	Reduce, re-use, recycle will be a key driver in the design work to optimise costs, reduce wastage, optimise footprints.
	Low-Carbon Building Materials (S1)	There are many initiatives into low carbon building materials including use of building materials made from recycled materials.
	Repurposing construction for permanent infrastructure (S1)	For example, construction office being repurposed to operations offices; this will reduce capital cost and wastage.
Transportation (Product)	Alternative fuels (S1)	Sweden is at the forefront of battery electric vehicle technology and is reported to have a circa 35% penetration into the vehicle market. The option for battery electric trucks is considered in the report. Other options include hydrogen fuel cell or biodiesel. In recent years, Northern Sweden has transformed into a region of innovation and growth and green hydrogen and green steel is a key part of this.
	Maximise export by rail (S1)	Rail transport is understood to in general reduce emissions compared to road haulage (diesel trucks). The Project will where possible utilise the rail system for export.
Supply Chain	Maximise importation by rail (S1)	The Project will utilise railway where possible instead of road transport.
	Petition for electrification of the Inland Railway (S3)	The inland railway line and connection to Umeå is yet to be electrified. While it is beyond the scope of the project to electrify the Inland line, the development of the project may well promote the national rail infrastructure owner to move in this direction to decarbonise supply chains in the area
	Load optimisation at railhead (S1)	Use of the export trucks for backhaul of consumables from the railhead will optimise emissions
	Low-emission suppliers (S3)	Influence other companies in the supply chain to reduce emissions and preferentially selecting suppliers/customers on their own emission reduction strategies.
Offsetting	EU Emissions trading scheme (EUETS)	The EUETS has been in place since 2003 and is prescribed in EU Directive 2003/87/EC ‘Establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC’. SRK has reviewed the planned activity against the qualification criteria in Annex I of the Directive and at present has not identified any aspect of the activity that would mandate the Project’s inclusion in the EUETS. However, the policy and legislative landscape around GHG, and in particular their pricing, is changing rapidly.
	Sweden carbon tax	In addition to the ETS, Sweden has a separate carbon taxation scheme[12]. The tax is “levied on all fossil fuels in proportion to their carbon content, as carbon dioxide emissions released in burning any fossil fuel are proportional to the carbon content of the fuel”. As of 2021, a price of SEK 1,200/tonne CO_2 is recommended (USD 133/t using SEK 9:1 USD). This is directly applicable to industries and individuals burning fossil fuels and is therefore included in the TEM for the non-electric scenarios as part of this PEA.

**S1, S2 and S3 relate to Scope 1, Scope 2 and Scope 3.*

[12]Sweden carbon tax: Sweden’s carbon tax - Government.se

19.6.4 Adaptation

Along with reduction in impacts associated with the Project, climate change is already modifying local climate conditions and will continue to do so for the foreseeable future. As a result, it is important for a major infrastructure project, such as a mine, to embed climate change adaptation into the project design. Predictions on future changes to climate are provided in Section 4.2.5.

This changing climate may require adaptations in design of the Project, particularly for assuring long term stability of remaining infrastructure post-operation (such as the WRD and TMF). This includes considering the impact of elevated temperatures on the duration of ice and snow cover along with increased quantity and pattern of precipitation that may require management.

19.6.5 Industrial zone

Boliden mined the deposit in the 1970s-1980s and the Stekenjokk area remains an industrial zone currently managed by Boliden. This includes the TMF and mining/processing buildings. This means the area has already been significantly modified for industrial purposes. This is expected to be taken into consideration during the environmental permitting phase of the Project. This also provides an opportunity to work with Boliden, particularly their experience of closure, to ensure a positive legacy can be achieved in the area.

19.7 Salient Issues and Material Risks

The salient environmental and social issues along with material risks to the Project identified through a review of the MKB studies and other available data are summarized below, with the exception of mine closure and rehabilitation, which is discussed in Section 19.8. Preliminary thoughts on potential management solutions are also provided.

Salient issues are described as issues that could potentially cause harm to the people, the environment and flora and fauna. Material risks are considered as those issues that may cause financial or reputational loss as a result.

It was noted the majority of impacts occur during construction when site preparation takes place and infrastructure, roads and transport corridors are built. This largely includes land clearance, which has an impact on local biodiversity and will cause change to the currently quiet and peaceful nature of the area. Detailed studies will need to be conducted as part of the MKB2 studies and environmental permit application to investigate these issues in further detail. Possible risk areas with respect to future development relate to perceived conflicts between land uses such as tourism, conservation and reindeer husbandry (with the latter two discussed further in the next sections).

19.7.1 Reindeer husbandry

The Sámi indigenous people have rights to large swaths of land in the area surrounding the Project and completely enclosing the exploitation concession boundaries. Although not used throughout the year, the reindeer herders require access to herding routes along with grazing pasture for their reindeer. The land use conflict between reindeer husbandry (Swedish: *rennäringen*) and mining was the primary reason the exploitation concession was rejected by the Mining Inspectorate in 2014.

As a result of the decision, the Company developed an updated Project design in 2018 including the following:

- Underground mining only during the period November / December to April / May, during the time when the reindeer are not usually being herded through the area. This would reportedly reduce the conflict of interest relating to land use. The original plan was to mine in a year-round operation.
- Primary crushing underground with subsequent transport of crushed ore to Joma in Norway for further processing and production of separate copper and a zinc concentrates along with waste disposal in the Joma area. This would remove the need for aboveground processing and tailings facilities in the Stekenjokk-Levi area. The original plan was to have a concentrator on-site in the Stekenjokk industrial area.
- Vilhelmina Mineral, together with partner Joma Näringspark AS in the municipality of Røyrvik in Norway formed a joint-venture company (Joma Gruver AS) to allow for an integrated operation between the two mining areas and one processing facility.

The updated proposal was reportedly well-received by Bergstaten; however, a final decision on the exploitation concessions is pending due to the additional requirement to investigate the impact on Natura 2000 areas (see above).

Further studies will be conducted as part of the MKB2 and environmental permit application to confirm these initial findings, including further engagement with Sámi representatives. Until such time as agreement is reached, this will remain a key risk to the project proceeding.

19.7.2 Conservation importance of the area

The Project is within a complex hydrological region with numerous lakes, rivers, streams and swamps present. This has contributed to the area being designated under the European Natura 2000 scheme. The boundaries of the Vardo-, Laster- och Fjällfjällen Natura 2000 area are shown on Figure 4-5 and clearly are truncated by the Levi K nr 1 exploitation concession boundary.

The interaction between the mine and Natura 2000 area was a cause for concern of Västerbotten CAB when considering the exploitation concession application. For this reason, the Company initiated a further study specifically into the potential impacts of the Project on the Natura 2000 area. The study investigated impact on potential lowering of water level and reducing water quality along with impacts on designated species.

The study completed by Golder (Golder Associates AB, 2020) concluded that the Project will have a low impact on the area due to the minimal footprint of the potential Levi mining operation and existing human interference. The study stated that 2 ha of land was required for the Levi operation compared with the total Natura 2000 area of 106,338 ha and the land required largely comprised land already affected by previous test mining and existing roads. It is expected that the environment authorities will require further investigations as part of the MKB2 to confirm these conclusions.

19.7.3 Historical liabilities

Boliden's mining activities between 1976 and 1988 have left environmental liabilities in the area. When the mine was closed, there was no formal closure plan in place (and no requirement from the authorities). A summary of the work completed by Boliden is described below. The main aims of the decommissioning project were to:

- prevent the area from becoming a major source of ARD;
- removal of facilities that could be hazardous to humans or wildlife; and
- adapting the area to the surrounding environment.

The closure work was completed between 1990 and 1992. Apart from the TMF, the decommissioning work at the site included reclamation of WRD, a small open pit and various surface installations. The underground mine was simply allowed to flood. Surface installations were removed (except for processing and admin buildings), the open pit was flooded and the waste-rock was used for constructing break-waters in the TMF and for improving the long-term stability of the downstream dam. Disturbed areas were re-vegetated with grass which turned out to be attractive reindeer grazing areas. The TMF closure work included: lowering the water level to facilitate the work; raising the dams; moving 90,000 m^3 of tailings to deeper parts of the pond; constructing breakwaters in the shallow part of the TMF; construction of a long-term stable spillway; and, finally, raising the water level.

Boliden is currently still responsible for the closed mine and associated facilities and is currently actively monitoring. Boliden wrote an article through the ICMM that describes the work undertaken on closure (Boliden Mineral AB, 2007). The mine closure work was initiated in the summer of 1990 and completed in summer 1992 and has been monitored since this time. The main concern of the closure project was to ensure the tailings facility did not become a major source of ARD. According to the article, this aim was achieved, and the area has been successfully managed. In addition, the subsequent MKB studies have confirmed that the water quality has not significantly deteriorated from the pre-mining condition with the exception of increases in cadmium. The article focussed on water quality and ecological recovery but not specifically soil. In addition, Boliden maintained dialogue with local stakeholders including Sámi reindeer herders who use the land for grazing.

Notwithstanding the above, the historical liabilities relating to the previous operation may cause issues for the Company, particularly with respect to dewatering of the now flooded mines. The water quality and levels will require extensive monitoring during pumping to ensure the impact is kept to a minimum. Legal and financial responsibilities between the different parties also will need to be confirmed, particularly should treatment or other forms of control be required before water can be released to the environment.

19.7.4 Transport emissions

The updated plan for the mine involves shipping the crushed ore 60 km to Joma in Norway. This will be mainly on public roads and may cause disruption to existing traffic along with increased emissions of dust, noise and vibrations for local residents and flora/fauna. The Project proposes to mitigate this by only transporting ore throughout the winter period when the majority of the roads are closed due to heavy snow and poor conditions. It is expected that further traffic studies will be required to confirm these assumptions.

In addition, emissions from vehicles and machinery will be mitigated for if the mining and logistics fleet is electrified.

19.7.5 Summary

A summary of SRK's understanding of the main salient issues and material risks along with potential management/mitigation solutions is provided below:

- Reindeer husbandry:
  - Main issues: direct impact on land use rights and ability to herd reindeer.
  - Potential management solutions: engage local team to start-up the dialogue with the Sámi to further refine mitigation measures with a view to ensure reindeer husbandry can continue effectively at the same time as mining operations take place. Significant discussion has been ongoing with Sámi following rejection of the exploitation concession in 2014. The Project re-designed with the main objective to work in cooperation with the Sámi reindeer herding community.
- Conservation:
  - Main issues: the project footprint will impact on protected areas (Figure 4-5), namely the Skåarnja nature reserve (Swedish: *Vildmarksområde*) in Jämtland, which is classified as a Wilderness Area as defined by the International Union on the Conservation of Nature ("IUCN") category 1b[13]. In addition there are two Natura 2000 areas surrounding the Project - Vardo-, Laster- och Fjällfjällen in Västerbotten and the smaller Stikkenjukke (Saxån) in Jämtland.
  - Potential management solutions Golder completed an assessment of the potential impacts of the mining project on the Natura 2000 areas as part of the updated exploitation concession application (Golder Associates AB, 2020).
- Historic liabilities:
  - Main issues: area has been affected by previous mining operation with degradation to the environment that may be exacerbated by restarting operations.
  - Potential management solutions: work with Boliden to understand the risks and successful mitigation strategies.
- Transport emissions:
  - Main issues: construction and operations produce noise, vibration and gas/dust emissions that impact surrounding people, flora and fauna.
  - Potential management solutions: dust suppression, noise barriers (for example, waste dumps on pit edges), working hour restrictions.

[13] *IUCN Category 1b: Protected areas that are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition* Category Ib: Wilderness Area | IUCN

- Outdoor recreational activities:
  - Main issues: loss of recreational opportunity will result particularly from within the Södra Lapplandsfjällen / Frostviken outdoor activity national interest areas, which have been designated for recreational fishing, skiing, small game hunting, snowboarding, hiking, horseback riding and mountain biking as well as snowmobiling.
  - Potential management solutions: the aboveground footprint of the mine is expected to be relatively small with new development in the Levi area only (outside the Natura 2000 areas). This should reduce the impact on these activities. compensation could be offered to those directly impacted. This is again only likely to be an issue in the Levi area as the Stekenjokk area has already been significantly disturbed by Boliden's operation (including tailings pond).

19.8 Mine Closure

Implementation of the EU Directive relating to wastes from extractive industries (Directive 2006/21/EC) into Swedish law has resulted in the requirement for mine operators to submit a preliminary plan for closure with the environmental permit application (Section 3.4). This closure plan and the associated costs will be approved by the Environmental Court. The operator must then make provision for a financial guarantee to cover the reclamation costs should it not be able to fulfil its duties. The guarantee is required for the actual area of land affected and as such is linked in part to the LOM schedule. During operation, the actual disturbance will be reported to the authorities and the increase in the closure provision will be determined accordingly. If progressive rehabilitation is undertaken, the cost for this can be withdrawn from the bond upon acceptance by the regulatory authority appointed by the Environmental Court. The closure costs and associated bond will be reviewed when the closure plan is reviewed, at least once every three years.

For the purposes of the MKB1 studies supporting the Project mine permit application, there is no requirement to present a closure plan in any detail. As a consequence, the level of closure planning available for review by SRK is limited. The MKB2 studies to be completed as part of the environmental permit application requires more detail on closure to be included.

No detailed closure planning has been undertaken for the Project to date. A plan will be required as part of the ongoing permitting process for the new Project. The closure plan should be developed using proven technologies and methods as it would facilitate the permitting process and improve the level of confidence in the cost estimates.

SRK has provided a brief overview below of the elements of a closure plan that will likely be required as a basis for generating a preliminary closure cost for the PEA.

19.8.1 Mine

The mine will likely require flooding to prevent oxidation and metal mobilising from any remaining sulphide minerals. Before flooding, equipment will need to be removed and appropriately disposed of. For the purposes of this preliminary costing, it is assumed that any overflow from the flooded pit would not require ongoing water treatment (this would need to be confirmed during the MKB2).

Shafts will require capping with a concrete slab following the removal of surface infrastructure such as fans, fan housings, associated buildings and infrastructure.

19.8.2 Crushing plant

The equipment used for crushing should be decommissioned and removed from site.

19.8.3 Waste

Closure of the WRD will require stable slopes for the long term. It is good practice to ensure the WRD slopes generated during ongoing mining are engineered to consider closure and long-term stability. Slopes of 3(horizontal):1(vertical) are often adopted for final slopes for a WRD. Depending on the agreed end land use criteria, it is expected the WRD would be revegetated (in naturally vegetated areas) to reduce likelihood of slope failure, reduce erosion and improve aesthetics.

No TMF will be required as the processing will be conducted at the Joma site.

19.8.4 Infrastructure, facilities and equipment

Infrastructure should be decontaminated and decommissioned, with material appropriately disposed of, unless agreed otherwise with local authorities (buildings may be made safe for hand over to third parties for alternative uses).

A list of the likely infrastructure, facilities and equipment that will require decommissioning and removal is listed in Table 19-2.

Table 19-2: Infrastructure, facilities and equipment

Industrial Site	Exploration	Administration	Mine
Crushers and mills	Drilling equipment	Administrative offices	Trucks & excavators
Maintenance workshops	Drillholes and pads	Technical offices	Other mobile equipment (such as graders)
Ore storage areas	Laboratory building and equipment	Change house	Fixed equipment (such as compressors, pumps, conveyors)
Additional equipment (such as compressors, pumps, conveyors)	Core storage area	Communication (telephones, internet, GPS)	Roads (haul and access)
Scrapyard		Car parks	Weighbridge
Fuel storage tanks		Gates, fences and signage	Cables and electrical equipment
Water tanks			Water supply equipment
Pipelines			Stockpile areas
Electricity network			WRD & TMF
Fire station			Explosives magazine
Powerhouse and transformers			

19.8.5 Port

Closure relating to the port will be covered by the Joma Project.

19.8.6 Post mining monitoring and maintenance

A monitoring and maintenance programme must be developed and undertaken by the Company. The specific details of this programme will be governed by the local authorities and the Environmental Protection Agency. It is recommended the site is continuously monitored for at least ten years after closure of the site. Soil, surface and ground water monitoring along with visual site inspections of decommissioned and closed areas will form part of this monitoring plan. Ecological assessments may also be required.

19.8.7 Social transition

Future closure plans will need to address social transitioning to minimise risks of negative socio-economic impacts associated with mine closure. Key to effective social transitioning is robust community programmes implemented during operations, along with appropriate retrenchment (in line with national labour requirements) and retraining of the workforce. Social transitioning is not currently required in terms of closure planning in Sweden but as this is a global trend in the industry, SRK expects this may change in the future. Thus possible ways in which a positive post mining legacy can be achieved should be investigated during the MKB2 and future feasibility studies.

19.8.8 Cost estimate

For the purposes of the PEA and to ensure an appropriate cost is assigned in the technical-economic model (“TEM”), SRK has used an order of magnitude cost of USD 10 M over the life of mine to cover post-operational closure and rehabilitation costs. Technical and cost assumptions supporting the closure plan should be refined during the next level of study

19.9 Permitting Strategy

As part of the application for exploitation concessions a preliminary ESIA/MKB1 was completed in 2011 and updated in 2019. The MKB1 studies focus on possible implications of mining on land use and is not required to be a detailed ESIA, as described in the EU EIA directive (2014/52/EU) (refer to Table 3-2).

A second, more detailed ESIA, referred to as MKB2, is required to obtain an environmental permit (Swedish: *miljötillstånd*). Although the previously completed MKB1 contains a preliminary assessment of land use and potential environmental and social issues, no detailed baseline studies have been completed on the Project to date. Some data from Boliden’s closure monitoring programme are available.

The EU EIA directive (2014/52/EU) requires the following factors that may be affected by the Project to be assessed in an ESIA and these requirements are considered by SRK as the basis for future baseline studies:

- population and human health;
- biodiversity, including fauna and flora and particular focus on species and habitats protected under Directive 92/43/EEC (conservation of natural habitats and of wild fauna and flora) and Directive 2009/147/EC (conservation of wild birds);
- land (for example land take);
- soil (for example organic matter, erosion, compaction, sealing);

- water (for example hydromorphological changes, quantity and quality);
- air;
- climate (for example greenhouse gas emissions, impacts relevant to adaptation);
- material assets; and
- cultural heritage, including architectural and archaeological aspects, and landscape.

The first stage of the permitting strategy is to kick-off ESIA/MKB2 studies as soon as possible alongside the PFS. For this, Bluelake Mineral needs a technical team on the ground close the Project along with identifying a consultant to conduct the ESIA work.

20 CAPITAL AND OPERATING COSTS

The Capital and Operating Costs are summarised in the separate overall PEA report for the Joma Project.

21 ECONOMIC ANALYSIS

The Economic Analysis is provided in the separate overall PEA report for the Joma Project.

22 ADJACENT PROPERTIES

22.1 Historical Production and Exploration Properties

Stekenjokk lies within a zone of significant historical importance for Cu-Zn mineralisation within the Caledonides in Sweden and Norway. Four mines historically operated in the region, including Stekenjokk, Skorovas, Gjersvik and Joma, with a total combined production of 24.5 Mt between 1952 and 1998. Several other deposits are known in the region, but few have been explored within the last 20 years.

The following sections provide a brief summary of the major deposits in the region included in the Norwegian "FODD" database for the Grong-Stekenjokk metallogenic area. Additional information of these deposits is available in GTK (2012).

22.1.1 Skorovas

The Skorovas deposit was discovered in 1873 and was operated between 1952 and 1984 with a total production of 5.6 Mt. The deposit was primarily mined for pyrite, with pyritic ore dominating production between 1952 and 1976. In the last 8 years of the mine, Cu and Zn mineralisation was exploited, and an estimated 1.3 Mt of material is thought to remain.

The deposit comprises an *en echelon* array of closely spaced, elongated, flat lying massive sulphide lenses. Minor mineralised lenses occur between the main lenses within strongly sheared rocks, representing transportation within larger nappe structures. Cu and Zn mineralisation displays strong zonation and displays evidence of a high degree of metamorphism.

22.1.2 Gjersvik

Bluelake Mineral currently holds an exploration permit over the Gjersvik mine area.

Gjersvik was discovered in 1909 but was not put into full operation until 1993. Historical "reserves" were estimated at 1.6 Mt at 1.7% Cu and 1.0% Zn; however, production was based on a high-grade target of 0.5 Mt at 2.15% Cu and 0.6% Zn. The deposit was operated as a satellite to the Joma Project and closed in 1998.

Mineralisation at Gjersvik consists of a series of massive sulphide lenses forming a package up to 8 m in thickness. The mineralisation has been complexly folded into an asymmetrical trough or spoon shape, with tight recumbent to isoclinal folds occurring within the deposit.

22.1.3 Joma

Bluelake Mineral currently holds exploration permits for the Joma mine area in Norway.

Joma is a Cu and Zn-bearing volcanic massive sulphide deposit located in the Norwegian section of the Grong-Stekenjokk metallogenic area. The deposit was first identified in the early 20th century and was first operated between 1912 and 1916, although the most significant commercial production occurred between 1972 and 1998. During this period, an estimated 11.5 Mt of material was mined at a grade of 1.49% Cu and 1.45% Zn (Bluelake Mineral, 2021).

The Joma mine eventually closed in 1998, attributed to falling metal prices and a reduction in mineable material. In 2007, IGE Nordic reported "available mineralisation" at Joma of some 5.4 Mt at 0.93% Cu and 2.14% Zn, presumably accounting for sterilized ground and pillars (Gee, 2011).

22.2 Modern Exploration

No modern exploration has been undertaken at the Stekenjokk-Levi Project.

23 OTHER RELEVANT DATA AND INFORMATION

No further information is considered necessary.

24 INTERPRETATION AND CONCLUSIONS

24.1 Project Economics

The PEA economic analysis for the Joma Project indicates good economic potential and warrants continued development.

24.2 Geology and Mineral Resources

The Stekenjokk-Levi Project is at an advanced stage of exploration. Historical surface and underground drilling, the digitising of interpreted sections, and geological modelling in 3D has added a certain degree of confidence in the understanding of the geological and grade continuity. This is reflected in the classification applied to the declared Mineral Resources.

The geological interpretation used to generate the Mineral Resource estimate for Stekenjokk-Levi is generally considered to be robust; however, there are areas of lower geological confidence, currently unclassified, which may be subject to further revision in the future. SRK notes that the there is a degree of uncertainty associated with the depleted volume at the Stekenjokk mine and that these underground workings are currently flooded.

SRK has declared a Mineral Resource Statement for the Stekenjokk-Levi Project. The declared Mineral Resources are constrained by mineable shapes, which reflects reasonable assumptions regarding potential mining, processing, and other associated costs.

SRK stresses that the optimisation exercise completed was purely to determine the material which could be declared as a Mineral Resource, and as such, cannot be used for the declaration of Mineral Reserves.

The Mineral Resources, as declared for the Stekenjokk-Levi Project, as at an effective date of 19 November 2021, amount to:

- No Measured Mineral Resources.
- No Indicated Mineral Resources.
- Inferred Mineral Resources of 11.8 Mt at a mean grade of 0.9% Cu, 2.1% Zn 0.4% Pb, 50 g/t Ag and 0.2 g/t Au.

24.3 Mining Including Geotechnical and Hydrogeological Aspects

The main challenges to mining at the Stekenjokk and Levi mines will be to understand the ground and water conditions ahead of development and mining activities so that adequate preparation can take place to manage potential challenges. Only a limited amount of site-specific investigation has been carried out and collection of more data and detailed analysis is required.

Dewatering activities are going to be a long-term cost and efforts should be directed at designing an efficient system with low operating costs. Options to contain water inflow at the source need to be well understood and managed.

24.4 Metallurgy

Future testing of variability composites across the deposit and pilot plant testing of a larger bulk sample will be required to confirm processing requirements and projected recoveries for both the Stekenjokk and Levi mineralisation.

24.5 Environmental, Social and Governance

The Project represents an opportunity to improve local employment and establish a source of copper and zinc in northern Europe through a brownfield operation with a small surface footprint.

Impacts to the natural environment and other land users in the vicinity of the Project are expected to be minimised through underground mining and waste and water management strategies along with campaign mining. Once the mine has closed and are rehabilitated, impacts are envisaged to largely cease, although some risks remain associated with the flooded underground workings.

The Project area includes areas of national interest for several purposes: reindeer husbandry, valuable deposits for mineral supply, nature reserves and outdoor activities. In addition, the Levi deposit underlies a European Union Natura 2000 protected wetland area. Regarding reindeer herding, through dialogue with the local Sámi villages of Vilhelmina Södra and Voernese the engineering and design of the Project has been adjusted to enable their considerations to be incorporated. Continued dialogue and discussion with the Sámi is vital to the overall success of the Project, as even if government support is obtained, if social licence to operate is not achieved with the Sámi, then protests may result in delays to project implementation and/or influence investment decisions by other parties.

Notwithstanding the above, social and economic impacts are largely positive particularly through new job creation, increased economy of the region and increased tax revenue to local authorities. Potential negative impacts mainly stem from the transporting materials: increased transport on roads, safety and disturbances from mining activities are other potential social impacts. In addition, the sulphide-rich nature of the ore represents a challenge to ensure the acid-generating potential is minimised.

The population density is low and aged with mainly summer vacation dwellings within the area. Reindeer herding and recreation are the most important economic sectors active in the area.

SRK has not deemed any of the ESG risks and issues noted in this section as of significant risk to impact reporting of Mineral Resources according to the RPEEE criteria. SRK, however, is aware there is a vocal opposition, particularly regarding concerns attributed to the potential impact on the Sámi reindeer husbandry, and significant effort will be required to ensure all potential negative impacts are assessed, avoided, minimised and/or mitigated. Prior to start-up of operations, additional environmental, building and water permits, are required following approval of the mining concession, including the environmental permit. SRK expects the timescales for determination of all authorisations for this Project will be extended to the limit of the regulatory timescales due to number of stakeholders involved.

25 RECOMMENDATIONS

25.1 Introduction

SRK recommends that once access is obtained to the Stekenjokk mine, given that the workings are currently flooded, all areas are accurately resurveyed to confirm these volumes. During this survey, the Company should also assess which areas of the workings have been backfilled as this will impact on future mine planning and geotechnical assessments.

Based on the work carried out for the Stekenjokk-Levi Project, SRK recommends that consideration is given to advancing the Project to a PFS level of study using this PEA as a basis for the refining and optimising the approach. Further investigation and technical work, as detailed in the following sections, is required to provide sufficient confidence in the Project to advance towards eventual development. The additional work will include continuation of exploration, geotechnical and hydrogeological investigation, environmental baseline, socioeconomic and engineering studies to support environmental assessment and project evaluation.

25.2 Geology and Mineral Resources

SRK considers there to be opportunity to improve confidence in the understanding of the geological and grade continuity in the reported Mineral Resources at the Stekenjokk-Levi Project.

In relation to drilling and sampling, SRK recommends the following:

- Verification of outlying sample interval lengths.
- Re-logging and/or visual assessment of available drillcore to better understand sampling strategy and interval selection.
- Continue ongoing verification of historical database through comparison of drillholes against original paper sections.
- Re-assessment of available sections and plans to identify missing erroneous collar locations.

In relation to geometallurgical testwork, SRK recommends the following:

- Metallurgical testing from a selection of available drillcore to support any future studies as the current metallurgical assumptions are based on the historical mining and processing and it may be possible to improve these.

In relation to the depletion survey, SRK recommends the following:

- Once access is available, accurately resurvey all workings using a total station and a laser scanner. This can then be used to accurately deplete the model and as an input into the mine planning process. This will also help to identify any areas which have been backfilled and areas in which mineable resources may remain.

In relation to the classification of the Mineral Resources, SRK recommends the following:

- Additional diamond drilling at Levi to upgrade unclassified material to Inferred, and to upgrade material classified as Inferred to Indicated.
- Additional diamond drilling at Stekenjokk to upgrade unclassified material to Inferred, and to upgrade material classified as Inferred to Indicated. A structural study at Stekenjokk is warranted to better constrain the folding exhibited by mineralisation in this area.

25.3 Mining

The following aspects should be considered for advancing the mining aspects of Stekenjokk-Levi Project:

1. Improve the geotechnical information available on the rock types for determination of localised extraction ratios and pillar requirements.
2. Further investigation into the potential for open pit mining.
3. Materials handling trade-off studies considering the potential for BEV and trolley-assist technologies to reduce reliance on fossil fuels and also to reduce greenhouse gas and carbon emissions.

4. Ground treatment requirements for boxcut/portal, underground access and ventilation raise requirements.

5. Once more information is available on the geotechnical and hydrogeological aspects of the Project then further detailed mine planning work can take place to identify opportunities for increasing the stope extraction ratios.

The mine design and schedule should be completed in line with the increased confidence of future mineral resources classification and in sufficient detail to provide accurate mine production rate estimates. Future more detailed planning is undertaken with consultation with equipment suppliers to understand the requirements (and costs) of reducing diesel-powered mobile equipment and practically implementing developing battery-electric and trolley assist technologies at the individual mines.

SRK recommends that future detailed geotechnical and hydrogeological investigation is undertaken on the location of ventilation raises to get a clearer understanding of the ground control requirements and costs.

25.4 Mineral Processing

The following process related recommendations should be considered as the Project advances to the next stage of study:

1. Drilling of additional metallurgical drill holes to provide variability composites across the deposit for a follow-up test program.

2. Process testwork to understand the opportunities for pre-concentration in the mine to reduce waste movement and potentially reduce processing costs.

3. Testing of an overall composite prepared from the variability composites to optimise flotation conditions and reagent additions and to confirm the optimum mesh-of-grind.

4. Performing grindability and lock cycle testing of variability composites across the deposit to quantify semi-autogenous grinding characteristics and quantify any potential grinding variability and variability of metallurgical recoveries and concentrate grades.

5. Conducting pilot plant testing of representative mill feed to test the selected flotation process under steady-state conditions.

6. Completing further studies to determine the marketability of the copper, zinc and lead concentrates and opportunities for ore sorting to reduce material transport costs from Stekenjokk-Levi to Joma.

25.5 Water Management and Treatment

Further work is recommended on the water management and treatments aspects of Stekenjokk-Levi Project considering:

1. Geochemical investigation, analysis and modelling to estimate dewatering water quality and treatment requirements prior to discharge.

2. Investigation into water quality of non-contact and potential contact waters as these will dictate the necessity for water treatment.

3. A dewatering strategy to promote the recovery of non-contact water and thereby minimise contact waters.

4. Advance the hydrogeological analysis for Project and complete a suitably detailed water balance covering all aspects related to mining, processing, tailings and backfill.

25.6 Environmental, Social and Governance

As the Project advances, Bluelake Mineral must ensure that ESG factors are considered in the assessment and selection of project design alternatives, particularly the siting of infrastructure and waste management facilities. Early ESG input can maximise opportunities for stakeholder engagement and avoiding key impacts and risks on the surrounding environment. This will require two-way communication between the project engineers and environmental and social specialists. Key recommendations include:

- Assess all opportunities for climate change considerations to be embedded in Project design. Design alternatives and option selection should take into consideration energy efficiency, energy supply, water use and project footprint to demonstrate the lowest practical carbon intensity for the overall project design. The Company should look to commit to a ‘net zero’ carbon footprint.
- Other factors likely to be important for gaining social licence to operate will be interactions with other land uses (particularly Sámi and reindeer husbandry and outdoor recreation), populated places and biodiversity. The risks and opportunities need to be considered in light of increased focus on key receptors and viewed from the perspective of environmental and human rights.
- Detailed studies of waste (waste rock and tailings) needs to be conducted and material that meets the criteria of ‘extractive wastes’ by the State, a waste management plan will be required, as will permitting of an extractive waste facility.
- Detailed modelling of the water balance, including how groundwater and surface water flow will be influenced by the Project, need to be undertaken;
- Detailed modelling of airborne particulate matter and emissions are required.
- Detailed biodiversity mitigation and management measures are recommended to demonstrate a net positive impact from the project in the long term. A detailed biodiversity action plan is a likely requirement as part of the final suite of management plans arising from the ESIA commitments.
- Local and national level stakeholders should be identified and mapped, appropriate engagement methods identified, and a stakeholder engagement strategy developed. Measures should be employed to improve local community’s understanding and awareness of the project (including the positive and negative impacts of the Project) through regular interactions and various methods of communication including local media.
- Stakeholder engagement and meetings should be recorded and documented. Issues and concerns raised need to be formally documented, progress tracked, and a commitment made to feedback to the communities on these issues. This process can help improve the understanding of the positive and negative impacts on the social environment.

- Formal grievance process should also be developed and implemented in line with the UN Guiding Principles of Business and Human Rights. A formal grievance register should be kept with clear documentation on the grievance made, the steps taken to resolve the grievance and an option for third party resolution for any unresolved disputes.
- Anti-mining sentiment indicates a need for specific consideration on human rights, multi-stakeholder engagement platforms with open and transparent communication and dialogue, combined with increased capacity to mitigate any ongoing community opposition.

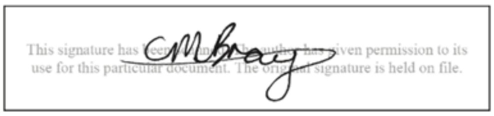
25.7 Closure

A detailed closure plan and associated cost estimate should be compiled as part of the PFS and must form part of the operating licence application. This allows for a higher level of accuracy in the Economic Analysis and a more detailed understanding of the Project to be communicated to stakeholders.

25.8 Future Work

Future work is summarised in the separate overall PEA report for the Joma Project.

For and on behalf of SRK Consulting (UK) Limited



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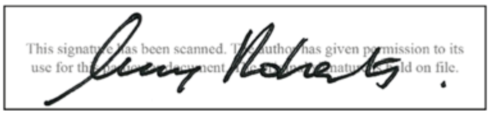

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GLOSSARY, ABBREVIATIONS, UNITS

Glossary – Technical Studies

Feasibility Study	Means a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.
Pre-Feasibility Study	The CIM Definition Standards requires the completion of a Pre-Feasibility Study as the minimum prerequisite for the conversion of Mineral Resources to Mineral Reserves. A Pre-Feasibility Study is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Qualified Person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Mineral Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.

Glossary – Mineral Resources and Mineral Reserves

Mineral Reserves	Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve. A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at pre-feasibility or feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.
Proven Mineral Reserves	A Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors. Application of the Proven Mineral Reserve category implies that the Qualified Person has the highest degree of confidence in the estimate with the consequent expectation in the minds of the readers of the report. The term should be restricted to that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect the potential economic viability of the deposit. Proven Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study.
Probable Mineral Reserves	A Probable Mineral Reserve is the economically mineable part of an

indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve. The Qualified Person(s) may elect, to convert Measured Mineral Resources to Probable Mineral Reserves if the confidence in the Modifying Factors is lower than that applied to a Proven Mineral Reserve. Probable Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study.

Mineral Resource
A concentration or occurrence of solid material of economic interest in or on the earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

Measured Mineral Resource
That part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

Indicated Mineral Resource
That part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Inferred Mineral Resource
That part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Glossary – Development Status

Adjacent Property
Means a property (a) in which the issuer does not have an interest (b) that has a boundary reasonably proximate to the property being reported on, and (c) that has geological characteristics similar to those of the property being reported on.

Advanced Property	
	Means a property that has (a) mineral reserves, or (b) mineral resources the potential economic viability of which is supported by a preliminary economic assessment, a pre-feasibility study or a feasibility study.
Early-Stage Exploration Property	
	Means a property for which the technical report being filed has (a) no current mineral resources or mineral reserves defined, and (b) no drilling or trenching proposed.
Advanced Exploration Property	
	Properties where considerable exploration has been undertaken and specific targets have been identified that warrant further detailed evaluation, usually by drill testing, trenching or some other form of detailed geological sampling. A Mineral Resource estimate may or may not have been made, but sufficient work will have been undertaken on at least one prospect to provide both a good understanding of the type of mineralisation present and encouragement that further work will elevate one or more of the prospects to the resource category.
Pre-Development Property	
	Properties where Mineral Resources have been identified and their extent estimated (possibly incompletely) but where a decision to proceed with development has not been made. Properties at the early assessment stage, properties for which a decision has been made not to proceed with development, properties on care and maintenance and properties held on retention titles are included in this category if Mineral Resources have been identified, even if no further Valuation, Technical Assessment, delineation or advanced exploration is being undertaken.
Development Property	Properties for which a decision has been made to proceed with construction and/or production, but which are not yet commissioned or are not yet operating at design levels,
Operating Mines	Mineral properties, particularly mines and processing plants that have been commissioned and are in production.
Care and Maintenance/Closed Properties	
	Mineral properties, particularly mines and processing plants which have been either decommissioned or placed on care and maintenance pending an improvement in economic and/or technical operating environments.

Abbreviations

AA-EQS	Annual Averaged Environmental Quality Standards
ARD	Acid Rock Drainage
asbuilts	historically mined areas
BAAS	battery-as-a-service
Bluelake Mineral	Bluelake Mineral AB
Boliden	Boliden Mineral AB
CAB	County Administrative Board
CBAM	carbon border adjustment mechanism
CIM	Canadian Institute of Mining and Metallurgy
Client	Bluelake Mineral
CMF	consensus market forecast
Company	Bluelake Mineral
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
DMF	Norwegian Directorate for Mineral Management (Norwegian: Direktoatet for mineralforvaltning)
DN	Directorate for Nature Management (Norwegian:; Direktoratet for naturforvaltning)
DOH	direct operating hours
EEA	European Economic Area

EFTA	European Free Trade Association
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EN	endangered
ESIA	Environmental and Social Impact Assessment
EU	European Union
GHG	Greenhouse Gas
Golder	Golder Associates AB
HDS	high density sludge
HV	High voltage
ICMM	International Council on Mining and Metals
IDW^2	Inverse Distance power 2
IED	Industrial Emissions Directive
IGE	International Gold Exploration AB
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
IUCN	International Union for the Conservation of Nature
Joma Gruver AS	a company in the Bluelake Mineral Group
Joma Main	Joma Main mineralisation
Joma South	Joma South mineralisation
JORC Code	The 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia
KPI	Key performance indicator
LC	Least Concern
LHOS	Longhole Open Stoping
LoM	Life of Mine
LOMP	Life of Mine Plan
LTC	Long Term Consensus
LV	Low voltage
MORB	Mid-ocean-ridge-basalt
MRE	Mineral Resource Estimate
MSO	mineable stope optimiser
MSO	mineable stope optimiser
Multiconsult	Multiconsult Norge AS
NEA	Norwegian Environment Agency (Norwegian: Miljødirektoratet)
NGM Nordic SME	Nordic Growth Market Small-Medium Enterprise stock exchange
NGU	Geological Survey of Norway (Norwegian: Norge Geologiske Undersøkelse)
NI 43-101	National Instrument 43-101 Report
NIVA	Norwegian Institute for Water research (Norwegian: Norsk institutt for vannforskning)
NPV	Net Present Value
NSR	Net Smelter Return
NT	near threatened
NVE	Norwegian Water Resources and Energy Directorate (Norwegian: Noregs vassdrags- og energidirektorat)
OK	Ordinary Kriging
PEA	Preliminary Economic Assessment
PFS	Prefeasibility Study
Project	Joma deposit, located in Norway and the Stekenjokk-Levi deposit, located in Sweden
QA/QC	Quality Assurance Quality Control
QKNA	Quantitative Kriging Neighbourhood Analysis
QP	Qualified Person
R&P	Room and Pillar mining method
RMR	Rock Mass Ratio
ROM	Run of Mine
ROS	risk and vulnerability analysis (Norwegian: risiko- og sårbarhetsanalyse)
RPEEE	Reasonable Prospects for Eventual Economic Extraction
SG	Specific Gravity

SGU	Geological Survey of Sweden (Swedish: Svenska Geologiska Undersökning)
SQKF	Stekenjokk Quartz-Keratophyre Formation
SRK	SRK Consulting (Sweden) AB
SRK Group	SRK Consulting (Global) Limited
SRKES	SRK Exploration Services Ltd
SveMin	Swedish Mining Association
TEM	technical-economic model
TEP	Technical Economic Parameters
TMF	Tailings Management Facility
TSM	Towards Sustainable Mining
UNECE	United Nations Economic Commission for Europe
USGS	US Geological Survey
UTM	Universal Transverse Mercator
Vilhelmina Mineral	Vilhelmina Mineral AB
VMS	volcanogenic massive sulfide
WPB	within-plate-basalt
WRD	Waste rock dump
WRSF	Waste Rock Storage Facility

Units

%	percent
°C	Degrees centigrade
cm	centimetre
dev m adv	development metres advance
g	gram
g/t	grams per tonne
hr	hour
kg	kilogram
kL	thousand litres
km	kilometre
km^2	kilometre squared (area)
koz	thousand ounces (troy)
kt	thousand tonnes
ktpa	thousand tonnes per annum
kVA	Apparent Power in kilo-watts
kW	Actual Power in kilo-watts
kWh	kilo-watt hour
L	litres
lb	pound (weight)
m	metre
M.Litres	million litres
m/s	metres per second
m^2	square metre (area)
m^3	cubic metre (volume)
m^3/s	cubic metres per second
masl	metres above sea level
mH	metres high
mm	millimetre
mRL	metres reduced level
Mt	million tonnes
Mt	million tonnes
Mtpa	million tonnes per annum
MW	Actual Power in mega-watts
mW	metres wide
MWh	mega-watt hour
NOK	Norwegian Kroner
oz	troy ounce

s	second
t	tonne
t/m^3	tonnes per cubic metre (density)
tkm	tonne-kilometre
tpa	tonnes per annum
tph	tonnes per hour
USD	United States Dollar
USDm	million USD
V	volt