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TREVALI MINING CORPORATION

TECHNICAL REPORT ON THE PERKOA MINE, BURKINA FASO

NI 43-101 Report

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1 SUMMARY

EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) was retained by Trevali Mining Corporation (Trevali) to prepare an independent Technical Report on the Perkoa underground zinc mine, located in Burkina Faso which is operated by Nantou Mining Burkina Faso S.A. (Nantou Mining). Glencore International PLC (Glencore) holds a 90% interest in Nantou Mining while the Burkina Faso State holds a 10% interest, in accordance with the Mining Code. The purpose of this report is to document the Mineral Resource and Mineral Reserve estimates prepared by Nantou Mining and audited by RPA as of December 31, 2016. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. RPA visited the property from January 31 to February 2, 2017.

The Perkoa underground zinc mine and 1,800 tonne per day (tpd) to 1,900 tpd milling operation is located in the Sanguié Province, 120 km west of the capital city of Ouagadougou, Burkina Faso. The Perkoa mine has been in operation since 2012 and currently produces zinc concentrates.

Trevali is a zinc-focused, base metals mining company with two commercially producing operations. Trevali is actively producing zinc and lead-silver concentrates from its 2,000 tpd Santander mine in Peru and its 3,000 tpd Caribou mine in the Bathurst Mining Camp of northern New Brunswick, Canada.

On March 13, 2017, Trevali announced that it had entered into definitive agreements with Glencore and certain of its subsidiaries whereby Trevali would acquire a portfolio of zinc assets from Glencore, including a 90% interest in the Perkoa mine located in Burkina Faso.

Perkoa Mineral Resources, estimated as at December 31, 2016, are summarized in Table 1-1.

TABLE 1-1 PERKOA MINERAL RESOURCE SUMMARY – AS AT DECEMBER 31, 2016
Trevali Mining Corporation – Perkoa Mine

Classification	Tonnes (M)	Zn (%)	Contained Zn (Tonnes)
Measured	3.04	15.5	470,762
Indicated	1.22	12.4	151,054
Measured and Indicated	4.26	14.6	621,589
Inferred	1.64	12.9	211,012

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are inclusive of Mineral Reserves.
3. Mineral Resources are estimated at a cut-off grade of 5% Zn.
4. Shown at 100% ownership.
5. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
6. Numbers may not add due to rounding.

Perkoa Mineral Reserves, estimated as at December 31, 2016, are summarized in Table 1-2.

TABLE 1-2 PERKOA MINERAL RESERVE SUMMARY - AS AT DECEMBER 31, 2016
Trevali Mining Corporation – Perkoa Mine

Classification	Tonnes (M)	Zn (%)	Contained Zn (Tonnes)
Proven	1.70	15.8	268,953
Probable	0.78	13.7	107,359
Proven and Probable	**2.48**	**15.1**	**376,312**

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at an NSR cut-off value of $100/t inclusive of capital expenditure, incremental stopes greater than US$78/t are included based on individual financial analysis.
3. Mineral Reserves are estimated using an average consensus forecast zinc price of US$0.99 per pound and a €/US$ exchange rate of 1.11.
4. Shown at 100% ownership.
5. Numbers may not add due to rounding.

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

CONCLUSIONS

Based on a site visit, discussion with Perkoa personnel, and review of available documentation, RPA offers the following interpretations and conclusions.

GEOLOGY AND MINERAL RESOURCES

- The geology and mineralization is well understood by Perkoa geology personnel.
- The drilling procedures employed by Perkoa conform to industry best practice and the resultant drilling pattern is sufficient to interpret the geometry and the boundaries of the mineralization with confidence. All drilling sampling was carried out under the direct supervision of appropriately qualified geologists. There are no drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results.
- Drilling, sampling, quality assurance/quality control (QA/QC), sample preparation and analyses were appropriate for the style of mineralization and adequate for Mineral Resource estimation. The QA/QC controls, however, require improvement.
- The assumptions, parameters, and methodology are appropriate for the style of mineralization.
- Mineral Resources were estimated consistent with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM definitions).
- Measured plus Indicated Mineral Resources total 4.26 million tonnes (Mt) grading 14.6% Zn.
- Inferred Mineral Resources total 1.64 Mt grading 12.9% Zn.
- The areas covered by the exploration licences, as well as other areas along strike of the Perkoa deposit, are very prospective for both base and precious metals.

MINING AND MINERAL RESERVES

- The Mineral Reserve estimate has been prepared utilizing acceptable estimation methodologies and the classification of Proven and Probable Mineral Reserves conform to CIM definitions and NI 43-101.
- Mining and milling costs used for the Mineral Reserve net smelter return (NSR) calculation have been extracted directly from the 0.67 Mt per annum mining cost estimation physicals prepared by Nantou Mining in mid-2016. The values are based on the average operating costs from the first half of 2016.
- The NSR cut-off value used for Mineral Reserve estimation is reasonable.
- Stope shapes have been designed manually using Surpac software. The resultant shapes were evaluated against the geological resource model to report the tonnes and grade for each stope shape.

- Stope modifying factors were applied, post-geological interrogation, to generate the final diluted and recovered Mineral Reserve.

- The Proven and Probable Mineral Reserve totals 2.48 Mt at 15.1% Zn for a total of 376,312 t of contained zinc.

- In addition to site operating costs, the Mineral Reserve estimate takes into consideration metallurgical recoveries, concentrate grades, transportation costs, smelter treatment charges, and royalty in determining economic viability.

MINERAL PROCESSING

- The process plant is a conventional sulphide flotation plant capable of processing 1,800 tpd to 1,900 tpd and includes crushing, screening, and grinding, followed by zinc flotation and filtering to produce a zinc concentrate.

- The process plant has historically produced a zinc concentrate in the range of 50.0% to 53.0% (during four previous years of operation from 2013 to 2016) from head grades ranging from 6.3% Zn (open pit) to 15.0% Zn (underground). Recovery of zinc has been in the range of 89.3% to 96.7%. In general, the Perkoa concentrate can be considered “clean”, with mercury and iron being two elements incurring small penalties.

- There are no other by-product credits.

- Zinc concentrates are trucked 1,200 km to the port of Abidjan, Côte d’Ivoire.

ENVIRONMENTAL, SOCIAL, COMMUNITY

- There is no evidence of environmental issues that could materially impact Nantou Mining’s ability to extract the Mineral Resources or Mineral Reserves at the Perkoa mine.

- The Perkoa mine has a Health, Safety, Environment and Community (HSEC) Policy (2014) outlining its commitment to the environment as well as procedures aligned to the requirements of applicable Burkina Faso legislation.

- The approved Environmental Management Plans (EMP) integral to the Environmental Social Impact Assessment (ESIA) provide the framework for Perkoa mine’s environmental management.

- As per the requirements of the Burkina Faso Legislative Framework, all applicable environmental licences are in place at the Perkoa mine.

RECOMMENDATIONS

RPA offers the following recommendations.

GEOLOGY AND MINERAL RESOURCES

- A comprehensive data process map should be undertaken, including logging and sampling inputs, database review, and production reconciliation studies.

- The Microsoft Access format diamond drill hole database should be modified so that only the Drill Hole Database Administrator has secured rights to revise or add data. RPA also recommends that the drill hole database include a field for QA/QC completed and a final Drill Hole Signoff by the Database Administrator.

- A study is required to determine the root causes of the current only adequate QA/QC results in order to ensure a high confidence in future QA/QC results.

- Grade capping should be investigated per lens and a new variography study should be completed.

- A reconciliation of the resource model versus the actual tonnage and grade, as determined by the process facility, should be a standard practice for the annual Mineral Resource estimation.

- Drilling is underway to upgrade resources into the Measured category and ultimately mine plan from the 400 to 490 levels where historically there has been a 60% conversion rate from resources to reserves. RPA recommends that this drilling program be a priority in order to support a potential extension of the life of mine (LOM) plan to 5.5 years.

- A comprehensive detailed review, compilation, and systematic exploration targeting plan is required prior to any future significant exploration expenditures.

MINING AND MINERAL RESERVES

- A review of the Mineral Reserves based on current zinc prices should be carried out.

- The Mineral Reserve estimate should be updated once the additional drill hole information is available.

MINERAL PROCESSING

- Recoveries (92% to 94%) and concentrate grades (52% to 53%) are reasonable, however, both of these may be improved to maintain the upper range of recoveries and concentrate grades with further metallurgical testing.

ENVIRONMENTAL, SOCIAL, COMMUNITY

- Malaria is a threat to the employees and contractors working at the mine. Ongoing Training and Awareness programs will need to be rolled out and extended beyond employees as infections may be occurring out of the mine workplace or camp site.

- The mandate from the government to conduct an Acid Rock Drainage potential study at the mine will assist in understanding mitigation measures that need to be developed managed and monitored at the mine and will provide an accurate closure liability costing and rehabilitation plan for the mine.

- There will need to be a stakeholder management plan that is developed to address the one percent levy that has been imposed from government. Although the mine will possibly not be able to direct the spend of that levy, community perceptions regarding

lack of local benefits and misappropriation of development funds could pose risk to the project, regardless of whether these perceptions are substantiated.

ECONOMIC ANALYSIS

As part of the 2017 Budget process, Nantou Mining has developed a four year mine plan (Four Year Plan) which projects production to 2021 with a total of 2.48 Mt being mined at a grade of 15.1% Zn. A Cash Flow Projection has been generated from the current Four Year Plan production schedule and capital and operating cost estimates, and is summarized in Table 1-3. Metal prices, as provided by Trevali, are based on consensus, long term forecasts from banks, financial institutions, and other sources. All costs are presented in US dollars. Some of the key parameters and assumptions for the pre-tax cash flow are as follows.

REVENUE (100% BASIS)

- 1,848 tpd
- Head grade: 15.1% Zn
- Mill recovery averaging: 92.0%
- Metal price: based on consensus forecast per year, averaging $1.14 per pound zinc
- Smelting and transport costs totalling $0.39 per pound payable zinc.
- NSR: $191 per tonne milled.

COSTS (100% BASIS)

- Mine life: 4 years
- Sustaining capital: $37.8 million
- Average operating cost over the mine life: $97.20/t milled
- Closure costs: $7.0 million
- Salvage costs: nil
- NSR Royalty: $14.6 million
- Net cash cost (equivalent to C1 cost), including capital, of $0.82 per pound of payable zinc.
- Pre-tax NPV at 10%: $157 million

Income tax losses may be carried forward for four years, while losses resulting from depreciation of assets can be carried forward indefinitely. Nantou Mining has a substantial income tax loss carry-forward and is not subject to corporate income tax until the income tax loss carry-forward has been used.

TABLE 1-3 CASH FLOW SUMMARY - 100% BASIS
Trevali Mining Corporation - Perkoa Mine

	INPUTS	UNITS	TOTAL	2017	2018	2019	2020	2021
MINING								
Operating Days		days	1,343	365	365	365	248	-
Tonnes milled per day		tonnes / day	1,848	1,845	1,846	1,852	1,852	-
Production		'000 tonnes	2,483	674	674	676	459	-
Zn Grade		%	15.16%	15.16%	15.16%	15.16%	15.16%	0.00%
Waste		'000 tonnes	-	-	-	-	-	-
Total Moved		'000 tonnes	2,483	674	674	676	459	-
PROCESSING								
Mill Feed		'000 tonnes	2,483	641	674	676	492	-
Zn Grade		%	15.16%	15.16%	15.16%	15.16%	15.16%	0.00%
Contained Zn		tonnes	376,371	97,176	102,135	102,481	74,579	-
Recovery Grade								
Zn Concentrate		%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
Recovered Amount								
Zn Concentrate		tonnes	346,261	89,402	93,965	94,282	68,613	-
Grades in Concentrate								
Zn Concentrate		tonnes	653,323	168,682	177,292	177,891	129,458	-
Zn grade in concentrate		%	53.00%	53.0%	53.0%	53.0%	53.0%	53.0%
Concentrate Moisture		%	8.10%	8.1%	8.1%	8.1%	8.1%	8.1%
Total Tonnes Concentrate		wmt	706,242	182,345	191,652	192,300	139,944	-
Total Recovered Zn		**tonnes**	**346,261**	**89,402**	**93,965**	**94,282**	**68,613**	**-**
REVENUE								
Metal Prices		**Input Units**						
Zn		US$/lb Zn	$1.14	$1.15	$1.19	$1.12	$1.10	$1.10
Zn Concentrate Payable %								
Payable Zn		%		84.9%	84.9%	84.9%	84.9%	84.9%
Zn Concentrate Payable								
Payable Zn		tonnes	293,995	75,907	79,781	80,051	58,256	-
Gross Revenue								
Total Gross Revenue		**US$ '000**	**$739,738**	**$192,853**	**$208,484**	**$197,127**	**$141,275**	**$0**
Total Charges								
Transport to Port								
Zn Concentrate		US$ '000	$60,408	$15,267	$16,726	$16,271	$12,144	$0
Freight Rollback								
Zn Concentrate		US$ '000	$26,046	$6,725	$7,068	$7,092	$5,161	$0
Treatment								
Zn Concentrate		US$ '000	$165,544	$37,021	$46,407	$47,360	$34,756	$0

	INPUTS	UNITS	TOTAL	2017	2018	2019	2020	2021
Total Charges		US$ '000	$251,997	$59,012	$70,201	$70,723	$52,060	$0
US$/Lb payable Zn		US$/Lb payable Zn	$ 0.39	$ 0.35	$ 0.40	$ 0.40	$ 0.41	$ -
Net Smelter Return		**US$ '000**	**$487,741**	**$133,840**	**$138,283**	**$126,404**	**$89,214**	**$0**
Royalty NSR	3.0%	US$ '000	$14,632	$4,015	$4,148	$3,792	$2,676	$0
Net Revenue		**US$ '000**	**$473,109**	**$129,825**	**$134,134**	**$122,612**	**$86,538**	**$0**
Unit NSR		**US$/t milled**	**$191**	**$203**	**$199**	**$181**	**$176**	**$0**
OPERATING COST								
Mining (Underground)		US$/t milled	$48.35	$48.28	$48.59	$49.24	$46.89	$0.00
Processing		US$/t milled	$31.89	$32.67	$31.72	$32.22	$30.66	$0.00
G&A		US$/t milled	$16.96	$17.59	$16.78	$17.06	$16.24	$0.00
Total Operating Cost		**US$/t milled**	**$97.20**	**$98.54**	**$97.09**	**$98.51**	**$93.79**	**$0.00**
Mining (Underground)		US$ '000	$120,035	$30,948	$32,734	$33,286	$23,066	$0
Processing		US$ '000	$79,174	$20,942	$21,373	$21,778	$15,082	$0
G&A		US$ '000	$42,102	$11,276	$11,306	$11,529	$7,991	$0
Total Operating Cost		**US$ '000**	**$241,311**	**$63,166**	**$65,412**	**$66,593**	**$46,140**	**$0**
Operating Cashflow		US$ '000	$231,798	$66,659	$68,722	$56,019	$40,398	$0
CAPITAL COST								
Sustaining		US$ '000	$30,774	$14,981	$4,764	$7,654	$3,375	$0
Reclamation and closure		US$ '000	$7,000	$0	$0	$0	$0	$7,000
Total Capital Cost		**US$ '000**	**$37,774**	**$14,981**	**$4,764**	**$7,654**	**$3,375**	**$7,000**
Net Cash Cost, including Capital		US$/Lb payable Zn	$0.82					
PRE-TAX CASH FLOW								
Net Pre-Tax Cashflow		US$ '000	$194,024	$ 51,678	$ 63,958	$ 48,365	$ 37,023	$ (7,000)
Cumulative Pre-Tax Cashflow		US$ '000		$ 51,678	$ 115,637	$ 164,001	$ 201,024	$ 194,024
Taxes		US$ '000	$0	$ -	$ -	$ -	$ -	$ -
After-Tax Cashflow		US$ '000	$194,024	$ 51,678	$ 63,958	$ 48,365	$ 37,023	$ (7,000)
Cumulative After-Tax Cashflow		US$ '000		$ 51,678	$ 115,637	$ 164,001	$ 201,024	$ 194,024
PROJECT ECONOMICS								
Pre-tax NPV at 5% discounting	5.0%	US$ '000	$173,983					
Pre-tax NPV at 7.5% discounting	7.5%	US$ '000	$165,197					
Pre-tax NPV at 10% discounting	10.0%	US$ '000	$157,116					
After-Tax NPV at 5% discounting	5.0%	US$ '000	$173,983					
After-Tax NPV at 7.5% discounting	7.5%	US$ '000	$165,197					
After-tax NPV at 10% discounting	10.0%	US$ '000	$157,116					

SENSITIVITIES

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined through analysis of cash flow sensitivities:

- Head grade
- Zinc recovery
- Zinc price
- Operating costs
- Sustaining capital costs

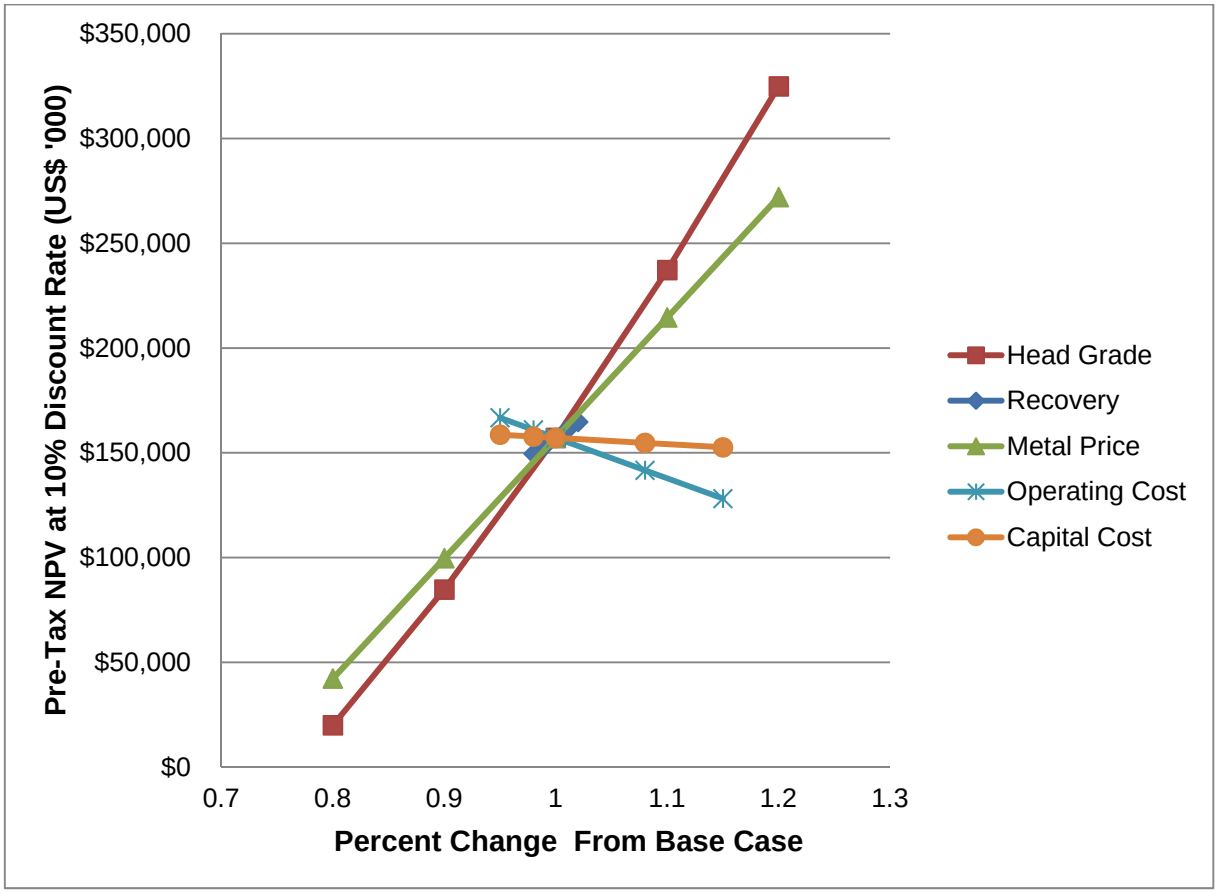
Pre-tax NPV at a 10% discount sensitivities over the Cash Flow Projection have been calculated per Table 1-4. The sensitivities are shown in Table 1-4 and Figure 1-1. The Project return is most sensitive to the product of changes in the head grade and zinc price followed by changes in the operating costs, recovery, and capital costs.

TABLE 1-4 SENSITIVITY ANALYSIS
Trevali Mining Corporation – Perkoa Mine

	Head Grade (%)	NPV at 10% ($M)
0.80	12.1	20.0
0.90	13.6	84.7
1.00	**15.2**	**157.1**
1.10	16.7	237.2
1.20	18.2	324.9
	% Recovery	**NPV at 10% ($M)**
0.98	90.2	149.5
0.99	91.1	153.3
1.00	**92.0**	**157.1**
1.01	92.9	160.9
1.02	93.8	164.7
	Zinc Price ($/lb)	**NPV at 10% ($M)**
0.80	0.91	42.2
0.90	1.03	99.7
1.00	**1.14**	**157.1**
1.10	1.26	214.6
1.20	1.37	272.0
	Operating Costs ($M)	**NPV at 10% ($M)**
0.95	229.2	166.8
0.98	236.5	161.0
1.00	**241.3**	**157.1**
1.08	260.6	141.7
1.15	277.5	128.2

	Capital Costs ($M)	NPV at 10% ($M)
0.95	35.9	158.6
0.98	37.0	157.7
1.00	**37.8**	**157.1**
1.08	40.8	154.7
1.15	43.4	152.6

FIGURE 1-1 SENSITIVITY ANALYSIS



TECHNICAL SUMMARY

PROPERTY DESCRIPTION AND LOCATION

The Perkoa mine is located in the Sanguié Province, approximately 120 km west of the capital city of Ouagadougou, Burkina Faso. The property's latitude and longitude are 12° 22' N and 2° 36' W.

LAND TENURE

The Perkoa mine consists of one exploitation permit (the Perkoa Exploitation Permit), which contains the Perkoa main zone deposit (Perkoa deposit) and two exploration permits (the Perkoa Exploration Permits), all located on contiguous ground.

The Perkoa Exploitation Permit, held by Nantou Mining, was granted on March 20, 2007 and formally grants Nantou Mining the rights to develop and operate the Perkoa mine. It is scheduled to expire on March 20, 2027. Boundary Ventures Limited (BVL) holds 90% of the share capital of the exploitation company while the Burkina Faso State holds 10%, in accordance with the Mining Code. The total area of the Perkoa Exploitation Permit is 6.24 km^2 and the permit is of sufficient size for the mining operations.

The Perkoa Exploitation Permit is surrounded by the Perkoa Exploration Permits, held by Nantou Exploration S.A. (Nantou Exploration), which currently cover a total area of 231.83 km^2. Nantou Exploration is owned 100% by Glencore. The Burkina Faso Mining Law gives the exploration permit holder the exclusive right to explore for the minerals requested on the surface and subsurface within the boundaries of the exploration permit.

EXISTING INFRASTRUCTURE

The existing infrastructure and services are suitable to support the Perkoa mine. There is good road access to the mine site. All existing infrastructure in place is to support the local subsistence and small-scale agricultural practices. Power from the National Grid is deemed unreliable. The Perkoa mine generates its own power by diesel generators. Water is supplied by a pipeline from a recently constructed dam at Seboun, approximately 18 km to the northeast of the mine.

HISTORY

The Perkoa mine area has been explored and investigated by a variety of companies for approximately 38 years. The initial exploration was undertaken as part of a wider United Nations Development Program (UNDP) research program, however, this was followed by further exploration by La Société Minière et Métallurgique de Peñarroya (Peñarroya), Boliden AB (Boliden), Billiton Plc (Billiton) (now BHP Billiton), and Metorex (Pty) Limited (Metorex), before AIM Resources Ltd. (AIM Resources), which subsequently changed its name to Blackthorn Resources Limited (Blackthorn Resources), took over the project in 2005.

In late 2010, a joint venture between Blackthorn Resources (39.9%) and Glencore (50.1%) was formed (BVL). In March 2013, agreement was reached for Glencore to provide additional equity funding to the project. Blackthorn Resources elected not to fund its equity share of the $80 million funding and, as a result, its interest in the Project was diluted from 39.9% to 27.3%. In May 2014, Blackthorn Resources and Glencore reached an agreement whereby Glencore acquired Blackthorn's 27.3% interest in the Perkoa Project, thereby allowing Blackthorn Resources to exit the Perkoa Project and increasing Glencore's interest to its current 90% level. Production at the Perkoa mine commenced in May 2013 and is ongoing at present.

GEOLOGY AND MINERALIZATION

The Perkoa deposit lies in a felsic to intermediary series of volcanic and volcanoclastic rocks, within the Paleoproterozoic Birimian Supergroup of West Africa. The prospective Birimian rocks in Burkina Faso are the same sequences that host major gold deposits in Burkina Faso and in neighbouring Ghana and Mali. The Birimian greenstone belts of West Africa are renowned for their gold mineralization, however, known occurrences of base metals are scarce. The Perkoa deposit represents the only significant Zn-Ag massive sulphide mineralization discovered in the Birimian to date and it is also the first Zn-Ag massive sulphide mineralization discovered in this region.

The Perkoa project area is located in the central part of the Boromo greenstone belt, which comprises volcanic and sedimentary rocks of the Lower Palaeozoic Birimian Supergroup that have been metamorphosed to lower greenschist facies. At least three phases of deformation have affected the Boromo belt and mafic to felsic dykes and granitic bodies were emplaced in several intrusive phases. The Zn-Ag mineralization has been dated at 2,120 Ma to 2,141 Ma (Billiton, 1998).

In the Perkoa mine area, the Birimian sediments, lavas, and pyroclastics strike from northeast to southwest and generally dip steeply to the northwest. Several units of andesitic lavas with subordinate andesitic tuffs, separated by sequences of tuffs interlayered with fine grained clastic sediments, make up the lithological package in the project area.

A number of syn-tectonic and post-tectonic intrusive bodies have been emplaced within the meta-sediments, which range from large plutons of granitic and dioritic composition, to

smaller ultramafic to rhyolitic intrusions. Crosscutting lineaments with a northwest-southeast orientation are common although major displacements along these lineaments are rare.

The Perkoa deposit has been classified as a volcanogenic massive sulphide (VMS) deposit. VMS deposits are lenses and sheets of massive sulphide that form from seafloor hydrothermal systems where metal rich fluids (black smoke) precipitate on (exhalative) or near the seafloor (sub-seafloor replacement.).

The Perkoa mineralization occurs as a series of stacked, northeast-southwest striking tabular VMS lenses hosted, and separated by, tuffaceous material that has been overturned with an average dip of approximately 70°. The deposit is unusual for its high concentrations of zinc and barium mineralization, and relatively low levels of lead and copper.

MINERAL RESOURCES

Geological interpretation and Mineral Resource estimation were completed by Perkoa and audited by RPA, with an effective date of December 31, 2016 (Table 1-1). The Mineral Resources have been completed to a level that meets industry standards and are compliant with CIM definitions. As of year-end 2016, total Measured and Indicated Mineral Resources are estimated to be 4.26 Mt grading 14.6% Zn, containing approximately 621,589 t of zinc. In addition, Inferred Mineral Resources are estimated to be 1.64 Mt grading 12.9% Zn, containing approximately 211,012 t.

The geological interpretation comprised wireframes for mineralization and lithological domains, which were developed using Surpac software. The wireframes for lithology, including dykes, were generated based on logging of the major lithological units. The cut-off grade for mineralization wireframes was 5% Zn. Composites were made using Surpac software using the wireframe intercept technique where intercepts of the geological drill or channel traces are coded to the geological database. Composites were made for each domain, including lead, silver, pyrrhotite, pyrite, and density, at a 1.5 m length. A grade cap of 50% Zn was applied to the composites to avoid the use of anomalous data leading to local overestimation of the grade. A 5 m by 5 m by 5 m block model was constructed which was then sub-blocked down to a minimum size of 1.25 m. For each of the mineralization lenses, three methods of interpolation were applied in order to interpolate the zinc grade: kriging as a primary estimation method and inverse distance and nearest neighbour interpolation methods used for comparison and validation of the model against the kriging results.

RPA reviewed the Perkoa block model in Micromine software. The block model was validated by completing a series of visual inspections. The checks showed good agreement between drill hole composite values along sections and plans. The overall compiled Mineral Resource estimate had no material differences to that reported.

MINERAL RESERVES

As of year-end 2016, Proven and Probable Mineral Reserves total 2.48 Mt grading 15.1% Zn (Table 1-2). RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

Mineral Reserves are estimated from the Measured and Indicated Mineral Resources. RPA has performed an independent verification of the block model tonnes and grade, and in RPA's opinion, the process has been carried out to industry standards.

MINING METHOD

The Perkoa mine is an underground operation, however, a small open pit was mined to reach near surface material during initial start-up to increase plant throughput as the underground mine ramped up production. The pit is now complete. Underground mining commenced in 2013 with contractors carrying out all aspects of the mining process.

All mining operations are currently being carried out by a mining contractor, which supplies manpower and equipment. Nantou Mining personnel provide geological and engineering services.

Longhole stoping is being used as the primary extraction method. There are several variations on this mining method employed such as longitudinal and transverse, with both bottom-up and top-down mining sequences. The exact method chosen is dependent on the orebody geometry. Stopes are backfilled either with cemented rock fill (CRF) or waste.

Longitudinal bottom-up stoping has been used above 190 level. Due to the orebody width and mine sequencing, stopes between 190 level and 280 level are mined using the transverse method with primary and secondary stopes, with some longitudinal retreat mining occurring at the extremities of the orebody. Most of the primary stopes above 280 level have been mined out with the majority of the remaining ore to be mined as secondary stopes.

A recoverable sill pillar is being established on 310 level in order to be able to convert the mining below 310 level to a longitudinal retreat method, which is expected to reduce the amount of development required. As well, a higher percentage of waste backfill instead of CRF can be used with this method which is expected to lower the mining cost.

Bottom-up mining will be utilized between 340 level and 430 level and top-down longitudinal retreat will be utilized between 460 level and 520 level. The current limit of the Proven and Probable Mineral Reserves is at 430 level. The majority of the stopes below 430 level are in a portion of the orebody which is classified as an Inferred Mineral Resource. This area will require infill drilling in order to upgrade the Inferred Mineral Resource to a Measured or Indicated Mineral Resource.

MINERAL PROCESSING

The process plant at Perkoa is a conventional sulphide flotation plant capable of processing 1,800 tpd to 1,900 tpd. The process plant includes crushing, screening, and grinding, followed by zinc flotation and filtering to produce a zinc concentrate. The process plant originally included a lead recovery circuit, however, this circuit is no longer used and has been reconfigured to increase capacity in the zinc recovery circuit due to higher zinc head grades.

The process plant has historically produced a zinc concentrate in the range of 50.0% to 53.0% (during four previous years of operation from 2013 to 2016) from head grades ranging from 6.3% Zn (open pit) to 15.0% Zn (underground). Recovery of zinc has been in the range of 89.3% to 96.7%.

Zinc concentrates are trucked 1,200 km to the port of Abidjan, Côte d'Ivoire.

PROJECT INFRASTRUCTURE

Current infrastructure includes power, water, sewerage, a diesel storage facility, fire protection, and explosives magazines.

Buildings on site include change houses, office blocks, gate houses, a clinic, and ablution facilities. Appropriate security fencing and access control prevents inadvertent access onto the property and enhances safety.

The supply of power from the national grid is unreliable. Power for all areas of the mine, with the exception of the underground mine, are supplied from the central power station. The power station has four 2.0 MW-6.6 kV Caterpillar 3516B-HD generators installed in an industrial type structure of masonry and corrugated iron construction with a concrete floor. Power usage at the central power station is approximately 2.5 MW to 3.2 MW, which means that normally three generators run at approximately 60% capacity, at any one time.

As of December 2016, an 11 kV overhead power transmission line is being installed between the central power house and the mine switch room in order to supply power to the full site, including the mine, from the central power house.

MARKET STUDIES

Global zinc demand continues to rise by approximately 2% to 3% per annum (or 280,000 t to 420,000 t of zinc metal) driven by gross domestic product (GDP) growth, urbanization, and infrastructure development, and as a “mid-cycle” commodity with expanding markets for consumer goods (automobiles, appliances, etc.) Primary zinc supply is in deficit following the recent closures of large global mines (Brunswick-12, Century, and Lisheen). There is consensus forecast of a significantly tightening zinc market over the next several years as supported by both increasing zinc commodity pricing and global zinc smelting shortfalls due to inability to secure sufficient zinc concentrates in addition to decreasing Spot and Annual benchmark smelting charges from 2015 onwards. Wood Mackenzie, an independent global commodity forecast consultant, is predicting robust zinc commodity prices over the short term; averaging $1.46/lb in 2017 and $1.76/lb in 2018.

ENVIRONMENTAL, PERMITTING, AND SOCIAL CONSIDERATIONS

The Perkoa mine has a HSEC Policy (2014) outlining its commitment to the environment as well as procedures aligned to the requirements of applicable Burkina Faso legislation. These commitments are then implemented and managed through a HSEC system, which is aligned to the principles of ISO 14001:2004 Environmental Management System. Perkoa will need to convert this system to the 2015 ISO 14001 Standard which has been committed for 2017. A certified ISO 14001: 2015 Management System is not a legal requirement, however, it is a best practice principle and provides a benchmark for Environmental Management.

The approved EMP integral to the ESIA provide the framework for Perkoa mine's environmental management. The EMP, based on the results of specialist studies, outline mitigation measures, including monitoring programmes, to reduce and manage negative impacts to the physical and social environment. Environmental audits must be carried out in accordance with the provisions of Article 4 of Decree No. 2015-10000 / PRES-TRANS / PM / MERH / MME / MICA / MS / MIDT / MCT of October 28, 2015 laying down detailed rules for carrying out environmental audits. As per these requirements, regular monitoring and evaluation of environmental performance through compliance audits is undertaken by BUMIGEB.

The Perkoa mine has areas of waste disposal including a tailings pond with additional extensions being implemented in 2017, waste treatment facilities, a scats stockpile and generates both general and hazardous waste. The mine currently has a tailings pond licensed by the Ministry of Environment that comprises three areas. At the present stage of development of mine activities, only the first and second cells were constructed. The Perkoa mine proposes to build a third cell for the receipt of its mining waste for a period of two years. The third cell is required as the first cell is full and will be managed under a closure and rehabilitation process and the second cell is almost at the maximum of its nominal design storage capacity.

The Perkoa mine has a procedure in place for publicizing recruitment, signed by Nantou Mining and the Youth Committee on June 12, 2015 to use only local unskilled labour and to favour local labour if qualification is required. Stakeholder management is being successfully managed on site by the implementation of a tripartite committee, comprised of representatives from Nantou Mining, the local community and the government.

In terms of corporate social responsibility, projects are consistent with those as required by the EMP. In 2013-2016, social expenses, including compensation for displaced graves and structures, construction of replacement houses, Perkoa Health and Social Promotion Centre, community boreholes, and a literacy program, amounted to $1.2 million.

The National HIV/AIDS infection rate for Burkina Faso is approximately 1.8% whereas in the local area of Perkoa the infection rate is approximately 2.3%. The elevated infections levels of HIV/AIDS within the Perkoa area need to be managed as it may be directly attributable to the social aspects of the mine. A request was received in June 2016 from a local committee

for HIV/AIDS prevention for funding from Nantou Mining for an HIV/AIDS prevention program in the mine's surrounding communities. The mine is actively involved in the prevention of HIV/AIDS and was presented with an award for "Significant Contribution to Community HIV/AIDS Program".

Of concern, is the threat of malaria to the employees and contractors working at the mine. Although strict controls are put in place by the Perkoa mine, there were 413 cases of malaria recorded for 2016. Training and Awareness programs will need to be rolled out and extended beyond employees as infections may be occurring out of the mine workplace or camp site.

CAPITAL COSTS

Sustaining capital is mainly for mine development, process plant upgrades, tailings dam expansion, and power plant upgrades. Table 1-5 presents the Four Year Plan sustaining capital cost, including closure costs.

TABLE 1-5 FOUR YEAR PLAN SUSTAINING CAPITAL COSTS
Trevali Mining Corporation – Perkoa Mine

($ M)	2017	2018	2019	2020	2021	Total
Mining	5.6	3.1	1.2	0.5	-	10.4
Plant	0.8	1.3	0.3	0.4	-	2.8
Tailings Dam	6.0	-	5.0	1.0	-	12.0
Engineering	2.0	0.3	1.1	1.4	-	4.8
HSEC	0.5	0.1	0.1	0.1	-	0.8
Services	0.1	-	-	-	-	0.1
Total Sustaining	15.0	4.8	7.7	3.4	-	30.9
Closure Cost	-	-	-	-	7.0	7.0
Total	**15.0**	**4.8**	**7.7**	**3.4**	**7.0**	**37.8**

OPERATING COSTS

Based on the operating cost experience to date, the Four Year Plan direct operating costs are summarized in Table 1-6.

TABLE 1-6 FOUR YEAR PLAN DIRECT OPERATING COST
Trevali Mining Corporation – Perkoa Mine

	Units	2017	2018	2019	2020	Total
Mine	$ M	30.9	32.7	33.3	33.9	**130.9**
Plant	$ M	20.9	21.4	21.8	22.2	**86.3**
Indirect Costs	$ M	11.3	11.3	11.5	11.8	**45.9**
Total Direct Costs	**$ M**	**63.2**	**65.4**	**66.6**	**46.1**	**241.3**
Milled	**t ('000)**	**640.7**	**673.9**	**678.2**	**685.8**	**2,678.6**
Cost/t Milled	**$/t**	**98.50**	**97.10**	**98.50**	**93.80**	**97.20**

2 INTRODUCTION

Roscoe Postle Associates Inc. (RPA) was retained by Trevali Mining Corporation (Trevali) to prepare an independent Technical Report on the Perkoa underground zinc mine, located in Burkina Faso (Perkoa). The purpose of this report is to document the Mineral Resource and Mineral Reserve estimates, prepared by Nantou Mining Burkina Faso S.A. (Nantou Mining) and audited by RPA, as at December 31, 2016. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

Trevali is a zinc-focused, base metals mining company with two commercially producing operations. Trevali is actively producing zinc and lead-silver concentrates from its 2,000 tpd Santander mine in Peru and its 3,000 tpd Caribou mine in the Bathurst Mining Camp of northern New Brunswick, Canada.

The Perkoa underground zinc mine and 1,800 tpd milling operation is located in the Sanguié Province, 120 km west of the capital city of Ouagadougou, Burkina Faso. The Perkoa mine has been in operation since 2013 and currently produces zinc concentrates. Glencore International PLC (Glencore) holds a 90% interest in Nantou Mining while the Burkina Faso State holds a 10% interest, in accordance with the Mining Code.

On March 13, 2017, Trevali announced that it had entered into definitive agreements with Glencore and certain of its subsidiaries whereby Trevali would acquire a portfolio of zinc assets from Glencore, including a 90% interest in the Perkoa mine.

SOURCES OF INFORMATION

A site visit was carried out from January 31 to February 2, 2017 by Mr. Torben Jensen, P.Eng., RPA Principal Mining Engineer, Mr. Ian Blakley, P.Geo., RPA Principal Geologist, and Ms. Tracey Jacquemin, Pr.Sci.Nat., Advisian Position Manager Environment and Society Mining, Sub-Saharan Africa. The site visit included the mine, processing plant, and the local community.

Discussions were held with the following Perkoa personnel:

- Olaf Meijer, General Manager.

- Bastien Fresia, Senior Geologist.
- Martin Rojas, Resource Geologist.
- Mark Rutetzki, Operations Superintendent.
- Frederic Cote, Planning Engineer.
- Terry Fortune, Engineering Manager.
- Paul Laframboise, Plant Manager.
- William Bannerman, SHE Manager.
- Jacob Bamouni, Exports Manager.
- Chris McClumskey, Supply Chain Manager.
- Guy Riopel, Finance & Administration Director.
- Matthias Zebro, Laboratory Manager.

Mr. Blakley reviewed the geology, sampling, assaying, and resource estimate work and is responsible for Sections 2 to 12, 14, and 23. Mr. Jensen reviewed the mining, reserve estimate, and economics and is responsible for Sections 15, 16, 18, 19, 21, and 22. Ms. Jacquemin reviewed the environmental and permitting aspects and is responsible for Section 20. Mr. Krutzelmann reviewed the metallurgical aspects and is responsible for Sections 13 and 17. The authors share responsibility for Sections 1, 24, 25, 26, and 27 of this Technical Report.

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

LIST OF ABBREVIATIONS

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

a	annum
A	ampere
bbl	barrels
btu	British thermal units
°C	degree Celsius
C$	Canadian dollars
cal	calorie
cfm	cubic feet per minute
cm	centimetre
cm^2	square centimetre
d	day
dia	diameter
dmt	dry metric tonne
dwt	dead-weight ton
°F	degree Fahrenheit
ft	foot
ft^2	square foot
ft^3	cubic foot
ft/s	foot per second
g	gram
G	giga (billion)
Gal	Imperial gallon
g/L	gram per litre
Gpm	Imperial gallons per minute
g/t	gram per tonne
gr/ft^3	grain per cubic foot
gr/m^3	grain per cubic metre
ha	hectare
hp	horsepower
hr	hour
Hz	hertz
in.	inch
in^2	square inch
J	joule
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
km	kilometre
km^2	square kilometre
km/h	kilometre per hour
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	litre
lb	pound
L/s	litres per second
m	metre
M	mega (million); molar
m^2	square metre
m^3	cubic metre
µ	micron
MASL	metres above sea level
µg	microgram
m^3/h	cubic metres per hour
mi	mile
min	minute
µm	micrometre
mm	millimetre
mph	miles per hour
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
oz	Troy ounce (31.1035g)
oz/st, opt	ounce per short ton
ppb	part per billion
ppm	part per million
psia	pound per square inch absolute
psig	pound per square inch gauge
RL	relative elevation
s	second
st	short ton
stpa	short ton per year
stpd	short ton per day
t	metric tonne
tpa	metric tonne per year
tpd	metric tonne per day
US$	United States dollar
USg	United States gallon
USgpm	US gallon per minute
V	volt
W	watt
wmt	wet metric tonne
wt%	weight percent
yd^3	cubic yard
yr	year

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by RPA for Trevali. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by Trevali and other third party sources.

For the purpose of this report, RPA has relied on ownership information provided by Trevali. RPA has not researched property title or mineral rights for the Perkoa mine and expresses no opinion as to the ownership status of the property.

RPA has relied on Trevali for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Perkoa mine.

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

4 PROPERTY DESCRIPTION AND LOCATION

The Perkoa mine is located in the Sanguié Province, approximately 120 km west of the capital city of Ouagadougou, Burkina Faso (Figure 4-1). The property's latitude and longitude are 12º 22' N and 2º 36' W.

The Perkoa mine consists of one exploitation permit (the Perkoa Exploitation Permit), which contains the Perkoa main zone deposit (Perkoa deposit) and two exploration permits (the Perkoa Exploration Permits), all located on contiguous ground.

MINERAL RIGHTS AND LAND OWNERSHIP

The exploitation and exploration permits comprising the Perkoa mine are subject to Burkina Faso's 2003 Mining Code No. 31–2003/AN, dated May 8, 2003 (the Burkina Faso Mining Law).

Under the Mining Code, an exploitation permit is granted by a government decree passed on the basis of a proposal by the Mining Minister, pursuant to the recommendation of the National Mining Commission. An exploitation permit is granted to any holder of an exploration permit which has provided evidence of the existence of an economic deposit in accordance with the Mining Code.

EXPLOITATION PERMIT

The Perkoa Exploitation Permit, held by Nantou Mining, was granted on March 20, 2007 and formally grants Nantou Mining the rights to develop and operate the Perkoa mine. It is scheduled to expire on March 20, 2027. Boundary Ventures Limited (BVL) holds 90% of the share capital of the exploitation company while the Burkina Faso State holds 10%, in accordance with the Mining Code. This 10% state participation must be maintained when there is an increase in the capital of the company. The government also collects various taxes and duties on the imports of fuels, supplies, equipment, and outside services, as specified by the Burkina Faso Mining Law. In addition, there is a 3% royalty, payable to the government, on all base metal production in Burkina Faso.

The Mining Convention between Nantou Mining and the Government of Burkina Faso, which was signed by the Minister of Mines of Burkina Faso on August 27, 2008, sets out the fiscal and legal terms with respect to the operation of the Perkoa Exploitation Permit, including taxation rates applicable to the project, per the 2003 Mining Code. The Convention is valid for 20 years commencing on the date of the grant, and may be renewed for subsequent periods of five years.

The Perkoa Exploitation Permit's perimeter is defined by UTM coordinates of the corner posts as listed in Table 4-1 and the permit's limit is shown in Figure 4-2. The total area is 6.24 km^2 (642 ha) and is of sufficient size for the mining operations.

TABLE 4-1 PERKOA EXPLOITATION PERMIT BOUNDARY COORDINATES
Trevali Mining Corporation – Perkoa Mine

Permit Name	Points	Datum	Zone	X	Y	Surface Area (km^2)
Perkoa	A	Adindan BF	30 N	542500	1369100	6.24
	B	Adindan BF	30 N	545100	1369100	
	C	Adindan BF	30 N	545100	1366700	
	D	Adindan BF	30 N	542500	1366700	
1 PERMIT						**6.24**

The new Burkina Faso Mining Code was approved by the transitional government and came into effect on June 16, 2015, however, an application decree is required for the Mining Code to be operational. Glencore does not expect a material impact of the new Mining Code on Nantou Mining, as it has fiscal stability clauses in its existing Mining Convention.

RPA is not aware of any environmental liabilities on the property. Nantou Mining has all required permits to conduct the work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the work on the property.

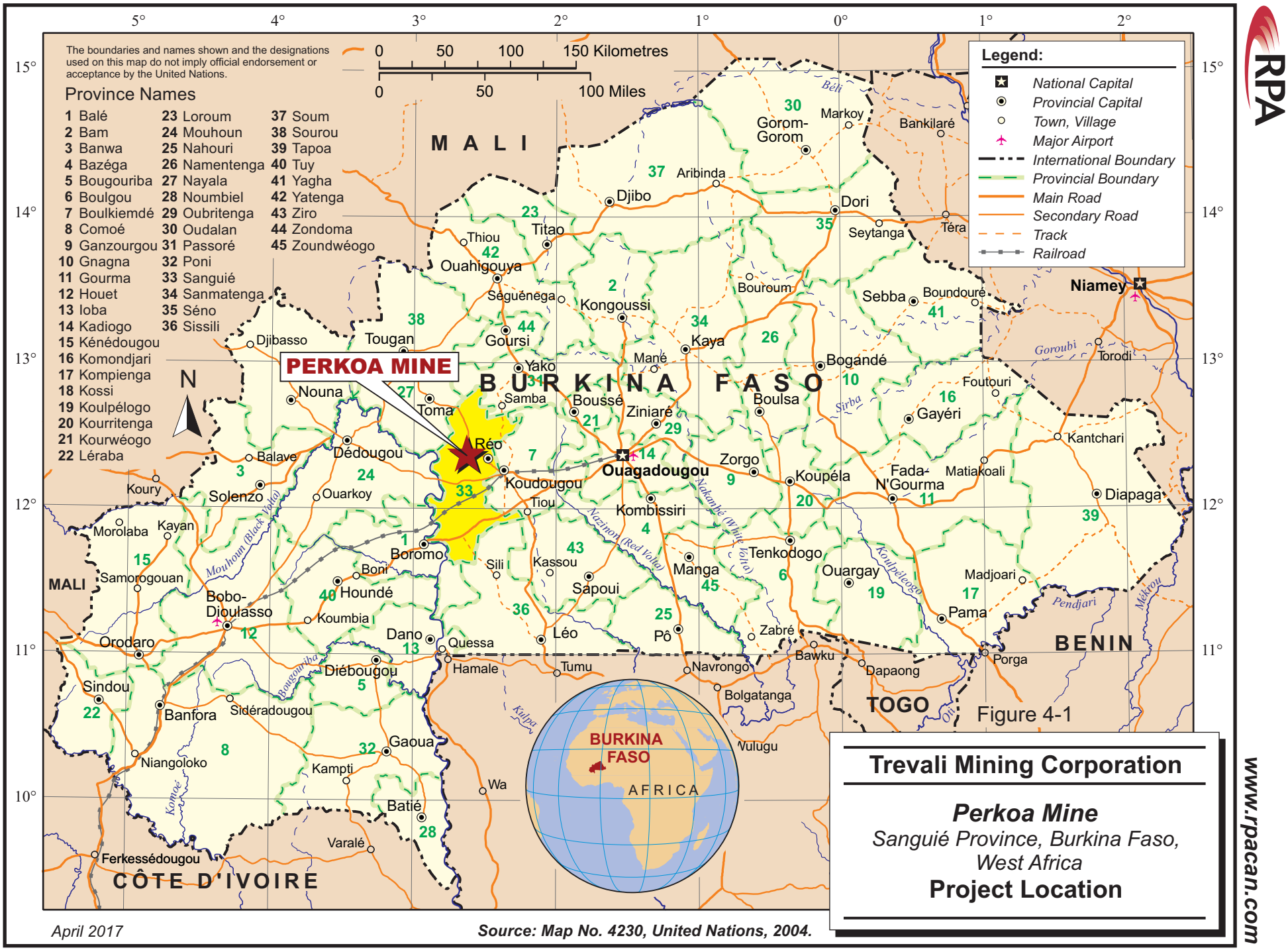


Figure 4-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso, West Africa

Project Location

April 2017

Source: Map No. 4230, United Nations, 2004.

www.rpacan.com

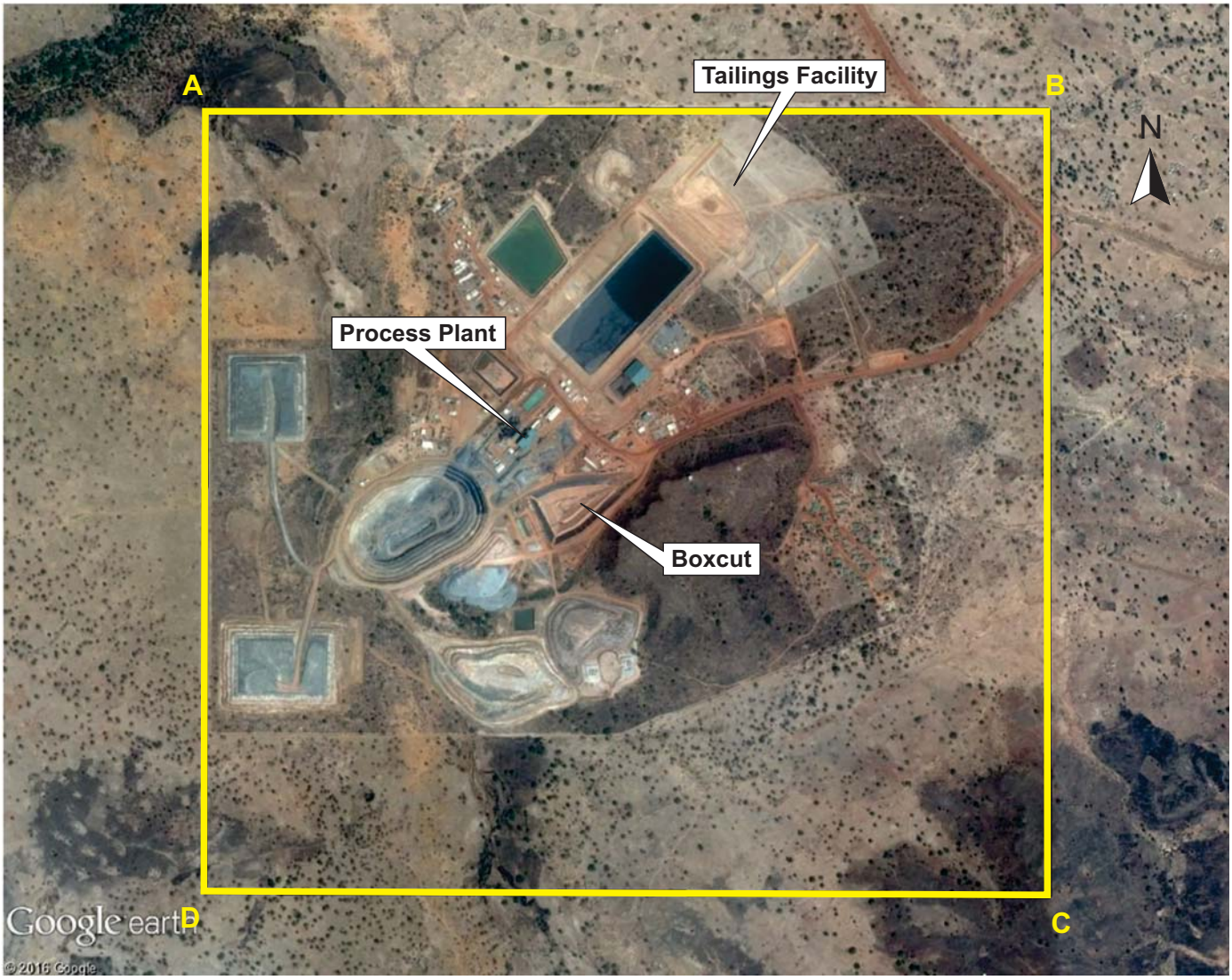


Figure 4-2

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Exploitation Permit Map

0 250 500 750 1000

Metres

April 2017

Source: Google Earth, 2017.

EXPLORATION PERMITS

The Perkoa Exploitation Permit is surrounded by the Perkoa Exploration Permits, held by Nantou Exploration S.A. (Nantou Exploration), which currently cover a total area of 231.83 km^2. Nantou Exploration is owned 100% by Glencore.

The Burkina Faso Mining Law gives the exploration permit holder the exclusive right to explore for the minerals requested on the surface and subsurface within the boundaries of the exploration permit. Exploration permits are guaranteed by the Law and its associated arrêtés (decrees) provided that the permit holder complies with reporting requirements and annual exploration expenditures totalling 270,000 francs CFA per km^2, or approximately $650/km^2.

The exploration permit also gives the holder the exclusive right, at any time, to convert the exploration permit into an exploitation permit, in accordance with the law. Each exploitation permit application requires a separate Feasibility Study (FS), however, there are precedents in Burkina Faso for variations to this rule (e.g., Etruscan's Youga project).

Exploration permits are valid for a period of three years from date of issue and may be renewed for two more consecutive terms of three years each for a total of nine years; however, on the second renewal, at least 25% of the original area must be relinquished.

The Perkoa Exploration Permits have been granted by the Minister of Mines, Quarries, and Energy (MMCE) as an arrêté under Burkina Faso's 2003 Mining Code (Code Minier, No. 31–2003/AN dated May 8, 2003).

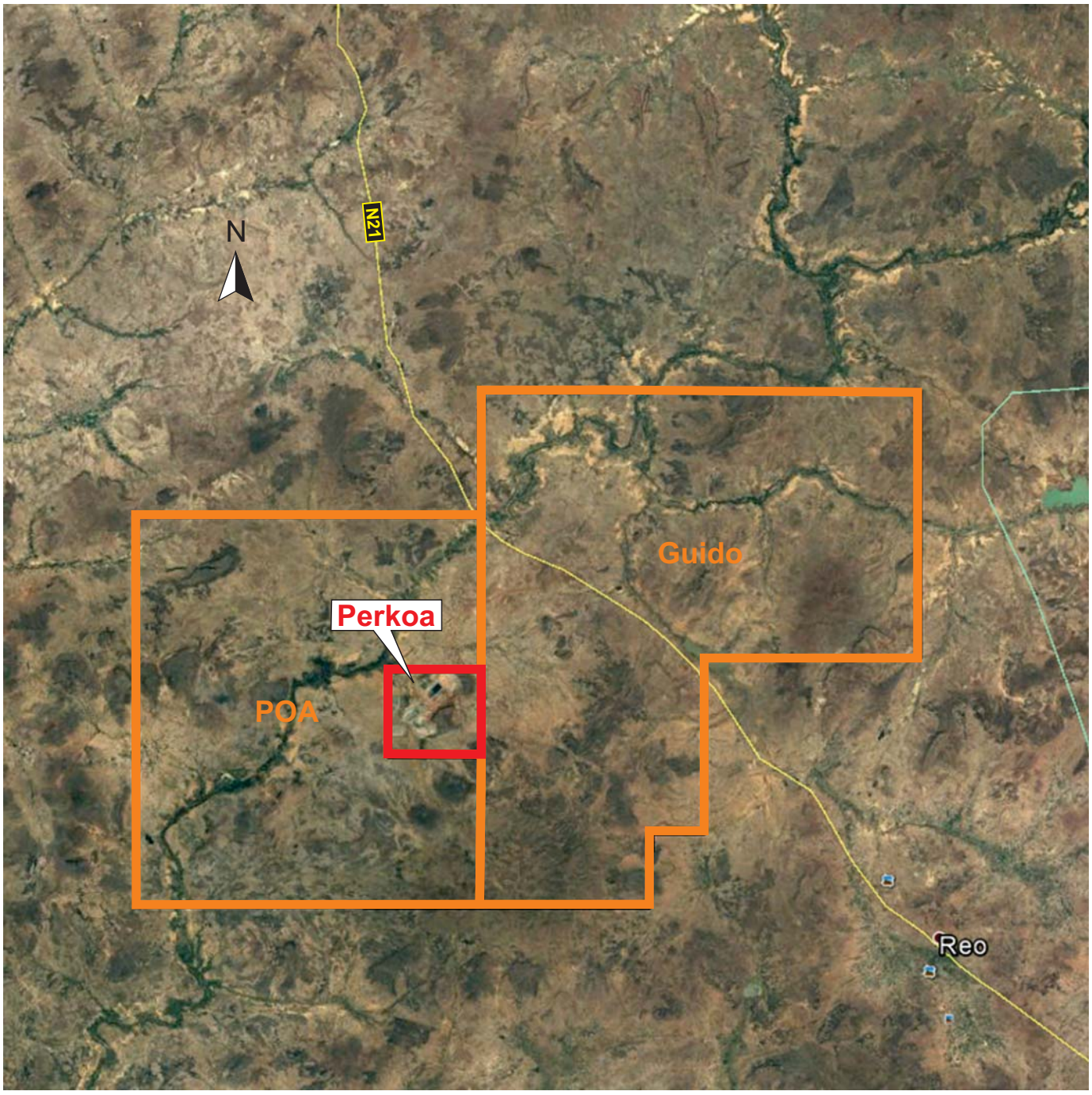
The POA Exploration Permit was originally granted to Blackthorn Resources Limited (Blackthorn Resources) by arrêté N° 07-098/MCE/SG/DGMGC on July 10, 2007 and was subsequently transferred to Nantou Exploration by arrêté N° 2015-000073/MME/SG/DGMGC on March 2, 2015. The third renewal application was submitted to MMCE on May 12, 2016 and is awaiting approval.

The Guido Exploration Permit was originally granted to Blackthorn Resources by arrêté N° 07-098/MCE/SG/DGMGC on July 10, 2007 and was subsequently transferred to Nantou Exploration by arrêté N° 2015-000073/MME/SG/DGMGC on March 2, 2015. The third renewal application was submitted to MMCE on May 12, 2016 and is awaiting approval.

Exploration permit boundary coordinates (projection Clark 1880; Adindan BF) are listed in Table 4-2 and the permits are shown in Figure 4-3.

TABLE 4-2 EXPLORATION PERMIT BOUNDARY COORDINATES
Trevali Mining Corporation – Perkoa Mine

Permit Name	Points	Datum	Zone	X	Y	Surface Area (km²) / (ha)
POA	A	Adindan BF	30 N	535400	1373400	99.5 / 9,950
	B	Adindan BF	30 N	545100	1376400	
	C	Adindan BF	30 N	545100	1369100	
	D	Adindan BF	30 N	542500	1369100	
	E	Adindan BF	30 N	542500	1366700	
	F	Adindan BF	30 N	545100	1366700	
	G	Adindan BF	30 N	545100	1362500	
	H	Adindan BF	30 N	535400	1362500	
Guido	A	Adindan BF	30 N	545100	1376900	132.33 / 13,233
	B	Adindan BF	30 N	557400	1376900	
	C	Adindan BF	30 N	557400	1369422	
	D	Adindan BF	30 N	551383	1369422	
	E	Adindan BF	30 N	551383	1364569	
	F	Adindan BF	30 N	549868	1364569	
	G	Adindan BF	30 N	549868	1362500	
	H	Adindan BF	30 N	545100	1362500	
2 PERMITS						**231.83 / 23,183**



0 2.5 5.0 7.5 10

Kilometres

Legend:

- *Exploration Permit Boundary*
- *Exploitation Permit Boundary*

Figure 4-3

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Exploitation and Exploration Permit Map

April 2017

Source: Google Earth, 2017.

SURFACE RIGHTS

Surface rights in the area of the Perkoa Exploitation Permit belong to the State of Burkina Faso. Utilization of the surface rights is granted by the Perkoa Exploitation Permit under condition that the current users are properly compensated. All the taxes relating to Nantou's Mining Rights have been paid to date and the concession is in good standing.

ROYALTIES AND LEASE OBLIGATIONS

Other than the royalty on the revenues from mineral production to the Government of Burkina Faso, RPA is not aware of any royalties, back-in rights, payments, or other agreements and encumbrances to which the property is subject.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

ACCESSIBILITY

The Perkoa mine is located in the Sanguié Province of Burkina Faso, approximately 120 km west of the capital Ouagadougou. The location of the mine is shown in Figure 4-1. The project is 35 km by road from the country's third largest town, Koudougou, which is linked to neighbouring states of Cote d'Ivoire, Ghana, and Togo by paved roads and by rail to Abidjan, the capital of Cote d'Ivoire.

Burkina Faso is serviced by two international airports, one in Ouagadougou, and the other in Bobo-Dioulasso. There are numerous secondary airfields throughout the country. Asphalt highways connect the main cities and neighbouring countries, and a narrow-gauge railroad connects Kaya and Ouagadougou with the port city of Abidjan in Côte d'Ivoire. A modern cellular telephone network has been established in the country.

CLIMATE

The Perkoa region is of the Sudanese north type with two distinctive seasons: (i) a long dry season from October to May with temperatures between 15° C and 41° C, (ii) a season of rainfall from June to September with temperatures between 22° C and 35.3° C.

The annual precipitation ranges from 703 mm to 994 mm. The average monthly quantity is between 207 mm and 226 mm. The month of August is the wettest. The average evaporation is 3,524 mm.

Burkina Faso's climate allows for exploration to be carried out throughout the year. Geological fieldwork and rotary drilling are usually conducted during the dry season between January and May, while diamond drilling can be conducted throughout the year.

LOCAL RESOURCES

The main activity of the local population is subsistence agriculture and to a lesser extent the raising of animals. Crops grown include cereals (sorghum, millet, and corn), which annually occupy more than 85% of the sewed surfaces and constitute the principal food of the population. Some cash crops, mainly cotton, and peanuts are cultivated.

The Project is named after the nearest village, Perkoa, and borders three other villages, Sanguié, Bonyolo, and Pouni Naorth. Perkoa is divided into three main areas: Piokoura, Negoulidouan, and Dakoulitio.

INFRASTRUCTURE

There is limited existing infrastructure or services in the general area that are suitable to support the Perkoa mine. There is good road access to the mine site. All existing infrastructure in place is to support the local subsistence and small-scale agricultural practices. Power from the National Grid is deemed unreliable. The Perkoa mine generates its own power by diesel generators.

Water is supplied by a pipeline from a recently constructed dam at Seboun, approximately 18 km to the northeast of the mine.

At the time of acquisition by Trevali, the surface and underground infrastructure at the Perkoa mine included the following:

- A 1,800 tpd to 1,900 tpd process plant.
- A tailings pond comprising three cells, a polishing pond, and a process water pond.
- A crushing plant.
- Administrative buildings, a warehouse, a dry, an infirmary, a laboratory, a main garage.
- A warehouse for reagents and lubricants.
- A decline and a series of ramp-connected levels.
- Power supply provided by diesel generators (elaborate).
- Mining equipment.

PHYSIOGRAPHY

The site topography is relatively flat; with a prominent hill directly to the southeast of the underground mine area. Topographical elevations range between 265 MASL and 271 MASL. The prominent hill southeast of the mining areas shows elevations ranging from the 271 MASL on the surrounding plain to a maximum of 293 MASL.

6 HISTORY

PRIOR OWNERSHIP

The Perkoa mine area has been explored and investigated by a variety of companies for some 38 years. The initial exploration was undertaken as part of a wider United Nations Development Program (UNDP) research program, however, this was followed by further exploration by La Société Minière et Métallurgique de Peñarroya (Peñarroya), Boliden AB (Boliden), Billiton Plc (Billiton) (now BHP Billiton), and Metorex (Pty) Limited (Metorex), before AIM Resources Ltd. (AIM Resources), which subsequently changed its name to Blackthorn Resources, took over the project in 2005.

In late 2010, a joint venture between Blackthorn Resources (39.9%) and Glencore (50.1%) was formed. In March 2013, agreement was reached for Glencore to provide additional equity funding to the project. Blackthorn Resources elected not to fund its equity share of the $80 million funding and, as a result, its interest in the Project was diluted from 39.9% to 27.3%. In May 2014, Blackthorn Resources and Glencore reached an agreement whereby Glencore acquired Blackthorn's 27.3% interest in the Perkoa Project, thereby allowing Blackthorn Resources to exit the Perkoa Project and increasing Glencore's interest to its current 90% level. Production at the Perkoa mine commenced in May 2013 and is ongoing at present.

EXPLORATION AND DEVELOPMENT HISTORY

The key milestones of the Project are described in the following sections.

UNDP – BUMIGEB: 1979 – 1982

Discovery of various anomalies including Perkoa following regional soil geochemistry conducted by the Bureau des Mines et de la Geologie de Burkina (BUMIGEB), the Burkina Faso state run geological research and mining company, between 1979 and 1982 during an exploration programme funded by a United Nations Development Programme (UNDP):

- Regional soil geochemical surveys.
- Follow-up soil geochemical surveys.
- Ground geophysical surveys including magnetics and electromagnetic (EM).

- Surface diamond drilling included 12 inclined drill-holes totalling 2,359.5 m.

PEÑARROYA – BUMIGEB: 1983 – 1986

More detailed geochemistry as well as auger drilling, geophysics, and diamond drill (DD) holes undertaken confirm the Perkoa Zn, Ag volcanogenic massive sulphide (VMS) deposit. The following work was completed between 1983 and 1986 in a joint venture between Peñarroya and BUMIGEB:

- Additional ground geophysical surveys.
- Surface diamond drilling included 39 inclined drill holes totalling 12,925.4 m.
- A pre-feasibility study report.

BOLIDEN: 1990 – 1992

Boliden undertakes a drilling program and defines a maiden resource for Perkoa:

- Surface diamond drilling included 23 inclined drill-holes totalling 6,476.0 m.

BILLITON: 1996 – 1997

Billiton undertakes further drilling as well as geotechnical work and re-estimates the resource. The following work was completed between 1996 and 1997 by Billiton:

- Surface diamond drilling included six inclined and vertical drill-holes totalling 1,283 m.
- Re-sampling of 19 historical drill-holes for check analyses and metallurgical testwork. The check assays by Billiton did not find major discrepancies in the zinc assays.
- Soil geochemical survey (50 m by 50 m grid).
- Re-interpretation of regional geophysical airborne magnetics and EM data.
- Pre-feasibility study.

METOREX: 1999 – 2004

Metorex acquired the project from Billiton on September 30, 1999.

No field work was carried out by Metorex on the Perkoa deposit. A geochemical anomaly situated 5 km southwest of Perkoa (Prospect AF1 of Billiton) was tested by induced polarity (IP) geophysical techniques, reverse circulation (RC) drilling, and diamond drilling in December 2002. Three diamond drill holes, totalling 500 m in length, were drilled at this

anomaly and intersected semi-massive pyrite/pyrrhotite mineralization, which was considered to be of little economic significance by Metorex.

AIM RESOURCES: 2005 – 2008

In 2005, AIM Resources obtains ownership of Perkoa and commences drilling for exploration and metallurgical testwork.

- December 2005 – Bankable Feasibility Study (BFS) completed by Snowden Mining Industry Consultants (Snowden).
- March 2007 – Exploitation License for Perkoa awarded to AIM Resources.
- March 2007 – Project construction commences for a 525,000 tpa mining operation based on the design developed in the December 2005 BFS.
- July 2008 – Construction halted and Perkoa is placed on a care and maintenance program due to declining zinc prices.

HISTORICAL MINERAL RESOURCE AND RESERVE ESTIMATES

On December 21, 2005, Snowden issued a BFS on behalf of AIM Resources.

The 2005 Mineral Resource estimate for Perkoa (Table 6-1) was classified as Measured and Indicated Resources using the guidelines of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) (December, 2004).

TABLE 6-1 PERKOA MINERAL RESOURCE SUMMARY – AS AT AUGUST 29, 2005
Trevali Mining Corporation – Perkoa Mine

Classification	Tonnes (M)	Zn Grade (%)
Measured	0.43	17.2
Indicated	6.29	16.3
Measured + Indicated	**6.72**	**16.4**
Inferred	-	-

Notes:
1. JORC 2004 definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 5% Zn.
3. Snowden 2005 Bankable Feasibility Study.
4. Numbers may not add due to rounding.

The 2005 Mineral Reserve estimate for Perkoa (Table 6-2) was classified as Proved and Probable Reserves using the guidelines of the JORC Code (December, 2004).

TABLE 6-2 PERKOA MINERAL RESERVE SUMMARY – AS AT AUGUST 29, 2005
Trevali Mining Corporation – Perkoa Mine

Classification	Tonnes (M)	Zn Grade (%)
Proved	0.24	14.2
Probable	6.03	14.5
Proved + Probable	**6.27**	**14.5**

Notes:
1. JORC 2004 definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 9% Zn.
3. Snowden 2005 Bankable Feasibility Study.
4. Numbers may not add due to rounding.

These estimates prepared for AIM Resources are considered to be historical in nature and should not be relied upon. These are relevant as these are indicative of the mineralization on the property. Trevali is not treating the historical estimates as current Mineral Resources or Mineral Reserves and these have been superseded by the Mineral Resource and Mineral Reserve estimates in Sections 14 and 15 of this report.

PAST PRODUCTION

Table 6-3 presents the past production of the property from 2013 through to year-end 2016.

TABLE 6-3 HISTORICAL CONCENTRATOR PRODUCTION
Trevali Mining Corporation – Perkoa Mine

	Units	2013	2014	2015	2016
Ore Processed	t	548,201	495,651	513,283	590,083
Zinc Grade	%	6.33	13.56	14.99	14.96
Zinc Recovery	%	92.8	96.7	89.3	92.1
Zinc Concentrate	t	63,648	126,015	130,269	153,715
Zinc Concentrate Grade	%	50.6	51.6	52.8	53.0
Zinc Metal	t	32,215	64,976	68,804	81,422

7 GEOLOGICAL SETTING AND MINERALIZATION

REGIONAL GEOLOGY

The Perkoa deposit lies in a felsic to intermediary series of volcanic and volcanoclastic rocks, within the Paleoproterozoic Birimian Supergroup of West Africa. The prospective Birimian rocks in Burkina Faso are the same sequences that host major gold deposits in Burkina Faso and in neighbouring Ghana and Mali. The Birimian greenstone belts of West Africa are renowned for their gold mineralization, however, known occurrences of base metals are scarce. The Perkoa deposit represents the only significant Zn-Ag massive sulphide mineralization discovered in the Birimian to date and it is also the first Zn-Ag massive sulphide mineralization discovered in this region.

The Perkoa project area is located in the central part of the Boromo greenstone belt, which comprises volcanic and sedimentary rocks of the Lower Palaeozoic Birimian Supergroup that have been metamorphosed to lower greenschist facies. At least three phases of deformation have affected the Boromo belt and mafic to felsic dykes and granitic bodies were emplaced in several intrusive phases. The Zn-Ag mineralization has been dated at 2,120 Ma to 2,141 Ma (Billiton, 1998).

The extensive development of laterite and the paucity of outcrop have not allowed for detailed surface mapping to take place. Consequently, geological maps are based on limited information.

LOCAL GEOLOGY

In the Perkoa mine area (Figure 7-1), the Birimian sediments, lavas, and pyroclastics strike from northeast to southwest and generally dip steeply to the northwest. Several units of andesitic lavas with subordinate andesitic tuffs, separated by sequences of tuffs interlayered with fine grained clastic sediments, make up the lithological package in the project area.

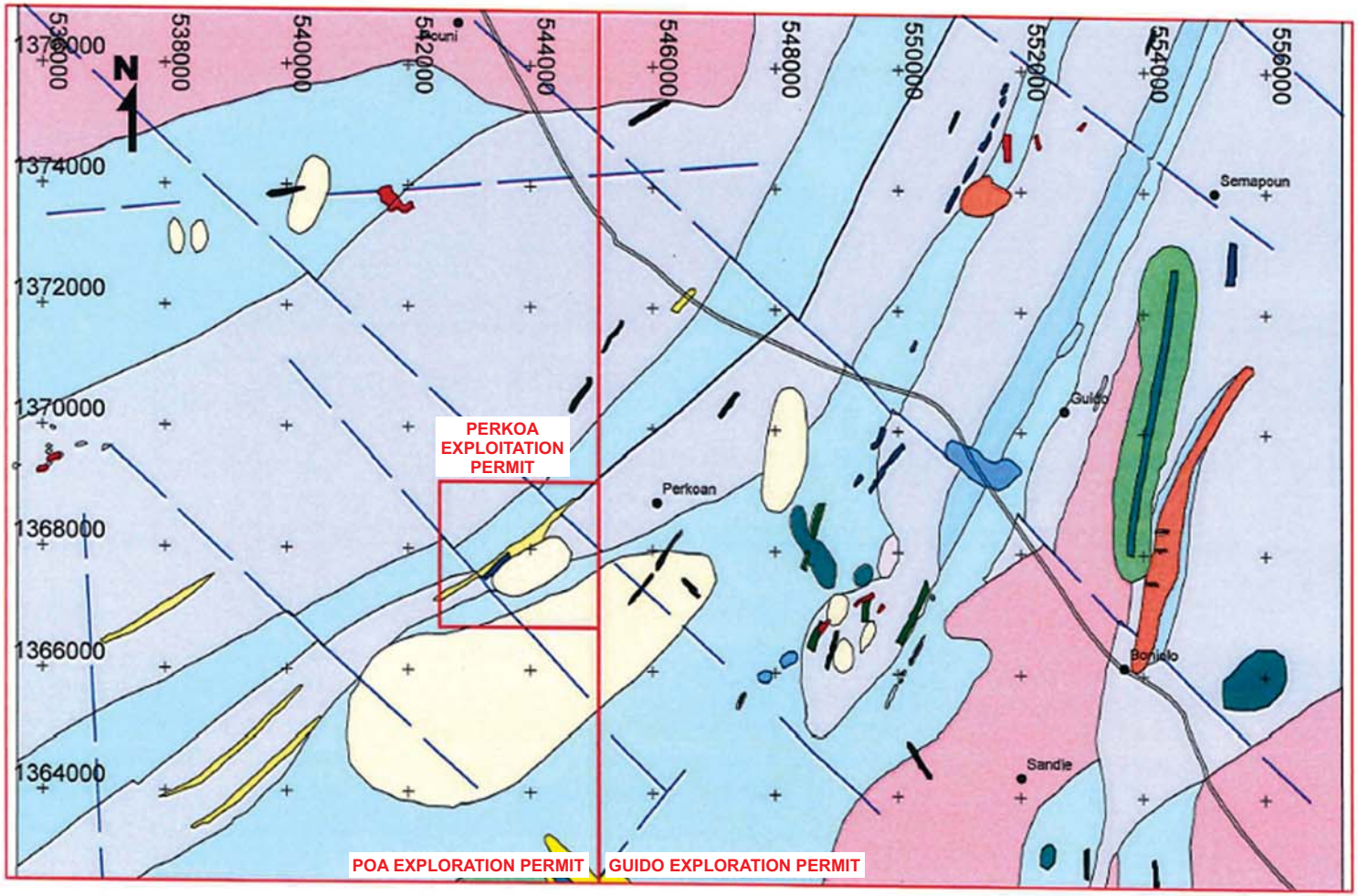


Figure 7-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Local Geology

April 2017

Source: Perkoa Mine, 2017.

A number of syn-tectonic and post-tectonic intrusive bodies have been emplaced within the meta-sediments, which range from large plutons of granitic and dioritic composition to smaller ultramafic to rhyolitic intrusions. Crosscutting lineaments with a northwest-southeast orientation are common although major displacements along these lineaments are rare.

PROPERTY GEOLOGY

The Perkoa mineralization occurs as a series of stacked, northeast-southwest striking tabular VMS lenses hosted, and separated by, tuffaceous material that has been overturned with an average dip of approximately 70° (Figure 7-2). The deposit is unusual for its high concentrations of zinc and barium mineralization, and relatively low levels of lead and copper.

The stratigraphic hanging wall is represented by andesites. Five mineralized lenses, hosted within the tuffs, have now been identified; one main lens called “Footwall Lens” (split into normal and high grade domains due to plutonic activity which had locally caused remobilization of zinc), one minor thin (less than 2 m) lens in the footwall, which is sometimes intermixed with the main orebody, and three minor lenses in the stratigraphy above called “Hanging Wall Lenses”. A granitic pluton is present in the footwall of the deposit and locally intrudes into the mineralized orebody, creating enriched remobilized areas.

Dyke structures crosscut the deposit, most notably a large granitic dyke 5 m to 20 m thick striking east-northeast to west-southwest and dipping an average of 50°, and have replaced areas of mineralization. Smaller families of andesitic and basaltic dykes crosscut the deposits and are typically sub-horizontal and sub-vertical respectively. Finally, the deposit is cut by several felsic to intermediary intrusive rocks, which tend to reappear in more or less regular intervals and can be interpreted as the feeders of lavas and intrusions found locally above and below the mineralized sequence.

View Looking North

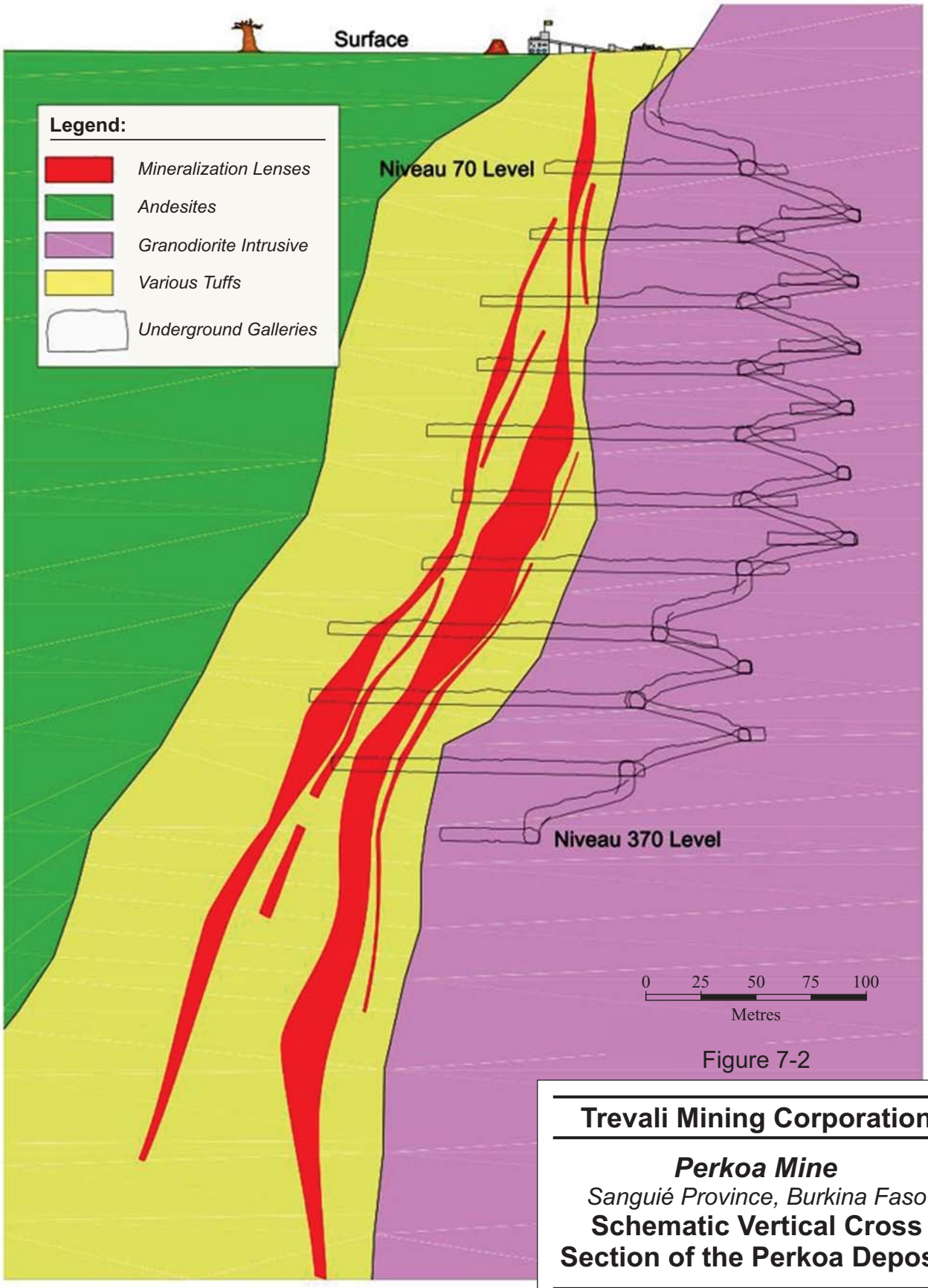


Figure 7-2

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Schematic Vertical Cross Section of the Perkoa Deposit

April 2017

Source: Nantou Mining, 2016.

MINERALIZATION

The Footwall Lens is the thickest (up to 25 m to 30 m) and most continuous of all the lenses. The Footwall Lens typically has higher zinc grades than that of the Hanging Wall Lenses. The Footwall Lens is composed of coarse grained sphalerite and pyrite of approximately the same proportions (around 20% to 25%) as the Hanging Wall Lenses with minor content of pyrrhotite, plus locally valuable galena associated with silver, however, with generally lesser amounts than the Hanging Wall Lenses. A large proportion of barite (up to 15%) is a common constituent of the gangue. In the upper northeastern area of the deposit, the Footwall High Grade Lens has grades in excess of 50% Zn at the contact of the sulphide lens and granodiorite pluton. Average zinc grades in the footwall are more in the region of 9% to 15 % Zn.

The Hanging Wall Lenses are typically thinner than the Footwall Lens and represent more interbedded features of massive, vein type, or disseminated VMS together with tuffaceous material along the same geological horizon. In these lenses, the pyrite and pyrrhotite content is higher than that of the Footwall Lens, while barite content is lower and almost no lead and silver are present. Due to the interbedded and disseminated nature of the Hanging Wall Lenses, they are typically of lower average zinc grade, however, they are found to have some enriched zones in proximity to fault zones and/or the footwall granitic pluton. At depth, the Hanging Wall Lenses thicken up to 15 m in width.

8 DEPOSIT TYPES

The Perkoa deposit has been classified as a volcanogenic massive sulphide (VMS) deposit (Billiton, 1998). VMS deposits are lenses and sheets of massive sulphide that form from seafloor hydrothermal systems where metal rich fluids (black smoke) precipitate on (exhalative) or near the seafloor (sub seafloor replacement.).

Worldwide, VMS deposits are major sources of zinc, copper, lead, silver, and gold.

VMS deposits generally display a massive sulphide horizon, overlying an alteration or stringer zone, and metal zonation is common. As VMS deposits commonly occur in groups or clusters, there is good potential for additional discoveries of mineralization in the Perkoa area.

The important characteristics of this deposit type, that have been used to guide exploration and evaluation at Perkoa, have included:

- The relationship between the VMS deposit type and the steeply dipping planar brittle/ductile shear zones and regional zones of deformation which provided sources and pathways for the hydrothermal solutions.
- The occurrence in volcanic-sedimentary successions and often at an interface between two lithological units.
- Characteristic metal zonation.

9 EXPLORATION

EXPLORATION PROCESS AND TECHNIQUES

BVL was a joint venture between Blackthorn Resources and Glencore that explored the potential of the Perkoa deposit and four exploration permits (POA, Guido, Seboun and Sepaogo) from 2010 to 2014.

The significant exploration work completed during this phase included:

- VTEM (Versatile Time Domain Electromagnetic) System airborne geophysical survey
- Airborne Magnetic Survey
- Ground Induced Polarization (IP) Geophysical Surveys
- Rotary Air Blast Drilling (RAB) and Geochemical Sampling

In 2015, Glencore took over all responsibility for exploration. Based on Glencore's review it was recommended that mine definition drilling be prioritized, however, regional exploration must be undertaken well in advance of reserves depletion.

The primary exploration observations for the Perkoa area included:

- The Perkoa deposit appears to be a good conductor.
- IP surveys are not suitable for base metal deposit discrimination.
- Soil and stream sediment sampling could have significant limitations resulting in low confidence levels.
- Surface geological mapping is problematic due to the weathered terrain.

The principal exploration recommendation was that proven geophysical exploration techniques (airborne, surface and downhole) should be employed in the search for large blind base metal deposits along the strike of the Perkoa deposit (the Perkoa Mine Horizon).

EXPLORATION POTENTIAL

Perkoa geologists are currently re-logging and re-sampling historical surface holes for inductively coupled plasma mass spectrometry (ICP-MS) analyses. They will then work on a

geochemical model using Leapfrog to determine indicators for future exploration. They will also try to map tuffs and classify dykes.

The 2017 in-mine diamond drilling program was proposed for mid-February for surface drilling (13,000 m) and mid-March for underground drilling (6,300 m). This drilling is planned to upgrade resources to the Measured category from 400 to 490 levels where historically there has been an approximately 60% conversion from resources to reserves. This could potentially extend the mine life to 5.5 years. Drilling may also delineate additional mineralization to the north and at depth. The surface drilling will be followed up with downhole electromagnetic surveys.

For 2018, approximately 5,000 m of underground drilling is proposed in order to target Measured Resources from 490 to 550 levels. Surface drilling is also being planned to test for any mineralization south or north of the existing deposit.

Renewal applications for the POA and Guido Exploration Permits have been approved. Exploration expenditures will be required in order to both maintain the permits as well as to potentially discover new sources of mine feed.

In RPA's opinion, the areas covered by the exploration licences, as well as other areas along the Perkoa Mine Horizon, are very prospective for both base and precious metals.

- For base metals the presence of the Perkoa VMS deposit is an indicator of the prospectivity for this type of deposit, which generally occur in clusters.
- For gold, the presence of artisanal mining sites in the surrounding area.

A significant amount of exploration work has been carried out on the permits by previous operators which can be used for target generation. In RPA's opinion, a comprehensive detailed review, compilation, and systematic exploration targeting plan is required prior to any future significant exploration expenditures by Trevali.

10 DRILLING

DRILL HOLE DATABASE

The Perkoa drill hole database contains 333 holes, totalling 30,528.88 m, of surface and underground diamond core drilling (DDH). In addition, there are 56 geotechnical (GT) drill holes totalling 1,488.0 m. The database also contains grade control face and channel samples (GRC) which have been converted into 664 pseudo drill holes totalling 4,897.8 m (Table 10-1).

The drilling history is summarized below:

- Over the course of several campaigns prior to 2005, a total of 23,000 m of historical drilling was conducted by previous operators as described in Section 6. The aim of this drilling was to define Indicated Mineral Resources as well as limited Measured Mineral Resources for FS purposes.
- Almost 6,000 m of surface drilling was added during the 2011 to 2012 period in order to target and define the lead-silver rich areas within the upper portion of the mine, with the aim of defining additional resources for conversion to open pit reserves.
- Between the end of 2013 and June 2015, 17,530 m of underground infill drilling was completed. Drilling followed the development of the underground mine and helped define most of the upper part of the mine from 70 to 280 levels.
- Between December 2015 and September 2016, 9,218 m of underground infill drilling was completed to upgrade the resources to a higher classification between 280 and 430 levels and complete the definition of the upper areas of the deposit.

TABLE 10-1 DRILL HOLE DATABASE
Trevali Mining Corporation – Perkoa Mine

	Diamond Drilling (DDH)		Geotechnical Drilling (GT)		Grade Control Pseudo Holes (GRC)		Total	
	No.	Metres	No.	Metres	No.	Metres	No.	Metres
Surface	117	3,780.9					117	3,780.9
Underground	216	26,748.0	56	1,488.0	664	4897.8	936	33,133.8
Total	**333**	**30,528.9**	**56**	**1,488.0**	**664**	**4,897.8**	**1,053**	**36,914.7**

Figure 10-1 presents a schematic vertical cross section of the Perkoa deposit illustrating drill traces. Figure 10-2 presents a plan map illustrating drill hole collars.

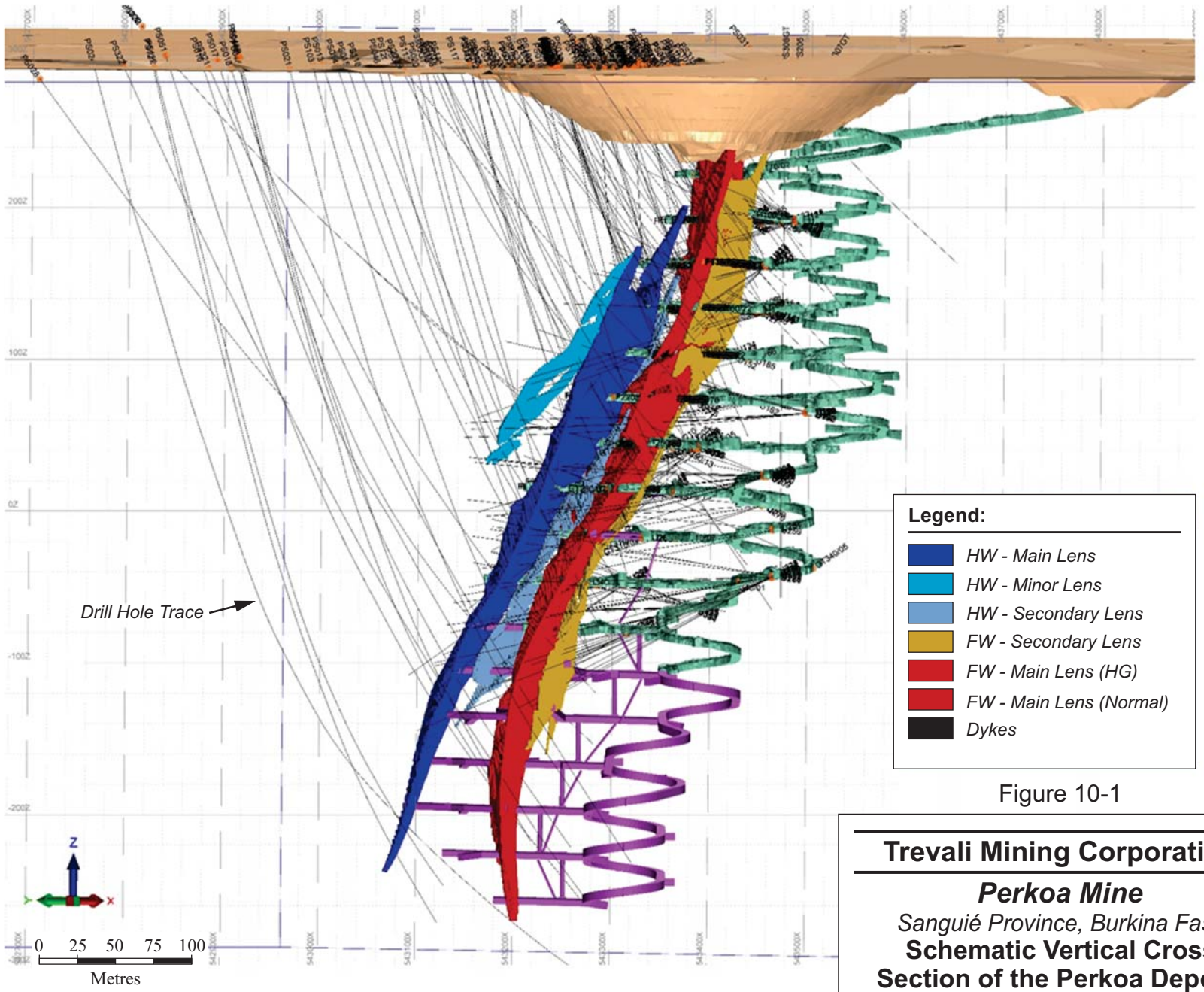


Figure 10-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Schematic Vertical Cross Section of the Perkoa Deposit Illustrating Drill Traces

April 2017

Source: Nantou Mining, 2016.

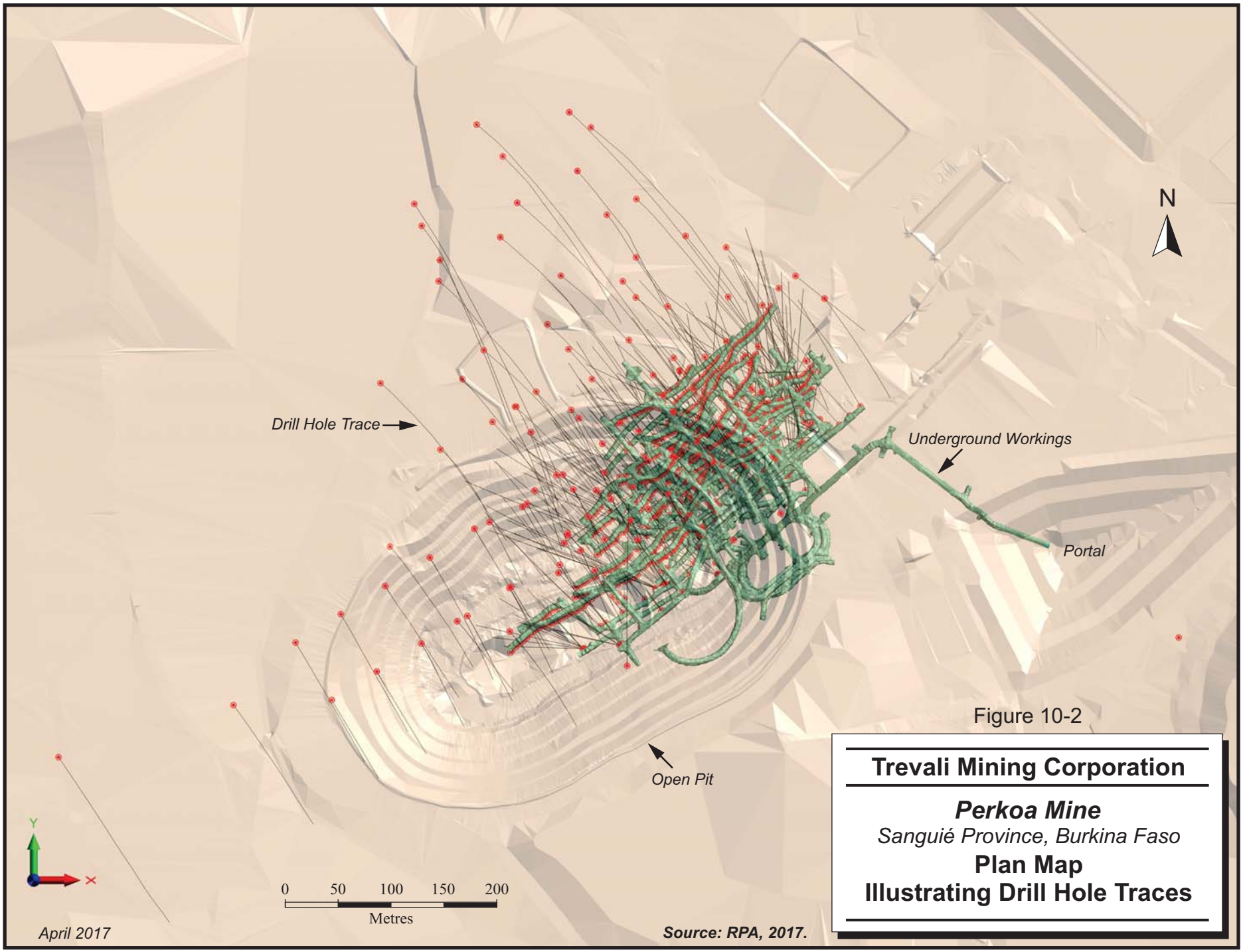


Figure 10-2

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Plan Map
Illustrating Drill Hole Traces

April 2017

Source: RPA, 2017.

All DDHs were drilled NQ core size and split for sampling. Perkoa plans that all new underground drill holes will be BQ size core, with the entire core sent for sampling. Diamond drill spacing is generally 80 m by 80 m for Inferred, 50 m by 50 m for Indicated, and 25 m by 25 m for Measured Mineral Resource classification. Core recovery is estimated at >95%.

All surface drill core is retained. For underground drilling, only a few witness holes have been kept due to storage limitations.

No diamond drilling was ongoing during RPA's visit, however, the Perkoa geologists were in the process of re-logging historic exploration holes in order to maintain consistency with recent geological logging codes.

SURVEY GRIDS

The current survey grid on used on the Project is UTM WGS 84 Zone 30 north.

In 2013, during mining of the deposit from underground, some historical surface drill holes were found to be spatially incorrect in the database as underground development was conducted which intersected their trace. The error was discovered to be a conversion error that occurred when AIM Resources converted all local grid collar co-ordinates to Clark 1880 and all collar co-ordinates converted to or recorded in Clark 1880 were later converted to WGS 84. The error was noted and corrected in 2014 by Glencore personnel onsite, who took the original survey co-ordinates and used an accurate conversion calculation to obtain the correct co-ordinates in WGS 84. These collar co-ordinate conversion adjustments have been verified where development intersects historical drill traces underground and with underground confirmation diamond drill holes which almost twin the holes where errors were suspected.

DRILL PLANNING AND SITE PREPARATION

Drill holes are planned in Surpac software. Consideration is given to the orientation of the drilling in relation to the geological structures, to provide for unbiased sampling.

The Geologist, Drill Foreman, Mine Planner, and Mine Surveyor all sign off on the drill hole plan prior to initiating drilling.

COLLAR SURVEYS

All surface drill hole collars are surveyed using a differential global positioning system (DGPS). A collar location, as well as a foresight and backsight are surveyed in to facilitate drill line-up.

Drill locations for underground drill holes are marked by the Perkoa Mine Survey Department. Surveyors mark the grid lines and azimuth on the tunnel walls. Drillers are given drill instruction sheets showing the section lines, the direction of drilling, and the dip of the borehole. The drill foreman and geologist check the machine set-up before drilling starts. The Mine Surveyors pick up the as drilled collar location upon completion of drilling.

DOWNHOLE SURVEYING

Historic downhole surveying was carried out approximately every 50 m downhole.

Downhole surveying is currently conducted using a REFLEX Act III Rapid Descent digital core orientation system. For underground drilling, an initial survey is taken at 15 m to ensure the correct drill hole trajectory. If correct, subsequent surveys are taken at 30 m downhole as well as at the total depth. At the end of the hole, a final multi-shot survey is taken back up the hole with an average survey interval of approximately three metres.

For surface drilling, the first survey is taken approximately 50 m after the bedrock interface, followed by multishot surveys every 30 m until hole completion.

All survey data is checked for any azimuth or dip variances prior to incorporation into the drill hole database.

GEOLOGICAL CORE LOGGING

Perkoa has a detailed procedure manual outlining drill hole logging and core sampling procedures. Prior to 2017, all logging was completed either on paper forms or in MS Excel. Currently, Perkoa geologists are using a customized MS Access logging form with the same database structure as the Surpac Drill Hole Database. Perkoa geologists are also now providing additional geological descriptions when logging, rather than just relying on codes.

CORE PREPARATION AND SPLITTING

The drill core is delivered to the surface Core Shed by the drilling contractor. Prior to undertaking geological core logging and sampling, the geologist ensures that the core on all trays of the required borehole to be logged is identified by the borehole number and sequences (marked on the core trays) and sorted in proper order.

The geologist initially checks the entire drill hole core for the drilled depth, recovery, cavities, and core blocks. The core is then carefully examined for cavities and fabric lineaments such as beddings and mineralization. It is then determined for equal structural and mineralization distribution on both sides of selected axial planes. The selected axial planes are then marked with a marker and fitted together in readiness for core splitting.

A Core Shed Attendant then extracts identified core trays from the core storing racks and delivers them to the core splitting area in readiness for bulk density determination and core splitting preparation.

Bulk density is conducted on drill core prior to splitting. A minimum of 60%, and preferably 100%, of the sample length is tested using a standard Archimedean water displacement method.

The Core Shed Attendant splits the marked core into half along the marked axial planes using a diamond saw and then lays the core back in the original positions on the core trays.

CORE LOGGING

The geologist initially checks the core for lithological contacts, core angles and extent of economical mineralization limits, Geological Footwall, Assay Footwall, Base of Banded Ore and Assay Hanging wall (GFW/AFW/BBO-AHW), by visual determination and estimations.

A comprehensive geological analysis of the core is then initiated by examining and recording all geological information on a standard logging form including the following details:

- Borehole Number.
- Location (Mine, Level and Section).
- Collar Coordinates (Easting and Northings) and Elevation.
- Bearing (Azimuth).

- Survey (Inclination and Azimuth).
- Drilling Dates (Dates when drilling of the hole was started and stopped).
- Date of Core Logging.
- Name of the Geologist (who logs the borehole).
- Descriptive notes and comments
- Ground conditions.
- Drilled interval (metres).
- Recovery (metres of core recovered or percentage of recovered core).
- Core angles (in degrees).
- Formation.
- Member (name of member of the rock formation).
- Descriptions (colour, grain sizes and shapes, alterations, textures, veining, mineralization habits, core condition, as well as Rock Hardness (Rock Quality Designation (RQD)).

The core is photographed in a wet state just outside the core shed in natural light.

GEOTECHNICAL LOGGING

Geotechnical logging is conducted on the drill core by the geotechnical geologist who also performs the underground geological mapping. Recorded are:

- RQD
- Number of discontinuities per metre
- Joint Number (JN), Joint Roughness (JR), Joint Alteration (JA)
- Q-System

Starting in 2017, all surface holes will utilize oriented core.

CORE SAMPLING

HISTORIC PRACTICES

Based on SRK (2009), the core from BUMIGEB drill holes was sampled every one metre within the mineralized zones. The Boliden and BHP Billiton core were sampled with respect to rock facies contacts with the mineralized zone resulting in varying sample intervals between four and six metres.

CURRENT PRACTICES

Economical mineralization limits of ore minerals (GFW/AFW/BBO-AHW) are visually identified and carefully marked on the logged core in readiness for sampling. Sampling criteria are focussed on sections with >3% sphalerite, however, currently, all sections with main mineralization areas (e.g., within the VMS) are sampled.

Also noted for sampling are:

- Sample number.
- Depth interval (of sampled core in metres).
- Recovery (metres or percentage of core recovered).
- Visual percentage estimation of mineralization.
- Zinc, lead, and silver assay grades.
- Mineralization type.

The geologist samples half of the split core in interval limits of a quarter of a metre to one metre. Samples do not cross lithologies. One and one-half metre intervals are used for shoulder samples and in waste areas.

The sampled core pieces are packed in new small sample plastic bags and tagged with duplicate labelled sample tickets. The Geologist also ensures that the Quality Assurance/ Quality Control (QA/QC) process is followed during sample submission.

The small sample bags are then packed into larger bags which are secured to prevent contamination and spilling of samples during transportation to the assay laboratory.

All samples sent to the assay laboratory are listed in a submission form. This submission form includes:

- The name of person authorized and the goods dispatched.
- Any special analysis instructions.

Samples are delivered to directly to SGS Ouagadougou by Perkoa mine transportation personnel.

Reject samples are retained by SGS Ouagadougou and pulps are kept in either SGS Johannesburg or SGS Ouagadougou.

UNDERGROUND CHANNEL SAMPLING

Perkoa has a detailed geological procedures manual for underground sampling. The purpose of this sampling is to determine the actual mineral grades of the exposed ore for use in determining the size and intersection grade, for use in Mineral Resource estimates.

- The initial procedure is to determine that the work area is safe and that the required personal protective equipment (PPE) is conformed with.
- Channel sampling is generally completed on the Northern or Southern wall.
- The geologist or geological assistant will then mark with paint all the contacts of the main geological units. The exposure will then be examined to determine the extent of mineralization and mark the probable sampling limits.
- Having completed this classification, a tape measure is then set up, at a height of 1.5 m above the bench, placing the zero at the extremity of the exposure.
- The previously marked geological units and probable assay limits are subdivided into suitable sample lengths ensuring that there are no sections that cross lithologies. The maximum sample length is 2.0 m and the minimum is 0.2 m.
- The position of all sample divisions in relation to the tape line are recorded as a simple sketch (not to scale diagram) in a field note book and the tape line is fixed to a survey peg. Positions of other main features relevant to the exposure are also marked on the sketch.
- A horizontal guide line corresponding with the tape is then drawn across the marked sampling sections marked earlier.
- Samples are then chipped using a 1.80 kg hammer and a chisel along the chalked guide line drawn on the sampling face. The groove cut or in effect the ideal groove should be 10 cm wide by 3.0 cm deep.
- In hard materials where groove cut may fall short of the ideal size, a suitable sample is obtained by taking equitable volumes from across the intersection following the guide line.
- Extra care is taken in sampling large concentration of minerals as they may not representative of the sample section as a whole.
- Clean polythene bags are used for sample collection. The sampler places a sample ticket number in each bag at site. No sample will be moved until the entire exposure is fully sampled and the samples have been verified by the sampler.
- Before leaving the site, the sampler must counter check the work completed against the field book entry. The number of samples in the field book must be equal to the physical samples in the bags.

- Underground samples are brought to surface by the sampler, and then packed and delivered directly to the Perkoa Mine Laboratory.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

HISTORIC SAMPLE PREPARATION AND ANALYSIS

No information is available on the sample preparation, assay laboratory, or QA/QC for the pre-2005 drill holes.

Samples collected by Blackthorn Resources were assayed for Zn, Pb, Ag, Cu, and As at Transworld Laboratory (TWL) in Tarkwa, Ghana, using aqua regia digestion (ARD) with an atomic absorption (AA) finish.

Samples collected by Blackthorn Resources following the BFS (2008 to 2011) were analyzed by ALS laboratories (ALS) in Vancouver, Canada after sample preparation in Ouagadougou, Burkina Faso. The samples were analyzed by four acid digestion with inductively coupled atomic emission spectrometry (ICP-AES) finish.

The first channel and face samples collected onsite on mining levels 70-130 (160-220 elevation) were all analyzed by ALS in Vancouver, Canada after sample preparation in Ouagadougou, Burkina Faso. These samples were analyzed using AA acid digestion with ICP-AES finish. All samples assayed thereafter for channel and face samples were analyzed at the onsite mine laboratory by pressed pellet X-ray fluorescence (XRF) analysis.

CURRENT SAMPLE PREPARATION AND ANALYSIS

The SGS commercial geochemical analytical laboratories in Burkina Faso and South Africa are officially recognized by the South African National Accreditation System (SANAS) for meeting the requirements of the ISO/IEC 17025 standard for specific registered tests for the minerals industry.

Core samples are sent to SGS Ouagadougou for crushing and grinding. The pulps are then sent to SGS South Africa for analysis.

Prior to analysis the pulps are weighed (SGS Code WGF79) and test samples are dry screened to ensure -75µm passing (SGS Code SCR32).

The main assaying suite is SGS Ore-Grade Analysis Code ICP13B. The pulps are analyzed by two acid digestion with ICP-AES finish for lead, zinc, and silver. Ore-grade packages are used to analyse samples that have high concentrations of pay metals. Typically, ore-grade analyses are accomplished by adjusting the sample weight and final solution volume ratio, thus expanding the linear range of the analysis.

SGS also insert a suite of internal laboratory blanks and certified reference materials (CRMs or standards). The frequency of inserted quality control materials is approximately 14%.

Perkoa are considering sending their core pulps to SGS Vancouver, Canada for analysis rather than to SGS South Africa.

RPA notes that, as of December 31, 2016, Perkoa was awaiting for SGS assay results for approximately 280 drill holes completed in 2016. Approximately 2,000 assays and 900 repeat assays requested for QA/QC issues were outstanding for many months. Stopes in the upper part of the mine, and sills in the lower part of mine, had been mined without close spaced assay support (e.g., rely on Indicated classification drilling). This matter should be resolved as soon as possible to ensure a reliable and timely delivery of assay results in the future.

PERKOA MINE LABORATORY

The Perkoa Mine Laboratory utilizes XRF spectroscopy. In pressed pellet XRF, samples are compressed into a pellet and analyzed instrumentally. Only lower levels of metals can be done accurately by this method. The advantages of XRF include rapid analysis time and accurate analyses, arising from the fact that inter-element corrections are well known and highly predictable.

The Perkoa Mine Laboratory analyses are used only for mine production sampling (channel samples, face samples, stockpile samples) and for process plant sampling.

The general process for geology samples includes:

- Receive and log in samples.
- Weigh and dry in over for one hour at 100°C.
- Crush to 2 mm and riffle split to 200 g.
- Add 0.5 g of wax to 4.5 g of sample to create a 5.0 g pellet (for each sample two pellets are made).
- Perkoa matrix matched XRF standards are used at the start and end of every XRF run.
- Normal expected variance is approximately ±2% Zn. Variances result in sample re-runs. The laboratory maintains a QA/QC spreadsheet which is reviewed daily.
- Reports are sent electronically to the Geology Department.

Plant samples, which arrive in liquid state, are kept separate from Geology samples at all stages of preparation and analysis. In the weigh room, there are separate work benches for geology and metallurgical samples.

RPA toured the Perkoa Mine Laboratory, and in RPA's opinion, it is professionally run. This laboratory is not certified and assays are not used in the Mineral Resource estimate. The Perkoa Mine Laboratory XRF assays are, however, used to determine concentrate grades. Composite samples are sent to Alfred H. Knight International Ltd. for independent confirmation.

QUALITY ASSURANCE AND QUALITY CONTROL

The QA/QC of the Perkoa geological database is subdivided into several exploration campaigns and periods of data collection.

HISTORICAL QUALITY ASSURANCE AND QUALITY CONTROL

The historical surface drill holes and surface drilling completed by Blackthorn Resources had their QA/QC evaluated in the Snowden 2005 BFS. The BFS listed all QA/QC issues and reviews of assays that had been completed for the FS and financing of the project. SRK (2009) considered the sample preparation and analytical quality of the data to be reasonable and the quality of the data to be appropriately reflected in the classification criteria used to estimate the Mineral Resources.

Figures 11-1 to 11-4 present the QA/QC evaluation for all sampling conducted by Blackthorn Resources following the BFS (2008 to 2011) for drill holes P316 to P336. Some low results, compared to the defined grade of the standard, were noted and considered to be due to the samples not being fully digested.

FIGURE 11-1 ZINC STANDARD SAMPLE RESULTS GBM995-8

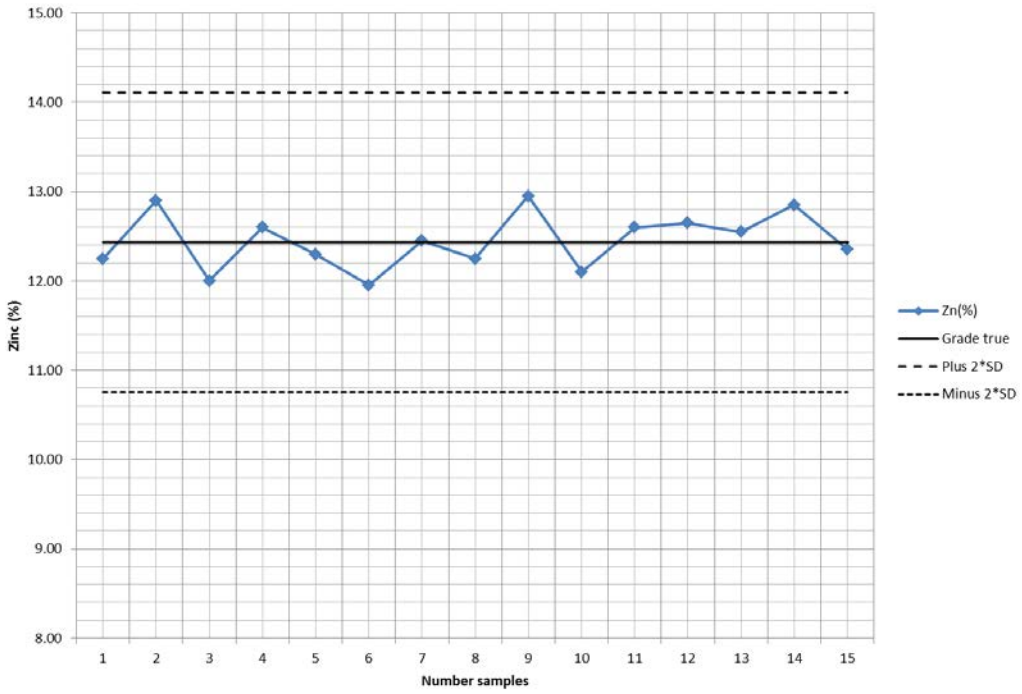


FIGURE 11-2 ZINC STANDARD SAMPLE RESULTS GBM308-12

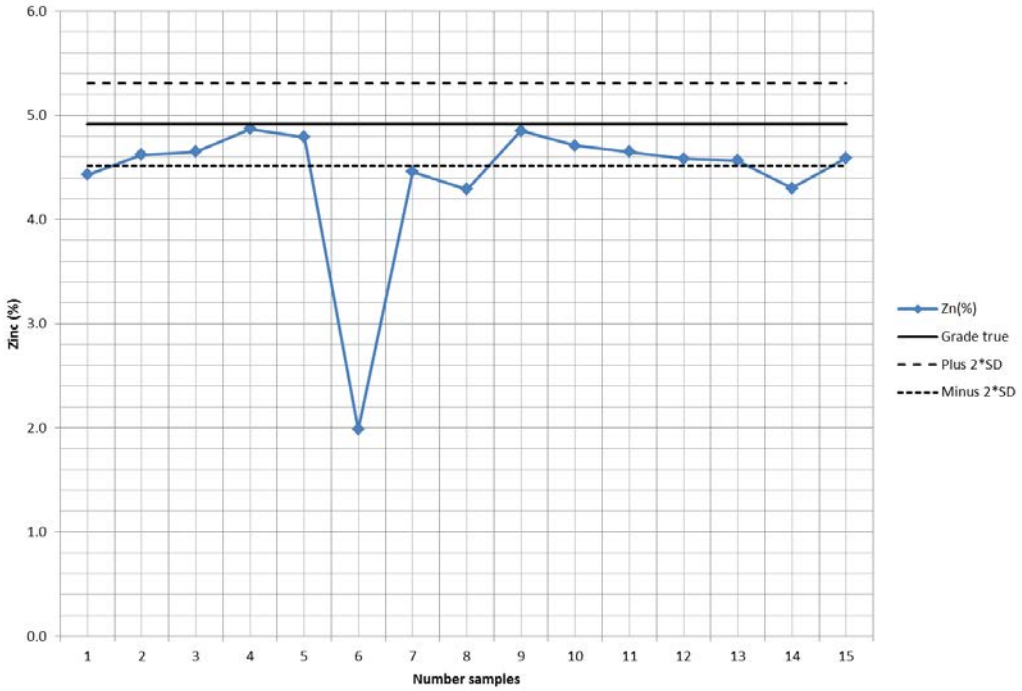


FIGURE 11-3 ZINC STANDARD SAMPLE RESULTS GBM308-14

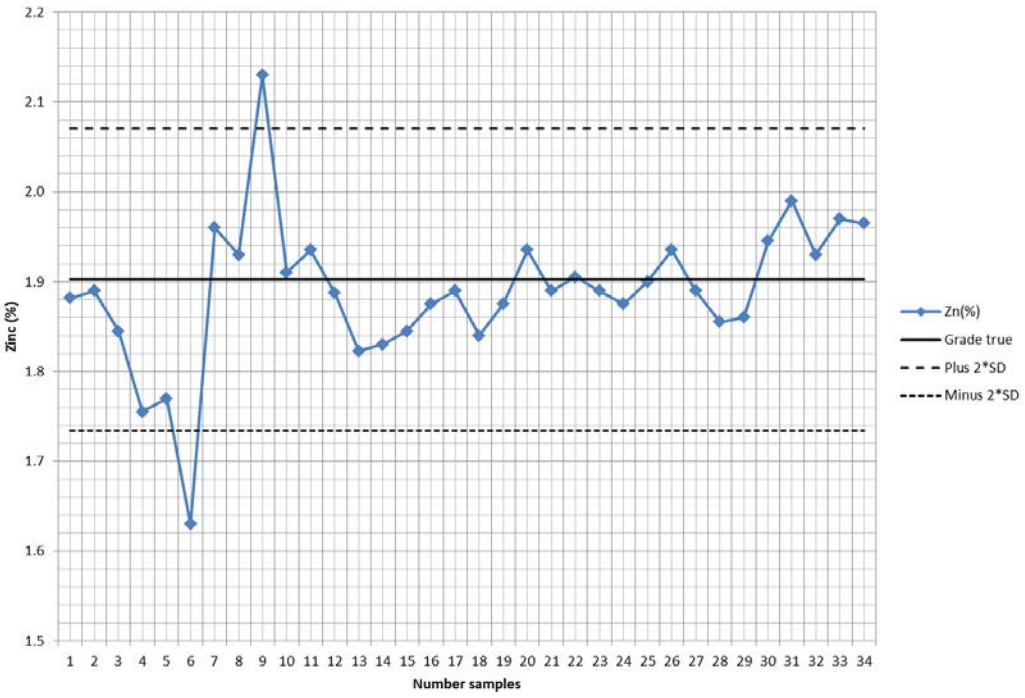
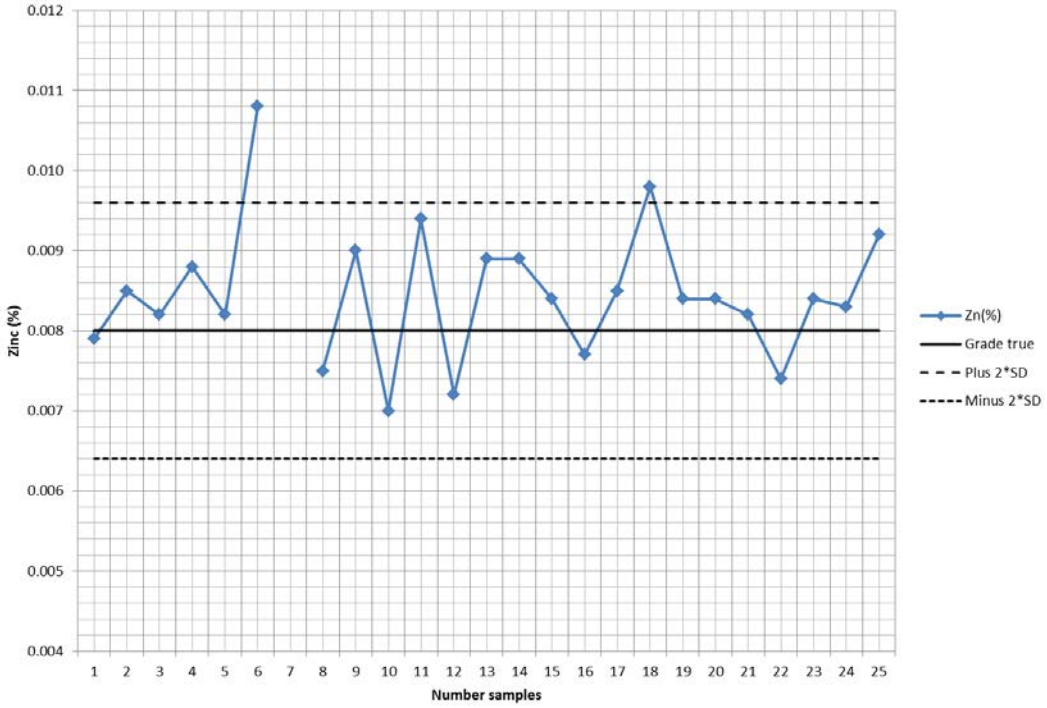


FIGURE 11-4 ZINC STANDARD SAMPLE RESULTS GBM307-38



The initial underground face and channel samples were all found to pass QA/QC based on blank, duplicate, and standard analysis for these batches.

CURRENT QUALITY ASSURANCE AND QUALITY CONTROL

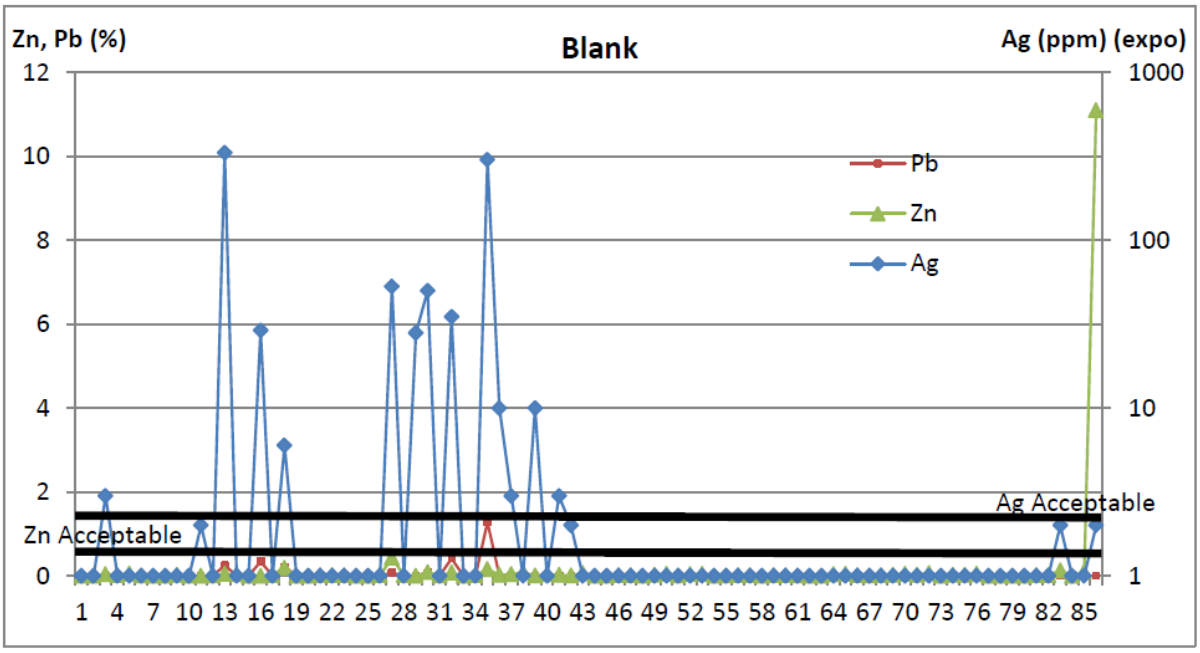
The following discussion on QA/QC results is based on assays processed by SGS and received during the period from April 4, 2016 to June 21, 2016. Perkoa's insertion rate for blanks and standards is 1 in 25.

BLANKS

The regular submission of blank material is used to assess contamination during sample preparation and to identify sample numbering errors.

Figure 11-5 illustrates the unacceptable values for silver results.

FIGURE 11-5 BLANKS



After an investigation, Perkoa determined that the quartz vein blank material they were using was not completely non-mineralized. The source of blanks, for insertion at the core shed, was changed in mid-2016 to be granodiorite core sourced from the top of surface drill holes.

CERTIFIED REFERENCE MATERIALS (STANDARDS)

Results of the regular submission of certified reference materials (CRM) are used to monitor analytical accuracy and to identify potential problems with specific batches. Specific pass/fail criteria are determined from the standard deviation (SD) provided for each CRM. The conventional approach for setting standard acceptance limits is to use the mean assay ± two SD as a warning limit and ± three SD as a failure limit. Results falling outside of the ± three SD failure limit must be investigated to determine the source of the erratic result, either analytical or clerical. At Perkoa, the failure criterion is two consecutive standards outside the ± two SD limit.

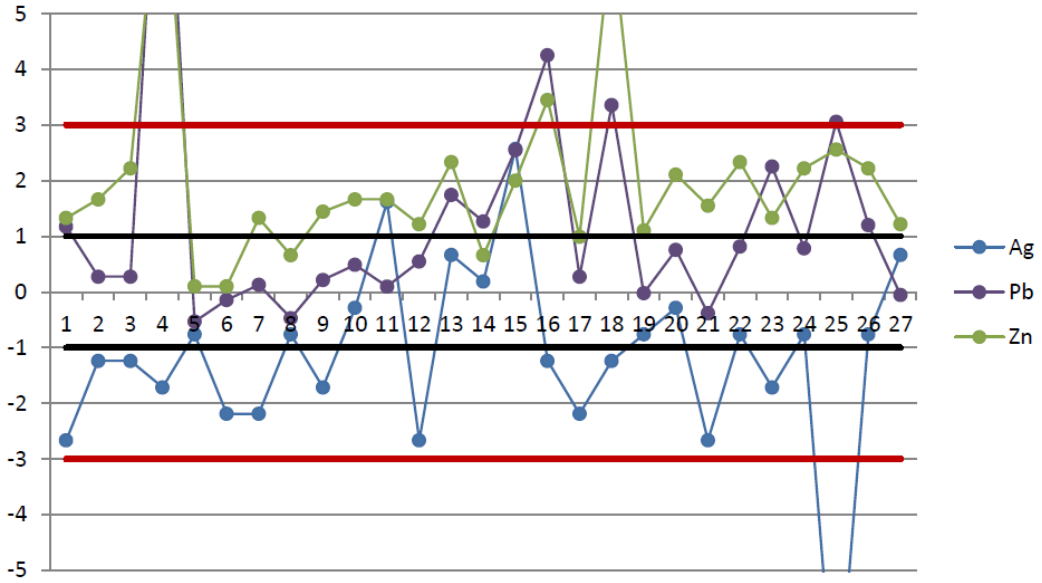
Table 11-1 lists the Geostats Pty Ltd (Geostats) certified ore grade base metal reference materials utilized in the 2016 QA/QC program.

TABLE 11-1 GEOSTATS PTY LTD CRMS
Trevali Mining Corporation – Perkoa Mine

Standard	No. of Insertions	Element	Grade	1 Standard Deviation	2 Standard Deviation	3 Standard Deviation
GBM310-14	28	Ag (g/t)	59.6	2.5	5.0	7.5
		Pb (%)	8.9465	0.3355	0.6710	1.0065
		Zn (%)	17.9106	0.8084	1.6168	2.4252
GBM308-14	25	Ag (g/t)	40.2	2.6	5.2	7.8
		Pb (%)	0.6514	0.0234	0.0468	0.0702
		Zn (%)	1.9025	0.0840	0.1680	0.2520
GBM910-11	25	Ag (g/t)	19.2	1.2	2.40	3.6
		Pb (%)	1.3372	0.0622	0.1244	0.1866
		Zn (%)	3.9325	0.1654	0.3308	0.4962

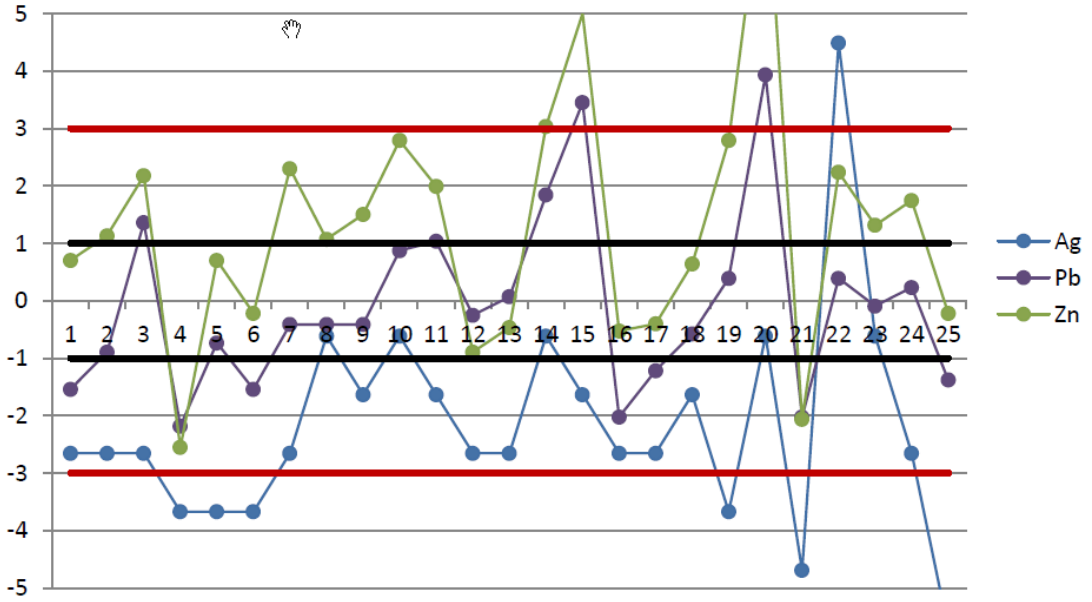
Figures 11-6, 11-7 and 11-8 present control charts for High Grade, Middle Grade, and Low Grade CRMs. The black lines represent ± one SD limits and the red lines represent ± three SD limits.

FIGURE 11-6 CRM – GBM310-14



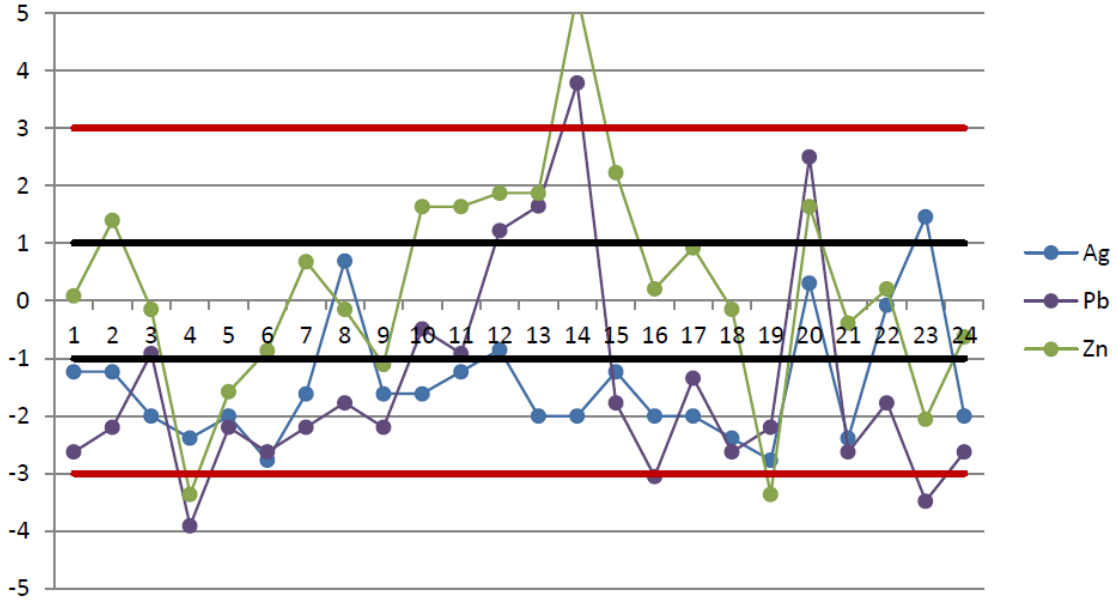
The graph for CRM GBM310-14 shows a large variance in the results and substantial deviations for high grade reference material, as almost all zinc and silver results fall outside of the ± one SD limit. There also appears to be a high assaying bias.

FIGURE 11-7 CRM – GBM910-11



The graph for CRM GBM910-11 shows a large variance in the results and substantial deviations for middle grade reference material, as the majority of the zinc and silver results fall outside of the ± one SD limit. There appears to be a high grade bias for the zinc assays.

FIGURE 11-8 CRM – GBM308-14



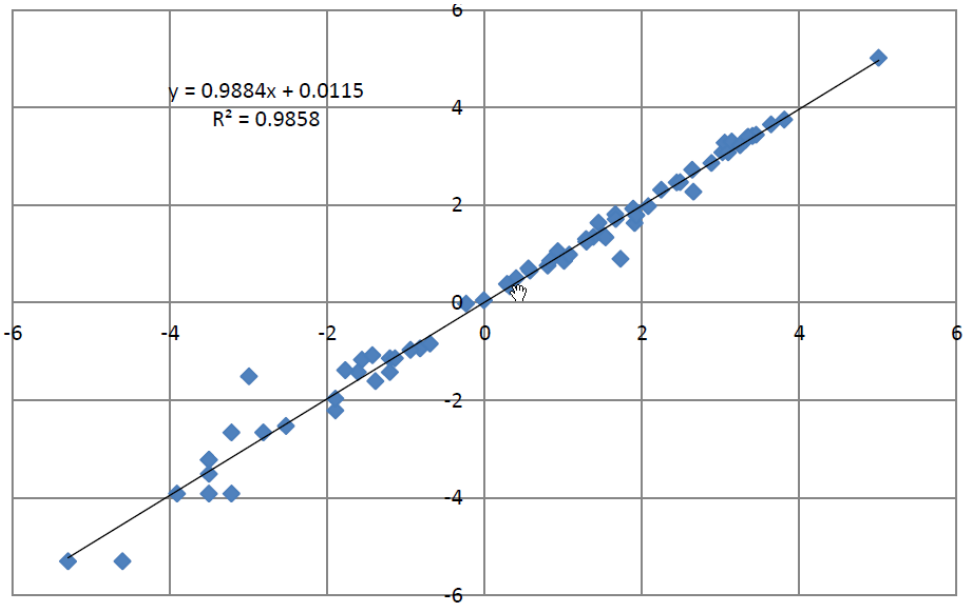
The graph for CRM GBM308-14 shows a large variance in the results and huge deviations for low grade reference material, as the majority of the lead and silver results fall outside of

the ± one SD limit. In this case, zinc is still biased high, while silver and lead appear to be biased low.

DUPLICATES

Figure 11-9 presents a plot of 70 pairs of original vs. duplicate assays for Zn%. Generally, there is a good correlation between the two sets of results with only a slight bias seen in the high and low grade populations.

FIGURE 11-9 ZN% ORIGINAL ASSAYS VS. DUPLICATES



Overall, results from the 2016 QA/QC program indicate that:

- The blank material was not barren.
  - The source material has been changed for future drill programs.
- CRM results indicate a large variance and a poor reconciliation with expected values.
  - There may be matrix affects that need to be investigated.
- Duplicates show bias in the analysis with the original values higher than the duplicate values.
  - Umpire assaying is recommended for the 2017 QA/QC program.

In RPA's opinion, the QA/QC program, as designed and implemented by Perkoa is adequate, and the assay results within the database are suitable for use in a Mineral Resource estimate. RPA recommends, however, a study be undertaken to determine the

root causes of the current only adequate QA/QC results in order to ensure a high confidence in future QA/QC results.

SECURITY

RPA is not aware of any security issues at the Perkoa mine, core processing center, or the Perkoa Mine Laboratory. Access to these sites is restricted to authorized personnel and the facilities are securely locked when not in use.

Logging, sampling, and analytical data are captured in an MS Access database, which resides on the company servers, and is backed up daily. The integrity of this database is the responsibility of a Database Manager.

Drill and mine samples are handled and transported only by Perkoa personnel or contractors. Core samples are conveyed to SGS Ouagadougou by Perkoa transportation personnel. Pulp sample transport is the responsibility of SGS who rely on commercial carriers. Assay results are sent electronically to the Drill Database Administrator.

12 DATA VERIFICATION

HISTORICAL DRILL HOLE DATA VALIDATION

Snowden (2005) and SRK (2009) validated the historical drill hole data.

PERKOA DRILL HOLE DATA VALIDATION

All data imported into the drill hole database is verified by the Database Manager. Assays are received electronically from SGS, and QA/QC is reviewed prior to importation as well as visually displayed using Surpac software.

RPA SITE VISIT

During the January 2017 site visit, RPA toured the underground operations to review geology and mineralization types in a number of exposures. RPA also observed the core logging, sampling, QA/QC, and database management procedures conducted by the Mine Geology department.

RPA also reviewed the geological modelling techniques and Mineral Resource estimation methodology with Perkoa geologists.

RPA is of the opinion that database verification procedures for Perkoa comply with industry standards and are adequate for the purposes of Mineral Resource estimation.

RPA recommends, however, that a comprehensive data process map, including logging and sampling inputs, database review, and production reconciliation studies, be undertaken in 2017. In RPA's opinion, the current geological staffing levels preclude the completion of an internal study in a relevant time frame.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

PRE-2005 METALLURGICAL TESTWORK

The following is an extract from the 2005 Snowden BFS.

Three different laboratory testwork campaigns have been undertaken on the Perkoa orebody in the past.

- Penarroya in 1987
- Billiton in 1998
- AIM Resources (Mintek) in 2005.

All of the parties did their own sampling and Billiton also carried out preliminary testwork on the archived Boliden core samples. From all of this testwork a number of broad conclusions were drawn.

Where similar testwork has been carried out, all three parties achieved very similar results in their metallurgical testwork, with the main conclusions being as follows:

- The Perkoa orebody appears to be a high grade zinc deposit that consists of massive sulphides.
- The main sulphide constituents are sphalerite, pyrite, pyrrhotite, and barite with trace quantities of quartz, chlorite, and muscovite.
- The silicates are liberated from the sulphides at a coarse crush size and it is possible to reject the less dense silicates using dense medium separation without significant losses of zinc.
- Based on Bond Work Index testwork the orebody can be classified as soft, with the mining waste being harder.
- The sphalerite is liberated from the iron sulphides at a relatively coarse grind of 65% passing 75 µm.
- The flotation response of the ore is generally good and a simple rougher stage is required to make good zinc recoveries >95% at concentrate grades >50% Zn. It is, however, necessary to have a relatively low percentage solids in the slurry fed to the flotation plant to minimize the interaction of gangue with the fast floating sphalerite.

- Variability testwork has shown that some areas within the orebody respond better to flotation than others, however, there is no way to quantify the relative proportions of "good" and "poor" ores at this stage. The predictions made in this report, however, are based on the entire bulk composite that was made up from the samples provided by Snowden and included these poor response ores - and should therefore reflect an "average" response.

- The iron content of the sphalerite crystals is high at about 7% Fe, which cannot be removed by physical means, and in order to produce concentrates with a low iron content there is a significant drop in zinc recovery.

- In general the Perkoa concentrate can be considered "clean" with mercury and iron being two elements incurring small penalties.

- There is silver present in the ore, however, it is unlikely that it will generate any revenue. There are also no other elements that are concentrated that are likely to produce a revenue stream from the smelter.

- A high grade iron sulphide concentrate (>50% sulphur) can be produced from the zinc flotation tailings and there may be some economic benefit that can be realized from it. This would have to be the subject of another study.

- No pilot plant testwork was done by any of the parties.

PLANNED METALLURGICAL TESTWORK

Nantou Mining has identified a series of metallurgical testwork to be performed, subject to the availability of a suitably trained metallurgist.

Nantou Mining plans to establish baseline mineralogy and to determine a strategy for maintaining quality control (QC) of zinc concentrate. Methods of stabilizing the recovery/grade components are to be investigated in order to establish reliable QC for marketing. The iron deportment and its effect on liberation and recovery needs to be determined. Investigations of the effects on liberation, as the distribution of sulphides changes, are to be carried out. Geological benchmarking is to be carried out to better understand and track changes in ore characteristics.

The compositions of final tails and concentrates are to be determined in order to investigate if there are opportunities. The characteristics/modifications are to be determined to improve throughput/recovery. Once opportunities are identified the circuit is to be configured to exploit these opportunities.

Since recommencing operation in 2013, Nantou Mining has been carrying out a number of improvements to the processing plant including: ongoing improvements in process control; improved reagent dosing controls; improved operator knowledge base (basic training); removal of commissioning and engineering deficiencies; improved water consumption monitoring; improved water balance and discharge tracking management; and improved tailings deposition and monitoring

Nantou Mining is working on several continuous improvement initiatives including: new metallurgical balance and data base; basic commissioning of metallurgical laboratory; Improved Courier on-stream analyzer reliability; flowsheet development; operational parameters / targeting / feedback; and power supply stability

14 MINERAL RESOURCE ESTIMATE

SUMMARY

Geological interpretation and Mineral Resource estimation were completed by Perkoa and audited by RPA, with an effective date of December 31, 2016 (Table 14-1). The Mineral Resources have been completed to a level that meets industry standards and are compliant with the terms and definitions provided in the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM definitions).

Table 14-1 lists the Mineral Resources as at December 31, 2016.

TABLE 14-1 PERKOA MINERAL RESOURCE SUMMARY – AS AT DECEMBER 31, 2016
Trevali Mining Corporation – Perkoa Mine

Classification	Tonnes (M)	Zn (%)	Contained Zn (Tonnes)
Measured	3.04	15.5	470,762
Indicated	1.22	12.4	151,054
Measured and Indicated	**4.26**	**14.6**	**621,589**
Inferred	1.64	12.9	211,012

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are inclusive of Mineral Reserves.
3. Mineral Resources are estimated at a cut-off grade of 5% Zn.
4. Shown at 100% ownership.
5. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
6. Numbers may not add due to rounding.

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

Perkoa Mineral Resources are presented as a series of discrete mineralized domain wireframes (Figure 14-1).

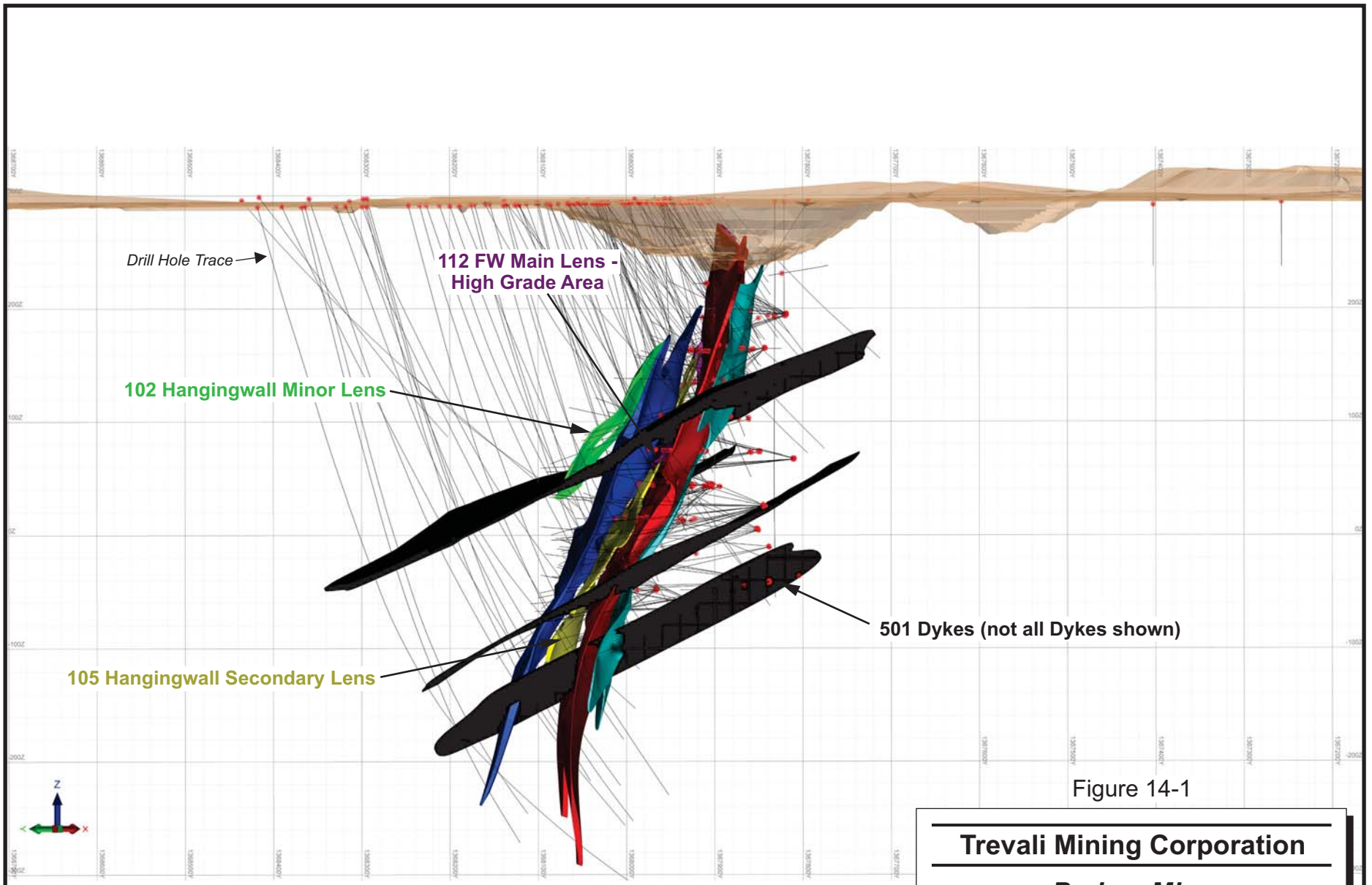


Figure 14-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Schematic View of Defined Mineralized Lenses

April 2017

Source: RPA, 2017.

Table 14-2 lists the Mineral Resources individually for each domain and resource category. The dimensions of the envelope containing currently defined mineralized lenses are approximately 600 m along strike, approximately 230 m across strike, and with a maximum depth of approximately 600 m below surface. The current Mineral Resource is estimated to 550 m below surface, however it is known that mineralization exists down to 800 m below surface.

TABLE 14-2 PERKOA MINERAL RESOURCE SUMMARY BY DOMAIN – AS AT DECEMBER 31, 2016
Trevali Mining Corporation – Perkoa Mine

Classification	Domain	Tonnes	Zn Grade (%)	Contained Zn (Tonnes)
Measured	100	852,971	10.3	87,856
	102	-	-	-
	105	112,986	12.3	13,897
	110	1,898,211	18.6	353,067
	111	173,003	8.7	15,051
	Total	**3,037,171**	**15.5**	**470,762**
Indicated	100	316,454	10.7	33,861
	102	-	-	-
	105	87,716	10.6	9,298
	110	691,633	13.7	94,754
	111	124,371	11.1	13,805
	Total	**1,218,174**	**12.4**	**151,054**
Measured + Indicated	100	1,169,425	10.4	121,717
	102	-	-	-
	105	200,702	11.6	23,195
	110	2,589,844	17.3	447,821
	111	297,374	9.7	28,856
	Total	**4,257,345**	**14.6**	**621,589**
Inferred	100	452,200	9.9	44,768
	102	50,187	6.7	3,363
	105	63,768	11.7	7,461
	110	1,031,830	14.8	152,711
	111	37,765	8.9	3,361
	Total	**1,635,750**	**12.9**	**211,012**

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are inclusive of Mineral Reserves.
3. Mineral Resources are estimated at a cut-off grade of 5% Zn.
4. Shown at 100% ownership.
5. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
6. Numbers may not add due to rounding.

During 2016, a series of changes were made to the Mineral Resource estimate due to increased drilling density and improved information, especially on the central-depth part of the mine (between 310 level and 430 level). The focus for the 2016 diamond drilling campaign was to upgrade Indicated Mineral Resources to Measured Mineral Resources. No drilling was conducted at depth resulting in little of the Inferred Mineral Resources being upgraded to Indicated Mineral Resources.

The 2016 drilling campaign improved the modelling of internal dilution in the central area of the deposit which resulted in an increase to the grade while lowering the tonnes. Improved density estimates have slightly reduced the total tonnage in the main Footwall Main Lens.

RESOURCE DATABASE

The Perkoa assay database used for the Mineral Resource estimate is composed of 17,101 samples comprising:

- **Historical Surface DDH:** Consisting of 6,211 assays for zinc and silver, plus non-systematic lead assays and rarely copper assays.
- **Face and Channel Samples:** Consisting of 2,745 assays for zinc, silver, and lead, 1,274 of which have been analyzed directly at the Perkoa site by the plant assay laboratory or by portable XRF. These samples are not used in the block model process as the method/laboratory accuracy is not sufficient. Some face and channel samples were used in the estimation process, however, these were analyzed by SGS and the independently certified assays were used in the estimation. No face/channel samples taken after June 2014 are included in the resource database.
- **Underground DDH:** Consisting of 8,145 assays, including the 4,901 assays from the 2016 drilling campaign.

Underground drilling, which has higher confidence in the survey data due to direct survey of collar in WGS 84 and downhole surveys every 3 m, supersedes surface drill holes.

RPA notes that a total of 2,033 of the underground DDH assay results were not completed by the laboratory by year-end 2016. Bulk density measurements have been processed manually (air weight/water weight). The assays have been, and are continuing to be, analyzed for zinc, silver, and lead. Visual estimations for pyrrhotite and pyrite were, however, added to the DDH database.

GEOLOGICAL MODEL

The geological interpretation comprises wireframes for mineralization and lithological domains, which were developed using Surpac software. The wireframes for lithology, including dykes, were generated based on logging of the major lithological units. Continuous updating of wireframes is undertaken by Perkoa geologists, based on updates of the geological information from underground mapping, core logging, and both underground and core sampling and assaying.

In the case of missing assays, the Perkoa geologists have used the estimated grade intersections based on core logging to adjust the relevant wireframes.

Table 14-3 lists the mineralization and lithological wireframe domains used for the Mineral Resource estimate.

TABLE 14-3 MINERALIZATION AND LITHOLOGICAL WIREFRAME DOMAINS
Trevali Mining Corporation – Perkoa Mine

Code	Domain Name – Description
110	Footwall Main Lens
112	Footwall Main Lens - High Grade Area
113	Footwall Main Lens - Normal Grade Area
111	Footwall Secondary Lens
100	Hanging Wall Main Lens
102	Hanging Wall Minor Lens
105	Hanging Wall Secondary Lens
500	Granitic Dyke
501	Andesitic Dykes
502	Mafic, Basaltic Dyke
503	Andesitic Sills Dykes
504	Felsic, Rhyolitic Dyke

Six of the historical surface DDH have been removed, during the interpretation process, as they have been challenged by underground drilling and one underground DDH has been removed due to considerable doubt regarding its position, following subsequent wireframe interpretation.

A number of the basaltic and andesitic dykes are too small to accurately model for resource estimation purposes. In previous years, a 12% dilution factor was added to the Mineral Reserve estimation methodology to account for geological dilution. The current methodology is to incorporate the internal dilution that these dykes cause into the resource interpolation. This is achieved by leaving the dyke "waste" grades in the intercepts and composites for the estimation. These grades then dilute the local area during estimation to model the geological loss effects of the cross cutting dykes. These dykes are too small to be selectively mined around and so this approach is suitable for estimating the internal dilution of the Mineral Resource and resultant Mineral Reserve.

CUT-OFF GRADE

The cut-off grade for mineralization wireframes is 5% Zn based upon the approximate cost of milling and transport of ore to surface.

The resource 5% Zn cut-off grade is honoured for most areas of the Footwall Lenses as the grades are typically always greater than 5% Zn. Some lower grade portions are included, however, if there is lithological continuity and/or internal waste within the domain. The Hanging Wall Lenses include material below the 5% Zn resource cut-off grade whenever the material is required to be included to maintain geological continuity in the same lithological horizons.

Generally, this means that the wireframes are not simply grade shells but wireframes of the geological horizons that bear zinc mineralization, the grade of which varies locally.

COMPOSITING

Composites were made using Surpac software using the wireframe intercept technique where intercepts of the geological drill or channel traces are coded to the geological database. Composites were made for each domain, including lead, silver, pyrrhotite, pyrite, and density, at a length of 1.5 m, the final composite length requiring a minimum size of 20 cm in order to be included.

The number of composites for zinc estimation are given in Table 14-4.

TABLE 14-4 DOMAIN COMPOSITES
Trevali Mining Corporation – Perkoa Mine

Code	Name – Description	No of Composites
110	Footwall Main Lens	2,878
112	Footwall Main Lens - High Grade Area	970
113	Footwall Main Lens - Normal Grade Area	1,908
111	Footwall Secondary Lens	191
100	Hanging Wall Main Lens	516
102	Hanging Wall Minor Lens	29
105	Hanging Wall Secondary Lens	168
500	Granitic Dyke	-
501	Andesitic Dykes	-
502	Mafic, Basaltic Dyke	-
503	Andesitic Sills Dykes	-
504	Felsic, Rhyolitic Dyke	-

Composites at zero grade, due to absence of data (e.g., pending assays), were deleted, unless they represented a modelled dyke intersection. Composites that intersected modelled dykes were voided during the estimation process. The intrusives that are not modelled (too small or that are not continuous enough) are taken into account in the compositing and will slightly dilute the composites, which results in an induced dilution for minor intrusions.

The assay database, used for compositing, represents the majority of the area between 70 and 400 levels, and consists of:

- 5,777 assays from surface DDH.
- 1,471 assays from underground sampling.
- 5,406 assays from UG DDH.

In RPA's opinion, the optimum composite length should be 2.0 m, with a minimum length of 0.5 m. This will coincide with the recent standard sample length of 1.0 m.

TREATMENT OF HIGH GRADES (CAPPING)

An overall grade cap of 50% Zn was applied to the composites to avoid the use of anomalous data leading to local overestimation of the grade.

In RPA's opinion, the overall grade cap of 50% Zn is reasonable as demonstrated in the log probability plot illustrated in Figure 14-2. RPA notes that this capping level results in less than 40 capped raw assays. It is, however, RPA's practice to grade cap raw assays prior to compositing in order to reduce the effect of extremely high grade outliers. In RPA's opinion, the upcoming Perkoa Mineral Resource update should incorporate this practice. RPA also recommends that grade capping be reviewed, per lens, as the drilling density is sufficient to support this exercise.

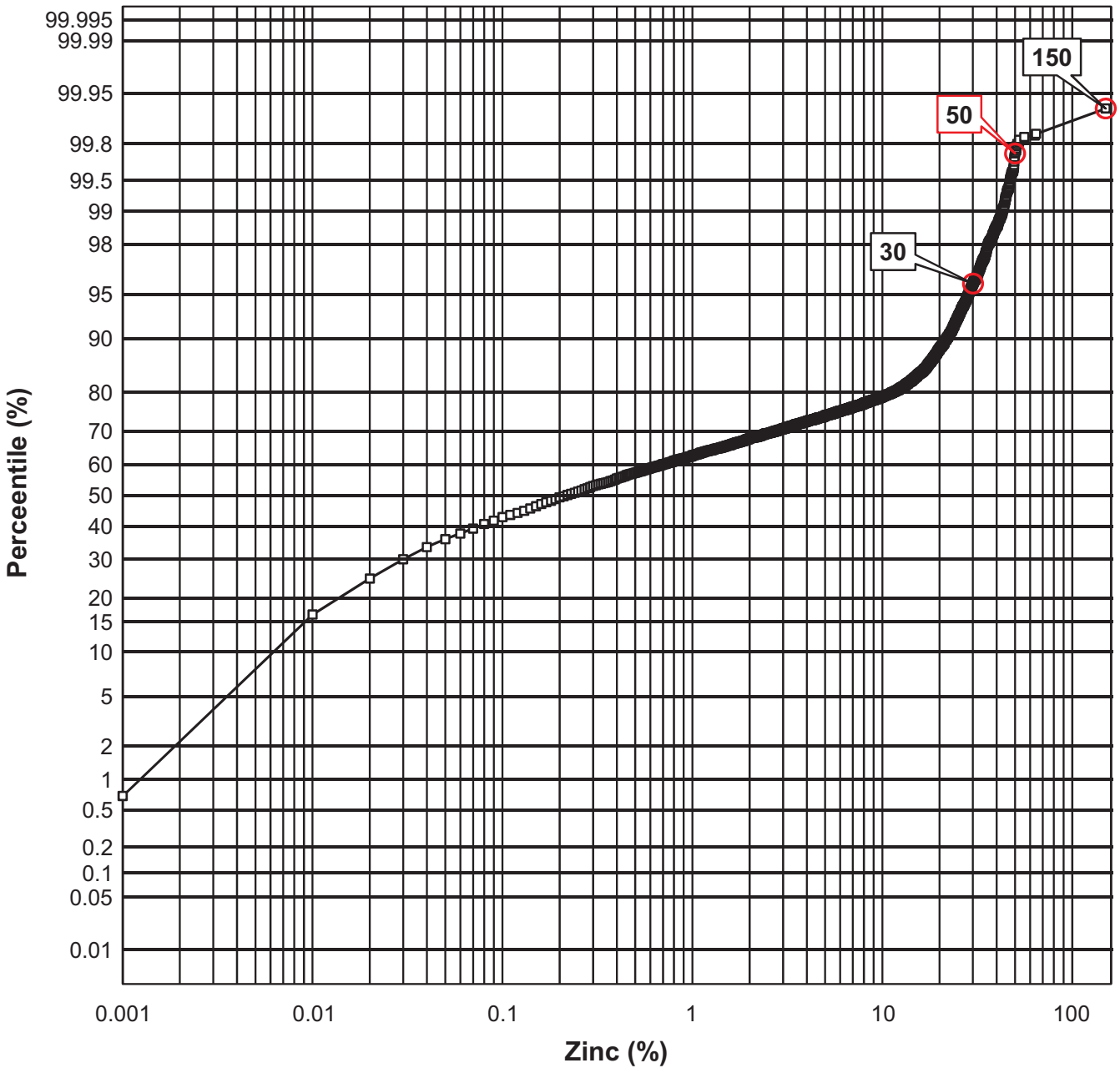


Figure 14-2

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Log Probability Plot

April 2017

Source: RPA, 2017.

BLOCK MODEL

The block model is rotated, with a size of 5 m by 5 m by 5 m, which is then sub-blocked down to a minimum size of 1.25 m (Table 14-5).

TABLE 14-5 BLOCK MODEL DESCRIPTION
Trevali Mining Corporation – Perkoa Mine

Type	Y	X	Z
Minimum Coordinates (m)	1366757.9	542153.5	-427.5
Maximum Coordinates (m)	1369268.5	544662.6	317.5
Parent Block Size (m)	5.00	5.00	5.00
Sub-Block Size (m)	1.25	1.25	1,25
Rotation (°)	0	44	0

The block model contains the key fields as listed in Table 14-6.

TABLE 14-6 BLOCK MODEL FIELDS
Trevali Mining Corporation – Perkoa Mine

Model Field	Description
Zn	Zinc Grade (%)
Ag	Silver Grade (g/t)
Pb	Lead Grade (%)
Fe	Iron Grade (%)
Domain	Wireframe Domains (identifying the Mineralization lenses and Dykes)
Res_cat	Resource Category (Measured, Indicated, Inferred, Waste)
Density	Specific Gravity
Void	Mined Out identifier (Void= mined, 0 = not mined)
Zn_nsr_lt	Net Smelter Return (long term cost assumptions)

SPATIAL ANALYSIS (VARIOGRAPHY)

Variogram parameters, per lens, for the 2016 estimation were drawn from a 2014 variography study based on dated exploration and underground drilling assay results for zinc (Table 14-7).

TABLE 14-7 VARIOGRAPHY PARAMETERS PER LENS
Trevali Mining Corporation – Perkoa Mine

Lens	Nugget	Sill	Range
110	0.502	1.000	150.10
112	0.101	0.813	74.62
113	0.154	0.900	130.09
100	0.256	0.954	127.76
102	0.106	1.534	59.89
105	0.053	0.657	99.34

Table 14-8 summarizes the ellipsoid parameters used for the interpolation of each lens by the kriging method. The same parameters are used for zinc, density, and secondary estimation. The parameters for the 110 lens are only used for secondary attributes estimates (lead, silver, pyrite, and pyrrhotite), whereas the more accurate 112 and 113 parameters are used for zinc and density.

TABLE 14-8 ELLIPSOID PARAMETERS PER LENS
Trevali Mining Corporation – Perkoa Mine

Lens	Min No. Samples	Max No. Samples	Azimuth	Plunge	Dip	Major Distance (m)	Major/Med	Major/Min
110	8	18	24.00	-50.3	57.5	30	2.06	13.04
112	8	18	60.717	31.166	59.784	30	1.51	5.71
113	8	18	22.791	-49.48	58.233	30	1.28	4.17
100	8	18	334.26	-68.91	6.4111	30	2.06	13.04
102	8	18	129.32	54.68	14.99	20	1.00	1.00
105	8	18	337.42	-58.52	16.739	30	7.17	11.08

As significantly more data has been collected since 2014, RPA concurs with Perkoa's conclusion that a new updated variography study is required in 2017. Results from this new variography study will be used for the future block models and more accurate interpolation parameters are to be created, especially for the Hanging Wall Lenses where original parameters were based on very limited data. Parameters for density, lead, and silver interpolation will be created as well.

BLOCK MODEL INTERPOLATION

For each mineralization lens, three methods of interpolation are applied in order to interpolate the zinc grade:

- Kriging is used as a primary estimation method and the results of this interpolation are used in the final block model for Mineral Resource reporting.
- Inverse distance and nearest neighbour interpolation methods are also used in order to compare and validate the model against the kriging results.

Three passes of estimation are applied. If the minimum number of assays is not found during the first interpolation, the ellipse is increased to try to find more assays. If the requirement is still not reached, the ellipse is increased again (Table 14-9). For each step, an attribute code of either 1, 2, or 3 is assigned to the block. A default value of 0 is applied to all the blocks that have not been interpolated due to a lack of data.

TABLE 14-9 SEARCH DISTANCE PER ESTIMATION PASS
Trevali Mining Corporation – Perkoa Mine

Lens	Major Distance 1st Pass (m)	Major Distance 2nd Pass (m)	Major Distance 3rd Pass (m)
110	30	60	193.6
112	30	60	74.624
113	30	60	130.093
100	30	60	193.6
102	20	40	60
105	30	60	130

Figure 14-3 illustrates the block model interpolation results for Zn%.

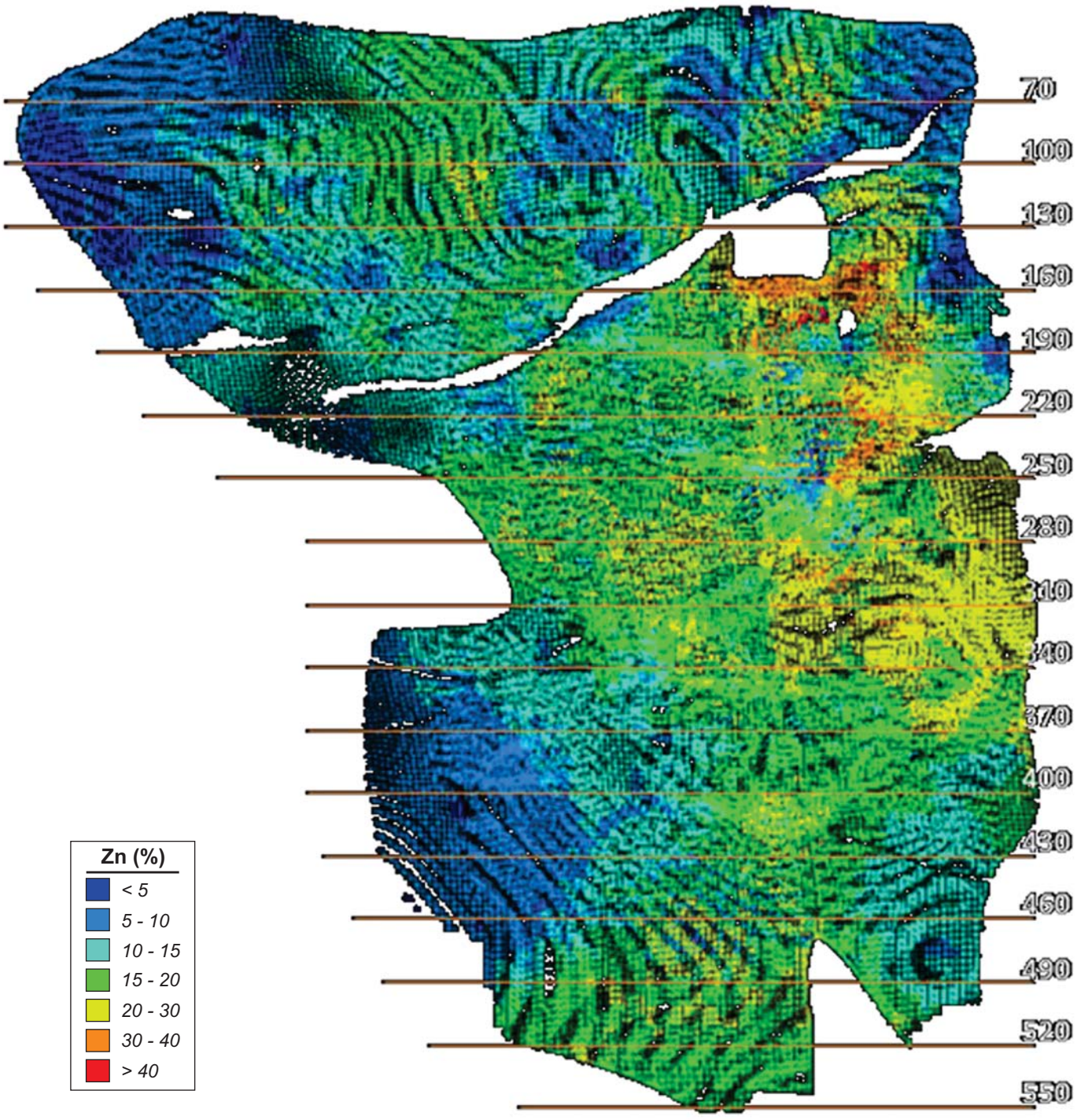


Figure 14-3

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Footwall Main Lens
Interpolation Zn%

April 2017

Source: Nantou Mining, 2016.

BULK DENSITY

Since mid-2015, Perkoa has been systematically measuring specific gravity on diamond drill core samples using a standard Archimedean water displacement method (air weight/water weight) procedure. This has allowed for higher precision for estimating bulk density in the block model. For 2016, the density model was estimated from 7,891 site measurements and the results were later confirmed by weighing haulage trucks. The mean interpolated bulk density values, per domain, are listed in Table 14-10.

TABLE 14-10 MEAN BULK DENSITY PER DOMAIN
Trevali Mining Corporation – Perkoa Mine

Code	Domain Name - Description	Mean Bulk Density t/m^3
110	Footwall Main Lens	-
112	Footwall Main Lens - High Grade Area	3.8
113	Footwall Main Lens - Normal Grade Area	4.0
111	Footwall Secondary Lens	3.6
100	Hanging Wall Main Lens	3.6
102	Hanging Wall Minor Lens	3.7
105	Hanging Wall Secondary Lens	3.4
500	Granitic Dyke	2.8
501	Andesitic Dykes	2.9
502	Mafic, Basaltic Dyke	3.0
503	Andesitic Sills Dykes	3.0
504	Felsic, Rhyolitic Dyke	2.9

Default bulk density for the tuff host waste rock is fixed at 3.0 t/m^3, which represents a mean value based on 4,302 measurements. Mean bulk density values based on physical measurements are assigned to each dyke's domain. Dyke 502 is located far from the mineralization and is only modelled for geotechnical purpose.

MINERAL RESOURCE CLASSIFICATION

Mineral Resource classification is based on the interpolation pass estimate attribute as well as the Qualified Person's level of geological knowledge and information (e.g., sufficient density of underground development or DDH in the area).

Using this data, wireframes are created using Surpac software to represent the areas of Measured, Indicated, and Inferred Mineral Resource definition for each lens. Resource class is then assigned to each interpolated block in the relevant box using Surpac software. For every interpolated block, a resource category attribute is assigned according to the level of estimation of the block (e.g., 1 for Measured, 2 for Indicated, and 3 for Inferred)

Figure 14-4 presents the results of the ordinary kriging Zn pass estimate confidence attribute for the Main Footwall Lens. Figure 14-5 presents the final Mineral Resource classification for the Main Footwall Lens.

In RPA's opinion, the Mineral Resource classification at Perkoa is in accordance with CIM definitions (2014). RPA notes, however, that the bulk of Indicated classification between 310 and 420 levels is located in an area with missing assays due to analytical laboratory issues. Perkoa staff have used the drill logs to estimate and remodel the wireframe widths, however, the grades are still based on wide spaced drill hole assays. This area is already in the Indicated classification and the assay results will be used to upgrade to Measured. In RPA's opinion, there is a significant potential for either gain or loss of metal in this area. Perkoa, however, reports that the model performs very well and is not concerned at this time during development operations.

MINING DEPLETION

Following estimation and classification, the block model is depleted using the actual development and stoping voids solids from survey pick-ups and cavity monitoring surveys (CMS). All the attributes of the affected blocks are then reset to default values. One copy of the non-voided block model is also saved for past-production reconciliation purpose.

RPA VALIDATION

RPA reviewed the Perkoa Mineral Resource interpolation inputs and methodology. Data was loaded into Micromine v.16.5 geological software. The block model was validated by completing a series of visual inspections against wireframes and drill holes. The checks showed good agreement between drill hole composite values along sections and plans. RPA's overall compiled Mineral Resource estimate showed no material differences to that reported.

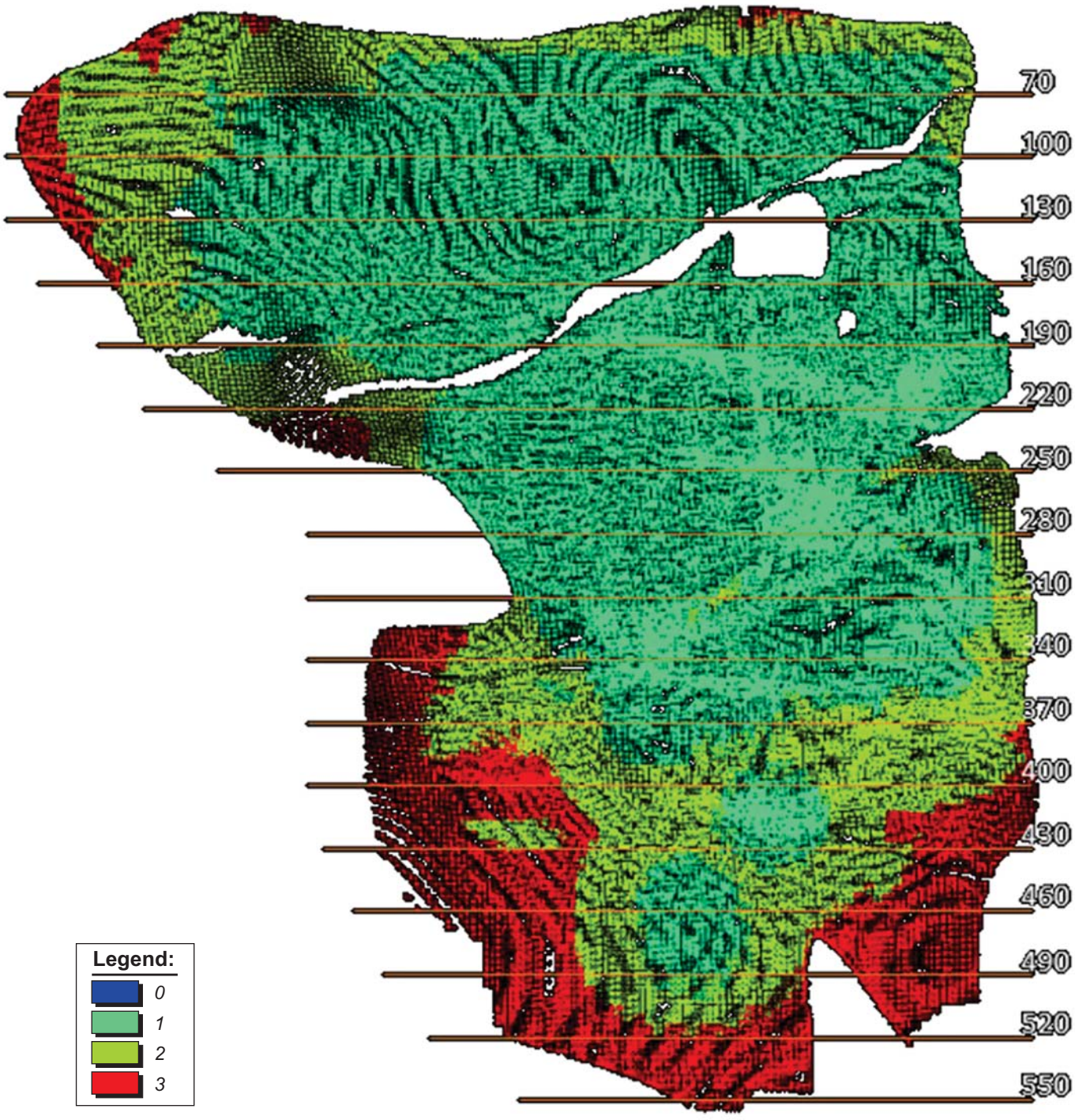


Figure 14-4

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Ordinary Kriging Zn Pass Estimate Confidence Attribute for the Main Footwall Lens

April 2017

Source: Nantou Mining, 2016.

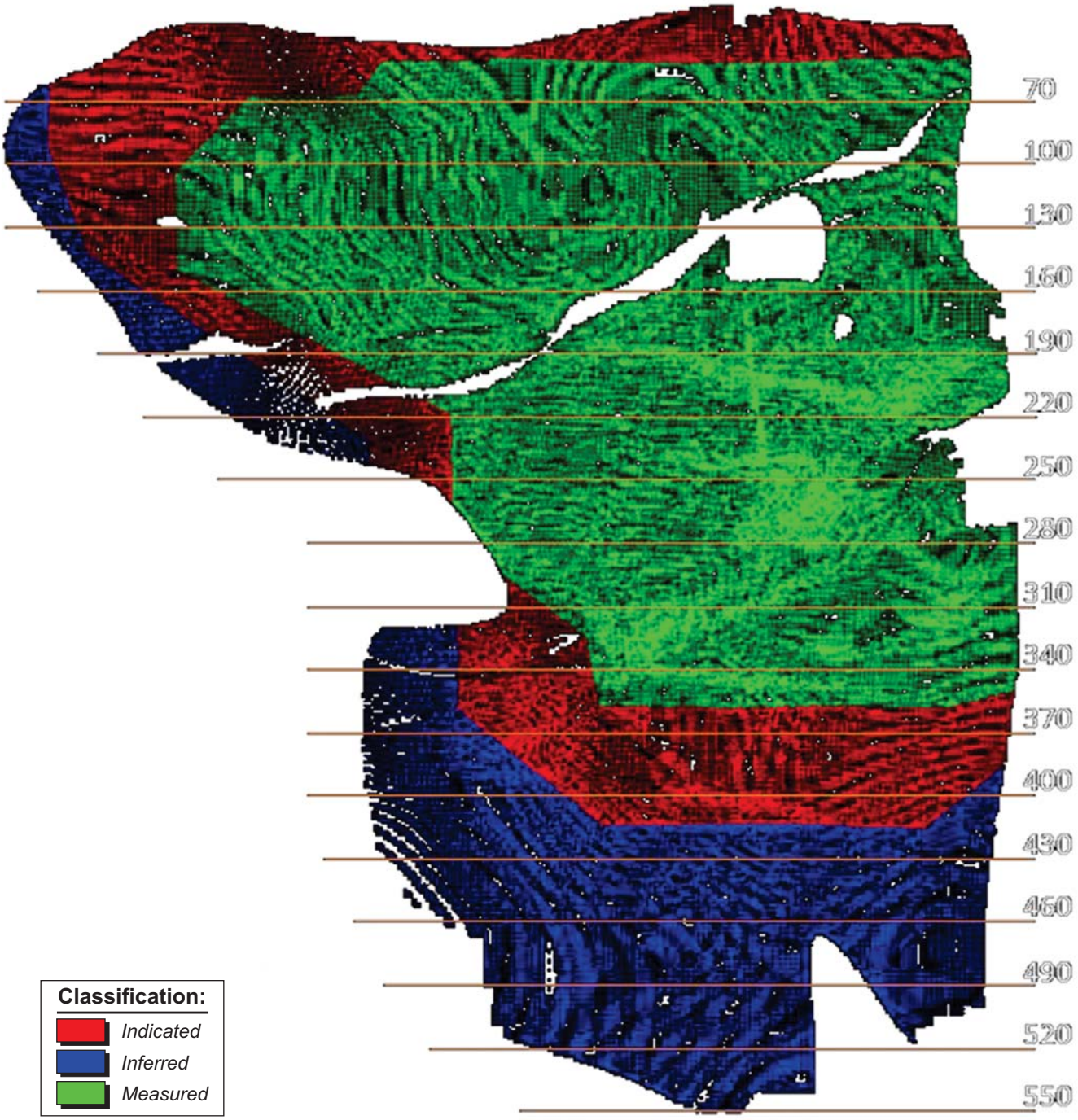


Figure 14-5

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Mineral Resource Classification for the Main Footwall Lens

April 2017

Source: Nantou Mining, 2016.

15 MINERAL RESERVE ESTIMATE

The Mineral Reserve estimate was completed by Perkoa and audited by RPA with an effective date of December 31, 2016 (Table 15-1). RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

TABLE 15-1 PERKOA MINERAL RESERVE SUMMARY - AS AT DECEMBER 31, 2016
Trevali Mining Corporation – Perkoa Mine

Classification	Tonnes (M)	Zn (%)	Contained Zn (Tonnes)
Proven	1.70	15.8	268,953
Probable	0.78	13.7	107,359
Proven and Probable	**2.48**	**15.1**	**376,312**

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at an NSR cut-off value of $100/t inclusive of capital expenditure, incremental stopes greater than US$78/t are included based on individual financial analysis.
3. Mineral Reserves are estimated using an average consensus forecast zinc price of US$0.99 per pound and a €/US$ exchange rate of 1.11.
4. Shown at 100% ownership.
5. Numbers may not add due to rounding.

Mineral Reserves are estimated from the Measured and Indicated Mineral Resources. RPA has performed an independent verification of the block model tonnes and grade, and in RPA's opinion, the process has been carried out to industry standards.

The Mineral Reserve estimation at the Perkoa mine has been completed by the Senior Mine Planner who has sufficient long term planning experience and is reviewed by the Glencore Zinc Technical Services Team.

In order to evaluate Mineral Reserves, Nantou Mining has developed an internal life of mine (Internal LOM) plan which includes Proven and Probable Mineral Reserves as well as factored Inferred Mineral Resources. After scheduling all development and stopes using Minesched software, the mined Mineral Resource tonnes were classified as Proven Mineral Reserve tonnage, Probable Mineral Reserve tonnage, and Internal LOM only tonnage. The

Internal LOM only tonnes are not included in the official Mineral Reserve estimate as they are Inferred Mineral Resources.

KEY FINANCIAL ASSUMPTIONS

MINING REVENUE

Revenue of any given parcel of material is calculated using an NSR equation, which takes into account all the latest financial and recovery information to generate a single revenue dollar figure for any particular grade combination found in the mine. The calculation uses 2016 assumptions for metal prices, current concentrator recoveries, and budgeted downstream transport and realization costs.

The NSR equation used in the 2016 Mineral Reserve estimate is NSR_LT = (9.72 x Zn%). The equation is applied throughout the geological model to populate an NSR field for each individual block.

A zinc metal price assumption of $$0.99/lb and a €/US$ exchange rate assumption of 1.11 are based on average long term price for the next six years.

Metallurgical recovery and concentrate grade assumptions are based on the 2016 actual results with a zinc recovery of 93.7% and a zinc concentrate grade of 53.6%.

OPERATING AND CAPITAL COSTS

Mining and milling costs used for the Mineral Reserve NSR calculation have been extracted directly from the 0.67Mt per annum mining cost estimation physicals prepared by Nantou Mining in mid-2016. The values are based on the average operating costs from the first half of 2016.

The costs include:

- All operating costs (mining, on-site crushing, ore transport to mill and milling)
- All administration costs

The average mining, milling, and maintenance cost over the Internal LOM is $78.00/t. This cost increases to $99.83/t with the inclusion of surface sustaining capital and general and administrative (G&A) costs for the underground operation.

MINING MODIFYING FACTORS

The block model provided for use in the Mineral Reserve estimate was in Surpac format.

Stope shapes were generated based on the above mentioned geological block model and revenue parameters. These shapes represent all available mineable shapes, which meet several important requirements:

- Create a net profit given the expected material revenue, and the cost per tonne (long term NSR >$100), or each stope must prove itself to be profitable to mine based on an individual financial analysis. Some stopes exist in the LOM plan down to $78/t however, these are deemed profitable based on activity based accounting.
- Stope dimensions are such that it meets the current mine plan (level spacing, etc.).
- Stope geometry is practically feasible to extract (drilling angle limitations, etc.).
- Stope shapes meet geotechnical limitations (hanging wall stability).
- Exclude material which is either already mined out or planned to be mined by December 1, 2016.
- Exclude majority of material which is of low geological confidence (Inferred Mineral Resources).

Stope shapes have been designed manually using Surpac software respecting the above-mentioned criteria. The resultant shapes were evaluated against the geological resource model to report the tonnes and grade for each stope shape.

Stope modifying factors were applied, post-geological interrogation, in the Reserve spreadsheet to generate the final diluted and recovered Mineral Reserve. The Mineral Reserve spreadsheet was used to categorize the Mineral Reserves into Proven and Probable classifications.

The Mineral Reserve spreadsheet, which summarizes the conversion from resources to reserves, indicates that each individual stope or mining block is assessed separately and that an estimate of the waste to be mined is carried out for each stope. This quantity of waste estimated can vary from a low of 0.03% of the Mineral Resource to a high of 51.45%. The waste is added to the resource tonnage at zero grade to arrive at a Mineral Reserve tonnage and grade.

Measured and Indicated Mineral Resources are respectively converted to Proven and Probable Mineral Reserves.

The final Mineral Reserves are based on stopes that must meet the following criteria:

- The stope must be mineable.
  - Four stopes were removed from the Mineral Reserve as these stopes were generated in areas which are impractical to access and unworkable to mine economically.

- The stope must be profitable.
  - The stopes were created using an incremental cut-off NSR value of $95 per tonne. This value reflects the current costs of hauling the ore to surface, onsite crushing, and concentrating. This value assumes all other costs leading up to this point are sunk costs. A fully costed NSR cut-off value, which includes all operating costs associated with the extraction and processing of ore material, has been calculated as $113/t for 2017 and $100/t for the Internal LOM.

16 MINING METHODS

The Perkoa mine is an underground operation, however, a small open pit was mined to reach near surface material during initial start-up to increase plant throughput as the underground mine ramped up production. The pit is now complete. Underground mining with contractors carrying out all aspects of the mining process commenced in February 2011.

All mining operations are currently being carried out by a mining contractor, which supplies manpower and equipment. Nantou Mining personnel provide geological and engineering services.

The mine is accessed via an 85 m long decline in the box cut prior to entering the portal. The main decline has currently been developed to between the 370 m and 400 m level (some 380 m below the surface). Figures 16-1 and 16-2 are longitudinal sections of the current mine development plan.

The decline and associated cross cuts are excavated in the competent quartz diorite of the footwall. The 5.3 m wide x 5.5 m high decline is a spiral and the level spacing is set at 30 m. Each level is identical with a footwall drive, sumps, and services cubbies (Figure 16-3). A ventilation shaft connects all levels of the mine and acts as an emergency egress via the sinking bucket (kibble). A further secondary ventilation ramp egress exists into the completed open pit to allow personnel to escape on foot in an emergency situation. A 35 m crown pillar has been maintained between the open pit and underground production workings. The top extraction level is 70 level with mining currently occurring down to 280 level.

Longhole stoping is being used as the primary extraction method. There are several variations on this mining method employed such as longitudinal and transverse, with both bottom-up and top-down mining sequences. The exact method chosen is dependent on the orebody geometry. Stopes are backfilled either with cemented rock fill (CRF) or waste.

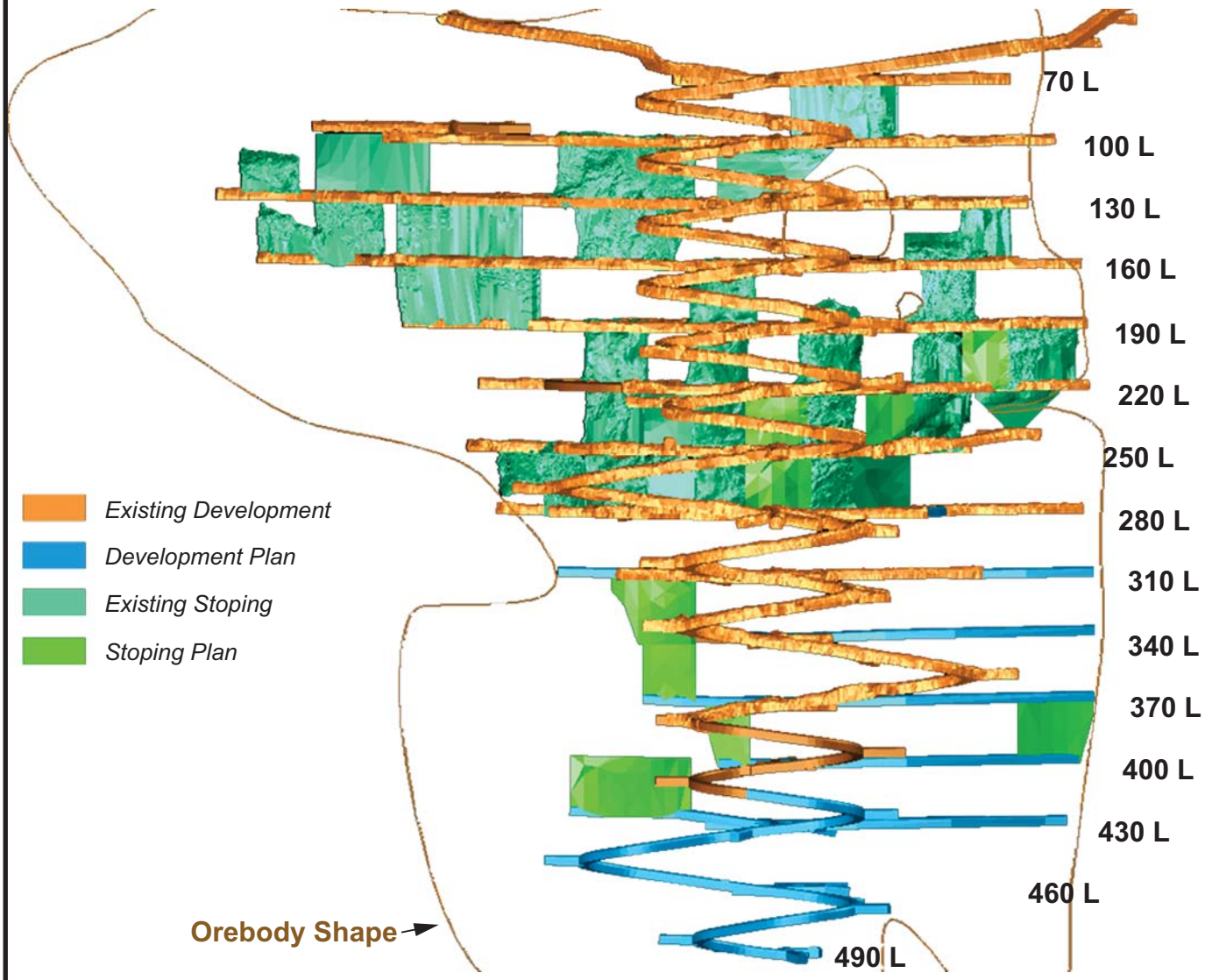


Figure 16-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Longitudinal Section - Existing and Proposed Development

April 2017

Source: Nantou Mining, 2016.

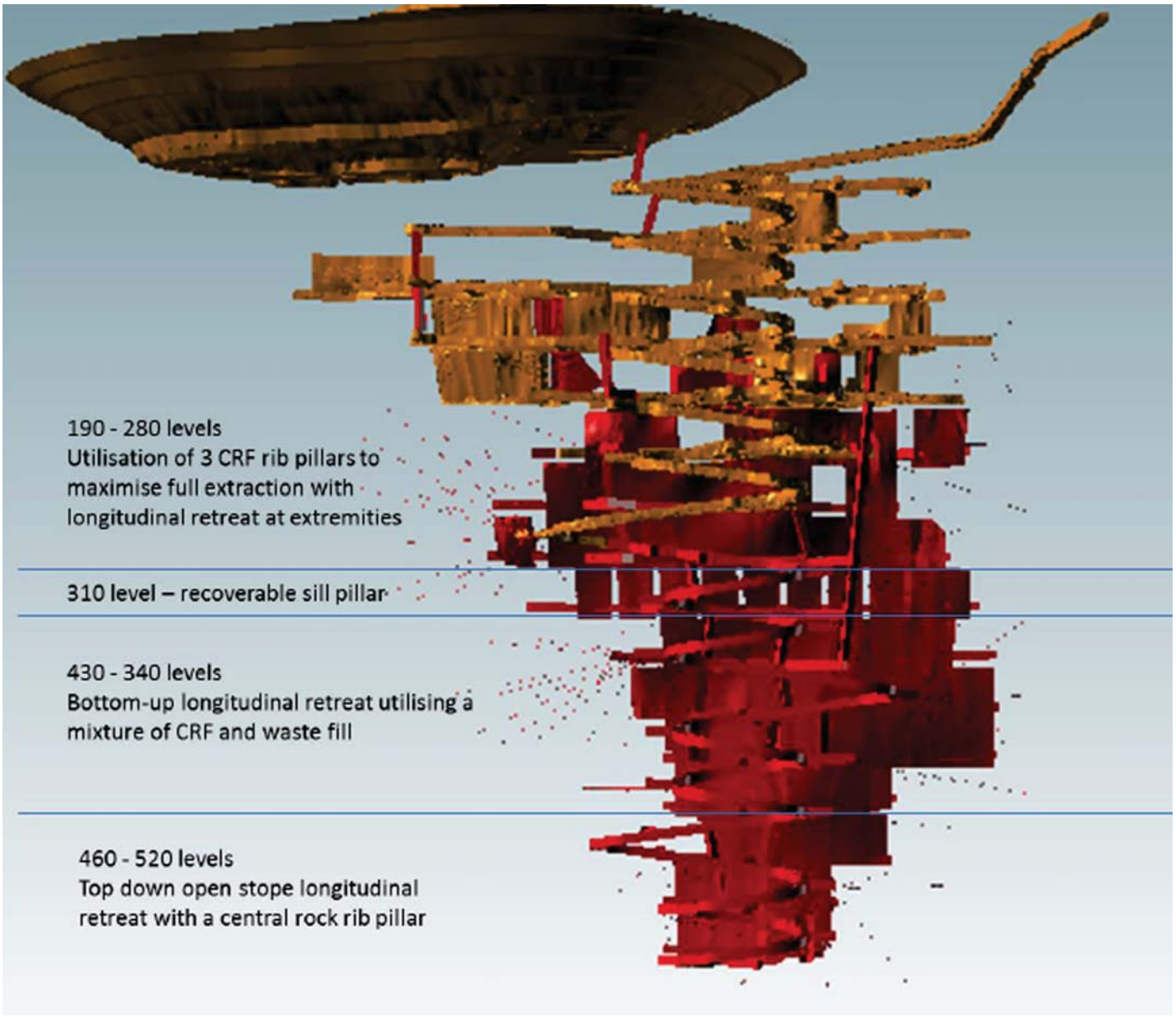


Figure 16-2

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Isometric View - Existing and Proposed Development

April 2017

Source: Nantou Mining, 2016.

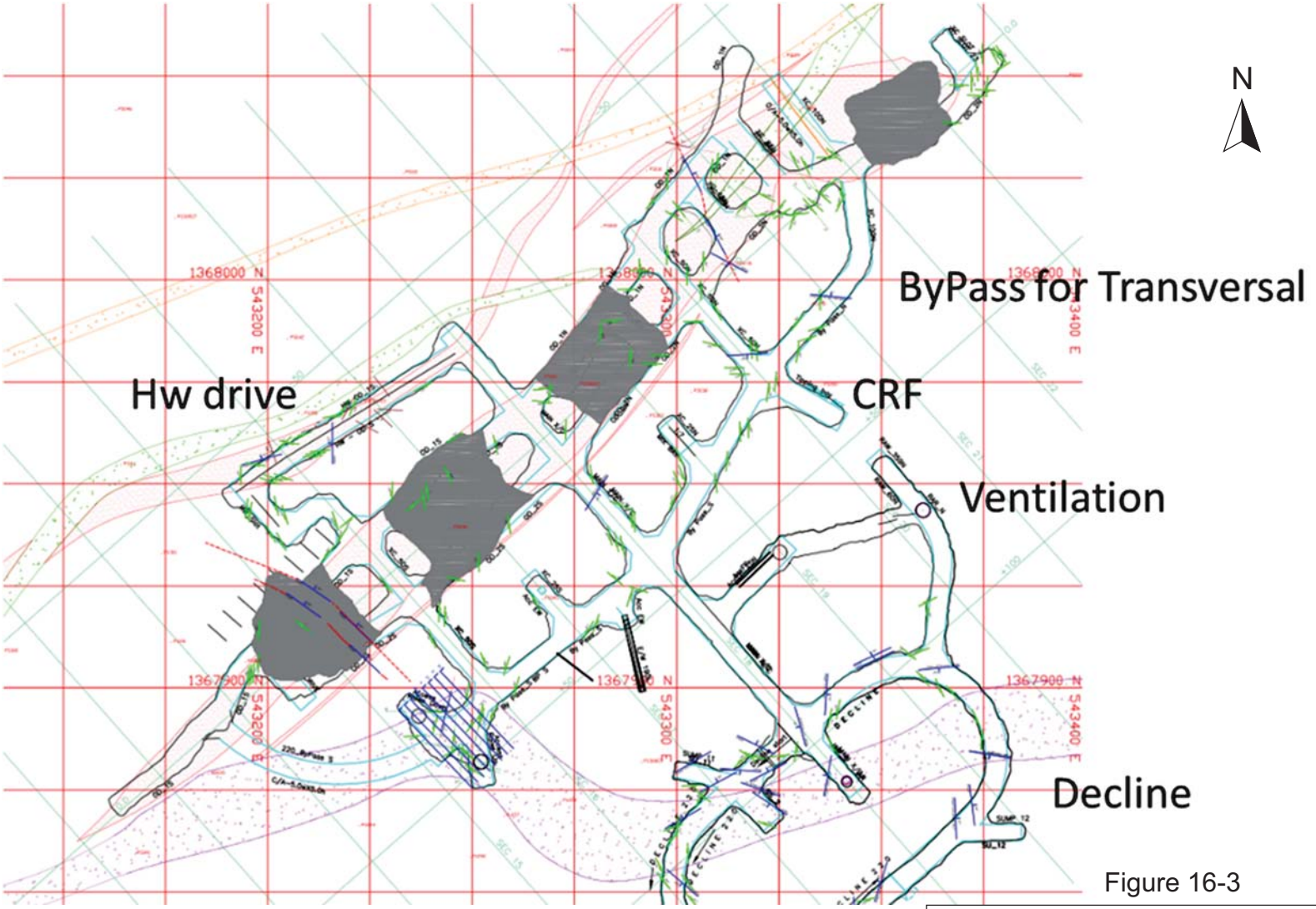


Figure 16-3

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Typical Level Design

April 2017

Source: Nantou Mining, 2016.

Longitudinal bottom-up stoping has been used above 190 level. Due to the orebody width and mine sequencing, stopes between 190 level and 280 level are mined using the transverse method with primary and secondary stopes, with some longitudinal retreat mining occurring at the extremities of the orebody (Figure 16-2). Most of the primary stopes above 280 level have been mined out with the majority of the remaining ore to be mined as secondary stopes (Figure 16-3).

A recoverable sill pillar is being established on 310 level in order to be able to convert the mining below 310 level to a longitudinal retreat method which is expected to reduce the amount of development required. As well, a higher percentage of waste backfill instead of CRF can be used with this method which is expected to lower the mining cost.

Bottom-up mining will be utilized between 340 level and 430 level and top-down longitudinal retreat will be utilized between 460 level and 520 level. The current limit of the Proven and Probable Mineral Reserves is at 430 level. The majority of the stopes below 430 level are in a portion of the orebody which is classified as an Inferred Mineral Resource. This area will require infill drilling in order to upgrade the Inferred Mineral Resource to a Measured or Indicated Mineral Resource.

The majority of the stopes to be mined are located in the Footwall Lens of the orebody (Figure 16-4). Figures 16-4 and 16-5 are longitudinal sections of the current mining plan (green fill denotes a mined out stope) for the Footwall and Hanging Wall Lenses. The Hanging Wall stopes (Figure 16-5) are mined in a combination of top-down open stope longitudinal retreat and bottom-up mining utilizing CRF.

When the full stope area has been mined out, voids are backfilled with CRF for primary stopes. Secondary stopes are filled with waste. The fill serves both to support stope walls and to provide a working platform for equipment when mining the next slice. Run of mine (ROM) waste and crushed material (100 mm all-in) is mixed with different binder percentages, depending on the application. The CRF is mixed in dedicated underground sumps. During 2016, a total of 316,200 t of CRF and waste were placed, which was approximately 54% of the ore mined during the year.

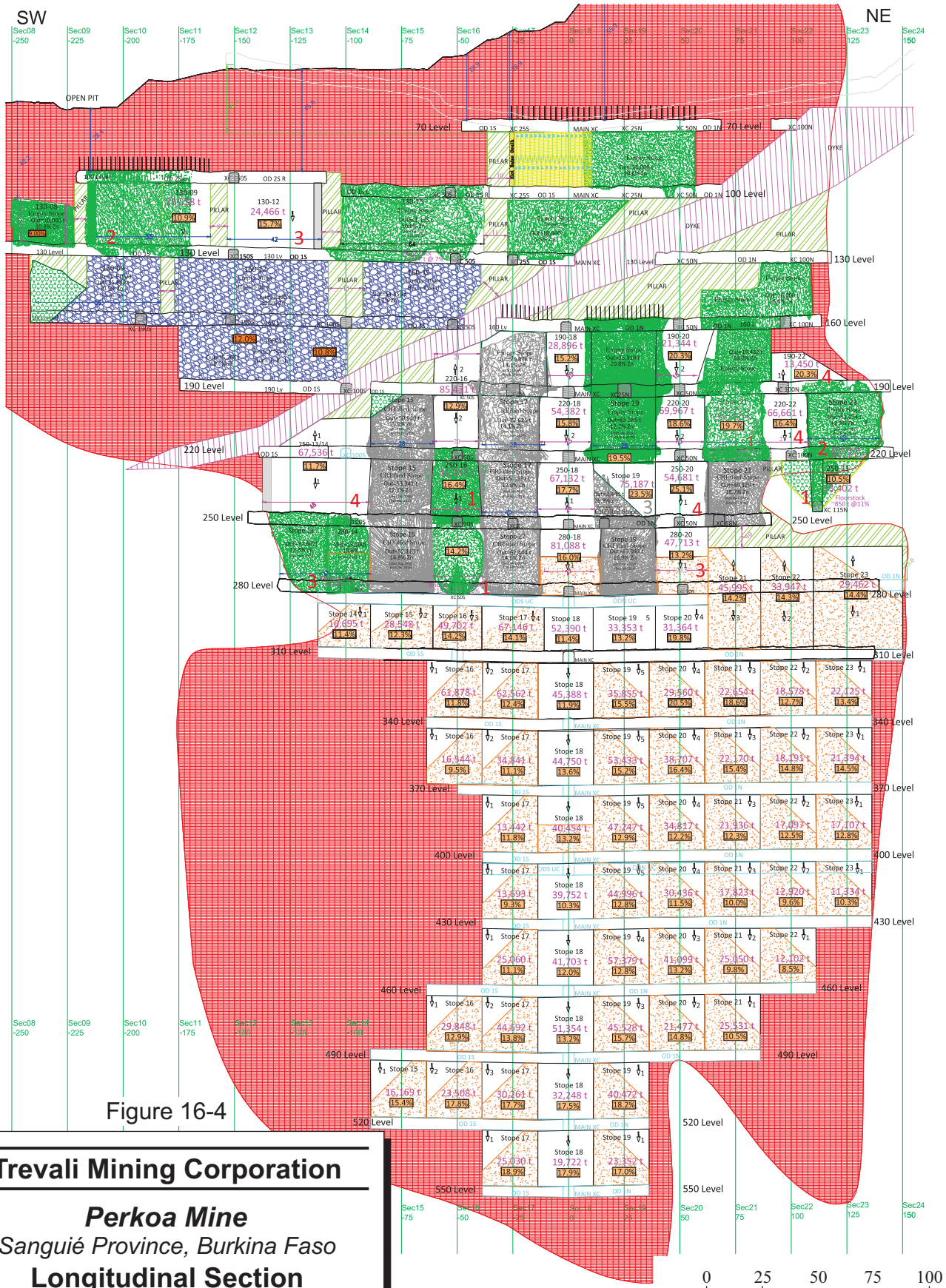


Figure 16-4

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Longitudinal Section
Footwall Lens

April 2017

Source: Nantou Mining, 2016.

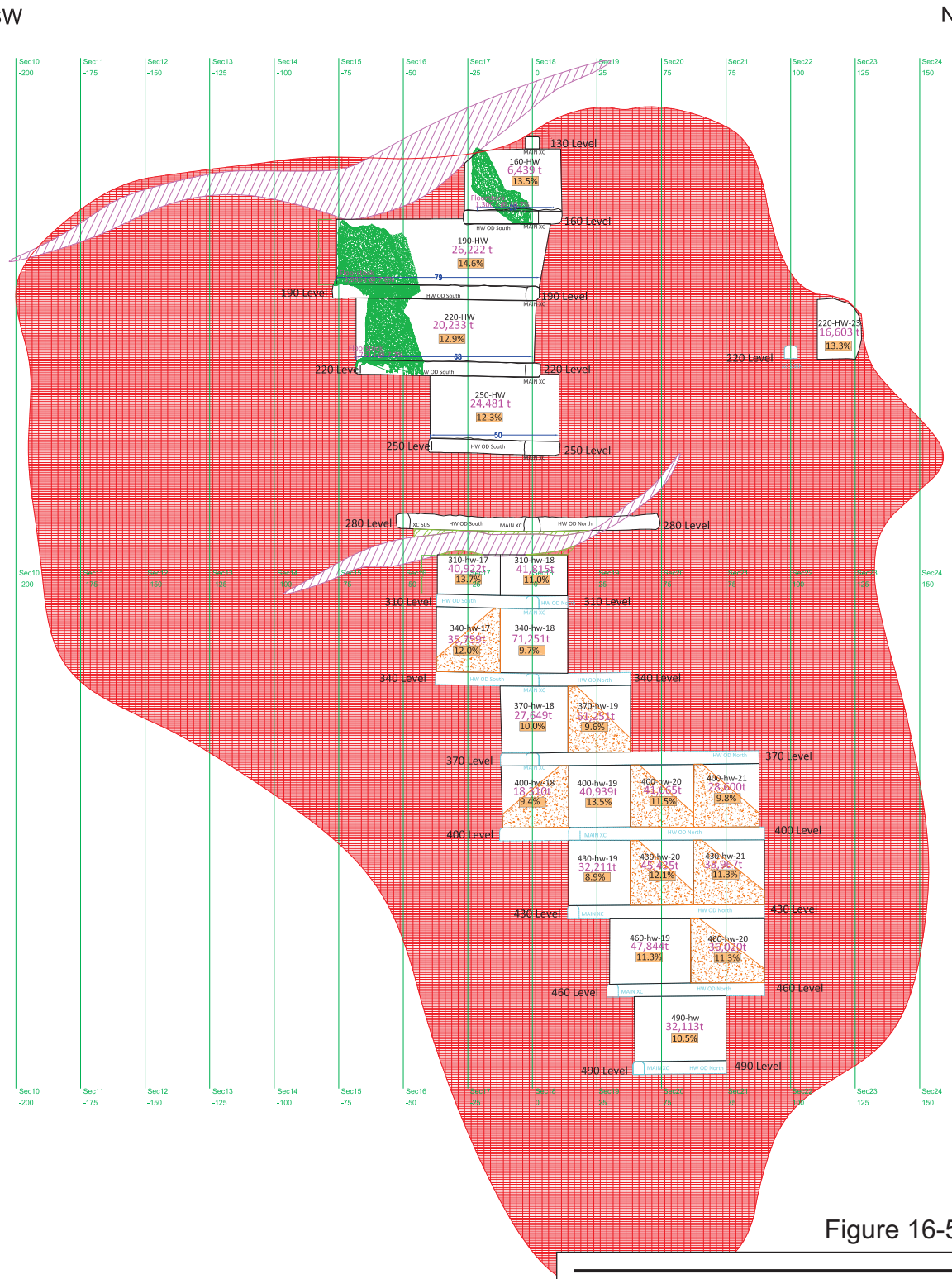


Figure 16-5

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Longitudinal Section
Hanging Wall Lens

April 2017

Source: Nantou Mining, 2016.

Production drilling is by one Atlas Copco Simba L6C drill with either 89 mm or 102 mm holes being drilled. Drill productivity is approximately 159 m/day. Figure 16-6 illustrates some typical stope drilling patterns.

Ore and waste is loaded by three scooptrams. The scooptrams are remotely operated using line of site and full tele-remote operation technology. Approximately 70% of each stope is mucked with the tele-remote scooptrams. Three 60 t trucks take the ore to the ROM pad (ore stockpile), and waste to the waste dump. In addition, there are a dozen or so pieces of assorted heavy mobile equipment to support the mining and processing operations.

Explosives, ammonium nitrate, slurry mix, and accessories are transported to the site from Ouagadougou by BME, the explosives contractor which is a member of the Omina Group. All charging underground is provided by the mining contractor using its own equipment.

Nantou Mining only keeps the minimum required stock on hand (approximately four days) as BME have a large storage and manufacturing facility 15 km away. ANFO is the primary explosive used, although there is a currently a move to using emulsion. The explosives are stored in a small magazine located at the southern perimeter of the site behind the oxide and open pit waste dumps. There are separate areas for ANFO, emulsion, and initiation systems all stored in Mine Department approved facilities. In addition, Nantou Mining has a day magazine underground which is used to hold one to two days' supply in a magazine built to South African Mine Regulation standards.

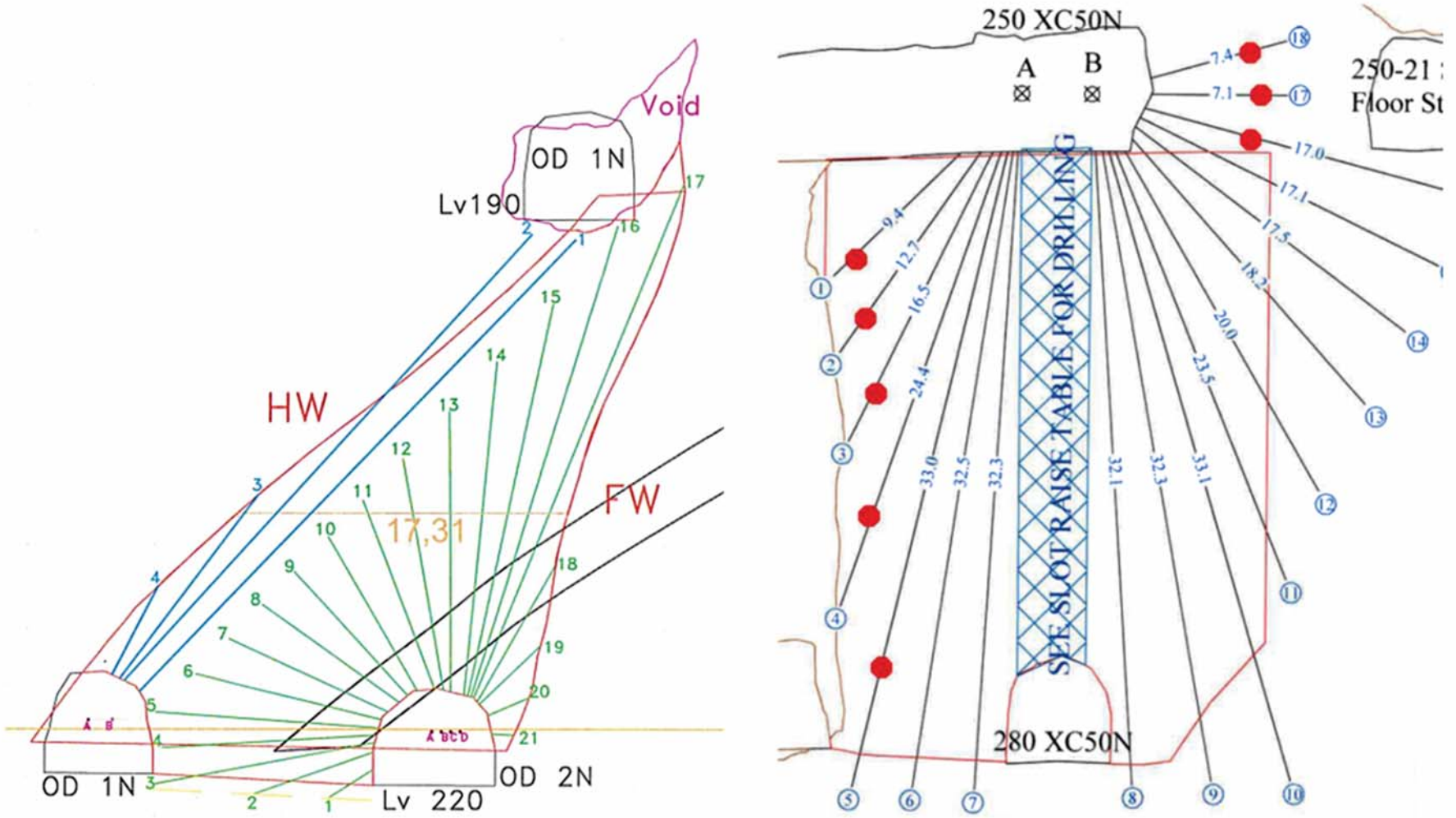


Figure 16-6

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Typical Stope Drilling

April 2017

Source: Nantou Mining, 2016.

GEOMECHANICS, GROUND SUPPORT

Ground conditions at Perkoa have been split into three types, Type 1, Type 2, and Type 3, with Type 1 being good ground. Type 1 ground is usually in the quartz diorite footwall rock, Type 2 ground is the hanging wall unit, and the Type 3 ground classification is used where the rock is very weak, either from blasting or from complex structures, such as dykes.

Ground conditions observed during the underground visit were good. Nantou Mining has developed ground support standards for various sizes of development headings. Permanent excavations, such as declines, remuck bays, level accesses, ventilation accesses, etc., are supported with nine 2.4 m grouted rebars every two metres along the drift, plus wire mesh to within 3.7 m of the floor, and 2.4 m long 47 mm splitsets every two metres along both walls of the drift. Temporary excavations, such as ore drives, are supported with eleven 2.4 m long 47 mm splitsets every two metres along the drift plus wire mesh to within 3.05 m of the floor.

INFRASTRUCTURE

MINE VENTILATION

Nantou Mining is using an exhaust ventilation system with two 315 kW axial flow primary ventilation fans located on surface near the northeastern edge of the open pit and currently delivering 165m^3/s to the underground. These fans exhaust the air through a dedicated up-casting ventilation shaft that intersects all levels. The fresh air intake is down the decline, and at each sublevel, there is a secondary booster fan taking fresh air into the workings. As mining depth increases it is envisaged that a third fan will be required to increase airflow to approximately 220 m^3/s. The future ventilation system will include two fresh air intakes and one return airway. The decline will remain the primary fresh air route and the north return air way (RAW) will remain the primary exhaust shaft. The ventilation management plan was designed by external consultants and onsite engineers monitor and update the plan monthly.

During 2017, Nantou Mining will be transforming the existing escapeways into a pressurized fresh air way, allowing the safe travel or safe shelter from 550 level up to 70 level, in the event of an emergency. Also planned is a system to rapidly exhaust air from the explosive magazine directly to the North RAW in the event of an explosion/fire inside the magazine.

A second access has been established into the open pit at 70 level and is also considered a fresh air intake. Escape ways have been established in fresh air and are sealed from the rest of the mine by utilizing the 70 level access.

In RPA's opinion, the ventilation system is appropriate and provides an adequate quantity of fresh air for the operation.

MINE DEWATERING

The mine is considered a dry mine with little or no ground water inflows, however, on each level there is a dewatering sump with a single Flygt 37 kW pump. Water is pumped up to the next level until 70 level is reached. Here, water enters a settling dam before overflowing to a clear water dam where a single Mono pump capable of handling 5 L/s pumps the water to surface.

On 280 level, a new pump station is being built and all water below 70 level will drain to 280 level before being pumped to 70 level. This will consist of two 150 kW Mono pumps (one duty and one standby) each with a capacity of 12.5 L/s pumping water in one of two rising mains to surface. This is planned to be installed in early 2017, however, the existing system will be retained as a backup.

Great care has been taken to manage rainfall in the portal box cut as this is the biggest exposure to flood. The box cut walls have either been sheeted with plastic or shotcreted and the benches have been concreted to control storm water runoff. Two separate sumps have been built in the box cut to capture water so as to minimize water entry into the portal. One sump is at the portal entrance and the other is mid-way up the box cut. Each has two Flygt pumps, one 37 kW and one 90 kW, and both sumps pump water to the surface.

MINE POWER

The underground mine is supplied with power from three Connell power generators that contain Caterpillar 3516B generators, assembled in shipping containers. The generators have an output of 1.6 MW-0.4 kV and are located adjacent to the underground mine ventilation fans. A transformer is located at the switch room and steps the power up from 400 V to 11 kV for distribution to the underground mine. Diesel is supplied to each generator by fuel truck.

RECONCILIATION

Perkoa has a standard end of month (EOM) production measurement system that reports and provides reconciliation between geology and the monthly mine production.

- The contractor records the trucks loaded underground on a daily basis. The location from which trucks are loaded must be recorded (stoping, development, stockpile). The trucks from underground tip the ore in the demarcated areas on the ROM pad according to the geologist's plan.

- The geologist records the number of trucks reporting to the ROM pad and underground location. The truck count for the past 24 hours is reported to the Geologist at the end of the night shift.

- The geologist compares the truck count to the contractor daily production sheet. The number of trucks must be agreed at every daily morning mining meeting. Any discrepancies are corrected the same day.

- The surveyors perform a mid-month and EOM CMS survey report including: 1) total tons blasted, 2) total removed from stope, 3) total hauled to the surface, 4) closing floor stock.
- The geologist and the contractor agree on the mid-month and EOM production reconciled with the CMS stope scans. Any discrepancies are highlighted.

- Densities are adjusted based on final grade.

- The surveyors perform a ROM pad and Fine Ore Stockpile (FOS) survey every Monday and Friday. The stockpile measurement is reconciled with the production recorded by the geology and the crushed tons reported by the plant. Any discrepancies are highlighted and explained.

- The geologist records the daily tonnes crushed as per Conveyor 1 (Primary Crusher). The ROM stockpile is calculated and reported on a daily basis. Average ROM pad's grade is adjusted according to production and crush grades.

- The geologist conducts a control of the truck loads at least two times per month. For each control, a minimum of eight trucks must be called randomly to a demarcated area and the actual load must be measured over the weighbridge. Adjustment to the trucks capacities and ROM pad densities must therefore be performed according to the results.

- At the end of the month, geology and survey departments perform a reconciliation of the total production as agreed on a daily basis with the EOM CMS measurement. The final figure is reported as the mine ore production.

Figures 16-7 to 16-9 present charts of the Perkoa production history from July 1, 2015 to December 31, 2016.

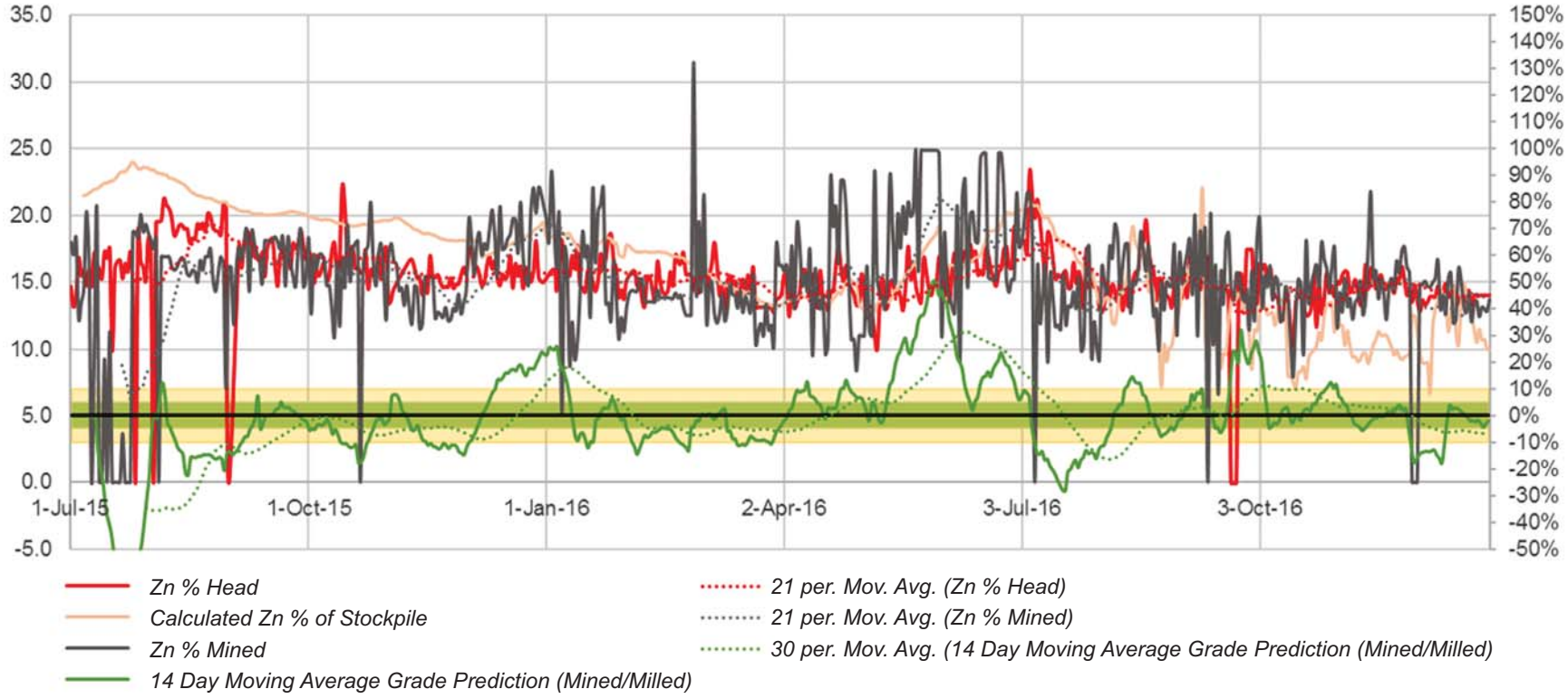


Figure 16-7

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Zn Trends at Perkoa

Source: Perkoa Mine, 2017.

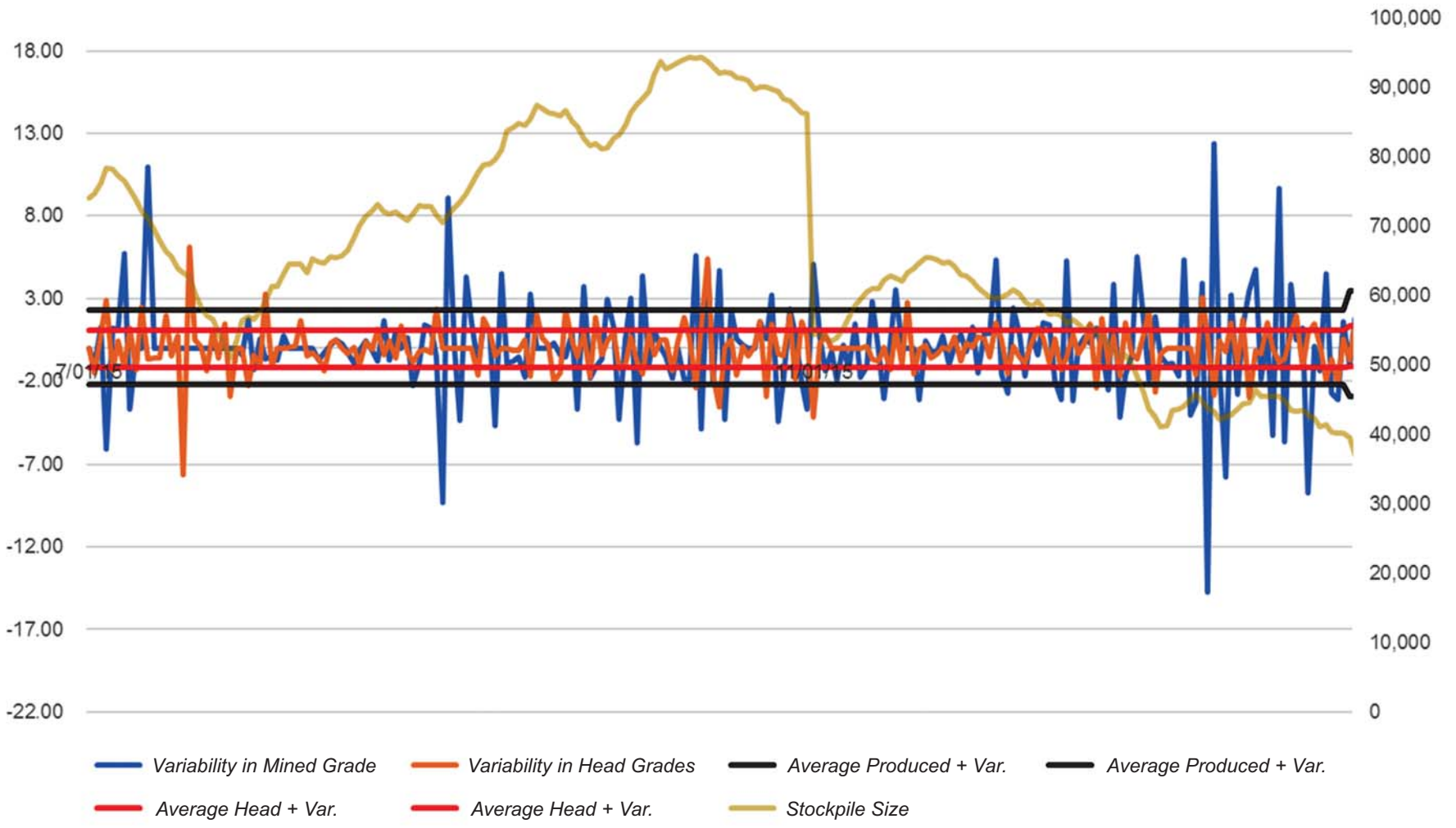


Figure 16-8

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Estimated Production Grade vs. Head Grade

April 2017

Source: Perkoa Mine, 2017.

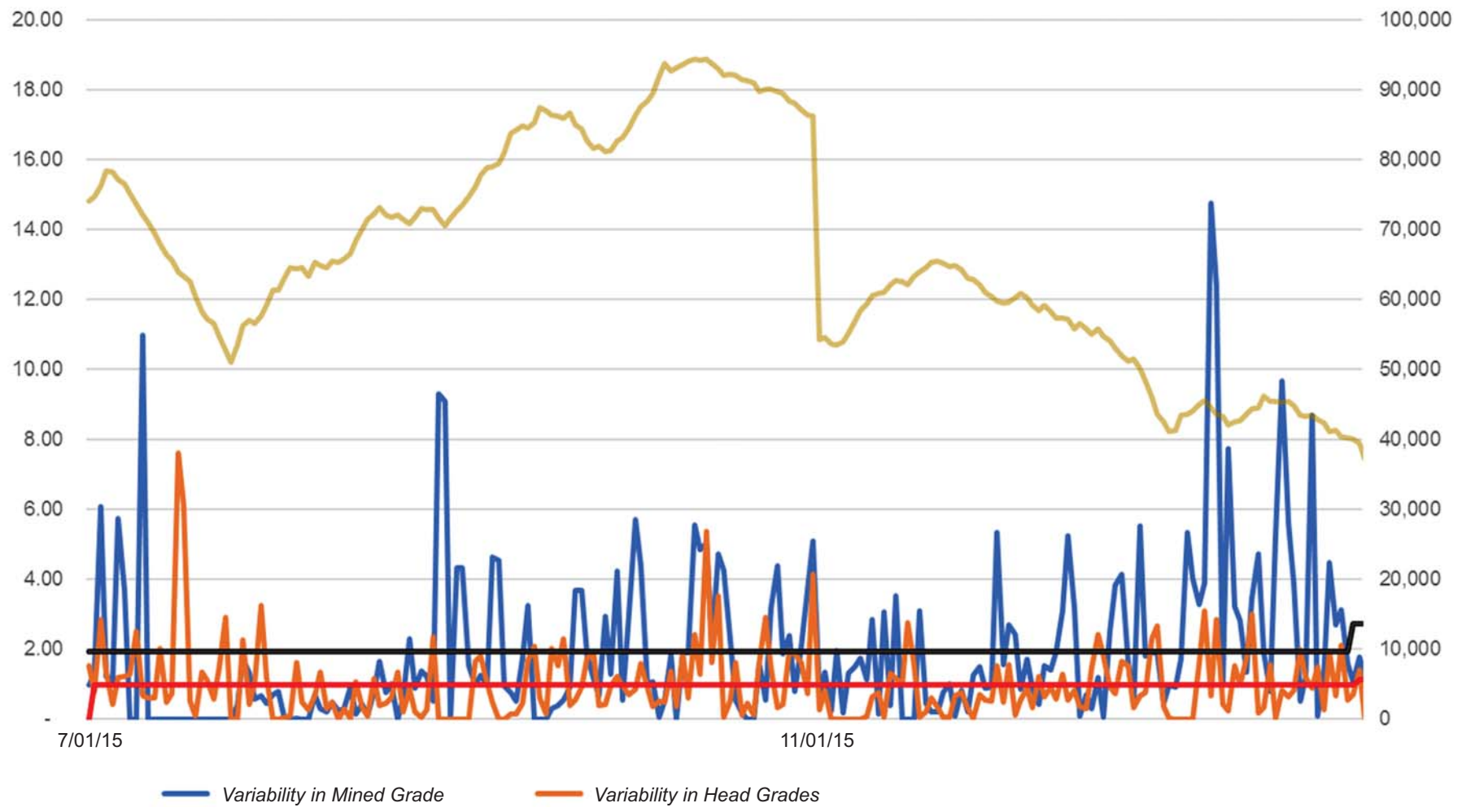


Figure 16-9

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Variability of Estimated Production Grade vs. Head Grade

April 2017

Source: Perkoa Mine, 2017.

FOUR YEAR MINE PLAN

As part of the 2017 Budget process, Nantou Mining has developed a four year mine plan (Four Year Plan) based on the Proven and Probable Mineral Reserves which projects production to 2021 with a total of 2.48 Mt being mined at a grade of 15.16% Zn.

The Four Year Plan schedule has been built around economic stopes that exceed the $78/t incremental mining cost. Stopes have been cut using Surpac geology and mining software using the resource block model constrained to $100/t NSR. The required development has then been designed in order to reach these mining locations.

The Four Year Plan schedule is based upon a process plant capacity of 640,000 tpa to 690,000 tpa. The Four Year Plan schedule, by year, is shown in Table 16-1.

TABLE 16-1 FOUR YEAR PLAN PRODUCTION SCHEDULE
Trevali Mining Corporation – Perkoa Mine

ROM Production		Total	2017	2018	2019	2020
Stope Ore	000 t	2,285	603	576	654	452
Development Ore	000 t	198	71	98	22	7
Total Ore	000 t	2,483	674	674	676	459
Average Production	t/d	1,851	1,845	1,846	1,852	1,852
Zinc Grade	%	15.16	15.16	15.16	15.16	15.16
Development						
Opex Development	metres	2,988	1,122	1,596	117	153
Capex Development	metres	1,852	1,068	594	190	-
Total	metres	4,840	2,190	2,190	307	153
Rounds/Day		-	2	2	0.3	0.1
Drilling						
Blasthole Drilling	metres	181,338	59,211	40,661	47,358	34,108
Simba m/d		-	162	111	130	93

17 RECOVERY METHODS

SUMMARY

The process plant at Perkoa is a conventional sulphide flotation plant capable of processing 1,800 tpd to 1,900 tpd. The process plant includes crushing, screening, and grinding, followed by zinc flotation and filtering to produce a zinc concentrate (Figure 17-1). The process plant originally included a lead recovery circuit, however, this circuit is no longer used and has been reconfigured to increase capacity in the zinc recovery circuit due to higher zinc head grades.

The run-of-mine (ROM) ore is fed through a grizzly to the primary jaw crusher at a rate of approximately 150 tonnes per hour (tph). The product is sent to a secondary cone crusher circuit operating in closed circuit with a screen, splitting at 10mm. The screen oversize (+10.0 mm) is sent to the cone crushers. Product from the cone crushers is returned to the primary screen. The undersize (-10.0 mm) from the primary screen is sent to the mill feed stockpile.

From the mill feed stockpile, the ball mill (10.5 ft. x 16 ft.) is fed at a rate of 80 tph to 85 tph solids feed. The ball mill operates in closed circuit with cyclones to produce a zinc flotation feed with 60% of the cyclone overflow product passing 200 mesh (75 µm)(P_{60} 75µ).

The flotation feed is sent to a conditioner where reagents (Copper Sulphate ($CuSO_4$), Xanthate, and Frother) are added before it passes on to rougher tank cells. High grade concentrate from the first three roughers is sent to final concentrate and the low grade concentrate from the last rougher is sent to the cleaner circuit.

The rougher tailings go to the scavenger circuit, where the concentrate from the first and second scavenger cells are sent to final concentrate, while the concentrate from the rest of the scavenger cells is sent to the cleaner/scavenger circuit. The scavenger tailings go to the final tailings.

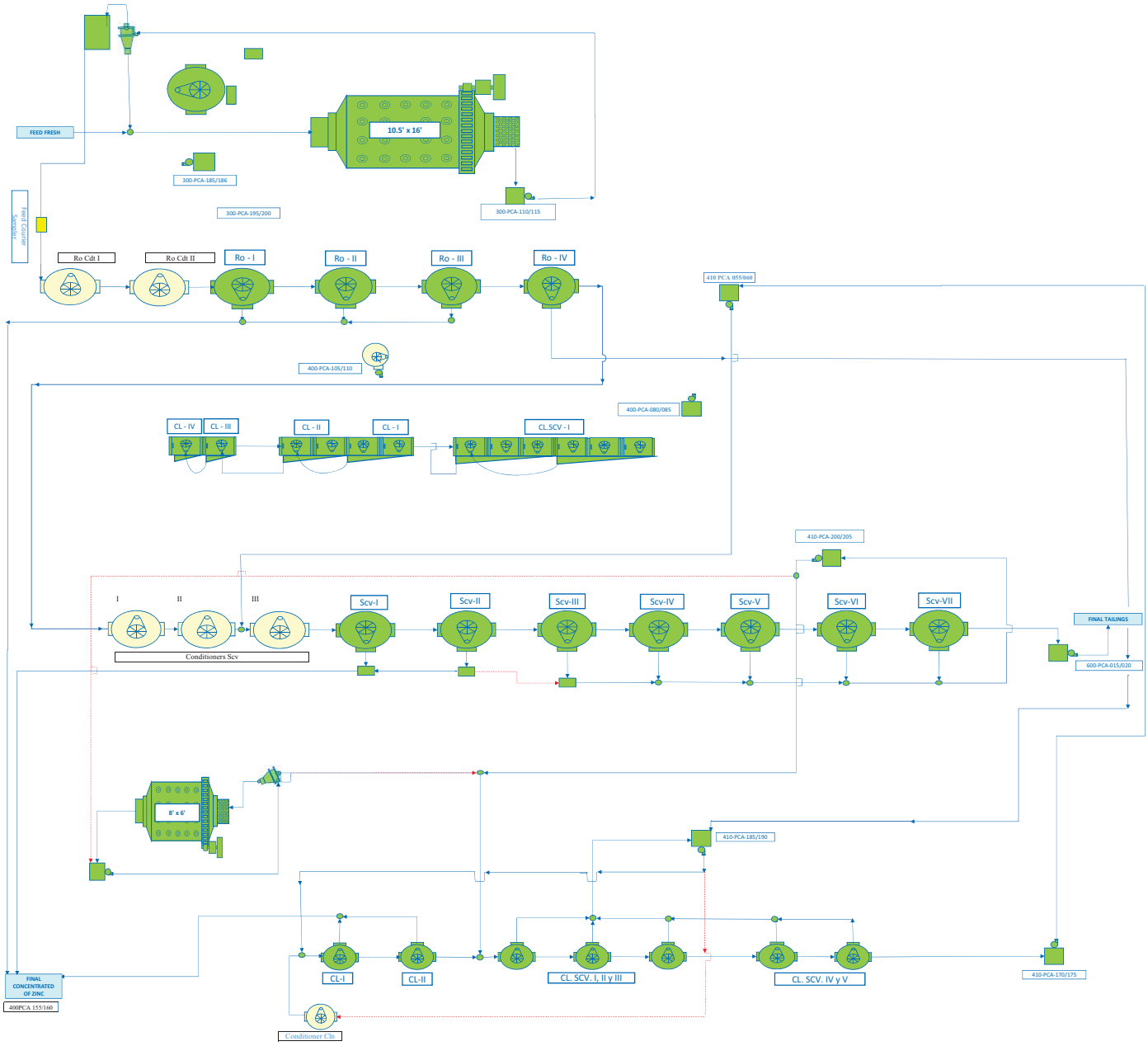


Figure 17-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Process Plant Flowsheet (Mill and Flotation)

April 2017

Source: Nantou Mining, 2017.

The concentrate from the cleaners is sent to final concentrate, with the tailings sent to the cleaner/scavenger circuit, where the concentrate is re-circulated back to the head of the cleaner circuit. The cleaner/scavenger circuit tailings are sent to the head of the scavenger circuit.

The final concentrate is sent to a zinc concentrate thickener and Larox pressure filter for dewatering.

The final zinc concentrate from the Larox filter is discharged onto a drying floor, where it is dried and stockpiled until loaded onto trucks for dispatch to the port of Abidjan, Cote d'Ivoire.

The process plant has historically produced (Table 17-1) a zinc concentrate in the range of 50.0% to 53.0% (during four previous years of operation from 2013 to 2016) from head grades ranging from 6.3% Zn (open pit) to 15.0% Zn (underground). Recovery of zinc has been in the range of 89.3% to 96.7%.

TABLE 17-1 CONCENTRATOR PERFORMANCE
Trevali Mining Corporation – Perkoa Mine

	Units	2013	2014	2015	2016
Ore Processed	T	548,201	495,651	513,283	590,083
Zinc Grade	%	6.33	13.56	14.99	14.96
Zinc Recovery	%	92.8	96.7	89.3	92.1
Zinc Concentrate	t	63,648	126,015	130,269	153,715
Zinc Concentrate Grade	%	50.6	51.6	52.8	53.0
Zinc Metal Contained	t	32,215	64,976	68,804	81,422
Availability	%	N/A	N/A	76.5	83.3

PRODUCTION SCHEDULE

The Four Year Plan plant production schedule is shown in Table 17-2.

TABLE 17-2 FOUR YEAR PLAN PLANT PRODUCTION SCHEDULE
Trevali Mining Corporation – Perkoa Mine

ROM Production		Total	2017	2018	2019	2020
Total Processed	000 t	2,483	641	674	676	492
Average Production	t/d	1,835	1,755	1,846	1,852	1,852
Zinc Grade	%	15.16	15.16	15.16	15.16	15.16
Zinc Recovery	%	92.0	92.0	92.0	92.0	92.0
Zinc Concentrate	t	653,323	168,682	177,292	177,891	129,458
Zinc Concentrate Grade	%	53.0	53.0	53.0	53.0	53.0
Zinc Metal Contained	t	346,261	89,402	93,965	94,282	68,613
Payable Metal Produced	t	293,995	75,907	79,781	80,051	58,256

RPA reviewed the Four Year Plan production schedule provided by Nantou Mining and has revised zinc recovery and zinc concentrate grades to be in line with actual 2016 values, as shown in Table 17-2.

CONCENTRATE HAULAGE

Zinc concentrates are trucked 1,200 km to the port of Abidjan, Côte d'Ivoire. In 2016, 170,968 wet metric tonnes (wmt) were hauled in 3,861 trips (11 trucks per day, 45 tonnes per truck). A round trip takes seven days. Three days from site to Abidjan and four days to return due to delays at the border between Côte d'Ivoire and Burkina Faso. The trucks backhaul clinker for the local cement market. This helps to reduce costs, however, it increases the haul cycle.

Transportation of concentrates involves several parties requiring close supervision to co-ordinate and organize each party's internal priorities including:

- The safe loading of transport trucks.
- On site weighing of transport trucks.
- On site sampling of concentrate.
- Assay and quality monitoring.
- Safety inspection of transport trucks prior to leaving site.
- Road conditions.
- Customs and duty inspections.
- Port congestion.

- Socio-political situations.

During 2016, a total of 157,205 wet metric tonnes (wmt) of zinc concentrates were shipped from the port. Destinations were Belgium, Italy, Germany, and Spain. Zinc concentrates shipped in 2016 contained an average of 514 ppm of mercury.

18 PROJECT INFRASTRUCTURE

SUMMARY

Current infrastructure includes power, water, sewerage, a diesel storage facility, fire protection, and explosives magazines. Water is supplied by a pipeline from a recently constructed dam at Seboun, approximately 18 km to the northeast of the mine.

Buildings on site include change houses, office blocks, gate houses, a clinic and ablution facilities. Appropriate security fencing and access control prevents inadvertent access onto the property and enhances safety.

The Perkoa mine site infrastructure plan is shown in Figure 18-1. The key Perkoa mine facilities include:

- Administration Building
- HSEC Training Center & Medical Clinic Building
- Services Office Building
- Administration and Finance Building
- Human Resources Building
- Mining & Survey Office Building
- Geology Offices
- Mine Services Lamp Room and Change House
- IT Communication and (Backup) Server Room
- Concentrates Storage Shed
- Geology Core Shed
- Lunch Rooms
- Mining Change House and Laundry
- Mining – Electrical Workshop
- Mining – Mobile Equipment Workshop
- Main Warehouse Area
- Supply Chain Warehouse – Container Yard
- Mining – Muster Room
- Mining – Contractor Main Offices
- Mining – Stores Offices and Yard

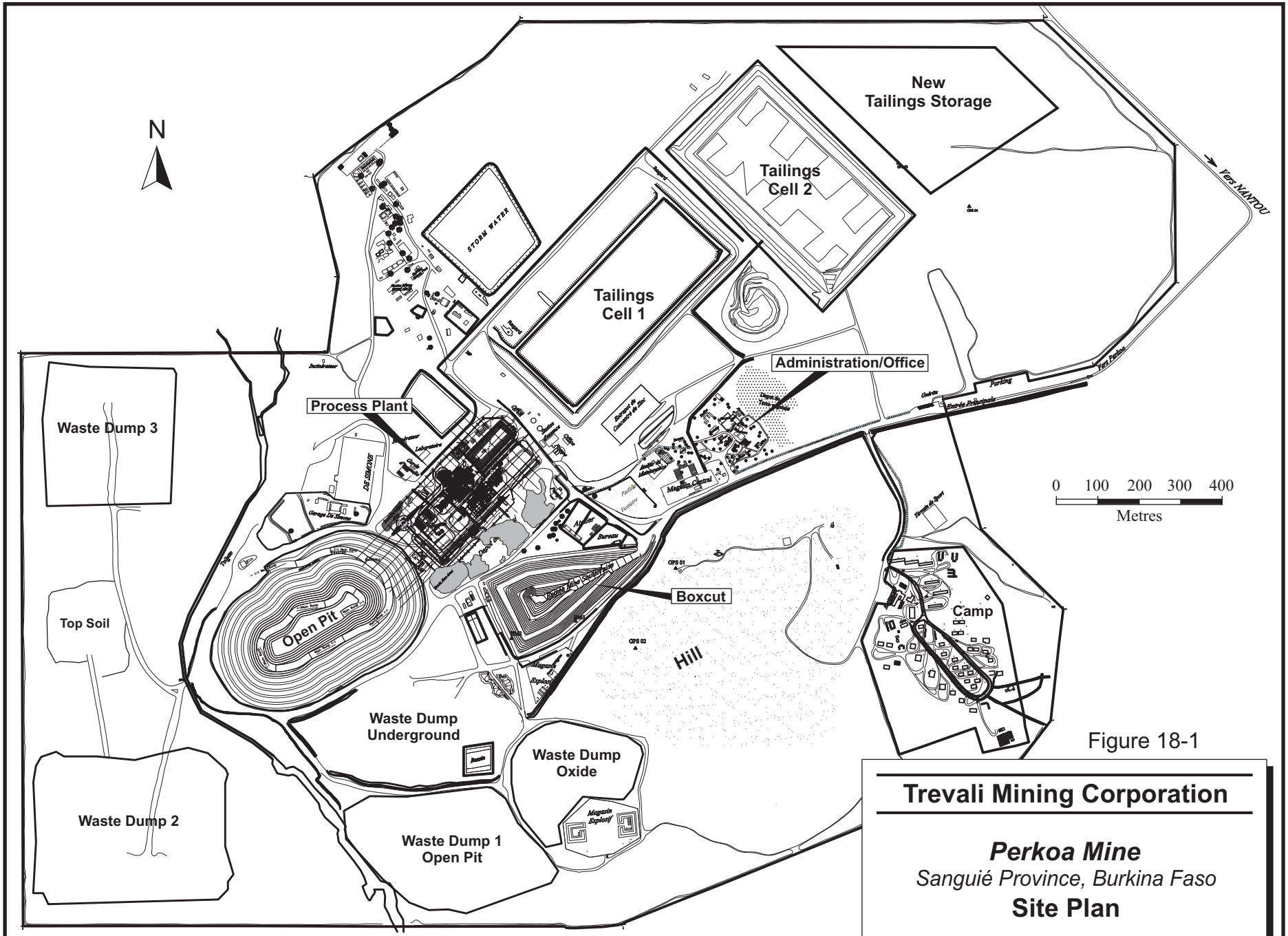


Figure 18-1

Trevali Mining Corporation

Perkoa Mine

Sanguié Province, Burkina Faso

Site Plan

April 2017

Source: Nantou Mining, 2016.

- Plant Main Mechanical and Boilermaker Workshop
- Fuel Farm (property of TOTAL Burkina SA)
- Mobile Equipment Workshop
- Mobile Equipment Offices
- Diesel Generator Plant

POWER

The supply of power from the national grid is unreliable. Power for all areas of the mine, with the exception of the underground mine, are supplied from the central power station. The power station has four 2.0 MW-6.6 kV Caterpillar 3516B-HD generators installed in an industrial type structure of masonry and corrugated iron construction with a concrete floor. Power usage at the central power station is approximately 2.5 MW to 3.2 MW, which means that normally three generators run at approximately 60% capacity, at any one time.

The diesel units have been operating since 2013 and Caterpillar, through their local representatives, Burkina Equipment, are providing routine servicing and condition monitoring for the diesel units. Two of the diesel units have been overhauled in 2015/2016 and a spare engine is available on site. There is a fire detection and automatic AFFF fire suppression on the generator. A fire detection system is planned to be installed in the switch room of the power station along with a fire suppression system in 2017.

As of December 2016, the central power house building has been extended to accommodate a fifth Caterpillar 3516B-HD generator, which has been delivered and is currently being installed.

As of December 2016, an 11 kV overhead power transmission line is being installed between the central power house and the mine switch room in order to supply power to the full site, including the mine, from the central power house.

There are a further approximately 12 mobile generators available with outputs from 20 kVA to 500 kVA to rig for power where required, such as for pumping of water.

Nantou Mining has a maintenance department consisting of 92 skilled personnel, of which 90% are Nationals.

TAILINGS STORAGE FACILITY

Plant tailings are deposited onto a tailings storage facility (TSF) immediately adjacent to the process plant (Figure 18-1). The initial Environmental and Social Impact Study carried out in 2006 was based on the construction of a TSF composed of three cells with an area of 7 ha, 10 ha, and 9 ha respectively. Only two of the cells were constructed. The first cell is full and the second cell is almost at its maximum nominal design storage capacity. A third cell is now required for future placement of tailings. The third cell has four phases of construction. The initial construction phase is called Phase 3, which will provide approximately two years of storage capacity, followed by subsequent phases which will provide storage for the total tonnes in the Internal LOM plan.

Construction of the Phase 3 facility has commenced and it is expected that the liner will be installed in April 2017 and that the Phase 2 TSF will be operational by May 2017. The capital cost for Phase 2 is $6 million.

19 MARKET STUDIES AND CONTRACTS

MARKETS

Global zinc demand continues to rise by approximately 2 to 3% per annum (or 280,000 to 420,000 t of zinc metal) driven by gross domestic product (GDP) growth, urbanization, and infrastructure development, and as a “mid-cycle” commodity with expanding markets for consumer goods (automobiles, appliances, etc.) Primary zinc supply is in deficit following the recent closures of large global mines (Brunswick-12, Century, and Lisheen). There is consensus forecast of a significantly tightening zinc market over the next several years as supported by both increasing zinc commodity pricing and global zinc smelting shortfalls due to inability to secure sufficient zinc concentrates in addition to decreasing Spot and Annual benchmark smelting charges from 2015 onwards. Wood Mackenzie, an independent global commodity forecast consultant, is predicting robust zinc commodity prices over the short-term; averaging $1.46/lb in 2017 and $1.76/lb in 2018 respectively (Wood Mackenzie, 2017).

In addition, lead, predominantly produced as by-product of zinc mining is also expected to strengthen during this period.

CONTRACTS

As part of the transaction, Trevali will enter into life of mine concentrate offtake agreements with Glencore for all concentrates at International Benchmark terms, that is, average London Metal Exchange (LME) pricing for any given shipping period and smelter charges based on the industry annual negotiations between third party smelting and mining groups.

RPA has reviewed the concentrate treatment charges, payable amounts, and commodity prices projected by Trevali. The results support the assumptions used in this Technical Report: In summary current concentrate treatment charges are lower (Teck and Korea Zinc recently settled at $172/t flat) and average LME spot commodity prices are higher those used in the report.

Nantou Mining has recently executed a Mining Services Contract with Byrnecut Burkina Faso SARL for a period of six years, in which Byrnecut is to provide all personnel and equipment in order to carry out mine services including all development and production.

Nantou Mining has a contract with Damco Burkina Faso S.A. for the transport of zinc concentrates from the Perkoa mine to the port of Abidjan, Cote d'Ivoire and to provide backhaul services, as required.

Nantou Mining has a contract with De Simone (B.F.) S.A. for the construction of the Phase 3 tailings dam.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

The Perkoa mine has a Health, Safety, Environment and Community (HSEC) Policy (2014) outlining its commitment to the environment as well as procedures aligned to the requirements of applicable Burkina Faso legislation. These commitments are then implemented and managed through a HSEC system, which is aligned to the principles of ISO 14001:2004 Environmental Management System. Perkoa will need to convert this system to the 2015 ISO 14001 Standard which has been committed for 2017. A certified ISO 14001: 2015 Management System is not a legal requirement, however, it is a best practice principle and provides a benchmark for Environmental Management.

Burkina Faso's legal system is based on civil law and is mainly copied from the French legal system. At the apex of the legal system, the Burkina Faso Constitution is the supreme law which was adopted by referendum of June 2, 1991 and revised three times by the Law No. 002/97/ADP of January 1997, the Law No. 003-2000/AN of April 11, 2000 and the Law No.001-2002/AN of January 22, 2002. The Constitution provides that the riches and natural resources of the country belong to the people and must be used to improve their living conditions. The Environmental Code (Law No 006 of 2013), containing five titles and 148 articles, aims to protect human beings against harmful effects or nuisances and risks that hinder and jeopardize their existence due to environment degradation, and to improve their living conditions.

ENVIRONMENTAL STUDIES

The approved Environmental Management Plans (EMP) integral to the Environmental Social Impact Assessment (ESIA) provide the framework for Perkoa mine's environmental management. The EMP, based on the results of specialist studies, outline mitigation measures, including monitoring programmes, to reduce and manage negative impacts to the physical and social environment. Environmental audits must be carried out in accordance with the provisions of Article 4 of Decree No. 2015-10000 / PRES-TRANS / PM / MERH / MME / MICA / MS / MIDT / MCT of October 28, 2015 which contains detailed rules for carrying out environmental audits. As per these requirements, regular monitoring and

evaluation of environmental performance through compliance audits is undertaken by BUMIGEB.

A BUMIGEB audit inspection report of May 23, 2016 highlights the need for a water sampling and analysis program to be developed in terms of oxides in the ore, establishing an effective dust mitigation system, the implementation of measures to limit discharge from activities on site, design a suitable area for the storage of minerals on site to minimise soil, surface water and groundwater contamination, maintain the water balance on mine, conducting a study to evaluate the Potential of Generation of Acid (PGA) at the open pit, tailings pond and the scats stockpiles, carrying out an environmental audit in accordance with the provisions of Article 4 of Decree No. 2015-10000 / PRES-TRANS / PM / MERH / MME / MICA / MS / MIDT / MCT of 28 October 2015 specifies detailed rules for carrying out environmental audits and the undertaking of a technical and financial evaluation report in accordance with Article 12 of Decree No 2007-845 / PRES / PM / MCE / MEF of 26 December 2007 on the management of the Mining Environment Rehabilitation Fund.

The Perkoa mine has areas of waste disposal including a tailings pond with additional extensions being implemented in 2017, waste treatment facilities, a scats stockpile and generates both general and hazardous waste. The mine currently has a tailings pond licensed by the Ministry of Environment that comprises three areas. At the present stage of development of mine activities, only the first and second cells were constructed. The Perkoa mine proposes to build a third cell for the receipt of its mining waste for a period of two years. The third cell is required as the first cell is full and will be managed under a closure and rehabilitation process and the second cell is almost at the maximum of its nominal design storage capacity. The new cell will be fully located within the current operating license and will be a lined facility. The Government have mandated Nantou Mining to undertake an acid rock drainage potential assessment during 2017. The results of this study may have implications for the tailings pond expansion, requiring costly mitigation and implementation measures, increased closure costs and will need to be managed accordingly. The impact of these results is currently unknown and cannot be used to validate the risk profile. The results of the study may require additional environmental rehabilitation, monitoring, and implementation of management measures to ensure that contamination is minimised or avoided where possible.

Contaminated runoff from the plant is directed via unlined canals (possible risk post the Potential Acid Generating Study) and collected in a stormwater reservoir and then transferred to treatment ponds. Polluted water from the plant is treated and reused. The water volumes required to operate the ore processing plant are pumped from the Seboun reservoir, with drinking water being sourced from the underground aquifer. This water is treated to be potable and then transported via a distribution network to the treatment plant and other facilities as required. As the mine is a net consumer of water, it is recommended that by implementing consumption monitoring, improving the water balance, discharge tracking and improving the tailing deposition monitoring that a water hierarchy of use can be generated. This would assist in utilizing what water can be reused in certain processes rather than sourcing from the reservoir. An agreement is in place with the Government for Nantou Mining to reduce the water consumption by 5% in 2017 from the 2016 figures.

PROJECT PERMITTING

As per the requirements of the Burkina Faso Legislative Framework, all applicable environmental licences are in place at the Perkoa mine. There was an ESIA compiled and submitted in June 2006 in accordance with Article 17 of the Environmental Code (Law No. 005/97). During 2010, the Perkoa mine underwent a review and the design of the mine was amended to include the addition of an open pit, an addition to the plant, a waste incinerator, increased waste disposal area, and a stream diversion. The ESIA for the changes to the mine plan was approved and an authorization issued on December 26, 2012 by the Minister of Environment and Sustainable Development in terms of the Environmental Code of Burkina Faso (Law No. 006 of 2013). An ESIA was also conducted by TEFA OMEGA SERVICES BUNEE-EIES for the changes to the Tailings ponds. Approval was granted on the ESIA 22 December 2016 (Reference TdR 20161222 (Environmental Code of Burkina Faso Law No. 006 of 2013). As per the requirements of the Burkina Faso Legislative Framework, all applicable environmental licences were valid at the time of the site visit and document review.

SOCIAL OR COMMUNITY REQUIREMENTS

The new Mining Code, which was passed by the Conseil National de Transition on June 26, 2015, proposes the creation of a new fund called “Mining Fund for Local Development”. The holders of exploitation permits and authorizations for quarrying exploitation shall be subject

to the payment of 1% of their turnover to the fund and the State shall pay 25% of the collected mining royalties to the new fund. The modalities and management of the fund shall be specified by the implementation measures. It is to be noted that the Perkoa mine is currently accruing for this levy although there is no requirement to pay this until the implementation measures and details for the management of this are released by the Government. The risk with the above legislative framework is the allocation of these funds towards the affected communities. There is no mechanism in place for how the funds will be allocated and, if perceived by the local community to be distributed to unaffected areas, this may lead to community protests or strike.

The Perkoa mine has a procedure in place for publicising recruitment, signed by Nantou Mining and the Youth Committee on June 12, 2015 to use only local unskilled labour and to favour local labour if qualification is required. Stakeholder management is being successfully managed on site by the implementation of the tripartite committee. The tripartite committee is comprised of representatives from Nantou Mining, the local community and the government.

In terms of corporate social responsibility, projects are consistent with those as required by the EMP. These include the construction of a community centre, primary school, as well as social expenses, including compensation for displaced graves and structures, construction of replacement houses, Perkoa Health and Social Promotion Centre, community boreholes, and a literacy program. In 2013 to 2016, social expenses amounted to $1.2 million.

The National HIV/AIDS infection rate for Burkina Faso is approximately 1.8% whereas in the local area of Perkoa the infection rate is approximately 2.3%. A request was received in June 2016 from a local committee for HIV/AIDS prevention for funding from Nantou Mining for an HIV/AIDS prevention programme in the mine's surrounding communities. The mine is actively involved in the prevention of HIV/AIDS and was presented with an award for "Significant Contribution to Community HIV/AIDS Program".

Of concern, is the threat of malaria to the employees and contractors working at the mine. Although strict controls are put in place by Perkoa mine, there were 413 cases of malaria recorded for 2016. Training and Awareness programs will need to be rolled out and extended beyond employees as infections may be occurring out of the mine workplace or camp site.

The mine has a fleet of approximately 70 trucks per week that transport zinc concentrate to the port in Abidjan, Cote d'Ivoire. The trucks carry approximately 45,000 t of zinc concentrate over 3,861 trips per annum. Eight accidents were recorded due to fatigue, congestion, and road conditions. RPA notes that there is risk associated with an environmental incident associated with the accident/ and or road transport. The load may be in international territories and international environmental legislation (penalties and fines) may be imposed. This is aligned with the requirements of the Environment Code of Burkina Faso (Law No. 006 of 2013) Article 145: The management of environmental issues in cross-border nature is done in consultation with the State(s) concerned in compliance with international standards applicable.

MINE CLOSURE REQUIREMENTS

The Perkoa mine developed a Preliminary Reclamation and Closure Plan in 2005 as part of the Environmental Impact Assessment (EIA) for the application for the Mine Operations Licence. The conceptual closure plan was revised in 2010 due to some changes to the mine and associated infrastructure. In terms of the plan, closure objectives and key measures to be implemented to ensure the achievement of these closure objectives have been formulated.

According to the ESIA of the Amendment to the Development Plan for the Perkoa mine, Burkina Faso (Aecom, 2012), the plan is structured in accordance with best practice and would satisfy requirements underlying laws relating to the rehabilitation and closure of mining in South Africa. South African legislation requires plans to be based on the assessment of potential residual risks associated with exploitation and that the objectives of the process are specified in terms of post-closure land use objectives. The conceptual closure plan was developed in the context of the proposed post-closure use of land, namely subsistence agriculture but also in the context of the mine's environmental policies and accounting policies, and the key environmental issues identified during the EIA process. As at September 2012, the total cost of rehabilitation and closure for Perkoa mine amounted to US$7.0 million. As detailed in the audit report of May 23, 2016, BUMIGEB requires the compilation and submission of a technical and financial evaluation closure report for approval in accordance with Article 12 of Decree No 2007-845 / PRES / PM / MCE / MEF of December 26, 2007 on the management of the Mining Environment Rehabilitation Fund.

Rehabilitation and closure costs will be reviewed during March 2017 to meet these requirements of BUMIGEB.

21 CAPITAL AND OPERATING COSTS

CAPITAL COSTS

Sustaining capital is mainly for mine development, process plant upgrades, tailings dam expansion, and power plant upgrades.

Table 21-1 presents the Four Year Plan sustaining capital cost, including closure costs.

TABLE 21-1 FOUR YEAR PLAN SUSTAINING CAPITAL COSTS
Trevali Mining Corporation – Perkoa Mine

($ M)	2017	2018	2019	2020	2021	Total
Mining	5.6	3.1	1.2	0.5	-	10.4
Plant	0.8	1.3	0.3	0.4	-	2.8
Tailings Dam	6.0	-	5.0	1.0	-	12.0
Engineering	2.0	0.3	1.1	1.4	-	4.8
HSEC	0.5	0.1	0.1	0.1	-	0.8
Services	0.1	-	-	-	-	0.1
Total Sustaining	15.0	4.8	7.7	3.4	-	30.9
Closure Cost	-	-	-	-	7.0	7.0
Total	**15.0**	**4.8**	**7.7**	**3.4**	**7.0**	**37.8**

OPERATING COSTS

Based on the operating cost experience to date, the Four Year Plan direct operating costs are summarized in Table 21-2.

TABLE 21-2 FOUR YEAR PLAN DIRECT OPERATING COST
Trevali Mining Corporation – Perkoa Mine

	Units	2017	2018	2019	2020	Total
Mine	$ M	30.9	32.7	33.3	23.1	**120.0**
Plant	$ M	20.9	21.4	21.8	15.1	**79.2**
Indirect Costs	$ M	11.3	11.3	11.5	8.0	**42.1**
Total Direct Costs	**$ M**	**63.2**	**65.4**	**66.6**	**46.1**	**241.3**
Milled	**t ('000)**	**641**	**674**	**676**	**492**	**2,483**
Cost/t Milled	**$/t**	**98.50**	**97.10**	**98.50**	**93.80**	**97.20**

Table 21-3 presents a breakdown of the Four Year Plan direct mine operating cost.

TABLE 21-3 FOUR YEAR PLAN DIRECT MINE OPERATING COST
Trevali Mining Corporation – Perkoa Mine

Mine	Units	2017	2018	2019	2020	Total
Management & General	$ (000)	1,844	1,839	1,777	1,225	6,685
Technical Services	$ (000)	2,086	2,017	2,055	1,423	7,581
Secondary Development	$ (000)	5,275	7,702	7,856	5,446	26,279
Stoping	$ (000)	3,363	2,313	2,359	1,635	9,670
Tramming / Hauling	$ (000)	14,520	15,020	15,320	10,621	55,481
ROM Stockpile Pad and Plant Feed	$ (000)	477	473	483	335	1,768
Mine Power Generation	$ (000)	3,384	3,370	3,436	2,382	12,572
Total Direct Costs	**$ (000)**	**30,949**	**32,734**	**33,286**	**23,066**	**120,035**
Milled	**t (000)**	**641**	**674**	**676**	**492**	**2,483**
Cost/t Milled	**$/t**	**48.28**	**48.59**	**49.24**	**46.89**	**48.35**

Table 21-4 presents a breakdown of the Four Year Plan direct plant operating cost.

TABLE 21-4 FOUR YEAR PLAN DIRECT PLANT OPERATING COST
Trevali Mining Corporation – Perkoa Mine

Mine	Units	2017	2018	2019	2020	Total
Management & General	$ M	1,418	1,510	1,540	1,068	5,536
Vehicle Maintenance Workshop	$ M	632	659	670	464	2,425
Plant Mechanical & Electrical	$ M	1,339	1,405	1,431	991	5,166
Plant - Management & General	$ M	2,575	2,396	2,444	1,694	9,109
Plant Technical Services	$ M	778	815	830	575	2,998
Crushing & Conveying	$ M	1,244	1,161	1,180	816	4,401
Milling	$ M	1,637	1,628	1,657	1,147	6,069
Flotation	$ M	3,202	3,358	3,420	2,367	12,347
Thickening & Filtration	$ M	946	868	881	608	3,303
Thickener & Tailing Dam	$ M	461	395	402	278	1,536
Engineering Power	$ M	6,710	7,179	7,321	5,075	26,285
Total Direct Costs	**$ M**	**20,942**	**21,374**	**21,776**	**15,083**	**79,175**
Milled	**t (000)**	**641**	**674**	**676**	**492**	**2,483**
Cost/t Milled	**$/t**	**32.67**	**31.73**	**32.21**	**30.33**	**31.89**

Indirect costs total $11 million per year.

MANPOWER

Table 21-5 presents a breakdown of the Four Year Plan manpower quantities.

TABLE 21-5 FOUR YEAR PLAN MANPOWER
Trevali Mining Corporation – Perkoa Mine

	2005 Actual	2016 Actual	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast
Nantou Mining						
Mining/Technical Services	28	32	33	33	33	33
Processing/Lab/Exports	83	95	91	91	91	91
Maintenance	89	93	101	101	101	101
Finance/Admin/IT/SCM/HR	41	46	45	45	45	45
HSEC/Security/Camp	36	34	36	36	36	36
Expatriates	17	23	23	23	23	23
Total Direct Employees	294	323	329	329	329	329
Contractors	276	309	309	309	309	309
Total	**570**	**632**	**638**	**638**	**638**	**638**

22 ECONOMIC ANALYSIS

As part of the 2017 Budget process, Nantou Mining has developed a four year mine plan (Four Year Plan) based on Proven and Probable Mineral Reserves which projects production to 2021 with a total of 2.48 Mt being mined at a grade of 15.1% Zn. A Cash Flow Projection has been generated from the Four Year Plan production schedule and capital and operating cost estimates, and is summarized in Table 22-1. The associated process recoveries, metal prices, operating costs, refining and transportation charges, royalties, and capital expenditures (sustaining) were also taken into account. All costs are based on fourth quarter of 2016 estimates and presented in US dollars. Metal prices, as provided by Trevali, are based on consensus, long term forecasts from banks, financial institutions, and other sources. Some of the key parameters and assumptions for the pre-tax cash flow are as follows:

REVENUE (100% BASIS)

- 1,848 tpd
- Head grade: 15.1% Zn
- Mill recovery averaging: 92.0%
- Metal price: based on consensus forecast per year, averaging $1.14 per pound zinc
- Smelting and transport costs totalling $0.39 per pound payable zinc.
- NSR: $191 per tonne milled.

COSTS (100% BASIS)

- Mine life: 4 years
- Sustaining capital: $37.8 million
- Average operating cost over the mine life: $97.20/t milled
- Closure costs: $7.0 million
- Salvage costs: nil
- NSR Royalty: $14.6 million
- Net cash cost (equivalent to C1 cost), including capital, of $0.82 per pound of payable zinc.
- Pre-tax Net Present Value (NPV) at 10%: $157 million

TABLE 22-1 CASH FLOW SUMMARY - 100% BASIS
Trevali Mining Corporation - Perkoa Mine

	INPUTS	UNITS	TOTAL	2017	2018	2019	2020	2021
MINING								
Operating Days		days	1,343	365	365	365	248	-
Tonnes milled per day		tonnes / day	1,848	1,845	1,846	1,852	1,852	-
Production		'000 tonnes	2,483	674	674	676	459	-
Zn Grade		%	15.16%	15.16%	15.16%	15.16%	15.16%	0.00%
Waste		'000 tonnes	-	-	-	-	-	-
Total Moved		'000 tonnes	2,483	674	674	676	459	-
PROCESSING								
Mill Feed		'000 tonnes	2,483	641	674	676	492	-
Zn Grade		%	15.16%	15.16%	15.16%	15.16%	15.16%	0.00%
Contained Zn		tonnes	376,371	97,176	102,135	102,481	74,579	-
Recovery Grade								
Zn Concentrate		%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
Recovered Amount								
Zn Concentrate		tonnes	346,261	89,402	93,965	94,282	68,613	-
Grades in Concentrate								
Zn Concentrate		tonnes	653,323	168,682	177,292	177,891	129,458	-
Zn grade in concentrate		%	53.00%	53.0%	53.0%	53.0%	53.0%	53.0%
Concentrate Moisture		%	8.10%	8.1%	8.1%	8.1%	8.1%	8.1%
Total Tonnes Concentrate		wmt	706,242	182,345	191,652	192,300	139,944	-
Total Recovered Zn		**tonnes**	**346,261**	**89,402**	**93,965**	**94,282**	**68,613**	**-**
REVENUE								
Metal Prices		**Input Units**						
Zn		US$/lb Zn	$1.14	$1.15	$1.19	$1.12	$1.10	$1.10
Zn Concentrate Payable %								
Payable Zn		%		84.9%	84.9%	84.9%	84.9%	84.9%
Zn Concentrate Payable								
Payable Zn		tonnes	293,995	75,907	79,781	80,051	58,256	-
Gross Revenue								
Total Gross Revenue		**US$ '000**	**$739,738**	**$192,853**	**$208,484**	**$197,127**	**$141,275**	**$0**
Total Charges								
Transport to Port								
Zn Concentrate		US$ '000	$60,408	$15,267	$16,726	$16,271	$12,144	$0
Freight Rollback								
Zn Concentrate		US$ '000	$26,046	$6,725	$7,068	$7,092	$5,161	$0
Treatment								
Zn Concentrate		US$ '000	$165,544	$37,021	$46,407	$47,360	$34,756	$0

	INPUTS	UNITS	TOTAL	2017	2018	2019	2020	2021
Total Charges		US$ '000	$251,997	$59,012	$70,201	$70,723	$52,060	$0
US$/Lb payable Zn		US$/Lb payable Zn	$ 0.39	$ 0.35	$ 0.40	$ 0.40	$ 0.41	$ -
Net Smelter Return		**US$ '000**	**$487,741**	**$133,840**	**$138,283**	**$126,404**	**$89,214**	**$0**
Royalty NSR	3.0%	US$ '000	$14,632	$4,015	$4,148	$3,792	$2,676	$0
Net Revenue		**US$ '000**	**$473,109**	**$129,825**	**$134,134**	**$122,612**	**$86,538**	**$0**
Unit NSR		**US$/t milled**	**$191**	**$203**	**$199**	**$181**	**$176**	**$0**
OPERATING COST								
Mining (Underground)		US$/t milled	$48.35	$48.28	$48.59	$49.24	$46.89	$0.00
Processing		US$/t milled	$31.89	$32.67	$31.72	$32.22	$30.66	$0.00
G&A		US$/t milled	$16.96	$17.59	$16.78	$17.06	$16.24	$0.00
Total Operating Cost		**US$/t milled**	**$97.20**	**$98.54**	**$97.09**	**$98.51**	**$93.79**	**$0.00**
Mining (Underground)		US$ '000	$120,035	$30,948	$32,734	$33,286	$23,066	$0
Processing		US$ '000	$79,174	$20,942	$21,373	$21,778	$15,082	$0
G&A		US$ '000	$42,102	$11,276	$11,306	$11,529	$7,991	$0
Total Operating Cost		**US$ '000**	**$241,311**	**$63,166**	**$65,412**	**$66,593**	**$46,140**	**$0**
Operating Cashflow		US$ '000	$231,798	$66,659	$68,722	$56,019	$40,398	$0
CAPITAL COST								
Sustaining		US$ '000	$30,774	$14,981	$4,764	$7,654	$3,375	$0
Reclamation and closure		US$ '000	$7,000	$0	$0	$0	$0	$7,000
Total Capital Cost		**US$ '000**	**$37,774**	**$14,981**	**$4,764**	**$7,654**	**$3,375**	**$7,000**
Net Cash Cost, including Capital		US$/Lb payable Zn	$0.82					
PRE-TAX CASH FLOW								
Net Pre-Tax Cashflow		US$ '000	$194,024	$ 51,678	$ 63,958	$ 48,365	$ 37,023	$ (7,000)
Cumulative Pre-Tax Cashflow		US$ '000		$ 51,678	$ 115,637	$ 164,001	$ 201,024	$ 194,024
Taxes		US$ '000	$0	$ -	$ -	$ -	$ -	$ -
After-Tax Cashflow		US$ '000	$194,024	$ 51,678	$ 63,958	$ 48,365	$ 37,023	$ (7,000)
Cumulative After-Tax Cashflow		US$ '000		$ 51,678	$ 115,637	$ 164,001	$ 201,024	$ 194,024
PROJECT ECONOMICS								
Pre-tax NPV at 5% discounting	5.0%	US$ '000	$173,983					
Pre-tax NPV at 7.5% discounting	7.5%	US$ '000	$165,197					
Pre-tax NPV at 10% discounting	10.0%	US$ '000	$157,116					
After-Tax NPV at 5% discounting	5.0%	US$ '000	$173,983					
After-Tax NPV at 7.5% discounting	7.5%	US$ '000	$165,197					
After-tax NPV at 10% discounting	10.0%	US$ '000	$157,116					

TAXATION AND ROYALTIES

The fiscal regime that applies in Burkina Faso to the mining and metals industry consists of a combination of corporate income tax (BIC), value added tax (VAT), royalties and taxes on mining activities (e.g., flat fees and surface fees).

The mining and metals industry in Burkina Faso is governed by the Burkina Faso General Tax Code, the Burkina Faso Mining Code (issued on May 8, 2003) and the UEMOA (West African Economic and Monetary Union) Mining Code (issued on December 23, 2003). The fiscal regime consists of a combination of corporate income tax, royalties, and several flat fees.

An annual tax rate of 27.5% is payable by resident companies, however, holders of exploitation permits are subject to a reduced rate of 17.5%.

Mining companies are subject to three types of royalties and contributions: flat fees, surface fees, and tax on mining and quarry substances and products.

A flat fee is payable on mining titles or the authorization for the sale of mine substances. This fee is also payable on the renewal, extension, sale (marketing), transfer, and sublease of such instruments. The fee payable is determined according to the nature of the mining title (such as prospecting, industrial operating, mining concession, semi-industrial operating, artisanal operating license or permit) held by the company. The amount due varies between US$2,000 and US$150,000 per square kilometer per year.

An annual surface tax is payable by mining companies that hold prospecting permits and mining concessions. The rate varies, depending on the type of mining license concerned, from US$5 to US$40,000 per square kilometre per year.

Most mining substances extracted are subject to specific mining taxes when they are removed from stock, based on the product's market value. Those taxes may be deducted in calculating taxable benefits. The rate varies from 3% to 8% of the turnover depending on the substance (such as bauxite, gold, diamonds, precious gems, iron or others of special interest). Nantou is subject to a 3% mining tax (royalty).

Income tax losses may be carried forward for four years, while losses resulting from depreciation of assets can be carried forward indefinitely. Nantou Mining has a substantial income tax loss carry-forward and is not subject to corporate income tax until the income tax loss carry-forward has been used.

CASH FLOW ANALYSIS

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals $194 million over the mine life.

The pre-tax NPV at a 10% discount rate is $157 million.

SENSITIVITIES

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined through analysis of cash flow sensitivities:

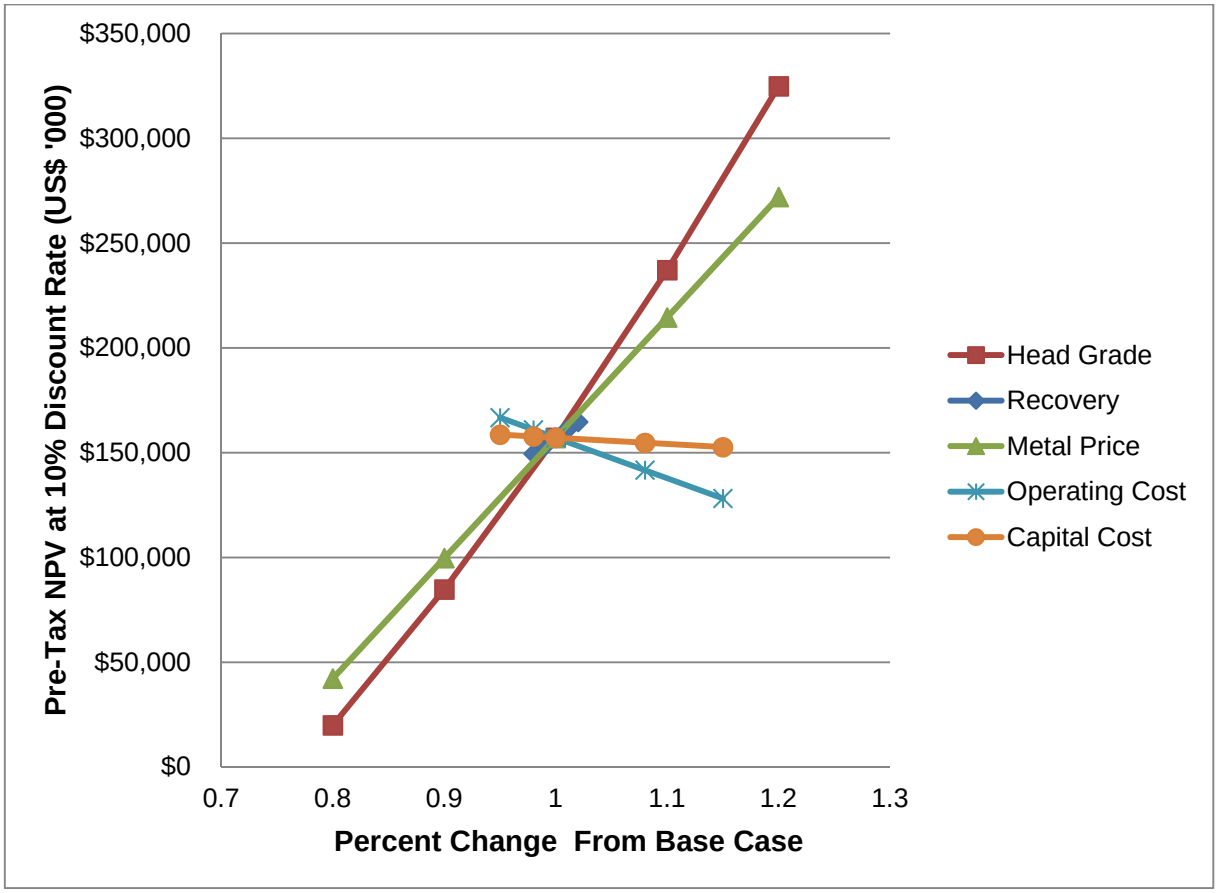
- Head grade
- Zinc recovery
- Zinc price
- Operating costs
- Sustaining capital costs

Pre-tax NPV at a 10% discount sensitivities over the Cash Flow Projection have been calculated per Table 22-2. The sensitivities are shown in Table 22-2 and Figure 22-1. The Project return is most sensitive to the product of changes in the head grade and zinc price followed by changes in the operating costs, recovery, and capital costs.

TABLE 22-2 SENSITIVITY ANALYSIS
Trevali Mining Corporation – Perkoa Mine

	Head Grade (%)	NPV at 10% ($M)
0.80	12.1	20.0
0.90	13.6	84.7
1.00	**15.2**	**157.1**
1.10	16.7	237.2
1.20	18.2	324.9
	% Recovery	**NPV at 10% ($M)**
0.98	90.2	149.5
0.99	91.1	153.3
1.00	**92.0**	**157.1**
1.01	92.9	160.9
1.02	93.8	164.7
	Zinc Price ($/lb)	**NPV at 10% ($M)**
0.80	0.91	42.2
0.90	1.03	99.7
1.00	**1.14**	**157.1**
1.10	1.26	214.6
1.20	1.37	272.0
	Operating Costs ($M)	**NPV at 10% ($M)**
0.95	229.2	166.8
0.98	236.5	161.0
1.00	**241.3**	**157.1**
1.08	260.6	141.7
1.15	277.5	128.2
	Capital Costs ($M)	**NPV at 10% ($M)**
0.95	35.9	158.6
0.98	37.0	157.7
1.00	**37.8**	**157.1**
1.08	40.8	154.7
1.15	43.4	152.6

FIGURE 22-1 SENSITIVITY ANALYSIS



23 ADJACENT PROPERTIES

Perkoa mine is the sole project of economic interest in the area and there are no adjacent properties of significance from a mining perspective.

24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25 INTERPRETATION AND CONCLUSIONS

Based on a site visit, discussion with Perkoa personnel, and review of available documentation, RPA offers the follow interpretations and conclusions.

GEOLOGY AND MINERAL RESOURCES

- The geology and mineralization is well understood by Perkoa geology personnel.
- The drilling procedures employed by Perkoa conform to industry best practice and the resultant drilling pattern is sufficient to interpret the geometry and the boundaries of the mineralization with confidence. All drilling sampling was carried out under the direct supervision of appropriately qualified geologists. There are no drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results.
- Drilling, sampling, QA/QC, sample preparation and analyses were appropriate for the style of mineralization and adequate for Mineral Resource estimation. The QA/QC controls, however, require improvement.
- The assumptions, parameters, and methodology are appropriate for the style of mineralization.
- Mineral Resources were estimated consistent with CIM definitions (2014).
- Measured plus Indicated Mineral Resources total 4.26 Mt grading 14.6% Zn.
- Inferred Mineral Resources total 1.64 Mt grading 12.9% Zn.
- The areas covered by the exploration licences, as well as other areas along strike of the Perkoa deposit, are very prospective for both base and precious metals.

MINING AND MINERAL RESERVES

- The Mineral Reserve estimate has been prepared utilizing acceptable estimation methodologies and the classification of Proven and Probable Mineral Reserves conform to CIM definitions and NI 43-101.
- Mining and milling costs used for the Mineral Reserve NSR calculation have been extracted directly from the 0.67 Mt per annum mining cost estimation physicals prepared by Nantou Mining in mid-2016. The values are based on the average operating costs from the first half of 2016.
- The NSR cut-off value used for Mineral Reserve estimation is reasonable.

- Stope shapes have been designed manually using Surpac software. The resultant shapes were evaluated against the geological resource model to report the tonnes and grade for each stope shape.

- Stope modifying factors were applied, post-geological interrogation, to generate the final diluted and recovered Mineral Reserve.

- The Proven and Probable Mineral Reserve totals 2.48 Mt at 15.1% Zn for a total of 376,312 t of contained zinc.

- In addition to site operating costs, the Mineral Reserve estimate takes into consideration metallurgical recoveries, concentrate grades, transportation costs, smelter treatment charges, and royalty in determining economic viability.

MINERAL PROCESSING

- The process plant is a conventional sulphide flotation plant capable of processing 1,800 tpd to 1,900 tpd and includes crushing, screening, and grinding, followed by zinc flotation and filtering to produce a zinc concentrate.

- The process plant has historically produced a zinc concentrate in the range of 50.0% to 53.0% (during four previous years of operation from 2013 to 2016) from head grades ranging from 6.3% Zn (open pit) to 15.0% Zn (underground). Recovery of zinc has been in the range of 89.3% to 96.7%. In general, the Perkoa concentrate can be considered “clean”, with mercury and iron being two elements incurring small penalties.

- There are no other by-product credits.

- Zinc concentrates are trucked 1,200 km to the port of Abidjan, Côte d’Ivoire.

ENVIRONMENTAL, SOCIAL, COMMUNITY RISKS

- There is no evidence of environmental issues that could materially impact Nantou Mining’s ability to extract the Mineral Resources or Mineral Reserves at the Perkoa mine.

- The Perkoa mine has a HSEC Policy (2014) outlining its commitment to the environment as well as procedures aligned to the requirements of applicable Burkina Faso legislation.

- The approved EMPs integral to the ESIA provide the framework for Perkoa mine’s environmental management.

- As per the requirements of the Burkina Faso Legislative Framework, all applicable environmental licences are in place at the Perkoa mine.

26 RECOMMENDATIONS

RPA offers the following recommendations.

GEOLOGY AND MINERAL RESOURCES

- A comprehensive data process map should be undertaken, including logging and sampling inputs, database review, and production reconciliation studies.
- The Microsoft Access format diamond drill hole database should be modified so that only the Drill Hole Database Administrator has secured rights to revise or add data. RPA also recommends that the drill hole database include a field for QA/QC completed and a final Drill Hole Signoff by the Database Administrator.
- A study is required to determine the root causes of the current only adequate QA/QC results in order to ensure a high confidence in future QA/QC results.
- Grade capping should be investigated per lens and a new variography study should be completed.
- A reconciliation of the resource model versus the actual tonnage and grade, as determined by the process facility, should be a standard practice for the annual Mineral Resource estimation.
- Drilling is underway to upgrade resources into the Measured category and ultimately mine plan from the 400 to 490 levels where historically there has been a 60% conversion rate from resources to reserves. RPA recommends that this drilling program be a priority in order to support a potential extension of the LOM plan to 5.5 years.
- A comprehensive detailed review, compilation, and systematic exploration targeting plan is required prior to any future significant exploration expenditures.

MINING AND MINERAL RESERVES

- A review of the Mineral Reserves based on current zinc prices should be carried out.
- The Mineral Reserve estimate should be updated once the additional drill hole information is available.

MINERAL PROCESSING

- Recoveries (92% to 94%) and concentrate grades (52% to 53%) are reasonable, however, both of these may be improved to maintain the upper range of recoveries and concentrate grades with further metallurgical testing.

ENVIRONMENTAL, SOCIAL, COMMUNITY

- Malaria is a threat to the employees and contractors working at the mine. Ongoing Training and Awareness programs will need to be rolled out and extended beyond employees as infections may be occurring out of the mine workplace or camp site.

- The mandate from the government to conduct an Acid Rock Drainage potential study at the mine will assist in understanding mitigation measures that need to be developed managed and monitored at the mine and will provide an accurate closure liability costing and rehabilitation plan for the mine.

- There will need to be a stakeholder management plan that is developed to address the one percent levy that has been imposed from government. Although the mine will possibly not be able to direct the spend of that levy, community perceptions regarding lack of local benefits and misappropriation of development funds could pose risk to the project, regardless of whether these perceptions are substantiated.

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28 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Perkoa Mine, Burkina Faso" and dated April 7, 2017, was prepared and signed by the following authors:

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April 7, 2017

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April 7, 2017

Holger Krutzelmann, P.Eng.
Associate Principal Metallurgist

29 CERTIFICATE OF QUALIFIED PERSON

TORBEN JENSEN, P.ENG.

I, Torben Jensen, P.Eng., as an author of this report entitled “Technical Report on the Perkoa Mine, Burkina Faso” prepared for Trevali Mining Corporation and dated April 7, 2017, do hereby certify that:

1. I am a Principal Mining Engineer with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.

2. I am a graduate of South Dakota School of Mines and Technology in 1978 with a B.Sc. degree in Mining Engineering.

3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90286881). I have worked as a mining engineer for a total of 36 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Preparation of NI 43-101 Technical Reports, feasibility studies, and due diligence reviews for a wide range of commodities including gold, silver, nickel, lead, zinc, uranium, coal, asbestos, potash, copper, and diamonds.
   - Vice President Corporate Development with a Canadian gold mining company, responsible for the evaluation of investment opportunities.
   - Vice President Engineering with a Canadian base metal mining company, responsible for preparation of feasibility studies related to property acquisitions and development, engineering design of underground and open pit projects, short and long range mine planning, capital and operating cost estimation for budgets, and permitting.
   - Manager of Engineering with a Canadian based mining company, responsible for the reopening of a former nickel mine.
   - Chief Mining Engineer with a Canadian-based coal company, responsible for mine contracting, short and long range mine planning, budget preparations, scheduling, project management, feasibility studies related to property acquisitions, open pit and underground engineering design, underground construction design, costing, and supervision.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I visited the Perkoa mine from January 31 to February 2, 2017.

6. I am responsible for Sections 15, 16, 18, 19, 21, and 22 of this Technical Report and share responsibility for Sections 1, 24, 25, 26, and 27 of this Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 15, 16, 18, 19, 21, and 22 of this Technical Report for which I am responsible, as well as Sections 1, 24, 25, 26, and 27 of this Technical Report for which I share responsibility, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 7th day of April, 2017

(Signed and Sealed) "*Torben Jensen*"

Torben Jensen, P.Eng.

IAN T. BLAKLEY, P.GEO.

I, Ian T. Blakley, P.Geo., as an author of this report entitled “Technical Report on the Perkoa Mine, Burkina Faso” prepared for Trevali Mining Corporation and dated April 7, 2017, do hereby certify that:

1. I am a Principal Geologist and Vice-President and General Manager of RPA UK Ltd. of One Fetter Lane, Suite 311, London, UK EC4A 1BR.

2. I am a graduate of the University of Waterloo, Waterloo, Ontario, Canada, in 1984 with a Bachelor of Science degree in Honours Co-operative Applied Earth Sciences/Geology Option.

3. I am registered as a Professional Geoscientist in the Province of Ontario (Reg. #1446). I have worked as a Geologist for a total of 34 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Review and reporting, including Mineral Resource estimation, as a geological consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements.
    - Vice-President – Exploration with a Canadian private company exploring and developing world-class gold assets in northeastern Kazakhstan.
    - Chief Geologist with a major Canadian mining company responsible for the management of geological exploration, resource definition and production.
    - Senior Mines Exploration Geologist for new capital underground mining projects including exploration and definition drilling, resource definition, infrastructure positioning, production and reconciliation.
    - Exploration Geologist responsible for sampling and mapping programs at gold and base metal properties in Canada.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I visited the Perkoa mine from January 31 to February 2, 2017.

6. I am responsible for Sections 2 to 12, 14, and 23 of this Technical Report and share responsibility for Sections 1, 24, 25, 26, and 27 of this Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 2 to 12, 14, and 23 of this Technical Report for which I am responsible, as well as Sections 1, 24, 25, 26, and 27 of this Technical Report for which I share responsibility, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 7th day of April, 2017

(Signed and Sealed) "*Ian T. Blakley*"

Ian T. Blakley, P. Geo.

TRACEY JACQUEMIN

I, Tracey Jacquemin, Pr.Sci.Nat 400163/12, as an author of this report entitled “Technical Report on the Perkoa Mine, Burkina Faso” prepared for Trevali Mining Corporation and dated April 7, 2017, do hereby certify that:

1. I am Position Manager Environment and Society Mining, Sub-Saharan Africa with Advisian (Trading as WorleyParsons RSA) at 39 Melrose Boulevard, Melrose Arch, Johannesburg, South Africa

2. I am a graduate of University of the Witwatersrand, Johannesburg, South Africa in 2004 with a Bachelor of Science Degree with Honours (BSc Hons.) Ecology, Environment and Conservation Biology

3. I am registered as a Professional Environmental Scientist in the Republic of South Africa (Pr.Sci.Nat 400163/12). I have worked as an Environmental Scientist for a total of 12 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Four years of consulting experience in Sub-Sahara Africa including but not limited to Environmental project management, contract management, due diligences, Environmental Impact Assessments, Basic Assessments, Water Use Licence Applications and Waste Licence Applications Permitting in terms of the South African Legislative Framework, Environmental Compliance Assessments and Auditing, Environmental Management System Development and Implementation and Environmental Control Officer work.
    - Environmental Manager for an Underground Mining Project
    - Environmental Project Manager / Environmental Assessment Practitioner for a South African Mine.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I visited the Perkoa mine from January 31 to February 2, 2017.

6. I am responsible for the preparation of Environmental Studies, Permitting, and Social or Community Impact as described in Section 20 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Section 20 of this Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 7th day of April, 2017

(Signed and Sealed) "*Tracey Jacquemin*"

Tracey Jacquemin, Pr.Sci.Nat 400163/12

HOLGER KRUTZELMANN

I, Holger Krutzelmann, P.Eng., as an author of this report entitled "Technical Report on the Perkoa Mine, Burkina Faso" prepared for Trevali Mining Corporation and dated April 7, 2017, do hereby certify that:

1. I am an Associate Principal Metallurgist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON M5J 2H7.

2. I am a graduate of Queen's University, Kingston, Ontario, Canada in 1978 with a B.Sc. degree in Mining Engineering (Mineral Processing).

3. I am registered as a Professional Engineer with Professional Engineers Ontario (Reg. #90455304). I have worked in the mineral processing field, in operating, metallurgical, managerial; and engineering functions, for a total of 36 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Reviews and reports as a metallurgical consultant on a number of mining operations and projects for due diligence and financial monitoring requirements
    - Senior Metallurgist/Project Manager on numerous gold and base metal studies for a leading Canadian engineering company.
    - Management and operational experience at several Canadian and U.S. milling operations treating various metals, including copper, zinc, gold and silver.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I did not visit the Perkoa mine.

6. I am responsible for Sections 13 and 17 and contributed to Sections 1, 25, 26, and 27 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 13 and 17 and portions of Sections 1, 26, 26, and 27 of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 7th day of April, 2017

(Signed and Sealed) "*Holger Krutzelmann*"

Holger Krutzelmann, P.Eng.