Technical Report on the Lac-des-Îles Quarry, Québec Report for NI 43-101

Northern Graphite Corporation

SLR Project No: 233.03482.R0000

Effective Date:
December 22, 2021

Signature Date:
February 2, 2022

Prepared by:
SLR Consulting (Canada) Ltd.

Qualified Person:
Luke Evans, M.Sc., ing., P.Eng.
Marie-Christine Gosselin, P.Geo.
Marc Lavigne, M.Sc., ing.
Guy Comeau, ing., P.Eng.
Jean Dionne, ing. P.Eng.

SOUTEX

SLR

Technical Report on the Lac-des-Îles Graphite Quarry, Québec, Canada

SLR Project No: 233.03482.R0000

Prepared by

SLR Consulting (Canada) Ltd.
55 University Ave., Suite 501
Toronto, ON M5J 2H7

and

Soutex inc.
1990 Cyrille-Duquet Street, Suite 204
Québec, QC G1N 4K8

for

Northern Graphite Corporation
Box 279
Manitock, Ontario, Canada
K4M 1K7

Effective Date – December 22, 2021
Signature Date – February 2, 2022

Prepared by:

Luke Evans, M.Sc., ing., P.Eng.
Marie-Christine Gosselin, P.Geo.
Marc Lavigne, M.Sc., ing.
Guy Comeau, ing., P.Eng.
Jean Dionne, ing. P.Eng.

Approved by:

Project Manager – Daniel Rolph, P.Eng.

Project Director – Jason Cox, P.Eng.

Peer Reviewed by:

Jason Cox, P.Eng.
Deborah McCombe, P.Geo.

FINAL

Distribution: 1 copy – Northern Graphite Corporation
1 copy – Soutex inc.
1 copy – SLR Consulting (Canada) Ltd.

CONTENTS

TABLES

FIGURES

1.0 SUMMARY

1.1 Executive Summary

SLR Consulting (Canada) Limited (SLR) and Soutex inc. (Soutex) were retained by Northern Graphite Corporation (NGC) to prepare an independent Technical Report on the Lac-des-Îles Graphite Quarry (the Quarry), located near Lac-des-Îles, Québec, Canada.

The purpose of this Technical Report is to support public disclosure for NGC as it relates to NGC's acquisition of the Quarry from Imerys Graphite & Carbon (Imerys). This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

SLR and Soutex visited the property on May 30, 2021 and October 4, 2021, respectively.

The Quarry is located approximately two kilometres south of Lac-des-Îles, Québec, Canada, 110 km northeast of Ottawa and 180 km northwest of Montréal. The Quarry was brought into production by Stratmin Graphite Inc. (Stratmin) in 1989. Imerys, as IMETA, acquired Stratmin in 1996. Stratmin became TIMCAL Canada Inc. (TIMCAL) in 2002. TIMCAL's plant in Terrebonne, located approximately 30 km from Montréal, commenced operation in the same year. TIMCAL changed its name to Imerys in 2014.

Graphite is mined at the Quarry using conventional open pit mining methods and refined at the on-site processing facility into high quality graphite products of various sizes and purities. The Quarry has a maximum production capacity of 25,000 tonnes per annum (tpa) and employs approximately 65 owner personnel. A portion of the products from the Quarry are shipped for further processing to the Terrabonne plant, which is not included in NGC's acquisition. Quarry and Terrabonne concentrates are sold to industrial customers involved in refractory, engineered materials, and polymer applications.

Imerys' Life of Mine (LOM) plan for the Quarry forecasts mining to late 2023, and sale of stockpiled material into 2024, followed by mine closure and reclamation.

NGC is a mineral development and technology company focussed on developing its Bissett Creek graphite deposit and upgrading mine concentrates into high value components used in lithium-ion batteries, electric vehicles, fuel cells, graphene and other advanced technologies. On June 7, 2021, NGC entered into an option agreement to earn up to an 80% interest in the South Okak nickel-copper-cobalt project, located 80 km southeast of Voisey's Bay, Labrador, to diversify into other battery minerals.

The currency used in this Technical Report is Canadian dollars (C$ or $) unless otherwise stated.

1.1.1 Conclusions

The Quarry is one of many operated by Imerys using a central technical hub to address long-term planning and Mineral Resource/Mineral Reserve estimation. This mode of operation meant that supporting data and information available for review was limited, in comparison to equivalent metal mines. Despite these data gaps, in the opinion of the Qualified Persons (QP) the estimates of Mineral Resources and Mineral Reserves are reasonable, as the Quarry is a mature operation, with a track record of production that reconciles to plans.

SLR offers the following additional conclusions by area.

1.1.1.1 Geology and Mineral Resources

- As of April 30, 2021, using a 4% organic carbon (Cg) cut-off grade, Indicated Mineral Resources, inclusive of Mineral Reserves, are estimated to total 621,000 tonnes (t) averaging 7.1% Cg (Table 1-1).

Table 1-1: Summary of Mineral Resources - Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Classification	Tonnage (kt)	Grade (% Cg)
Indicated	621	7.1

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within a design pit using a 4% Cg block cut-off grade.
3. Mineral Resources include in-situ material only. Stockpiles have not been considered.
4. Bulk density is 2.8 t/m^3, applied to all material types.
5. Mineral Resources are reported inclusive of Mineral Reserves.
6. The numbers may not add due to rounding.

- There is no current exploration on the deposit and past exploration by either the current owner or past operators has not been digitally documented. Archived data has been retained in various non-digital formats by Imerys, however, this information has not been made available to SLR.
  - Drilling indicates the presence of significant graphite mineralization outside the Quarry and significant graphite mineralization has been intersected in drill holes outside the mineralization wireframe.
- Diamond drilling occurred at the Quarry from 1998 to 2006. Drilling campaigns were undertaken in 1998, 2000, 2001, 2004, and 2006. No information has been retained in the drilling database regarding the drilling procedures, recovery, or sampling during any of the drilling programs. A total of 277 surface core drill holes comprises the resource drill hole database for the Quarry.
- No information has been provided pertaining to the quality assurance and quality control (QA/QC) programs in place during the drilling of the deposit.
- On-bench sampling, sample preparation, analysis, and security procedures at the Quarry are adequate for use in the estimation of Mineral Resources. In the QP's opinion, Quarry sample preparation, analysis, and security procedures do not meet industry best practices, however, the mine production and reconciliation history suggest that the resource estimation is performing well and that the underlying data is acceptable. In the QP's opinion, given the mining history and limited remaining mine life of the Quarry, obtaining additional information is neither practical nor beneficial.
- A single density value of 2.8 t/m^3 was assigned to all blocks within the resource model, regardless of lithology.
- A design pit has been prepared and used for resource reporting purposes at a cut-off grade of 4% Cg. Constraining the Mineral Resources within a design pit satisfies the requirement of the Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions) that Mineral Resources demonstrate reasonable prospects for eventual economic extraction.

- In the QP's opinion, there are no significant risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information or Mineral Resource estimate. Risks and uncertainties in exploration information and underlying geologic data are largely mitigated given the production and reconciliation history of the Quarry.

1.1.1.2 Mineral Reserves

- The Mineral Reserve estimate for the Quarry is based on the resource block model developed by Imerys. Mineral Reserves have been classified as Probable in accordance with CIM (2014) definitions. Only those Mineral Resources that were classified as Indicated were given economic attributes in the mine design and when demonstrating economic viability.
- As of April 30, 2021, using a 4% Cg cut-off grade, total Probable Mineral Reserves are estimated to be approximately 594,000 t averaging 7.07% Cg (Table 1-2).

Table 1-2: Summary of Mineral Reserves – Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Category	Tonnage (t)	Grade (% Cg)	Contained Graphite (t)
Probable – Stockpiles	102,024	6.92	7,062
Probable – Pit 2	491,741	7.10	34,937
Total Probable	**593,764**	**7.17**	**41,999**

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 4% Cg. SLR has inferred that the mineralization domain wireframe was constructed using a nominal graphite cut-off grade of approximately 4%, a value that is used to delineate mineralized rock ("ore") from weakly mineralized or barren country rock ("waste").
3. Mineral Reserves are estimated using an average long-term price of US$1,600 per tonne, a metallurgical recovery of 89.2%, and a US$/C$ exchange rate of 1.25.
4. A minimum mining width of 5 m was used.
5. Bulk density is 2.8 t/m^3, applied to all material types.
6. Numbers may not add due to rounding.

- Reconciliation of the block model to Pit 2 production from Q3 2016 to Q3 2021 shows 85% of the modelled tonnes mined as ore, at grades averaging 115% of modelled. More recent results (mid 2019 to Q3 2021) are closer, at 90% of tonnes and 109% grade.
- At the mine production scheduling stage, Imerys applies modifying factors (mining recovery factors) to all run-of-mine (ROM) ore tonnage from Pit 2B to arrive at plant feed tonnages. A mining factor of 0.85 is applied to all ore between elevations 209 and 251, and a factor of 0.75 is applied to the final 6 m bench in Pit 2B (elevation 203). No adjustment is applied to grades.
  - Although global factoring is not best practice for addressing dilution and extraction, this methodology provides a conservative estimate relative to reconciliation results.
  - In the opinion of the QP, a satisfactory mechanism for the prediction of in-situ and plant feed tonnes and grades is achieved when the Quarry's current block model is combined with the application of Imerys' modifying factors.
- The provided Pit 2 design has been trimmed below waste dumping activities at the pit crest, however, the design has not been trimmed beneath the rock pile located at the south end of the

pit bottom. To confirm volumetrics, the pit bottom rock pile was delineated and the corresponding material was excluded from SLR's assessment.

- No pit optimization was performed to inform the pit design. Such optimization work typically targets the highest pit value considering parameters such as commodity price, operating costs, pit slopes, etc. In the opinion of the QP, Pit 2 and stockpiled material at the Quarry can be declared a Mineral Reserve, though this Mineral Reserve may not be optimized from an economic standpoint.
- Total stockpiles of 102,024 t at 6.9% Cg form part of the April 2021 Mineral Reserve statement. The stockpiles account for approximately 17% of total mill feed.
- Imerys' stockpile estimate is derived from a drone survey analysis completed on April 13, 2021 and agrees well with estimates derived from haul truck counts. Topographic information was not available for SLR's review and thus the QP cannot independently verify the stockpile physicals provided by Imerys.
- The QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

1.1.1.3 Mining

- Imerys reports that pit wall designs are adjusted based on performance and/or geotechnical consultant review/recommendations. The QP notes that there have been some localized slope instabilities in Pit 2/Pit 6 in recent years. Imerys reports that the Quarry uses the services of a geotechnical consultant at least four times a year to check for stability issues and develop mitigation measures where warranted. In general, the QP's review indicates that geotechnical hazards at the Quarry have been managed appropriately.
- Imerys relies on its individual Toromont-Hewitt equipment maintenance contracts for its maintenance strategy. An additional maintenance resource is supplied by Toromont-Hewitt to maintain all other site mobile equipment not covered under individual contracts. Contract pricing and primary equipment hours were not available for SLR review.
- The Quarry appears to have slightly more primary fleet units with higher capacity compared to similar operations. As a result, there may be opportunities to optimize and/or further leverage the capability of the Quarry's mining mobile equipment fleet by mining faster.
- Imerys' Pit 2 production schedule for the LOM was provided on a non-annualized, level-by-level (or bench-by-bench) basis. As required, the process plant is fed directly from Pit 2, from stockpiles, or a combination of both. SLR notes stockpile variations (in/out) are not planned by Imerys, nor are they integrated with a Pit 2 feed plan to construct an overall feed plan for the process plant.
- SLR constructed an annualized LOM plan (SLR LOM plan) based on inputs from Imerys. In developing the SLR LOM plan, SLR assumed all stockpile tonnage in the Mineral Reserve estimate would be processed in the final year of Quarry operations (2024). The SLR LOM plan closely matches the annual ore tonnages of the Imerys LOM plan and total LOM physicals in the SLR LOM plan match those presented in the Mineral Reserve statement. Based on historical performance for both mined and finished product production, SLR considers both the Imerys and SLR LOM plans to be achievable.
- Finished product inventory is prioritized to meet customer demand. As of May 2021, Imerys had approximately 11,000 t of finished inventory bagged and awaiting sale on the Quarry site. This

situation permits the Quarry to halt and then resume mining and processing operations on an as-needed basis. These stoppages are not reflected in any planning information available for review.

1.1.1.4 Mineral Processing

- The QP has not reviewed any metallurgical information that would suggest that future plant feed will be materially different from past plant feed.
- The percentage of coarse graphite (+80 mesh and +50 mesh fractions) increased slightly from 2018 to through 2020, thus providing more value for the concentrate. The QP is unable to determine the causes of the increase.
- During the site visit, Imerys indicated that a sample from each concentrate product bag is drawn for grade monitoring. The sample is kept in storage for a period of six months. The Quarry's metallurgical laboratory was visited and the facility seemed well stocked and fully functional. Imerys indicated that the laboratory had analytical sampling procedures, however, none were provided for review.
- No recovery models exist for future production and Imerys has indicated that the relationship between grade and recovery, if any, is not clear.
- The plant circuit configuration is modified to achieve a concentrate grade of either 95% Cg or 97% Cg, depending on customer requirements.
- Actual concentrate grades for the produced graphite concentrate were not available for review, although the QP notes that the Imerys internal Mineral Reserve statement (April 2021) assumes a concentrate grade of 96.5% Cg.
- The QP conducted a tour of the site and process plant on October 4, 2021. During the time of the visit, the process plant was not operating. Plant equipment appears to have adequately facilitated graphite concentrate production over the last 30 years. Processing equipment appeared to be clean and well maintained and plant equipment was well identified.
- Equipment capacities and design criteria were not available for review.
- Imerys reports that operation of the grinding and flotation circuits is very manual-intensive and there is little automatic process control. The circuits were relatively clean, and equipment was clearly identified. There were no obvious signs of major equipment failures.
- Imerys reported that the ideal feed grade ranges between 7% Cg and 7.5% Cg. Typically, actual feed grades range between 6% Cg and 8% Cg. According to Imerys, the less-than-ideal actual grade range is a result of challenges primarily related to the availability of experienced staff and the manual-intensive nature of the Quarry's grade control program. Plant feed grades are verified twice a day from three stockpiles of differing grade ranges.
- Imerys calculated the concentrate recoveries by using the following assumptions:
    - Graphite Plant Recovery = 91.3 %
    - Graphite Concentrate Grade = 96.5 %

  It is not known by which methods these assumptions were arrived at by Imerys.
- The graphite recovery was calculated by the QP from daily production data provided by Imerys for the period January 2018 to mid-April 2021. The average graphite recovery for this period was calculated to be 89.2%. The forecasted head grades in the years 2021 to 2024 are slightly lower than the head grades of 2018 to 2021. An average graphite recovery of 89.2% was used to calculate the concentrate tonnage in the SLR LOM processing plan.

- The actual and projected hourly tonnages for the years 2021 and 2022 at 31 tonnes per hour (tph) and 28 tph are lower than typical production rates (between 40 tph and 50 tph). Based on recent historical data and past plant feed tonnages from 1990 to 2018, the plant has the capacity to process the expected plant feed tonnages, grades, and concentrate tonnages in the years 2021 to 2024.
- During SLR's site visit, Imerys reported experiencing issues with semi-autonomous grinding (SAG) mill throughput relating to the quartz content in the mill feed (ore hardness). Quartz content was reported to be disseminated and/or in small boudined veinlets which are difficult to model. The hardness issues are reported to be rare, on the order of a few days per occurrence, and have been managed with relative ease from existing ore sources/stockpiles.

1.1.1.5 Infrastructure

- Fixed equipment information was not available for review and photos were not permitted during the limited site visit. Based on recent operational performance, existing mining infrastructure appears to be suitable.
- Electricity is supplied to the Quarry by Hydro Québec under Rate M. This rate is a general rate for medium-power customers and applies to a contract whose maximum power demand has been at least 50 kW during a consumption period included in the last 12 monthly periods.
- Other than work by Roche Ltée (Roche), Imerys confirmed that no other geotechnical stability studies have been carried out on the Quarry's waste rock facilities (WRF). The QP has relied on the conclusions of Roche and Imerys and provides no conclusions or opinions regarding the stability of the aforementioned facilities.
- The QP notes there has been no information provided on the historic tailings management facility (TMF) construction method. Imerys reports that independent consulting firms have completed annual inspections of the Quarry's TMF tailings dikes to ensure that their construction and maintenance continues to adhere to good practice and specialized recommendations made by the consultants.
- The 2002 and 2004 Quarry rehabilitation plans include a copy of the inspection reports of the TMF tailings dikes carried out by the consulting firm Laboratoire d'Expertises du Québec ltée (LEQ). The most recent report available for review is dated June 2004 and is included with the Quarry's 2007 Closure plan. Annual inspections were reportedly completed in 2020 and 2021, however, these reports were not available for review.
- During Soutex's site visit, Imerys indicated stability checks on the TMF are done by a consulting firm and no issues have been identified. Documentation of these stability checks was not available for review and thus it is unclear how often these checks are undertaken, and what TMF performance aspects are being assessed during the checks/inspections.
- The QP has relied on the conclusions of Imerys and its independent consultants and provides no conclusions or opinions regarding the stability of any of the Quarry's TMFs.

1.1.1.6 Markets and Contracts

- Global graphite market information was provided by Benchmark Mineral Intelligence (Benchmark) and NGC.
- There is no posted spot price or futures market for graphite. Sales are negotiated between producers and consumers of which there are many. Some have long standing relationships and

negotiate prices and volumes annually, however, typically there are no long-term contracts or off-take agreements.

- As a result, forecasting graphite revenue is inherently less certain than for commodities with global market-setting, such as base or precious metals.
- The Quarry has been able to achieve an average price of approximately US$1,575/t for its concentrates over the 2019-2021 period. Imerys Business Plan (BP) assumptions imply annual average unit prices for graphite concentrate increasing from US$1,508/t to US$1,743/t over the 2021 to 2025 period. In general, SLR finds the implied/Imerys forecasted unit prices to be reasonable and consistent with calculated prices derived from recent product volumes and revenues and generally consistent with past pricing research conducted by SLR.
- SLR notes graphite concentrate sales currently exist between Imerys' Quarry and Terrebonne businesses. As part of an acquisition transaction involving the Quarry only, a new supply agreement would need to be established between the Quarry and Terrabonne.
- Imerys reports that its 10 most important customers are mostly governed by monthly or yearly purchase orders.
- Imerys reports having business relationships with its top eight customers for over 15 years, with these customers accounting for approximately 85% of Quarry revenues.
- Concentrate unit prices, the seller's grade, and technical specifications were redacted and unavailable for SLR review.
- In the opinion of the QP, master supply, consignment stock, and agency/distribution agreements appear reasonable and contain agreement language that is generally consistent with industry norms.

1.1.1.7 Environmental and Social Considerations

1.1.1.7.1 General

- The QP has not identified any issues with respect to Quarry permitting and is not aware of any environmental liabilities pertaining to the property. Imerys confirmed to the QP that there are no on-going compliance issues at the Quarry.

1.1.1.7.2 Closure Plan

- Imerys complies with the obligations provided for in Sections 232.1 to 232.12 of the Mining Act and the restoration measures proposed by Imerys have been approved by the Ministère de l'Énergie et des Ressources naturelles (MERN) and the Ministère du Développement Durable, de l'Environnement et de la Lutte contre les Changements climatiques (MDDELCC).
- MERN approved the Quarry's 2020 Closure Plan on July 23, 2020, including a total closure cost estimate of $8.23 million. As of November 5, 2021, the amount paid as security is $6,535,055. The last payment ($1,667,886) is due July 23, 2022. The next revision of the Quarry's Closure Plan must be submitted to MERN no later than August 2022. The QP's review of the closure cost estimate did not identify any material omissions and the estimate includes reasonable indirects and contingencies. Post-closure monitoring cost estimates appear to be appropriate and reasonable.

- Restoration measures proposed by Norda Stelo assume that mined waste rock and tailings are not generating any acid mine drainage (AMD). Consequently, measures to restore the TMF, WRFs, and all in-pit wastes will be limited to water management and the establishment of plant cover.
- In line with indications from regulators, applicable guidelines, and typical practice, the QP agrees with excluded credits against closure cost estimates that include re-use and salvage values of scrap materials and used equipment.
- Other than the last payment of $1,667,886 due on July 23, 2022, there are no additional requirements requested by MERN.

1.1.1.7.3 Regulatory

- No Environmental Impact Assessments (EIAs) were conducted for the Quarry as this was not required by federal or provincial legislation at the time of initial project development.
- Imerys submits annual declarations to Environment Canada on contaminants emitted to the environment. The QP reviewed declarations provided for years 2018 to 2020 and did not note any issues.
- Imerys operates the Quarry under authority of Industrial Sanitation Certificate No. 201315001 (the Certificate), which the MDDELCC issued to Imerys on February 25, 2015. On December 16, 2021, Imerys informed NGC that the application for renewal of the Certificate has been submitted to MDDELCC, however, no response has yet been received, with delays possibly due to the COVID-19 pandemic. During the application review process, the Quarry operates under the conditions of the previous Certificate.

1.1.1.7.4 Compliance

- According to Roche, apart from a burst of water that occurred at the TMF in the spring of 2011 (which resulted in significant suspended solids in the Quarry's final effluent), analyses carried out since 1990 demonstrate that the Quarry's final effluent generally complies with the applicable regulation (criteria of Directive 019).

1.1.1.7.5 Waste and Water Management

- According to studies by Roche, the Quarry's source materials, mineral processing, and tailings management operations do not produce AMD and thus there is no water treatment required for the final effluent. The QP has no information on more recent studies nor any direct monitoring data to confirm these findings.
- During the Soutex site visit, Imerys indicated that a bathymetry evaluation had been carried out to inform the status of tailings and waste rock deposition in Pit 12 and that the evaluation confirmed sufficient storage capacity for the life of Quarry operations. A copy of the bathymetry results was not provided for review and thus the QP cannot confirm Imerys' statements regarding the storage capacity available.
- There are no formal documented waste and water management plans for the Quarry. Imerys indicated that currently the Quarry has no water management issues and the Quarry reports on effluent quality to the regulators as required by current permits.

1.1.1.7.6 Stakeholder Management

- The QP notes that the Quarry has no standing social committees or groups to monitor social impacts of mining activities and Indigenous Communities are not mentioned in any of the Imerys-supplied documentation.

1.1.1.7.7 Environmental and Social Management System

- The Quarry Environmental and Social Management System (ESMS) reflects compliance with the requirements of the auditing standards and provides an adequate structure to support the implementation and maintenance of the integrated management system.
- The QP notes that the ISO system table of contents provided by Imerys includes permit requirements, health and safety, emergency planning, internal and external auditing, however, no environmental management and monitoring procedures are mentioned.
- Imerys reported that the ESMS addresses all legal requirements related to environmental management, however, Imerys' internal audit reports do not appear to audit against specific permit and authorization requirements.

1.1.1.8 Capital and Operating Costs

1.1.1.8.1 Capital Costs

- SLR notes that half of the primary mining fleet units are leased units. Imerys captures these costs as operating expenses. Should it be required, SLR has assumed that additional or replacement mining equipment will be similarly leased or rented, though no additional expense has been allowed for in the operating costs or economic analysis. SLR has assumed that Imerys has considered this potential eventuality in preparing its operating cost estimates.
- Imerys reports that all capitalized waste and overburden stripping required to the end of Quarry life was completed at the start of Pit 2 mining activities. SLR has thus assumed these costs to be zero for the purpose of capital cost estimation and economic analysis.
- During the two site visits, a new mine maintenance (dome-type) facility was being constructed. SLR does not have any cost estimate nor information on the full timing of this expense and has assumed a $500,000 capital cost allowance in 2021 for the completion of this facility.
- The Imerys BP forecasts that remaining mine production activities will be carried out at a mining rate that is below or equal to process plant capacity, so no expansion/additional capital spending is expected at this time.
- The total 2020 Closure Plan cost estimate of $8,232,941 appears reasonable and reflects the state of knowledge of the site. Norda Stelo's unit costs for estimating restoration costs are realistic and within the range of values commonly used by consulting firms that prepare similar estimates.
- Imerys and NGC identified salvage values that could be realized at final closure during dismantling and removal of Quarry buildings and structures. The saving opportunity is presented under Economic Analysis alongside other cost saving opportunities.

1.1.1.8.2 Operating Costs

- Electricity is supplied to the Quarry by Hydro Québec under Rate M. In general, the rates being charged are reasonable and, combined with the opportunity for credits, offer some of the lowest electricity rates in North America.
- Total annual operating costs reported by Imerys for 2019 and 2020 were $18.6 million and $12.9 million, respectively, and thus the Imerys BP forecasted annual operating costs appear reasonable relative to recent cost performance at similar production rates.
- SLR determined that the Quarry has an indicative unit mining cost in the range of $8/t to $9/t of rock mined. Comparable surface operations (4,000 tonnes per day (tpd) to 6,000 tpd of rock moved) typically have unit mining costs of approximately $7/t of rock mined. Reasons for a more elevated unit mining cost at the Quarry include:
  - A longer than typical ore haul distance.
  - Deposit geometry and the corresponding need for in-pit rehandling to selectively mine the ore (e.g., small excavator, dozer pushing ore down along dip).
- Soutex determined an indicative unit processing cost in the range of $31/t to $35/t processed, which the QPs find reasonable given the relatively low plant throughput over the LOM (ranges from 28 tph to 48 tph).
- For estimating unit overhead costs, SLR referenced the average of 2019 and 2020 actual costs and prorated these costs according to the LOM yearly finished product sales; the reference yearly cost being $1.7 million. For estimating unit shipping costs, a similar estimation method was used to derive an average unit delivery cost per tonne of finished product of $47.92. The methodology assumes that the Quarry's primary customer sales distributions remain similar over the coming years.
- SLR and Soutex estimate total LOM operating costs of $53.4 million compared to $56.5 million in the Imerys BP. On further inspection, the QPs are of the opinion that the Imerys 2021 cost estimate is for a full calendar year rather than an estimate of costs from mid-April to year end.
- Forecasted LOM unit costs are estimated to be $8.53/t mined and $32.97/t processed. In years 2023 and 2024, the processing unit operating cost was reduced using an empirical equation relating to the forecasted higher daily processing throughput.
- NGC identified several operating cost saving opportunities which are presented under Economic Analysis. Opportunities include:
  - A reduction in annual management fees allocated to the Quarry by Imerys (fees of $2.5 million in 2020).
  - In connection with acquisition of the Quarry, a reduction in the taxes payable by NGC upon reset of tax pools.
  - Operation of the Quarry closer to full capacity, thereby reducing unit costs and certain fixed costs.

1.1.2 Recommendations

1.1.2.1 Geology and Mineral Resources

1. Historical paper records documenting the exploration on the property should be collated and the graphite mineralization wireframe interpretation should be reviewed for potential areas of extension.
2. Snap the mineralization wireframe to assay intervals both on section and between sections and treat unsampled intervals as zero grade during grade interpolation.
3. For better reconciliation control, complete a program of density sampling across the deposit targeting both mineralized rock and waste.

1.1.2.2 Mining, Processing, and Mineral Reserves

1. To determine more appropriate graphite feed grades for the processing plant, review the availability (and retention) of experienced staff and the manual-intensive nature of the Quarry's grade control program.
2. Review the Quarry's reconciliation methods and create a more typical process for estimating modifying factors. Corresponding documentation should be prepared for others to follow and in the event of new personnel/high staff turnover.
3. Review the Quarry's LOM plan preparation process and ensure that the LOM plan is fully integrated with the stockpile processing plan, includes graphite grades and forecasted graphite flake size distribution, and is annualized.
4. The large volume of finished product inventory stored at the Quarry suggests that there may be opportunities to better align operating plans with anticipated sales/commitments.
5. There appears to be sufficient process plant capacity in 2022 to increase throughput and potentially improve Quarry economics (28 tph processed compared to 40 tph to 50 tph capacity). A LOM plan optimization exercise is recommended.

1.1.2.3 Environmental and Social Considerations

1. Carry out more detailed work to review and assess risk associated with the following aspects:
    - Stakeholder identification and engagement, including Indigenous Community engagement and an assessment of potential impacts on these communities.
    - The Quarry's ESMS and how legal requirements are tracked to determine the possible impact to a financial assurance package.
    - The Quarry's GHG emissions and potential financial obligations.
2. Review available water quality monitoring data and compare this to relevant regulatory standards to confirm that post-closure effluent will comply with regulatory requirements before being discharged.
3. Perform acid base accounting test work on representative samples of tailings and waste rock materials to verify that these materials continue to be non-acid generating.
4. The polishing pond will be transformed into a wetland. A hydrological and hydrogeological study should be carried out to inform this work.

5. Verify that the polishing pond dike does not need to comply with Dam Safety Regulations.
6. Complete soil characterization work (Phase II) to identify any additional soil contamination sites, other than those identified in the crusher area.
7. Revisit the likely costs of equipment dismantling and removal as part of the next Closure Plan amendment.
8. Discuss the Closure Plan's supporting agronomist report with the author to understand the closure plan more fully.

1.1.2.4 Operating Costs

1. To facilitate future cost reviews, public reporting, and internal benchmarking of performance, develop and report operating costs by department/functional area (e.g., mining, processing, and general and administration (G&A)) alongside the Quarry's existing fixed and variable consolidation.

1.2 Economic Analysis

1.2.1 Base Case Cash Flow (Imerys BP)

1.2.1.1 Physicals

SLR's cash flow model includes the following key physical inputs/assumptions:

- Pit mining activities from April 2021, ceasing in November 2023 while a partial year of stockpile processing and completion of final product production are set to occur in 2024.
- Mine operating days – based on operating information provided by Imerys:
  - 170 days in 2021
  - 240 days in 2022
  - 225 days in 2023
- Process operating days – based on 4.5 days per week (nine, 12 hour shifts per week):
  - 153 days in 2021
  - 216 days in 2022
  - 203 days in 2023
  - 90 days in 2024
- Total in-situ resource – 620,780 t at 7.1% Cg.
- Total Pit 2 ore mining – 491,741 t at 7.10% Cg.
- Total waste mined of 2.39 Mt at a strip ratio of 4.85.
- LOM feed to the process plant including stockpiles – 593,764 t at 7.1% Cg.
- Average metallurgical recovery – 89.2% (all years).
- Average graphite concentrate grade – 96.5% Cg (all years).

- Total graphite concentrate produced – 38,834 t. The Imerys value is 39,767 t assuming a 91.3% process recovery.
- Total on-site graphite concentrate inventory – 11,001 t. This is equal to the value implied by the Imerys BP.
- Total payable graphite concentrate – 49,835 t. The Imerys implied value is 50,768 t. Per the Imerys BP, concentrate sales extend into 2026 (3,951 t in 2025 and 1,241 t in 2026).
- No capitalized waste or overburden stripping required to end of mine life – all completed at start of Pit 2.

1.2.1.2 Economic Inputs

The Base Case cash flow model includes the following key economic inputs/assumptions:

- Revenue is recognized at the time of production.
- US$/C$ exchange rate of 1.23 in 2021 and 1.25 thereafter.
- Marketing and concentrate transportation/insurance charges included in operating costs.
- Landowner royalty of $0.48 per tonne processed, totalling $285,000 over the LOM.
- LOM operating costs as follows:
  - LOM unit mining cost averaging $8.53/t mined.
  - LOM unit processing cost averaging $32.97/t processed.
  - LOM overhead costs totalling $6.9 million or an average of $11.60/t processed.
  - LOM shipping costs totalling $2.4 million or an average of $47.92/t shipped.
  - LOM total unit operating cost averaging $89.94/t processed.
- Management fees of $2.5 million per year, totalling $10.2 million over the LOM. Fees pro-rated from April in 2021 and reduced to $500,000 in each of 2025 and 2026.
- Based on the average of 2019 and 2020 amortization identified by Deloitte LLP, a cost reduction for amortization amounts included in Imerys cost data totalling $6.9 million over the LOM.
- Allowance of $500,000 in 2021 to reflect expense of new mine maintenance facility near Pit 2.
- Reclamation capital costs totalling $8.23 million, introduced in the cash flow model as follows:
  - 2023 – 2.00 million. Final year of pit mining activities.
  - 2024 – 4.16 million. Stockpile rehandling and processing. Processing activities cease.
  - 2025 – 1.77 million.
  - 2026 through 2028 – $100,000 per year.
- Reclamation bond – $8.23 million required in 2021 and gradually credited back until final regulatory release from obligations (assumed to occur in 2029 for cash flow purposes).
- LOM capital costs of $8.73 million.
- SLR assumptions related to income tax payable:
  - Provincial corporate tax rate of 11.5%.
  - Federal corporate tax rate of 15.0%.

- SLR assumes that there are no other tax obligations as part of the economic analysis.
- Effective tax rate of 24.78% calculated via straight line depreciation.
- LOM income taxes payable of approximately $6.4 million.

- Discount rate of 5%. The Quarry is a current producer with some historical physicals and cost information provided.

1.2.1.3 Cash Flow Analysis – Base Case

Considering the Quarry on a stand-alone basis, SLR's economic analysis yielded the following results:

- LOM gross revenue – $99.5 million.
- LOM net revenue - $99.2 million.
- LOM average Net Smelter Return – $167.01 per tonne processed.
- LOM operating margin – $42.5 million.
- LOM undiscounted pre-tax cash flow – $33.7 million.
- LOM undiscounted after-tax cash flow – $27.3 million.
- Pre-tax Net Present Value (NPV) at a 5% discount rate – $27.3 million.
- After-tax NPV at a 5% discount rate – $21.8 million.
- Simple payback of 1.3 years (from April 2021).

SLR's cash flow model is informed by and consolidates physical and economic information provided by Imerys and NGC. The distribution of mining physicals differs slightly between the SLR LOM plan and the Imerys BP, however, SLR's assumptions are not materially different from the Imerys BP.

SLR notes that the Quarry's operating margin is positive in all operating years, thus supporting the declaration of Mineral Reserves.

The undiscounted pre-tax and after-tax cash flows are positive in all Quarry operating years, apart from 2021 (negative $2.1 million pre-tax and negative $2.9 million after-tax). This is primarily due to the reclamation bond deposit.

1.2.1.4 Sensitivity Analysis – Base Case

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by varying the following parameters:

- Graphite concentrate price
- Plant head grade
- Metallurgical recovery
- Operating cost
- Capital cost

For an after-tax NPV at a 5% discount rate, sensitivities have been calculated for -20% to +20% variations. Metallurgical recovery sensitivities have been calculated for -5% to +5% variations. Sensitivity results are presented in Table 1-3 and Figure 1-1.

Of the parameters examined, Quarry economics are most sensitive to changes in graphite price, followed by metallurgical recovery, head grade, operating cost, and capital costs.

Table 1-3: After-Tax Sensitivity Analysis
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Head Grade (%Cg)	NPV at 5% (C$M)
0.80	5.66	11.1
0.90	6.37	16.9
1.00	**7.07**	**21.8**
1.10	7.78	27.0
1.20	8.49	32.1
	% Metallurgical Recovery	**NPV at 5% (C$M)**
0.95	84.7	19.3
0.97	86.5	20.3
1.00	**89.2**	**21.8**
1.03	91.9	23.4
1.05	93.7	24.4
	Graphite Price (US$/t)	**NPV at 5% (C$M)**
0.80	1,281	8.3
0.90	1,441	15.4
1.00	**1,601**	**21.8**
1.10	1,761	28.3
1.20	1,921	34.8
	Operating Costs (C$M)	**NPV at 5% (C$M)**
0.80	42.7	31.3
0.90	48.1	26.6
1.00	**53.4**	**21.8**
1.10	58.8	17.1
1.20	64.1	12.3
	Capital Costs (C$M)	**NPV at 5% (C$M)**
0.80	7.0	23.6
0.90	7.9	22.7
1.00	**8.7**	**21.8**
1.10	9.6	21.0
1.20	10.5	20.1

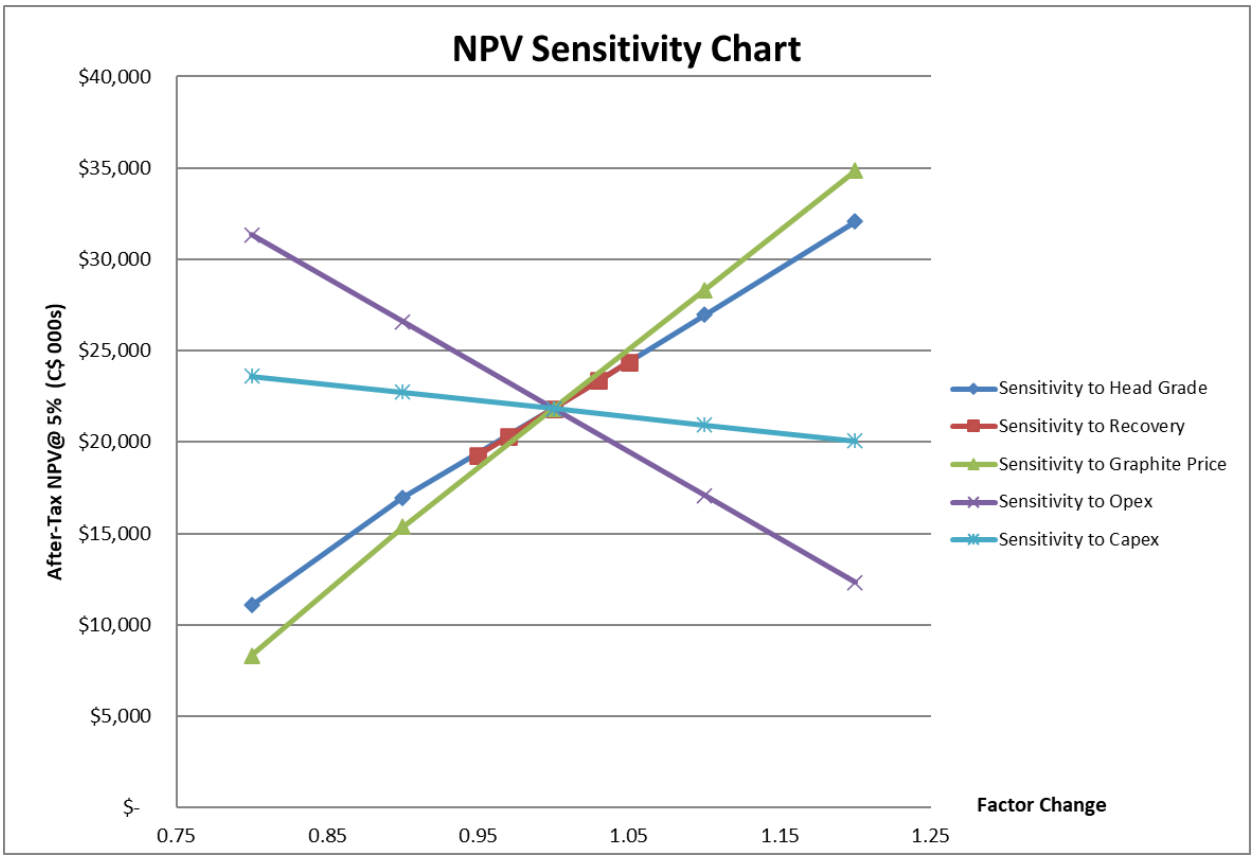


Figure 1-1: After-Tax Sensitivity Analysis

1.2.2 Upside Case Cash Flow

SLR prepared an Upside Case cash flow model that explores the economic impact of certain potential improvements that NGC has identified for the Quarry, post-closing of the acquisition.

SLR notes that certain simplifying assumptions were introduced in the Upside Case at a high level of resolution and assumptions will require further analysis and verification by NGC. Physical and economic inputs that have been modified from the Base Case are reviewed in the sub-sections that follow.

1.2.2.1 Physicals

Under the Imerys BP, the process plant is operated below its historical throughput capacity of 40 tph to 50 tph and approximately 102 kt of stockpiles are processed in 2024. SLR's review indicates plant operating days per week can be increased to five and the 102 kt of stockpile material can be processed together with all Base Case pit feed in 2022 and 2023 without exceeding the plant's maximum historical throughput. With these changes, there is a corresponding opportunity to increase payable graphite concentrate sold in years 2022, 2023, and 2024, though further investigation would be needed to determine if existing and/or new customer agreements could accommodate the revised production plan in order to realize revenue sooner.

SLR notes that based on the current mining shift schedule (one shift per day, five days per week), there appears to be opportunity to accelerate extraction of Pit 2 Mineral Reserves and improve the Quarry's overall cost profile.

With accelerated mining and/or processing, an integrated stockpiling, finished product inventory, and product sales strategy will need to be developed and optimized. SLR recommends NGC undertake a formal LOM optimization study to evaluate the optimal combination of improvements in connection with the terms of customer and Quarry workforce agreements.

Table 1-4 presents the physical assumptions introduced in the Upside Case relative to Base Case assumptions.

Table 1-4: Upside Case vs. Base Case - Physicals
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Potential Improvement	Upside Case	Base Case	Comment
Increase process plant operating time	24 hours per day, five days per week	24 hours per day, 4.5 days per week	Begins start of Q2 2022 (post-closing and labour negotiations concluded)
Process stockpiles earmarked for 2024 in 2022 and 2023	Process approximately 62 kt in 2022 and 40 kt in 2023	Process all 102 kt of stockpile in 2024	Combined pit and stockpile feed plan adheres to maximum historical plant throughput (48 tph)
Increase payable graphite concentrate sold in years 2022, 2023, and 2024	Approximately 15.5 kt sold in each of 2022 and 2023 and 8.6 kt in 2024	Approximately 11.3 kt in 2022, 13.2 kt in 2023, 10 kt in 2024, 4 kt in 2025, and 1.2 kt in 2026	Assumes new and/or existing customer agreements can accommodate revised production plan

1.2.2.2 Economic Inputs

Base Case graphite concentrate pricing is informed by projected revenues and volumes sold under the Imerys BP (May 2021). An Imerys April 2021 preliminary business plan included a forecast of revenue and volumes sold demonstrating the potential for realizing higher average concentrate prices relative to the Imerys BP. The Upside Case includes graphite concentrate pricing implied by Imerys' preliminary April 2021 forecast.

Assuming accelerated processing could begin in Q2 2022, the Upside Case introduces a lower unit process operating cost in 2022. This also assumes that no further capital is required to bring the process plant back to its historical maximum throughput.

Analysis by NGC and its consultants identified the following additional opportunities:

- Elimination of Imerys management fees and reallocation of certain geology and mine engineering tasks to Quarry personnel.
- Realizing salvage credits during the reclamation spend period. Imerys identified approximately $2.5 million in credits from salvage of plant equipment and materials. NGC and its consultants identified an additional $1.5 million that could potentially be realized from the sale of mobile equipment.
- Less income tax related to the Quarry as a result of the acquisition, the resetting of tax pools, and associated debt.

Table 1-5 presents the economic assumptions introduced in the Upside Case relative to Base Case assumptions.

Table 1-5: Upside Case vs. Base Case – Economic Inputs
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Potential Improvement	Upside Case	Base Case	Comment
More favourable LOM average prices for concentrate	LOM average of US$1,641/t	LOM average of US$1,600/t	Higher prices in Imerys April 2021 data vs. May 2021 Imerys BP
Lower unit process operating costs in 2022	$31.59/t milled	$34.76/t milled	Adjusted for maximum historical plant throughput with no additional capital requirements
Elimination of Imerys management fees	Nil	$10.2 million over LOM	NGC and independent analysis
Realize salvage credits during reclamation spending period	$4 million credit	Nil	NGC and independent analysis
Income tax payable	$1.9 million over LOM	$6.4 million over LOM	NGC analysis and independent auditor data

1.2.2.3 Cash Flow Analysis – Upside Case

Table 1-6 presents SLR's analysis of the Upside Case relative to Base Case results.

Table 1-6: Upside Case vs. Base Case – Cash Flow Analysis
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Cash Flow Model Metric (C$ millions)	Upside Case	Base Case	Difference
LOM gross revenue	102.0	99.5	2.5
LOM net revenue	101.7	99.1	2.6
LOM average NSR (C$/t milled)	171.21	167.01	4.20
LOM operating margin	55.9	42.5	13.4
LOM undiscounted pre-tax cash flow	51.2	33.7	17.5
LOM undiscounted after-tax cash flow	49.3	27.3	22.0
Pre-tax NPV @ 5%	43.5	27.3	16.2
After-tax NPV @ 5%	41.8	21.8	20.0

1.3 Technical Summary

1.3.1 Property Description and Location

The Lac-des-Îles Graphite Quarry is located approximately two kilometres south of Lac-des-Îles, Québec, Canada, approximately 110 km northeast of Ottawa and 180 km northwest of Montréal. The Quarry was brought into production by Stratmin. Imerys, as IMETA, acquired Stratmin in 1996. Stratmin became TIMCAL in 2002. TIMCAL's plant in Terrebonne, located approximately 30 km from Montréal, commenced operation in the same year. TIMCAL changed its name to Imerys in 2014.

Natural flake graphite is mined at the Quarry and refined into high quality graphite products of various sizes and purities. These graphite concentrates are directly sold for various applications or further processed at Imerys' Terrebonne plant. The operation has a maximum production capacity of 25,000 tpa and employs approximately 65 Imerys personnel.

1.3.2 Land Tenure

The Quarry is covered by active mining title BM-788, which has an area of approximately 652.6 hectares (ha) over 23 contiguous smaller blocks as part of NTS sheet 31J05. The title is fully registered to Imerys Graphite & Carbon Canada Inc. The title was first acquired in February 1989 for a 20-year period, and has been extended twice, with a current expiration date of January 31, 2029. The title may then be extended for a third ten-year period, however, subsequent extensions beyond the third are available only for five-year periods.

In Québec, quarries are governed by the Mining Act (M-13) and must have either a mining lease or a lease to mine surface mineral substances. Under Section 13.1 of the Mining Act, graphite is not a surface mineral substance and therefore a mining lease is required.

On December 11, 2003, and again on May 14, 2012, TIMCAL executed amending agreements with the surface rights holders of certain lots of the mining lease for the use of land for mining purposes. The agreement states that TIMCAL (now Imerys) must pay the owner of the surface rights a royalty per metric tonne of ore extracted and processed.

1.3.3 History

Table 1-7 outlines relevant exploration, development, and initial operating activities at the Quarry.

Table 1-7: Exploration and Development History
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Activity	Responsible
1982-1983	Detailed geological survey of the area and airborne electromagnetic (EM) survey.	Ministère de l'Énergie et des Ressources du Québec.
1983	Electronic chain-level topographic and Apec Max-Min II horizontal loop EM survey in southwestern sector of the property to define conductors.	E.Gaucher & Associés in conjunction with Orwell Energy Corporation Ltd.
1987	Geophysical survey and 12 drill holes (950 m) campaign.	Stratmin Graphite Inc.

Year	Activity	Responsible
1988	EM survey, trenching, 221 drill holes (16,414 m) and extraction of 2,018 t of ore.	Stratmin Graphite Inc.
1989	Drilling, commissioning of the new mill, and beginning of operations.	Stratmin Graphite Inc.

Prior to this report, recent resource and reserve estimates have been completed by Imerys' corporate division in Europe. The Quarry receives strategic and long-range technical information from its corporate counterparts from which shorter-term mining and processing plans are developed by site personnel.

There have been numerous historical internal reserve estimates completed by the current and past operators of the Quarry. SLR has not been provided with sufficient information to disclose historical estimates.

1.3.4 Geology and Mineralization

The Quarry is located in the southwestern portion of the Grenville Geological Province of the Canadian Shield. The Grenville Province is restricted to the north by the Superior and Churchill provinces and to the south by sedimentary rocks of the St. Lawrence Platform and the Appalachian Province. The Grenville Front separates the Grenville Province from the Superior Province. Geographically, the Grenville Province is subdivided into three parts: west, central, and east. The Quarry is situated in the west part.

The Grenville Province is composed of large eastward-dipping supracrustal belts, each one dipping eastward below successively younger ones due to the pushing and adding of new terranes during distinct phases of orogenic activity. The terranes are fault-bounded crustal blocks that are exposed over a wide belt from southwestern Ontario, through northern New York State to Labrador.

The Grenville Province is divided into three parts, the Autochthonous, Parautochthonous and Allochthonous tectonic belts. Intense ductile deformation occurred during the Grenvillian orogenic cycle (1,160 Ma to 970 Ma). During this cycle, the different terranes were thrust up and over each other. The graphite deposit that comprises the Quarry is hosted within the Allochthonous tectonic belt, which is composed of Paleoproterozoic to Mesoproterozoic rocks.

Graphite mineralization at the Quarry is hosted in a strongly folded marble unit within a paragneiss host rock, and mineralization is characteristic of flake graphite. Internal waste units of paragneiss and intrusive rocks have been identified within the marble. The fold hinge line is oriented approximately north-south and the hinge plane dips to the east at approximately 40° to 50° to nearly horizontal towards the south end of the deposit. Unconsolidated Pleistocene deposits are widespread in the area and overlay the deposit.

1.3.5 Exploration Status

No exploration work has been conducted by or on behalf of NGC. There is no current exploration on the deposit by the current owner, and past exploration by either the current owner or past operators has not been digitally documented. No drilling has been conducted by or on behalf of NGC. Past exploration and drilling indicate the presence of significant graphite mineralization outside the Quarry, and geophysical surveying by Stratmin identified numerous significant EM conductors on the property. In addition, there are significant graphite intersections in resource drill holes both beneath the current mineralization wireframe and to the south of grid line 11,650 N.

1.3.6 Mineral Resources

Mineral Resources estimated by Imerys for the Quarry used all drill results available to 2012 and depleted for production using a drone survey dated April 13, 2021. SLR is not aware of any additional drilling at the Quarry after this date. Mineral Resources are hosted in a strongly folded marble/metamorphosed dolomite unit within a paragneiss host rock.

The current Mineral Resource estimate is based on an open pit mining scenario using a 4% Cg cut-off grade and includes only in-situ material and not stockpiles. The Mineral Resources are constrained within a design pit to satisfy the CIM (2014) definitions requirement that Mineral Resources demonstrate reasonable prospects for eventual economic extraction.

Mineral Resources dated April 30, 2021 are summarized in Table 1-1. Mineral Resources inclusive of Mineral Reserve are estimated to total 621 kt averaging 7.1% Cg. All Mineral Resources have been incorporated into the Life of Mine (LOM) plan and there are no Mineral Resources exclusive of Mineral Reserves. All Mineral Resources have been classified into the Indicated category.

Key inputs, parameters, and procedures used to estimate Mineral Resources include the following:

- Assay samples range in length from 0.09 m to 3.4 m and were used for block grade interpolation after capping graphite grade to 9% organic carbon (Cg).
- Unsampled intervals located within the mineralization wireframe have been ignored and zero grade was assigned to internal waste domains within the mineralization wireframe.
- The block model has parent cells measuring five metres by five metres by six metres and a minimum sub-cell size of 1.25 m in the X and Y directions and 1.5 m in the Z direction. The block model fully encloses the mineralization wireframe and open pit design.
- A two-pass approach was used to interpolate block grades using ordinary kriging (OK). A hard boundary was used to prevent the use of samples within the waste domains.
- All blocks within the mineralization wireframes situated within the design pit have been classified as Indicated Mineral Resources.

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

1.3.7 Mineral Reserves

Quarry personnel report that internal resource/reserve estimations are completed by Imerys' corporate division in Europe. The Quarry receives geology and mine engineering information from its corporate counterparts from which mining plans are developed.

Pit 2 is the last pit to be mined at the Quarry and is located at the north end of the property. Pit 2 is subdivided into Pit 2A (depleted south end) and Pit 2B, which lies north of Pit 2A. SLR was able to reproduce and confirm the remaining Pit 2B volumetrics using the pit design and the adjusted April 2021 pit and surface topography.

The Mineral Reserve estimate for the Quarry is based on the resource block model estimated by Imerys. Mineral Reserves have been classified as Probable in accordance with CIM (2014) definitions. Only those Mineral Resources that were classified as Indicated were given economic attributes in the mine design and when demonstrating economic viability. Mineral Reserves have been derived using several mining extraction and processing factors to arrive at plant feed physicals.

No pit optimization was performed to inform the pit design. Such optimization work typically targets the highest pit value considering parameters such as commodity price, operating costs, pit slopes, etc. In the opinion of the QP, Pit 2 and stockpiled material at the Quarry can be declared a Mineral Reserve, though this Mineral Reserve may not be optimized from an economic standpoint.

Mineral Reserves for the Quarry are summarized in Table 1-2.

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

1.3.8 Mining Methods

Mining of mineralized material and waste rock is carried out by a mix of Imerys employees and long-term contractors using conventional open pit methods consisting of the following activities:

- Pit wall clean-up and mechanical scaling by Imerys personnel using a small excavator fleet.
- Pit wall control and production drilling by drill contractor Forexplo Inc. (Forexplo) using conventional production drills.
- Blast tie-in and initiation completed by Imerys personnel. All other blasting related tasks completed by Orica Canada Inc. (Orica) or Forexplo.
- Loading and hauling operations performed by Imerys personnel with front-end loader, hydraulic excavators, and rigid frame haulage trucks.
- Primary production equipment is supported by smaller front-end loaders, excavators, a dozer, and a grader.

The pit component of the Quarry has a maximum annual production rate of 235,000 tpa (1,000 tpd) of graphite-bearing material.

Pit 2 is the last pit to be mined at the Quarry and is located at the north end of the property. Ore is hauled from active Pit 2 benches to the on-site crusher, a distance of more than two kilometres. Pit 2 mining activities are progressing in a retreat fashion to the north end of the pit allowing waste backfilling to proceed at the south end of Pit 2/Pit 6.

Recent ore production for the Quarry is summarized in Table 1-8.

Table 1-8: Historical Production (2018 to YTD 2021)
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Units	2018	2019[1]	2020[2]	2021[3] (estimated)
Ore mined	t	178,294	219,647	80,224	88,048
Waste mined	t	2,028,161	994,871	532,104	550,604
Total rock moved	t	2,206,455	1,214,518	612,328	638,652
Stripping ratio		11.38	4.53	6.63	6.25
Graphite grade	% Cg	7.25	7.91	8.19	7.70

Notes:

1. Two-month operations stoppage.
2. Six-month operations stoppage (COVID-19 pandemic).
3. Year-to-date as of June 2021.

To facilitate shorter waste hauls and limit visual impacts and reclamation obligations, waste rock is currently being dumped and dozed from several locations into the Pit 6 WRF (south of Pit 2), forming three overlapping waste piles in the pit bottom. Below these waste piles, Pit 6 and Pit 2 have been mined out to their final pit limits.

Should any additional waste rock disposal capacity be required, waste rock could be hauled and placed in the water body located between Pits 12 and 16 where tailings are currently being deposited (immediately east of the process plant).

No additional waste or overburden stripping is required to the end of the Quarry mine life as these material movements were completed during pioneering activities during the development of Pit 2. Pit 2 has been excavated to all ultimate pit lateral limits, with all remaining extraction to occur as part of sinking to the ultimate pit bottom.

1.3.9 Mineral Processing

ROM feed from Pit 2 and stockpiles is crushed in a conventional jaw crusher. Crusher product is fed to the silo via a conveyor where a 24-hour retention time is possible. Calcium chloride is added to the feed to minimize ore freezing in the silo. Vibrating feeders at the bottom of the silo feed the grinding circuit (semi-autogenous grinding mill and ball mill).

From the grinding circuit, the ore is treated in the flotation and gravity separation circuits. The circuit is designed to recover coarse graphite as early as possible during the separation process to avoid damaging the coarse flakes.

Graphite concentrate is filtered on a drum filter followed by drying in a kiln. Kiln product is screened into different product size fractions. Products are bagged in 25 kg bags or 1,000 kg bags depending on customer requirements. A sample from each bagged product is checked for quality control and kept for a period of six months.

Imerys reports that the ideal plant feed range falls between 7% Cg and 7.5% Cg. Typically, actual feed grades range between 6% Cg and 8% Cg. According to Imerys, the less-than-ideal actual grade range is a result of challenges primarily related to the availability of experienced staff and the manual-intensive nature of the Quarry's grade control program. Plant feed grades are verified twice a day from three stockpiles of differing grade ranges.

1.3.10 Project Infrastructure

Primary infrastructure at the Quarry comprises:

- Open pits:
  - Pit 2 – active quarry mining operations and in-pit, non-mineralized waste rock disposal.
  - Pit 6 – historic mined-out pit used as non-mineralized WRFs.
  - Pits 12 and 16 – historic mined-out pits used as a mineralized WRF and site of current tailings storage and deposition.
- Waste rock storage facility constructed above original ground surface at the southwest corner of the property.
- Primary crusher facility with rock breaker and conventional jaw crusher.
- Processing plant.

- TMF located within Pits 12 and 16.
- Mechanical shop.
- Warehouse.
- Administrative offices.
- Gatehouse.

Since at least 2014, all waste rock has been placed in the Quarry's mined-out pits.

The historic TMF, located in the southwest corner of the property, was in operation from 1989 and ceased to receive tailings in 2013.

In early 2014, tailings deposition began in the historic Pit 12 in co-deposition with waste rock mined from Pit 6. Final closure activities for the TMF began in 2015. At the time of Soutex's site visit, the TMF was fully revegetated.

1.3.11 Market Studies

Global graphite market information was provided by Benchmark and NGC:

- Benchmark estimates that worldwide production of natural flake graphite in 2021 will be just over 1 Mt of which China will produce approximately 75%. Brazil (8%) and Mozambique (6%) are expected to make up the bulk of the production balance, with minor percentages coming from Madagascar, Tanzania, and Europe.
- In its Q2 2021 forecast, Benchmark estimates that worldwide demand for natural flake graphite in 2021 will be 913 kt. Historically, the single biggest use of graphite has been for the manufacture of refractories for the steel industry (blast furnace brick) which accounts for over 40% of demand or 400 kt.
- There is no posted spot price or futures market for graphite. Sales are negotiated between producers and consumers of which there are many. Some have long standing relationships and negotiate prices and volumes annually, however, typically there are no long-term contracts or off-take agreements.
- Because of potential demand from the growing electric vehicle (EV)/lithium-ion battery (LiB) markets, NGC notes there are over 20 advanced stage graphite projects outside of China that have completed feasibility studies. They represent a significant source of future supply, however, NGC notes overall supply is expected to remain constrained given that not all projects are expected to produce battery grade graphite products and typical project development factors and risks, e.g., country/political risk and project permitting, financing, and construction timelines.
- Graphite is the anode material in LiBs and is their largest single component. Natural graphite-based anode material is called spherical graphite (SPG) and is manufactured from mined natural graphite concentrates through a process that involves micronization, rounding, purification, high temperature heat treatment, and coating.
- To be used in the manufacture of SPG, NGC notes that mined concentrates should have a purity of 94% or higher, have a high bulk density, high crystallinity, and capable of being economically rounded and purified.
- Benchmark estimates that demand for flake graphite from the anode material market will be approximately 350 kt in 2021 and that flake graphite production needs to more than double by 2025 to meet this demand.

- To consistently attract buyers and achieve favourable prices, generally concentrates must be above 150 mesh in size (small flake), have a carbon content greater than 94%, and not have any undesirable impurities.
- Prices increase with flake size and carbon content. Premiums are relatively small, increasing from +150 mesh (small) flake to +100 mesh (medium) and +80 mesh (large flake). Prices are notably higher for rarer sizes (+50 mesh (XL) and +32 mesh (XXL) flake sizes).
- NGC notes that most graphite mine concentrates, produced by flotation alone, range between 94% Cg and 98% Cg and most also produce a substantial amount of -150 mesh material (micro flake and fines) at less than 94% Cg. This material presents a marketing challenge as it is not suitable for many of the major markets.

The Quarry has been able to achieve an average price of approximately US$1,575/t for its concentrates over the 2019-2021 period. Imerys Business Plan (BP) assumptions imply annual average unit prices for graphite concentrate increasing from US$1,508/t to US$1,743/t over the 2021 to 2025 period.

1.3.12 Environmental, Permitting and Social Considerations

1.3.12.1 Environmental Impact Assessment

No EIAs were conducted for the Quarry as this was not required by federal or provincial legislation at the time, however, the Closure Plan of November 2002 submitted by Roche provides a detailed description of the ambient environment as submitted to the MDDELCC in 1989, when the authorization was sought for the development of the concentrator and historic TMF. Study updates were completed in 1995 (part of a request for the expansion of the historic TMF), in February 2002 (part of the Quarry's dewatering project) and in 2012 (certificate request for Pit 2 Exploitation).

Soutex consulted the Protected Areas Register on MDDELCC's web site and can confirm the Quarry is not located in the vicinity of national parks and other protected natural areas.

1.3.12.2 Permits and Regulatory Reporting

Part of the mining lease (BM 788) held by Imerys is located on Lot V, land which is zoned as agricultural. Imerys has obtained authorization from the Commission de Protection du Territoire Agricole du Québec (CPTAQ) to use these lands for its operating activities. These lands represented 200 ha of the 676 ha of the mining lease.

Imerys operates the Quarry under authority of Industrial Sanitation Certificate No. 201315001, which the MDDELCC issued to Imerys on February 25, 2015 (a modification of the first issue of attestation dated October 22, 2013). The Certificate was issued under the Québec Environmental Quality Act (EQA RLRQ, Chapter Q-2, section IV.2). The Certificate establishes the environmental conditions under which Imerys must carry out its mining activities and establishes annual variable fees that Imerys must pay for the contaminants released to the environment.

The Quarry holds a permit for the storage of petroleum products in four surface tanks issued by the Régie du Bâtiment du Québec (No. 1012110). The permit is valid until June 30, 2022.

In compliance with permit requirements, Imerys reports annually to MDDELCC on the following items:

- Water abstraction.
- Effluent discharge quality.

- Air emissions (sulphur dioxide emissions calculated from the sulphur content of the fuels used on the site and the quantities consumed from those fuels, and calculated dust emissions).
- Noise and vibrations.
- Waste management.
- Mine tailings and waste rock deposition volumes.

Annual reports to MDDELCC include groundwater levels and quality in a set of boreholes around the pits.

For years 2018 to 2020, Imerys' reporting data had no exceedances of authorized abstraction volumes, effluent discharge standards, water quality standards in surface and groundwater, nor any noise or vibration issues. Sulphur and total particulate matter emissions during the period were well below reporting threshold limits.

The Quarry is authorized to withdraw water from the Lac-des-Îles River and re-use water on site. Fresh water is drawn from the Lac-des-Îles River via a pumping station located near Route 309. According to annual reports submitted by Imerys to the MDDELCC in 2018, 2019, and 2020, the volumes of water withdrawn from the river were well below the volumes authorized by the MDDELCC.

The Quarry is authorized to discharge effluent to the Lac-des-Îles River. A measuring station is installed at the final effluent of the polishing pond and ensures continuous recording of pH, flow, and effluent quality. Imerys reports annually to MDDELCC on the volume of discharges and its compliance with discharge standards.

Per a review completed by Roche in 2002, there was no mention of threatened or vulnerable species, those likely to be so designated, nor any species of interest noted on the Quarry property nor within the Quarry's mining area of influence, however, the request for a certificate of authorization submitted to the MDDELCC in 2002 (Pit 2) indicated a species that would likely be designated threatened or vulnerable outside but close to the project study area, i.e., the hoary bat (*Lasiurus cinereus*).

1.3.12.3 Non-Compliance Review

According to Roche, apart from a burst of water that occurred at the historic TMF in the spring of 2011 (which resulted in significant suspended solids in the Quarry's final effluent), analyses carried out since 1990 demonstrate the Quarry's final effluent generally complies with the applicable regulation (criteria of Directive 019). According to Roche, controls put in place following the 2011 incident have proven to be effective in controlling the entrainment of suspended solids.

A corresponding notice of infringement was published by the MDDELCC specifying an infringement with respect to final effluent quality occurred between March 13 and October 17, 2012. During Soutex's site visit, Imerys reported the Quarry's final effluent meets the criteria of Directive 019 and the 2012 non-compliance is the only exceedance that has occurred during the Quarry's operating history.

1.3.12.4 Water and Waste Management

According to Roche, the Quarry's source materials, mineral processing, and tailings management operations do not produce AMD and thus there is no water treatment required for the final effluent.

According to a work document of the MDDELCC, Quarry tailings may be considered low risk as the tailings metal concentrations do not exceed Level A Criteria stipulated by the MDDELCC's Soil Protection and Contaminated Land Rehabilitation Policy. TCLP-1311 and SPLP-1312 leaching tests completed in 2008 on

five samples (Roche, certificate request 2012) indicate the Quarry waste rock piles are "low risk" within the meaning of Directive 019 of the MDDELCC.

The TMF, located in the southwest corner of the property, was in operation from 1989 and ceased to receive tailings in 2013. From 2002 until 2013, tailings generated from mining of Pit 12 were deposited in the mined-out Pit 16. In early 2014, tailings deposition began in the mined-out Pit 12 in co-deposition with waste rock mined from Pit 6.

Imerys has applied for the disposal of waste rock and tailings in Pit 2. In the supporting report, Solumines indicated that the remaining capacity for in Pit 12 was 250,000 m^3. The report indicated that a volume of 204,000 m^3 of waste rock will be deposited in Pit 12, which leaves capacity for an additional 46,000 m^3 for disposal of additional waste rock.

1.3.12.5 Recognized Standards and On-going Impacts Review

Imerys conducts internal and external audits and has been certified under ISO 14001 and 18001 standards.

Imerys identifies environmental impacts and associated controls for both normal and abnormal operating conditions. Impacts are identified through a risk assessment process conducted internally by Imerys. Imerys reports that stakeholders were identified and engaged to identify impacts, although no formal records of these interactions were kept. Imerys identified stakeholders to include:

- National and provincial regulators.
- The municipality of Saint-Aimé du Lac-des-Îles.
- Shareholders, employees, suppliers and subcontractors, and worker unions.
- Customers, landowners, environmental organizations, and college and university students.
- The media, residents, and users of the territory of the municipality of Saint-Aimé-du Lac-des-Îles.
- Immediate neighbours and emergency services.

Imerys has a collective bargaining agreement (CBA) with the Union of Works Timcal Canada Works Inc. (the Union) signed in November 2016 and valid until October 31, 2021. NGC reports that contract negotiation has been deferred until after NGC's acquisition of the Quarry closes.

A preliminary search using the Government of Canada First Nations Interactive Map identifies the Kitigan Zibi Anishinabeg First Nation reserve approximately 40 km to the southwest of the Quarry, near Maniwaki. Based on the QP's review, this Indigenous Community has not been consulted nor has it been determined if their traditional way of life has been impacted by the Quarry and associated activities.

Imerys identifies the following primary concerns raised by landowners, environmental organizations, residents, and neighbours:

- Environmental protection.
- Groundwater contamination.
- Being kept informed of Quarry activities and how these may affect people.

All identified impacts were assessed as being insignificant, except for a change in the landscape caused by ore and waste rock piles and soil contamination through oil leaks at the crusher. Quarry decontamination and restoration measures are listed as controls. A spill response procedure is in place and emergency spill stations are installed at several locations around the Quarry to assist with immediate response.

1.3.12.6 Closure Plan

The fourth revision of the Quarry's Closure Plan was submitted to MERN in October 2014. It was approved after consultation with MDDELCC on July 23, 2020. The next revision of the Quarry's Closure Plan must be submitted to MERN no later than August 2022.

New and amended Closure Plan approvals are contingent on the payment of a financial guarantee. The current estimated cost of Closure Plan restoration work is $8,232,941. As of November 5, 2021, the amount paid as security is $6,535,055. The guarantee held by MERN consists of a sum of $1,531,396 in cash and an irrevocable letter of credit in the amount of $5,003,659 (No. 10011689) issued on January 20, 2021, by the Royal Bank (RBC). The letter of credit is valid until January 19, 2022. The last payment ($1,667,886) is due July 23, 2022.

Given the height of the historic TMF retaining dike, Imerys will have to seek an opinion from MDDELCC on whether the structure is subject to the Dam Safety Act. If subject to the Act, a long-term follow-up program could be requested by MDDELCC. The Closure Plan monitoring cost estimate does not include this expense.

Stability studies for pit and WRF slopes will be carried out when mining activities cease. Stabilization measures may be required to meet the stability criteria of the MERN restoration Guide. Norda Stelo's cost estimate assumes that no additional work will be triggered from study findings.

Security and site access restrictions will be put in place for Pits 2 and 12. The proposed measures will be subject to agreement with the surface rights holders.

In the QP's opinion, Imerys' experience and revegetation performance lend credibility to future cost estimates. Contrary to the indications contained in the Closure Plan, Imerys confirmed all waste rock pile surfaces will be revegetated.

1.3.13 Capital and Operating Cost Estimates

Typically, in the final years of a mineral asset, growth and sustaining capital expenditures are minimal. As production activities began at the Quarry in the early 1990s, and closure activities are planned for the 2024 to 2028 period, SLR considers the Quarry to be in the final years of mine life.

Table 1-9 presents a summary of the capital cost estimates assumed in the economic analysis of the Quarry. In the sub-sections that follow, additional commentary is provided discussing the basis for the cost assumptions.

Table 1-9: Summary of Capital Cost Estimate
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Cost Type	C$000	Total C$000	Comment
Capitalized waste and overburden removal	-	-	Complete at start of Pit 2
New mine maintenance facility	500	500	Allowance in 2021
Closure	Years 2023 to 2028	8,233	See Sections 20 and 22
Total		**8,733**	

Actual and forecast operating costs for the Quarry were made available for review at a high level of consolidation. Table 1-10 presents a summary of the operating cost estimates SLR has assumed in the economic analysis of the Quarry.

Table 1-10: Summary of Operating Cost Estimate
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Cost Category	LOM (C$000)	LOM Average (C$/t mined)	LOM Average (C$/t processed)	LOM Average (C$/t shipped)
Mining	24,558	8.53	41.36	492.78
Processing	19,574	6.80	32.97	392.78
Overhead	6,885	2.39	11.60	138.16
Shipping	2,388	0.83	4.02	47.92
Total	**53,405**	**18.55**	**89.94**	**1,071.63**

2.0 INTRODUCTION

SLR Consulting (Canada) Limited (SLR) and Soutex inc. (Soutex) were retained by Northern Graphite Corporation (NGC) to prepare an independent Technical Report on the Lac-des-Îles Graphite Quarry (the Quarry), located near Lac-des-Îles, Québec, Canada.

The purpose of this Technical Report is to support public disclosure for NGC as it relates to NGC's acquisition of the Quarry from Imerys Graphite & Carbon (Imerys). This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

The Quarry is located approximately two kilometres south of Lac-des-Îles, Québec, Canada, 110 km northeast of Ottawa and 180 km northwest of Montréal. The Quarry was brought into production by Stratmin Graphite Inc. (Stratmin) in 1989. Imerys, as IMETA, acquired Stratmin in 1996. Stratmin became TIMCAL Canada Inc. (TIMCAL) in 2002. TIMCAL's plant in Terrebonne, located approximately 30 km from Montréal, commenced operation in the same year. TIMCAL changed its name to Imerys in 2014.

Graphite is mined at the Quarry using conventional open pit mining methods and refined at the on-site processing facility into high quality graphite products of various sizes and purities. The Quarry has a maximum production capacity of 25,000 tonnes per annum (tpa) and employs approximately 65 owner personnel. A portion of the products from the Quarry are shipped for further processing to the Terrabonne plant, which is not included in NGC's acquisition. Quarry and Terrabonne concentrates are sold to industrial customers involved in refractory, engineered materials, and polymer applications.

Imerys' Life of Mine (LOM) plan for the Quarry forecasts mining to late 2023, and sale of stockpiled material into 2024, followed by mine closure and reclamation.

NGC is a mineral development and technology company focussed on developing its Bissett Creek graphite deposit and upgrading mine concentrates into high value components used in lithium-ion batteries, electric vehicles, fuel cells, graphene and other advanced technologies. On June 7, 2021, NGC entered into an option agreement to earn up to an 80% interest in the South Okak nickel-copper-cobalt project, located 80 km southeast of Voisey's Bay, Labrador, to diversify into other battery minerals.

2.1 Terms of Reference

SLR Consulting (Canada) Limited (SLR) and Soutex inc. (Soutex) were retained by NGC to prepare an independent Technical Report on the Quarry. The purpose of this Technical Report is to support public disclosure for NGC as it relates to NGC's acquisition of the Quarry from Imerys. Imerys' Terrabonne processing facility is not included in NGC's acquisition.

The Qualified Persons (QP) and their responsibilities for this Technical Report are presented in Table 2-1.

Table 2-1: Qualified Person – Report Responsibilities
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Report Section(s)	Responsibility Detail	Qualified Person(s)
2 to 6	All content except Past Production	Luke Evans
6	Past Production	Guy Comeau
7 to 11	All content	Marie-Christine Gosselin
12	All content	Luke Evans
13	All content	Guy Comeau
14	All content	Luke Evans
15 and 16	All content	Marc Lavigne
17	All content	Guy Comeau
18 and 19	All content	Marc Lavigne
20	All content	Jean Dionne
21	Mineral processing costs	Guy Comeau
21	Mining and all other costs	Marc Lavigne
22	All content	Marc Lavigne
23	All content	Marie-Christine Gosselin

The QPs share responsibility for Sections 1, 24, 25, 26, and 27 of this Technical Report.

2.2 Sources of Information

Marie-Christine Gosselin, P. Geo. of SLR visited the Quarry on May 30, 2021. Marc Lavigne, ing, visited the site numerous times between 1996 and 2010. Guy Comeau, ing, P.Eng. and Jean Dionne, ing, P.Eng. of Soutex visited the Quarry on October 4, 2021.

In preparing this report, information was provided to SLR and Soutex by the following personnel:

- Mr. Greg Bowes, P. Geo., Chief Executive Officer, NGC
- Mr. David Marsh, FAusIMM(CP), Chief Executive Officer, URE Consulting Inc.
- Mr. Matteo Zenone, Natural Graphite Operations Leader, Imerys
- Mr. Clément Michel, Imerys
- Mr. Maxime Forsoni, Geologist, Imerys
- Mr. Rob Heinrich, FAusIMM, Group Mining & Geology Vice-President, Imerys
- Mr. Jean-Michel Negroni, EurGeo (CP), Senior Geologist, Imerys
- Mr. Michel Houseman, Geology Manager - Performance Minerals Americas - Corporate Mining and Resource Planning, Imerys
- Mr. Armand Dubus, Mining and Resource Planning Director RAC (Refractory, Abrasives and Construction), Imerys
- Mr. Matthieu Elriz, Global Head of Strategy, M&A and Business Development, Imerys

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

2.3 List of Abbreviations

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

µ	micron
µg	microgram
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
kt	thousand tonnes
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
MASL	metres above sea level
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

3.0 RELIANCE ON OTHER EXPERTS

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

- Information available to SLR at the time of preparation of this report.
- Assumptions, conditions, and qualifications as set forth in this report.

For the purpose of this report, SLR has relied on ownership information provided by Imerys. SLR has not researched property title or mineral rights for the Project and expresses no opinion as to their ownership status.

In preparing this report, SLR and Soutex have relied on other experts as follows:

- Realized flake graphite concentrate revenues and volumes sold – provided by Imerys and Mr. Gregory Bowes of NGC in May 2021 and November 2021.
- Global Graphite Marketing Study – Benchmark Mineral Intelligence, 2021.
- Issuer Market Study Summary – provided by Mr. Gregory Bowes of NGC on November 6, 2021.
- Quarry-related tax information – provided by Mr. Gregory Bowes of NGC on November 11, 2021.

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.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Lac-des-Îles Graphite Quarry is located approximately two kilometres south of Lac-des-Îles, Québec, Canada, approximately 110 km northeast of Ottawa and 180 km northwest of Montréal (Figure 4-1 and Figure 4-2). The Quarry was brought into production by Stratmin in 1989. Imerys, as IMETA, acquired Stratmin in 1996. Stratmin became TIMCAL in 2002. TIMCAL's new plant in Terrebonne, located approximately 30 km from Montréal, commenced operation in the same year. TIMCAL changed its name to Imerys in 2014.

4.2 Land Tenure, Mining Lease, and Surface and Mineral Rights

4.2.1 Land Tenure

The Quarry is covered by active mining title BM-788, which has an area of approximately 652.6 ha over 23 contiguous smaller claims as part of NTS sheet 31J05 (Table 4-1 and Figure 4-3). The title is fully registered to Imerys Graphite & Carbon Canada Inc. The title was first acquired in February 1989 for a 20-year period, and has been extended twice, with a current expiration date of January 31, 2029. The title may then be extended for a third ten-year period, however, subsequent extensions beyond the third are available only for five-year periods.

Table 4-1: Claims Converted to BM-788
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Claims	Area (ha)	Expiration Date
CB690 R 0005 0018 1	11.47	31-Jan-2029
CB690 R 0005 0019 1	13.47	31-Jan-2029
CB690 R 0005 0020 1	13.05	31-Jan-2029
CB690 R 0005 0021 2	15.4	31-Jan-2029
CB690 R 0005 0022 2	14.44	31-Jan-2029
CB690 R 0005 0023 2	15.68	31-Jan-2029
CB690 R 0005 0024 2	16.58	31-Jan-2029
CB690 R 0005 0025 2	18.31	31-Jan-2029
CB690 R 0005 0026 2	17.37	31-Jan-2029
CB690 R 0005 0027 2	19.8	31-Jan-2029
CB690 R 0005 0028 2	21.92	31-Jan-2029
CB690 R 0005 0029 2	22.7	31-Jan-2029
CB690 R 0006 0019 1	31.79	31-Jan-2029
CB690 R 0006 0020 1	31.17	31-Jan-2029

Claims	Area (ha)	Expiration Date
CB690 R 0006 0021 2	40.26	31-Jan-2029
CB690 R 0006 0022 2	44.03	31-Jan-2029
CB690 R 0006 0023 1	45.53	31-Jan-2029
CB690 R 0006 0024 1	44.13	31-Jan-2029
CB690 R 0006 0025 1	43.85	31-Jan-2029
CB690 R 0006 0026 1	43.34	31-Jan-2029
CB690 R 0006 0027 1	42.97	31-Jan-2029
CB690 R 0006 0028 1	42.83	31-Jan-2029
CB690 R 0006 0029 1	42.49	31-Jan-2029

4.2.2 Mining Lease

In Québec, quarries are governed by the Mining Act (M-13) and must have either a mining lease or lease to mine surface mineral substances. Under Section 13.1 of the Mining Act, graphite is not a surface mineral substance and therefore a mining lease is required. As identified under Section 4.2.1 above, the Quarry is covered by mining title BM-788.

The requirements for a successful mining lease application to the Ministère de l'Énergie et des Ressources naturelles (Ministry of Energy and Natural Resources, or MERN) include:

- Submission of a report describing the nature, extent and probably value of an identified deposit, accompanied by a project feasibility study and a scoping and market study with a focus on processing in Québec. This report must be certified by a member of either the Ordre des ingénieurs du Québec or the Ordre des géologues du Québec.
- An approved rehabilitation and restoration plan should be in place.
- Certificates of authorisations in accordance with the relevant sections (22, 31.5, 165 and 201) of the Environment Quality Act should be in place.
- The Office of the Surveyor-General of Québec should have formalized the project survey plan.

After approval, the new lessee is subject to several obligations including:

- Payment of an annual rent in accordance with a rate schedule maintained by MERN.
- Commencement of work within four years of the date the mining lease is issued, unless MERN agrees there are valid ground for delaying work.
- Within 30 days, the creation of a monitoring committee to ensure involvement of the local community.
- Annual reporting requirements covering:
    - Preliminary data for the current year and forecasts for the previous year before October 31.
    - The detailed report for the previous year is due before March 31 and should encompass the nature of exploration and mining work, expenditures (such as research, capital, and repair), nature and cost of restoration activities, and the amount and value of production.

- Updated plans for surface, underground and open-cast working, which have been certified by an appropriately qualified engineer, should be supplied in January of the current year, and updated for December 31 of the previous year.
- On the anniversary date of the lease being granted, the lessees must provide MERN with a report which includes a statement of the amount and value of the ore extracted during the previous year.

With the above requirements in mind, a review of the documentation provided by Imerys was carried out. While many items appeared to be present, SLR could not determine which were part of the formal submission requirements under the obligations of a lessee. Additionally, no evidence of the required community engagement was easily discernable.

4.2.3 Surface and Mineral Rights

On December 11, 2003, and again on May 14, 2012, TIMCAL executed amending agreements with the surface rights holders of certain lots of the mining lease for the use of land for mining purposes. The agreement states that TIMCAL (now Imerys) must pay the owner of the surface rights a royalty per metric tonne of ore extracted and processed. The agreement is further summarized in subection 4.4.

Part of the mining lease held by Imerys is located on land which is zoned as agricultural. Imerys has obtained authorization from the Commission for the Protection of Agricultural Land (Commission de Protection du Territoire Agricole du Québec, or CPTAQ) to use these lands for their operating activities (MERN, 2021).

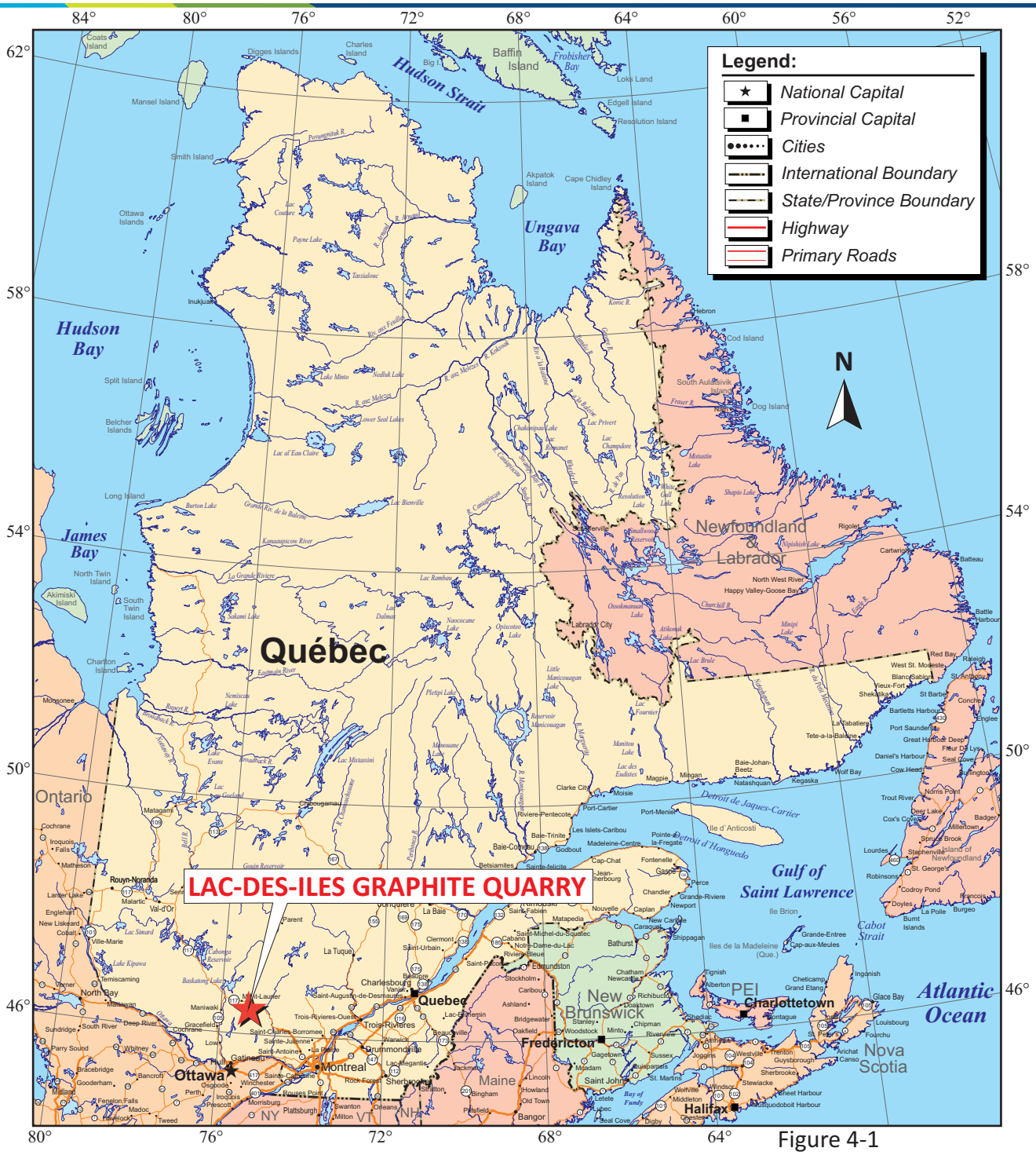


Figure 4-1

Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Québec, Canada

Project Location

February 2022 ***Source: Map Resources, 2020.***

Figure 4-2

Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Québec, Canada

Local Project Area

February 2022 ***Source: Google Earth, 2021.***

0 250 500 750 1,000

Metres

Figure 4-3

Legend:

- *Mining Title BM-788*
- *Private Owner 1*
- *Private Owner 2*
- *Private Owner 3*
- *Private Owner 4*

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Claim Location Map

February 2022 ***Source: https://sigeom.mines.gouv.qc.ca, 2021***

4.3 Royalties

In exchange for surface access/surface rights, Imerys pays royalties to the landowners (a local family of farmers). The royalty agreement was originally executed on July 21, 1988 under Stratmin and subsequently amended on February 5, 1991, December 11, 2003, and again on May 14, 2012. SLR was able to review the two most recent amendments of the agreement.

In summary, the agreement states that TIMCAL (now Imerys) must pay the owners of the surface rights a royalty for each metric tonne of ore extracted and processed within the boundaries of mining lease BM-788 (currently estimated by SLR to be a combined $0.48 per tonne). The May 14, 2012 amendment makes clear that any ore extracted outside the BM-788 mining lease and processed within said mining lease is also subject to the per metric tonne royalty.

The royalty is paid monthly and reconciled quarterly alongside quarterly reporting submitted by Imerys to the Québec Ministry of Natural Resources, Wildlife, and Parks (Ministère des Forêts, de la Faune et des Parcs, or MFFP). Monthly payments are based on the number of truck loads dumped at the Quarry crusher, assuming a haul truck tonnage factor of 35 metric tonne per haul truck.

The per metric tonne royalty amount is adjusted annually on January 1, based on the monthly Consumer Price Index published by Statistics Canada.

The agreement includes an indemnity amount payable to the landowners per tree felled to exploit the land for the purposes of mineral extraction within the mining lease. The amount is minor and SLR assumes that this obligation is zero or near zero given the mature nature of operations at the Quarry.

The agreement is valid until MERN confirms that the site is restored according to the approved rehabilitation (closure) plan.

4.4 Encumbrances

The SLR and Soutex QPs are not aware of any environmental liabilities pertaining to the property. Imerys has all required permits to conduct the proposed work on the property. The QPs are not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Lac-des-Îles Quarry is accessible by road from Ottawa northwards on Highway 309 for approximately 155 km, to approximately five kilometres south of Lac-des-Îles, Québec. From Montréal, the site is approximately 300 km by road, travelling north on the A15 to Highway 117 to Mont-Laurier, then turning south onto the 309 past Lac-des-Îles. An unpaved road, Chemin du Graphite, leads from the highway to the site.

5.2 Climate

The project area has a continental temperate climate with warm, partly cloudy summers and freezing, snowy winters. There are wide temperature variations in each season due to the region's inland location, with high precipitation year-round. The average summer temperature varies between 16°C and 26°C. The average winter temperature in the area ranges from -5°C to -15°C, and snow cover is generally significant.

5.3 Local Resources

The quarry is within the Saint-Aimé-du-Lac-des-Îles municipality, which is part of the Antoine-Labelle Regional County Municipality of the Laurentides region of Québec, Canada. The nearest large community is the town of Mont-Laurier, which lies approximately 24 km to the north of the property. The region's geography is dominated by lakes and mixed forests and in addition to the mainstay logging industry, there is extensive hunting, fishing, and leisure industries.

5.4 Infrastructure

5.4.1 Electricity

Hydro-Québec power lines access the property from the main line parallel to Highway 309.

5.4.2 Water

The Quarry is authorized to withdraw water from the Lac-des-Îles River and re-use water on site. Fresh water is drawn from the Lac-des-Îles River via a pumping station located near Route 309.

5.5 Physiography

The property is located within the Laurentian Region of the Canadian Shield. This physiographic subregion is comprised primarily of uplands and highlands that are dominated by the typical terrain found within the larger Canadian Shield Region. Extensive glacial activity has scoured much of the original sediments and left a distinctive undulating landscape with numerous glacial deposits of boulders, gravel, and sand. The average depth of overburden in the area of the Quarry is approximately four metres.

Post-glacial seawater intrusions and lakes resulted in abundant, locally thick, clay deposits in some parts of the Shield. An intricate hydrological network of lakes, muskeg, rivers, and streams are a dominant

feature of the Canadian Shield. The Rivière du Lièvre runs alongside Highway 309 and several small lakes are within close distance.

The topography in the project area is typical of the glaciated Canadian Shield in that low ridges of rock or gravel are interspersed with low areas of muskeg or lakes. The property is located at an elevation of approximately 300 MASL.

Tree cover in the area is mainly boreal forest, dominated by coniferous trees; the most common being white and black spruce and pines. Large mammals include moose, deer, and black bear. Small fur bearing animals include wolf, fox, lynx, mink, marten, and beaver. The numerous lakes have abundant trout populations.

6.0 HISTORY

6.1 Prior Ownership

The reader is referred to Section 4 for discussion of prior ownership of the Quarry.

6.2 Exploration and Development History

Table 6-1 outlines relevant exploration, development, and initial operating activities at the Quarry.

Table 6-1: Exploration and Development History
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Activity	Responsible
1982-1983	Detailed geological survey of the area and airborne electromagnetic (EM) survey.	Ministère de l'Énergie et des Ressources du Québec
1983	Electronic chain-level topographic and Apec Max-Min II horizontal loop EM survey in southwestern sector of the property to define conductors.	E.Gaucher & Associés in conjunction with Orwell Energy Corporation Ltd.
1987	Geophysical survey and 12 drill holes (950 m) campaign.	Stratmin Graphite
1988	EM survey, trenching, 221 drill holes (16,414 m) and extraction of 2,018 t of ore (Figure 6-1).	Stratmin Graphite
1989	Drilling, commissioning of the new mill, and beginning of operations.	Stratmin Graphite

Legend:

- *Resource Drill Hole*
- *Mineralization Wireframe*
- *EM Conductor*
- *Massive Graphite*
- *Stringer Graphite*

February 2022

Source: Imerys, 2021

Figure 6-1

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry
Québec, Canada

Stratmin EM Exploration Interpretation

6.3 Historical Resource Estimates

Prior to this report, recent resource and reserve estimates have been completed by Imerys' corporate division in Europe. The Quarry receives strategic and long-range technical information from its corporate counterparts from which shorter-term mining and processing plans are developed by site personnel.

There have been numerous historical internal reserve estimates completed by the current and past operators of the Quarry. SLR has not been provided with sufficient information to disclose historical estimates.

6.4 Past Production

The Quarry began operations in 1989 as TIMCAL (Stratmin). Available production information to June 2021 is summarized in Table 6-2. Production information was provided to SLR by Imerys.

The QP notes the following:

- There is a gap in the production data from 2015 to 2017.
- There was little production from July to November 2020.
- Production values for 2021 include January to June.
- The mined grade for the Quarry from 2018 to 2021 ranges from 7.3% Cg to 8.2% Cg.
- Average mined grade is not available prior to 2018.

Table 6-2: Quarry Production Data
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Concentrator Feed Wet tonnes	Total Concentrate Dry tonnes
1989	-	-
1990	124, 519	6, 431
1991	176, 877	10, 054
1992	294, 986	16, 338
1993	301, 674	17, 834
1994	371, 331	23, 053
1995	422, 207	24, 604
1996	423, 321	25, 688
1997	442, 466	24, 101
1998	392, 378	21, 928
1999	353, 442	20, 601
2000	414, 423	22, 708
2001	357, 026	20, 984
2002	259, 901	15, 040
2003	206, 331	12, 225

Year	Concentrator Feed Wet tonnes	Total Concentrate Dry tonnes
2004	220, 807	12, 932
2005	239, 717	13, 926
2006	248, 258	14, 885
2007	233, 539	13, 899
2008	348, 060	19, 298
2009	90, 926	5, 504
2010	310, 698	19, 475
2011	279, 686	18, 150
2012	272, 251	17, 997
2013	189, 300	11, 868
2014	235, 457	14, 989
2018	178,294	13,493
2019	219,647	13,910
2020	80,224	8,171
2021	88,048	4,180

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Quarry is located in the southwestern portion of the Grenville Geological Province of the Canadian Shield. The Grenville Province is restricted to the north by the Superior and Churchill provinces and to the south by sedimentary rocks of the St. Lawrence Platform and the Appalachian Province. The Grenville Front separates the Grenville Province from the Superior Province. Geographically, the Grenville Province is subdivided into three parts: west, central, and east. The Quarry is situated in the west part.

The Grenville Province is composed of large eastward-dipping supracrustal belts, each one dipping eastward below successively younger ones due to the pushing and adding of new terranes during distinct phases of orogenic activity. The terranes are fault-bounded crustal blocks that are exposed over a wide belt from southwestern Ontario, through northern New York State to Labrador

The Grenville Province is divided into three parts, the Autochthonous, Parautochthonous, and Allochthonous tectonic belts. Intense ductile deformation occurred during the Grenvillian orogenic cycle (1,160 Ma to 970 Ma; Rivers et al., 1989). During this cycle, the different terranes were thrust up and over each other. The graphite deposit that comprises the Quarry is hosted within the Allochthonous tectonic belt, which is composed of Paleoproterozoic to Mesoproterozoic rocks.

Regionally, the Quarry is underlain by the Mesoproterozoic Central Metasedimentary Belt (CMB) of the Grenville Province. The CMB comprises north-northeast trending quartzofeldspathic rocks, quartzite, biotite gneiss, limestone/marble, and locally pegmatitic quartzofeldspathic rocks. Regional metamorphism is of upper amphibolite grade and, locally, granulite facies. Suites of north-trending monzonitic, dioritic, and gabbroic rocks are present along the boundaries of the CMB.

The CMB represents accreted lithotectonic terranes (1.22 Ga to 1.21 Ga) that were sealed against the Laurentian continent to form the Rodinia supercontinent. Protoliths to the quartzite and marble domains were shallow-marine and platform sediments, respectively, laid down within a retroarc foreland fold basin developed on the continental (Laurentian) margin during the collision.

Two lithotectonic domains are recognized in the CMB: the marble domain and the quartzite domain. The Quarry is located within the marble-rich domain, a north-south segment of the CMB characterized by abundant marble outcrops within paragneiss. The regional geological setting is illustrated in Figure 7-1.

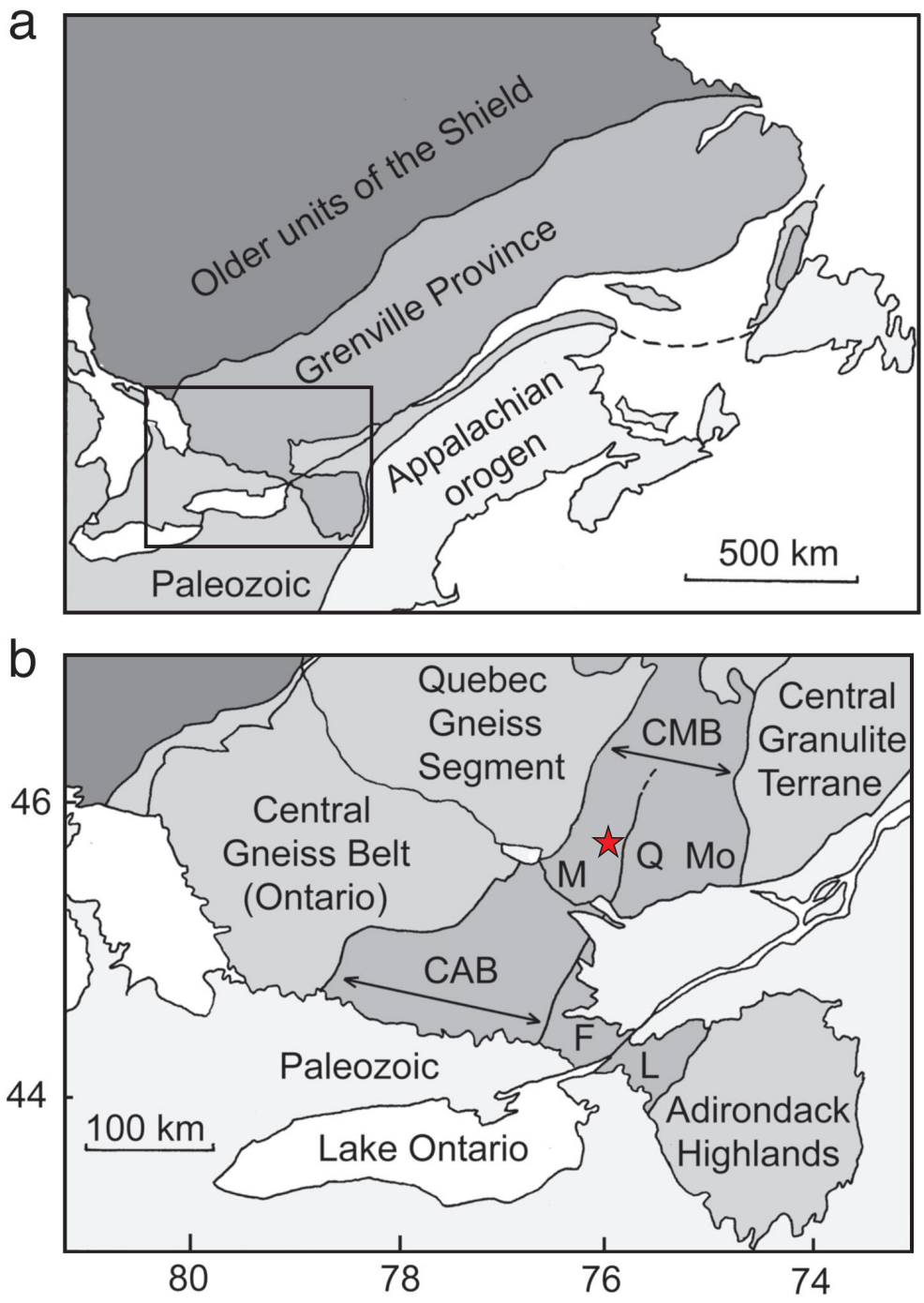


Figure 7-1

Legend:

a *Location of Grenville Province in North America*

b *Crustal Subdivisions of the Southwest Grenville Province subdivided into the Composite Arc Belt (CAB), the Frontenac Terrance (F), the Quartzite domain (Q), the Morin terrane (Mo), and the Marble domain (M).*

★ *Lac-des-Îles Graphite Quarry*

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry
Québec, Canada
Regional Geology

February 2022 ***Source: Dickin and McNutt, 2007***

7.2 Local Geology

The area is underlain by Precambrian metamorphic and intrusive rocks. The oldest rocks belong to the Grenville series metasediments. Unconsolidated Pleistocene deposits are widespread in the area and overlie the deposit.

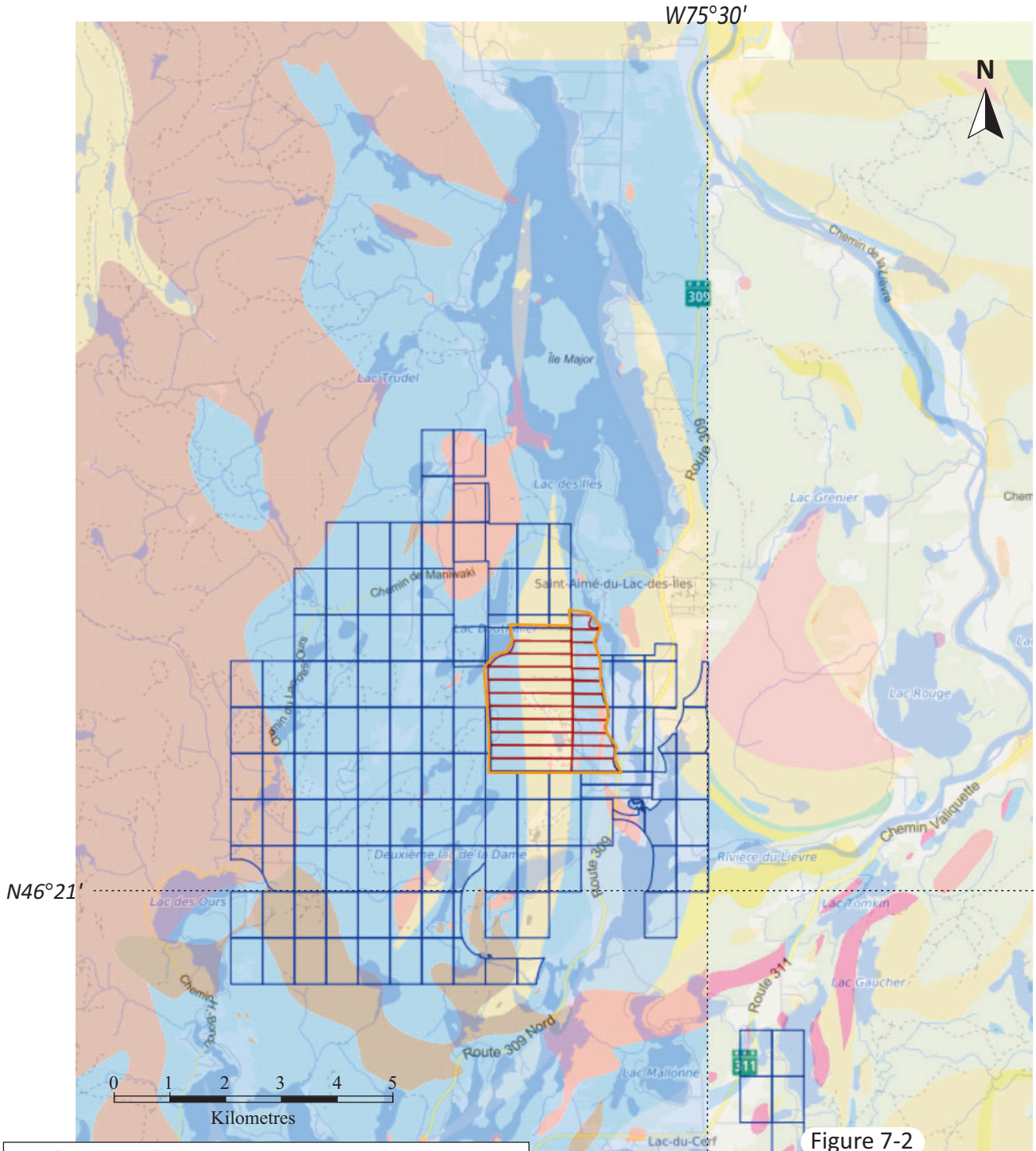
The following description is an extract of Jébrak and Marcoux (2008) on the Lac-des-Îles property:

> *The host rocks of the graphite deposit are metamorphized to amphibolite and granulite facies. They are principally composed of garnet gneiss with sillimanite-plagioclase +/- orthopyroxene-quartz, biotite gneiss with plagioclase +/- orthopyroxene-clinopyroxene-quartz, and dolomitic and calcite marble. Only the marble with a calcite dominance contains large graphite flake, with grades that can reach above 7%. All lithologies are affected by a polyphased tectonic deformation. The graphitic horizon is extremely ductile, is enclaved between two gneiss lithologies and is boudined, folded and graphite enriched in the hinges*.

Graphite is commonly found in the Grenville Province rocks throughout this area and has been commercially mined at several deposits. It is associated with paragneiss, conforming to the beds in regular bands. Graphite mineralization is also located in shear zones at the contact of the gneisses and marble in flakes that are up to several millimetres in diameter. The deposit presents an alternance of quartzite, biotite-felspathic gneiss, garnet-biotite gneiss, crystalline carbonate, marble, graphitic marble, feldspathic rock, and green rock units. The host rock contains traces of sulphur associated with various quartzite horizons of different thickness, biotitic gneiss (with or without garnet), and calc silicates rocks (SIGEOM, 2021).

The unconsolidated surficial deposits of glacial, fluvial, and lacustrine origin cover a large part of the property and surrounding area. The glacial deposits are well developed on hills, which are symmetrically aligned. Glacial striations indicate a S10°E direction of movement. Morainic accumulation of rounded boulders occurred in areas with gentle slopes. Groups of eskers are generally aligned in a north-northeast direction. Post glacial fluviatile and lacustrine deposits generally consist of grey clays, commonly varied yellow quartzose sands, gravels, and boulders. Sand mixed with gravel is found over large flat or gently rolling areas.

Figure 7-2 shows the different regional geological units of the area surrounding the Property.



Geology Legend:

- *Migmatite*
- *Quartzite*
- *Marble, paragneiss, quartzite, amphibolite*
- *Gabbro, microgabbro (dikes)*
- *Granite, pegmatite*
- *Metapelite*
- *Imerys Mining Titles*
- *Active Mining Titles*

February 2022

Source: Imerys, 2021

Figure 7-2

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Local Geology

7.3 Property Geology and Mineralization

Graphite mineralization at the Quarry is hosted in a strongly folded marble unit within a paragneiss host rock, and mineralization is characteristic of flake graphite (Figure 7-3). Internal waste units of paragneiss and intrusive rocks have been identified within the marble. The fold hinge line is oriented approximately north-south and the hinge plane dips to the east at approximately 40° to 50° to nearly horizontal towards the south end of the deposit. Unconsolidated Pleistocene deposits are widespread in the area and overlay the deposit.

Figure 7-3: Hand Specimen of Graphite Mineralization at the Quarry

The following description has been sourced from an Imerys internal memorandum (Dubus, 2010).

The mineralization consists of large graphite flakes and is commonly associated with regular banding of paragneiss, conforming to beds. The protolith is thought to comprise a clayey-carbonate sandstone. A change in the depositional environment resulted in the precipitation of a carbonate platform rich in organic matter with variable carbon content. A subsequent event of terrigenous sedimentation deposited sandstone with clay horizons on top of the carbonaceous carbonate platform.

High pressures and temperatures associated with the Grenville orogeny transformed the sedimentary protoliths to biotite gneiss, graphitic limestone marbles, and garnet gneiss that outcrop at the Quarry. The graphite mineralization is thought to be associated with the transformation of organic matter during metamorphism together with the contribution of deep fluids rich in CO_2 resulting in graphitic limestone marbles. Slow cooling of the mineralized material has produced crystalline large flake graphite.

Graphite mineralization is associated with limestone marbles. The marbles are zoned with respect to calcite content: the core is characterized by a higher calcite content (“soft ore”) that becomes more silicious (“hard ore”) with the introduction of diopside towards its margin. The calcite zonation is thought to reflect the chemical composition of the protolith. The change in calcite content is gradational within the marble, and the contact between the marble and surrounding paragneiss is sharp.

The protolith was disrupted by various intrusive events. Felsic to mafic intrusions have been identified locally, as well as differentiated pegmatites. Intrusions, which range from <0.1 m to several metres in thickness, are emplaced along zones of weakness (shears, formational contacts) and often disrupt the contact between the graphitic mineralization within the marble with surrounding paragneiss.

The sedimentary protoliths, together with the intrusions, have undergone at least three phases of ductile tectonics. The first phase of east-west compression folded the sedimentary package to form an "S" fold. A second phase of compression distorted, flattened, and locally boudinaged the rocks with a general dip to the east. A final, third phase of north-south compression resulted in a north-south undulation of the sequence along this axis. This undulating folding influences the depth at which the graphic mineralization occurs across the deposit. Folding is seen on all scales, from less than one metre to hundreds of metres.

The sequence also underwent several phases of brittle deformation. There are north-south normal faults dipping to the west and a second set of sinistral east-west faults that has displaced some of the graphitic mineralization observed in the main mineralized zone.

The thickness of the marble units varies from an average of approximate five metres to 10 m and higher at the fold noses. Since marble is particularly ductile during the compression phase, the local thickness can vary greatly.

In the context of exploration on the deposit at the Quarry, the north-south axis of mineralization serves as a general guide, with east-west faulting shifting mineralization. This offset is observed within the open pit. The complex folding dictates the depth and thickness of the mineralization. The thickness of graphitic mineralization is greatest within the fold hinges and thins out and can be absent within the fold limbs. The mafic and felsic intrusions, together with pegmatites disrupt the stratabound mineralization and the boundary between ore and waste, which is typically quite sharp, is mixed and gradational.

8.0 DEPOSIT TYPES

Graphite deposits are usually divided into three classes (Spence 1920, Mitchell 1993, Luque et al., 2014). These classes include:

- Amorphous: Graphite represents an aggregate of extremely fine lathes. Amorphous graphite deposits are typically less valuable than flake or vein deposits.
- Flake: Graphite is the scaly or lamellar form of the mineral, commonly found disseminated in metamorphic rocks, such as crystalline limestone, gneisses, and schist.
- Vein deposits: graphite is found in veins or fracture systems along intrusive contacts of pegmatites with host limestones and schists. Vein deposits are typically the most valuable deposit type.

There are two main genetic models that describe graphite mineralization:

- Syngenetic: Graphite deposits result from the conversion of carbonaceous matter through contact or regional metamorphism (growth of graphite during metamorphic process).
- Epigenetic: Precipitation from carbon-bearing hydrothermal fluids or, less commonly, melts (epigenetic; Luque et al., 2014).

These processes are end members; some graphite deposits are formed through both metamorphism and hydrothermal deposition (Papineau et al., 2010a; Luque et al., 2012). Graphitic carbon deposited from hydrothermal fluids occurs globally, in rocks from all depths in Earth's crust and ranging in age from Precambrian to Tertiary (Rumble, 2014). Metamorphic graphite is concentrated in high temperature metamorphic rocks whereas lower-grade rocks generally contain other carbonaceous material (e.g., coal) in addition to graphite (Okuyama-Kusunose and Itaya, 1987)

The former process forms syngenetic deposits (or metamorphic deposits) that yield either amorphous or flake graphite, depending on the metamorphic grade of the host rock (Mitchell, 1993). Flake graphite usually occurs in high-grade gneisses, quartzites, or granulite facies rocks that have a syngenetic origin. The second process forms epigenetic, vein deposits in which lump graphite occurs (Mitchell, 1993). Amorphous, flake, and lump graphite are commercial terms to designate cryptocrystalline (<70 µm), crystalline, and coarsely crystalline graphite (Luque et al., 2014).

Syngenetic graphite deposits, such as at the Quarry, are usually stratabound, with tabular, lenticular, or irregular mineralized bodies. Graphite mineralization results from the progressive transformations that the carbonaceous matter undergoes through prograde metamorphism, or graphitization (Kwiecinska and Petersen 2004). The changes induced by metamorphism on the carbonaceous matter include both structural and chemical modifications which begin during the earlier stages of diagenesis and greatly affect the impurities and final product grade, which can vary from 75% C to 97% C (Luque et al., 2014).

Epigenetic graphite deposits, or 'vein' deposits, are also usually found in high grade metamorphic rocks (mainly granulties) but are usually spatially associated with fracture or vein sets. Epigenetic deposits provide the chemically purest graphite, with carbon contents of approximately 99% in the graphite concentrates. Graphite occurs as nearly monomineralic veins or modules that can be tens of centimetres in size. Individual crystals are quite large, generally centimetres in size (Mitchell, 1993).

9.0 EXPLORATION

9.1 Northern Graphite Corporation

No exploration work has been conducted by or on behalf of NGC.

9.2 Current and Past Exploration

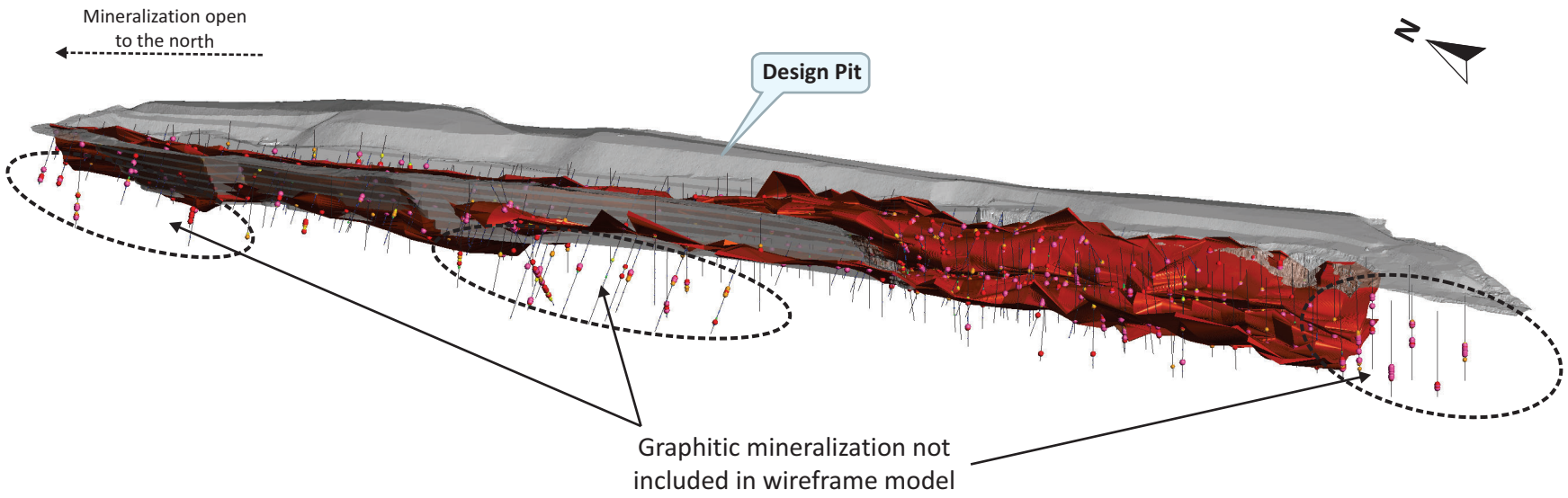
There is no current exploration on the deposit by the current owner, and past exploration by either the current owner or past operators has not been digitally documented. Archived data has been retained in various non-digital formats by Imerys, however, this information has not been made available to SLR.

9.3 Exploration Potential

Past exploration and drilling indicate the presence of significant graphite mineralization outside the Quarry, and geophysical surveying by Stratmin identified numerous significant EM conductors on the property (Figure 6-1).

SLR found some additional historical exploration drilling information in the government assessment files and recommends that this data be digitized as it suggests that there is good potential for additional graphite resources on the property.

In addition, there are significant graphite intersections in resource drill holes both beneath the current mineralization wireframe and to the south of grid line 11,650 N. Mineralization is also open to the north (Figure 9-1). The QP recommends that historical paper records documenting the exploration on the property be collated and the graphite mineralization wireframe interpretation be reviewed for potential areas of extension.



Legend:

Cg (%)

- *< 0.5*
- *0.5 - 2.0*
- *2.0 - 4.0*
- *4.0 - 6.0*
- *6.0 - 8.0*
- *> 8.0*

Drill Hole Traces

Assays

0 50 100 150 200 250

Metres

February 2022

Source: SLR, 2021

Figure 9-1

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Exploration Potential

10.0 DRILLING

10.1 Northern Graphite Corporation

No drilling has been conducted by or on behalf of NGC.

10.2 Current and Past Drilling

Diamond drilling in the resource database provided occurred at the Quarry from 1998 to 2006. Drilling campaigns were undertaken in 1998, 2000, 2001, 2004, and 2006. No information has been retained in the drilling database regarding the drilling procedures, recovery, or sampling during any of the drilling programs. A total of 277 surface core drill holes are included in the resource drill hole database for the Quarry, as summarized in Table 10-1.

Table 10-1: Drilling Campaigns
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Total Drill Holes
1998	61
2004	48
2006	67
2000-2006 (specific year not documented)	101
Total	**277**

The location of the resource drill holes is illustrated in Figure 10-1.

SLR has not received any digital information on additional exploration drilling either by the current operator or past operators that occurred on the property.

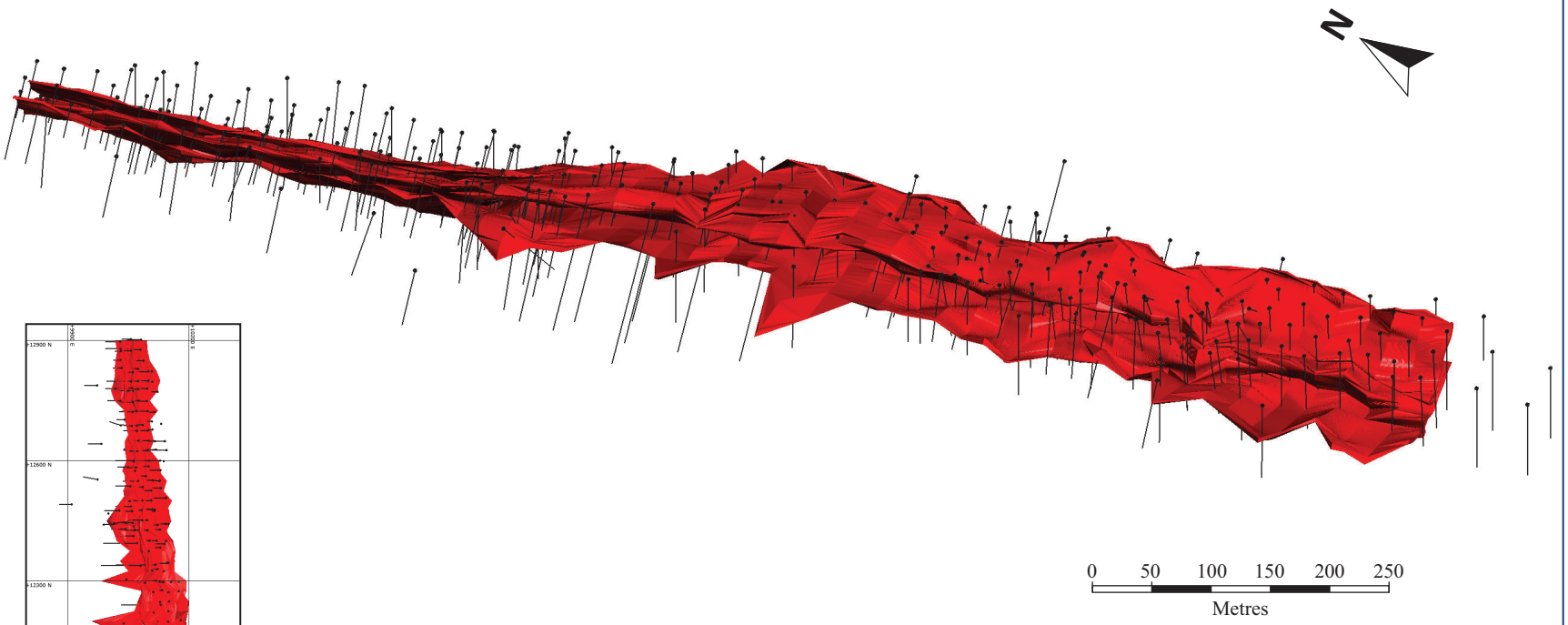


Figure 10-1

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Location of Drill Holes

February 2022

Source: SLR, 2021

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Northern Graphite Corporation

No sampling has been conducted by or on behalf of NGC.

11.2 Drilling Programs

No information has been provided to SLR on the sampling, sample preparation, and analysis procedures employed during the drilling programs in 1998 to 2006. Samples were presumably analyzed for organic carbon (Cg). It is not known what laboratory completed this work or whether it was accredited with the ISO 9001:2008 and ISO 17025 certifications. There is no data on any other elements that may have been analyzed in addition to graphite (i.e., sulphur or other deleterious elements).

11.3 On-Bench Sampling Procedures

Sampling of production drill cuttings is completed by the Quarry supervisor (mine engineer) or surveyor. Production drill patterns are typically on a four metre by four metre grids with production holes drilled to approximately seven metres in depth. Samples of approximately four kilograms to five kilograms are shoveled from drill cuttings piles and secured in plastic bags. Personnel who obtain samples also estimate these for graphite by referencing geological section information along with conferring with drill/blast personnel on the rock type/hardness to assist with the ore blending/processing plan. SLR could not confirm the sample selection/layout procedure during the site visit as the pertinent Quarry staff were not on site at the time of the visit.

11.4 Sample Preparation and Analytical Procedures

Sample preparation is completed at the Quarry by Imerys personnel. Based on site visit observations, SLR has inferred that analysis is completed inside the processing plant facility after drying samples in a dryer.

The Quarry has a small analytical laboratory with a wash station, an acid station, an Eltra analyzer room, and a Rotap sieve room.

Analytical QA/QC consists of calibration of the Eltra analyzer. Ore is burnt and the ash is weighed. Each sample bag has the graphite grade noted along with a particle size distribution (PSD value). Imerys personnel indicated that this information becomes the site sample “certificate”. Samples remain on site: Independent laboratory checks are not conducted by Imerys.

The Quarry does not have a density measurement system. In-situ densities are assumed from a wall blast study that was completed during early operations at the Quarry. The study calculated an in-situ density of 2.8 t/m^3 for waste and 2.9 t/m^3 for mineralized material. As SLR has reported elsewhere, a density of 2.8 t/m^3 is used for all material types and similarly in the block model.

In the QP’s opinion, the Quarry sample preparation and analytical procedures are acceptable.

11.5 Sample Security

No information is available on the sample security during drilling programs. Imerys does not transport any samples off site.

11.6 Quality Assurance and Quality Control

No information is available on the QA/QC programs implemented during the drilling programs on the deposit. This includes the insertion of standard reference material, duplicate, and blank samples within the sample stream, and the verification, preparation, and sample submittal to the analytical laboratory.

Current QA/QC measures at the on-site analytical laboratory include only calibration of the Eltra analyzer. A description of the procedure was not provided to SLR.

In the QP's opinion, Quarry sample preparation, analysis, and security procedures may not meet industry best practice, however, the mine production and reconciliation history indicate that the resource estimation is performing well and this suggests that the underlying data is acceptable.

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

12.0 DATA VERIFICATION

SLR has not reviewed exploration data or validated the resource database against original records. SLR reviewed the resource database using tools provided within the Leapfrog Geo software program and Microsoft (MS) Excel to check for potential issues including:

- Sample length and overlap issues
- Maximum and minimum lengths and assay grades
- Negative assay values
- Drill hole deviations
- Gaps in assays/unsampled intervals
- Assay outliers

SLR makes the following observations on the resource database:

- Drill holes have a single azimuth and dip suggesting that downhole surveys were not completed and there may be small accuracy errors associated with the downhole drilling information used to model the deposit. Greater than 95% of the drill holes are less than 100 m limiting the potential deviations and the impact on local grade estimates. Considering the deposit type and mining method, SLR is of the opinion that the issue is not material.
- SLR identified unsampled intervals inside the wireframes. SLR cautions that unsampled intervals have been ignored and not treated as zero.
- There are several drill hole intersections through the mineralization wireframe with assay data with high grade graphite mineralization (≥4% Cg) but no informing assay samples for grade interpolation. SLR understands this occurs in drill holes that are between digitized sections that were used to triangulate the mineralization wireframe. In such cases, the waste interval samples were not flagged for grade interpolation and ignored.

In the QP's opinion, the data verification undertaken does not meet industry best practices to ensure that the resource database is suitable for Mineral Resource estimation, however, the mine production and reconciliation history suggests that the resource estimation is performing well and that the underlying data is acceptable. In the QP's opinion, given the limited mine life of the Quarry, further data verification is not needed.

12.1 Site Visit

Ms. Marie-Christine Gosselin, P. Geo. of SLR, visited the Quarry on May 30, 2021. During the site visit, Ms. Gosselin was provided with an overview of the operation and a surface site tour. It was not possible to review core, observe the core shack, the on-site laboratory, or take videos or photos. While at the Quarry, SLR visited the surface infrastructure such as the mill, an active pit, ore pads, and tailings. Ms. Gosselin was accompanied by Mr. Greg Bowes, P. Geo., Chief Executive Officer, NGC, Mr. Matteo Zenone, Natural Graphite Operations Leader, Imerys, and Mr. Oliver Peters, Mineral Processing Engineer & President of Metpro Management Inc.

No independent samples were taken as the Quarry has been an operating mine since 1989 and mineralization is clear in hand samples.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Content in this section has been prepared primarily by Soutex, with Guy Comeau of Soutex acting as the QP.

As previously discussed, the Quarry began operations in 1989 as TIMCAL. A summary of available production information is provided in Table 13-1 and Table 13-2.

Soutex notes:

- There is a gap in the production data from 2015 to 2017.
- From the data provided, there was very little process plant production from July to November (five months) in 2020, although concentrate shipments to customers did continue. This is attributed to Imerys' operational posture in response to the COVID-19 pandemic.
- The data from 2021 is from January to June.

The QP has calculated the weight yield assuming an ore moisture of 5%. This weight yield is listed by year in Table 13-1 and is showing an upward trend in the years 2006 to 2014. This trend may be due to an increased graphite head grade, an increased graphite recovery, or decreased concentrate grade.

As presented in Table 13-2, the percentage of coarse graphite (+80 mesh and +50 mesh fractions) increased slightly from 2018 through 2020, thus providing more value for the concentrate. The QP is unable to determine the causes of the increase.

Table 13-1: Annual Process Plant Production Data (1989 to 2014)
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Process Plant Feed (Wet tonnes)	Concentrate Produced (Dry tonnes)	Weight Yield (%)
1989	-	-	-
1990	124, 519	6, 431	5.2
1991	176, 877	10, 054	5.7
1992	294, 986	16, 338	5.5
1993	301, 674	17, 834	5.9
1994	371, 331	23, 053	6.2
1995	422, 207	24, 604	5.8
1996	423, 321	25, 688	6.1
1997	442, 466	24, 101	5.4
1998	392, 378	21, 928	5.6
1999	353, 442	20, 601	5.8
2000	414, 423	22, 708	5.5
2001	357, 026	20, 984	5.9
2002	259, 901	15, 040	5.8

Year	Process Plant Feed (Wet tonnes)	Concentrate Produced (Dry tonnes)	Weight Yield (%)
2003	206, 331	12, 225	5.9
2004	220, 807	12, 932	5.9
2005	239, 717	13, 926	5.8
2006	248, 258	14, 885	6.0
2007	233, 539	13, 899	6.0
2008	348, 060	19, 298	5.5
2009	90, 926	5, 504	6.1
2010	310, 698	19, 475	6.3
2011	279, 686	18, 150	6.5
2012	272, 251	17, 997	6.6
2013	189, 300	11, 868	6.3
2014	235, 457	14, 989	6.4

Table 13-2: Mine and Process Plant Production Data (2018 to 2021)
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Mine Output (t)	Mined Grade (% Cg)	Total Concentrate (t)	Product Distribution			
				Fine (%)	150 to 80 Mesh (%)	80 Mesh (%)	50 Mesh (%)
2018	178,294	7.3	13,493	48	19	19	14
2019	219,647	7.9	13,910	44	18	20	18
2020[1]	80,224	8.2	8,171	42	17	22	19
2021[2]	88,048	7.7	4,180	Distribution data not available for review			

Notes:

1. No mining or processing for five months due to COVID-19 pandemic.
2. January to June.
3. Source: Imerys, 2021.

13.1 Metallurgical Testing

Historic and recent metallurgical study information was not available for review and thus the QP is relying on available processing plant performance history presented herein and in Section 17 to assess forecasted metallurgical performance assumptions. The QP notes that the Quarry has been in operation for over 30 years and during this time has produced saleable graphite concentrate. Historical production can be considered a good predictor of future performance. The QP has not reviewed any metallurgical information that would suggest that future plant feed will be materially different from past plant feed.

13.2 Analytical Procedures

During the site visit, Imerys indicated that a sample from each concentrate product bag is drawn for grade monitoring. The sample is kept in storage for a period of six months. The Quarry's metallurgical laboratory was visited and the facility seemed well stocked and fully functional. Imerys indicated that the laboratory had analytical sampling procedures, however, none were provided for review.

13.3 Recovery Models

No recovery models exist for future production and Imerys has indicated that the relationship between grade and recovery is not clear.

Table 13-3 presents actual overall graphite recovery at the Quarry on an annualized basis. Data for the year 2021 includes January to April. The circuit configuration is modified to achieve a concentrate grade of either 95% Cg or 97% Cg depending on customer requirements.

Actual concentrate grades for the produced graphite concentrate were not available for review, although the QP notes that the Imerys internal mineral reserve statement (April 2021) assumes a concentrate grade of 96.5% Cg. Target concentrate grades are shown Table 13-3.

For further information, the reader is referred to Section 17.

Table 13-3: Overall Graphite Recovery and Target Concentrate Grade
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Graphite Recovery (%)	Target Concentrate Grade (% Cg)
2018	89.9	96.5
2019	89.2	96.0
2020	88.2	96.1
2021[1]	87.8	96.8
Average	89.2	96.3

Notes:

1. January to June.
2. Source: Imerys, 2021.

14.0 MINERAL RESOURCE ESTIMATE

Mineral Resources estimated by Imerys for the Quarry used all drill results available to 2012 and depleted for production based on a drone survey dated April 13, 2021. SLR is not aware of any additional drilling at the Quarry after this date or any drilling in digital format that has been excluded from the resource drill hole database. Mineral Resources are hosted in a strongly folded marble/metamorphosed dolomite unit within a paragneiss host rock. The current Mineral Resource estimate is based on an open pit mining scenario using a 4% Cg cut-off grade and includes only in-situ material and no stockpiles. In the QP's opinion, constraining the Mineral Resources within a design pit satisfies the requirement of the Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions) that Mineral Resources demonstrate reasonable prospects for eventual economic extraction.

Mineral Resources dated April 30, 2021 are summarized in Table 14-1. Mineral Resources inclusive of Mineral Reserve are estimated to total 620 kt averaging 7.1% Cg. All Mineral Resources have been incorporated into the life-of-mine (LOM) plan and there are no Mineral Resources exclusive of Mineral Reserves. All Mineral Resources have been classified into the Indicated category.

Table 14-1: Summary of Mineral Resources - Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Classification	Tonnage (kt)	Grade (% Cg)
Indicated	621	7.1

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within a design pit using a 4% Cg block cut-off grade.
3. Mineral Resources include in-situ material only. Stockpiles have not been considered.
4. Bulk density is 2.8 t/m^3, applied to all material types.
5. Mineral Resources are reported inclusive of Mineral Reserves.
6. The numbers may not add due to rounding.

Imerys constructed a block model of the deposit in 2012, which was provided to SLR. SLR prepared a check estimate in the process of the block model review using informing assay points, wireframes, and parameters used by Imerys. Table 14-2 summarizes the results of SLR's block model check. The QP considers the outcome of the check estimate to be acceptable.

Table 14-2: SLR Block Model Check Estimate
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Imerys Model		SLR Check Model		Difference	
Classification	Tonnage (kt)	Grade (% Cg)	Tonnage (kt)	Grade (% Cg)	Tonnage (%)	Grade (%)
Indicated	621	7.1	617	6.9	-0.6%	-2.3%

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

The Quarry resource drill hole database includes 277 surface drill holes totalling 20,702 m. A three-dimensional (3D) wireframe model for the mineralized graphite zone was generated using graphite assay grades and lithology as guides. Assays with centre points occurring within the mineralization wireframe were flagged and graphite was capped to 9% Cg. Block model grades within the wireframe models were interpolated by ordinary kriging (OK). A single density value of 2.8 t/m^3 was assigned to all blocks, regardless of rock type. The Mineral Resource was assigned an Indicated category based on drill hole spacings, mining history, reconciliation, and demonstration of economic viability by means of inclusion within the Mineral Reserve.

14.1 Resource Database

SLR received a drill hole database consisting of collar, survey, assay, lithology, structure, and hardness data from Imerys in spreadsheet format. In addition, an assay "composite" file of samples used for block grade interpolated was provided as point data, i.e., each composite had a mid-point location but no drill hole intersection information or lengths. Table 14-3 summarizes the records in the resource drill hole database.

Table 14-3: Resource Drill Hole Database as of Year End 2012
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Attribute	Number of Records	Holes with Records
Drill Holes	277	-
Surveys	277	277
Assays	4,723	237
Assay composite points	2,767	237
Assay composite points within Mineralization	2,726	237
Lithology	4,388	276
Structure	1,813	118
Hardness	854	45

To the best of SLR's knowledge, the drill hole database consists of holes drilled in multiple campaigns in 1998, 2000, 2001, 2004, and 2006 by TIMCAL. No drilling has occurred since 2006.

SLR reviewed the drill holes and composite points and observed that 40 drill hole dips are not consistent with the drill hole trace using survey information, noting that the offsets are typically minimal (Table 14-4). The QP reviewed the location of the assay composite points with respect to the mineralization wireframes and together with the results of the resource check estimate using both point data and downhole sample data that the discrepancy is not material to the global resource estimate. No additional information was provided to SLR to explain the inconsistency.

In addition, SLR received the following files to support the Mineral Resource review:

- Graphite mineralization wireframe as a .dxf file.
- Block model as a .csv file.
- Reserve pit design surface as a .dxf file.

- Topographic surfaces for April 2021 and July 2015 as .dxf files.
- Interpolation and variogram parameters as Surpac text files.
- Reserve statement as of April 2021. The exact date the statement was prepared was not provided, however, drone survey information in the statement was dated April 13, 2021.

Table 14-4: Drill Holes With Inconsistent Downhole Assay Composite Point Sample Locations Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Hole ID	Hole ID	Hole ID
F02-005	F06-060	F02-9862
F02-9804	F02-9837	F02-9863
F02-9808	F02-9838	F02-9865
F02-9811	F02-9840	F02-9866
F02-9813	F02-9841	F02-9868
F02-9814	F02-9842	F06-031
F02-9816	F02-9843	F06-039
F02-9818	F02-9845	F06-052
F02-9823	F02-9847	F06-053
F02-9831	F02-9849	F06-054
F02-9832	F02-9851	F06-055
F02-9834	F02-9853	F06-056
F02-9835	F02-9859	F06-057
F02-9836		

SLR notes the following:

- Drill hole collar locations are estimated from a handheld GPS.
- Downhole survey information has not been collected along the drill hole path. Dip and azimuth have been estimated in the field at the collar location.
- The resource/reserve modelling work has not been documented and there is little available data in the public domain with respect to the local geology and deposit type.

Section 12, Data Verification, describes the resource database verification steps carried out by the QP. In the opinion of the QP, the drill hole database interval files are suitable for Mineral Resource review and validation, and a check estimate on the block model was completed to ensure that the Mineral Resource estimate was consistent with the data provided and acceptable to support the Mineral Reserve estimation.

14.2 Geological Interpretation

A simplified lithological model has been constructed for the Quarry area (Figure 14-1). The main geological units modelled include marble, gneiss, and overburden. The lithological interpretation was completed using cross sections digitized on 25 m to 30 m east-west sections using drill hole lithology

logging information and local geological knowledge. The sections were imported in Surpac, and a wireframe solid model was built and snapped to the digitized sections.

The mineralization model consists of a single highly folded domain (Figure 14-2). The mineralization is contained within the marble lithological unit. Although some mineralization occurs within the host gneiss, it is generally low grade and has been treated as waste. The mineralization domain solid is 1,250 m along its north-south strike, extends approximately 150 m across strike in an east-west direction, and extends from 30 m to more than 60 m below the pre-mining topographic surface.

The main marble unit was used to construct a mineralization wireframe for block model interpolation and inform the graphite grade for the block model. The mineralization wireframe model was not snapped to assay samples and may be slightly offset from the graphite mineralization on drill fences where sections were not digitized for triangulation. This has resulted in some high-grade assays excluded from the mineralization domain and waste incorporated at the margins of the wireframe and between the digitized east-west sections.

The QP reviewed the sectional interpretations in section and on plan, including constructing a contact plot of graphite grades (Figure 14-3) and is of the opinion that the wireframe reasonably honours the assay data.

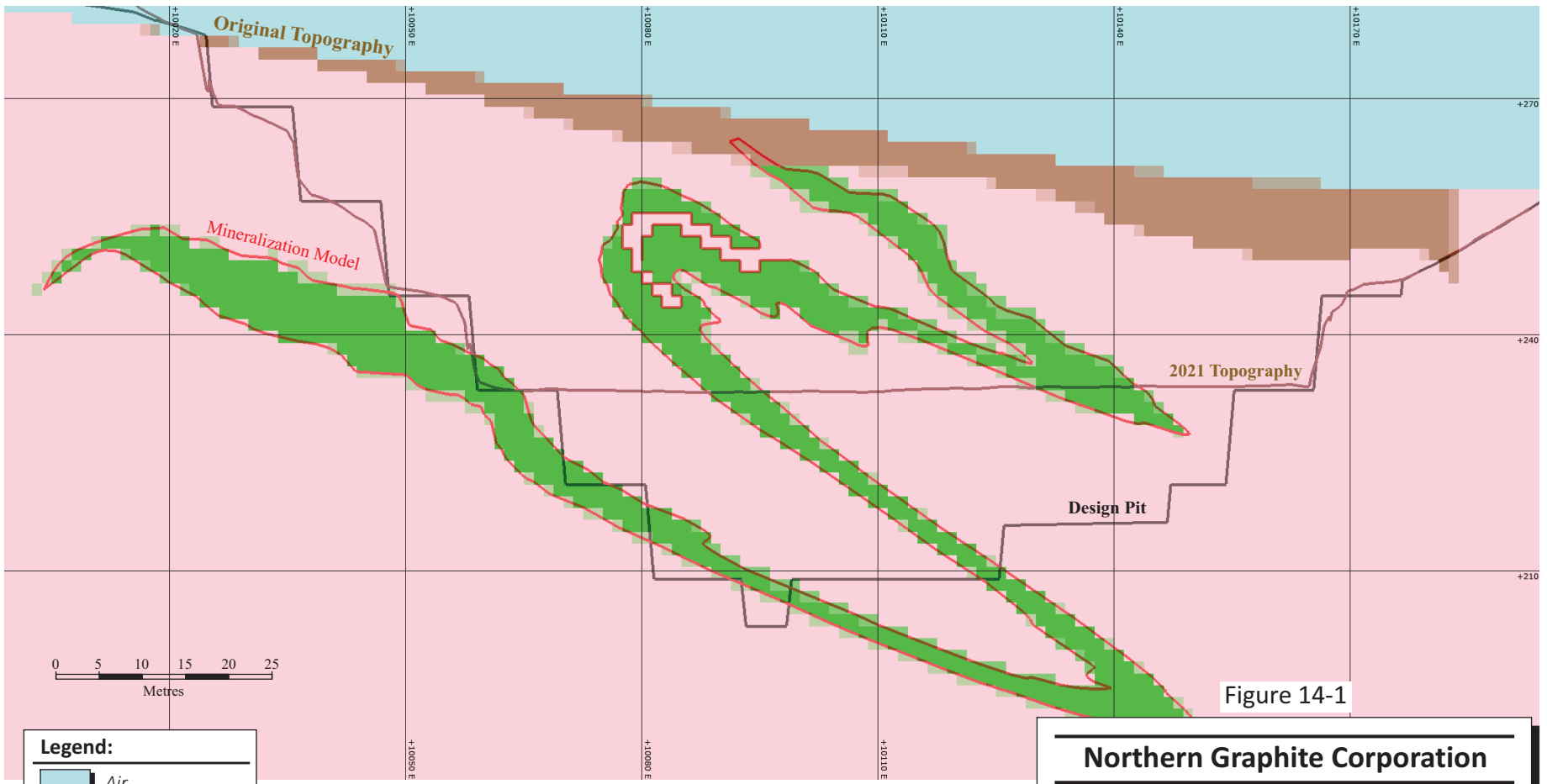


Figure 14-1

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Lithology Model

February 2022

Source: SLR, 2021

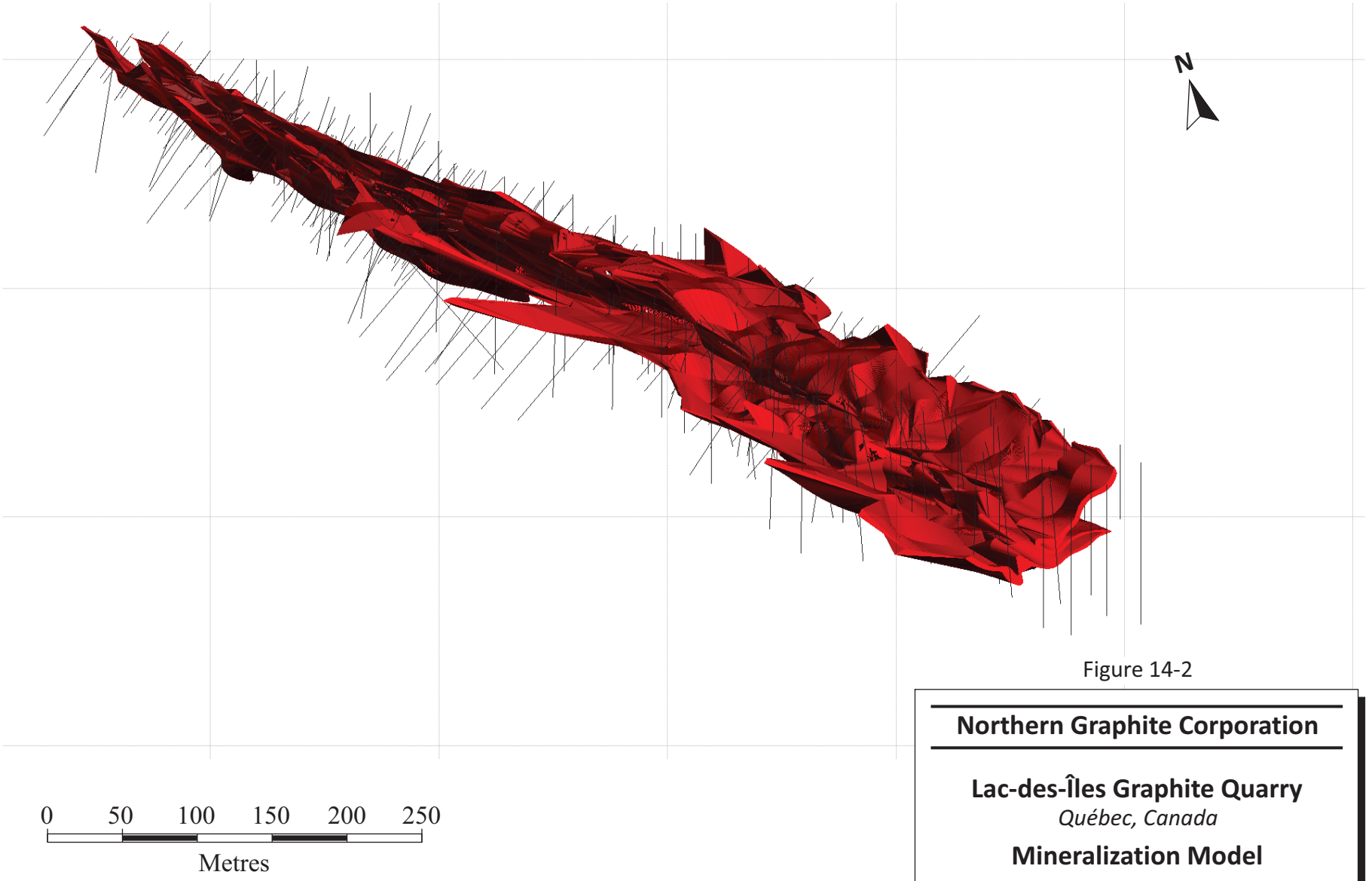


Figure 14-2

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry
Québec, Canada
Mineralization Model

February 2022

Source: SLR, 2021

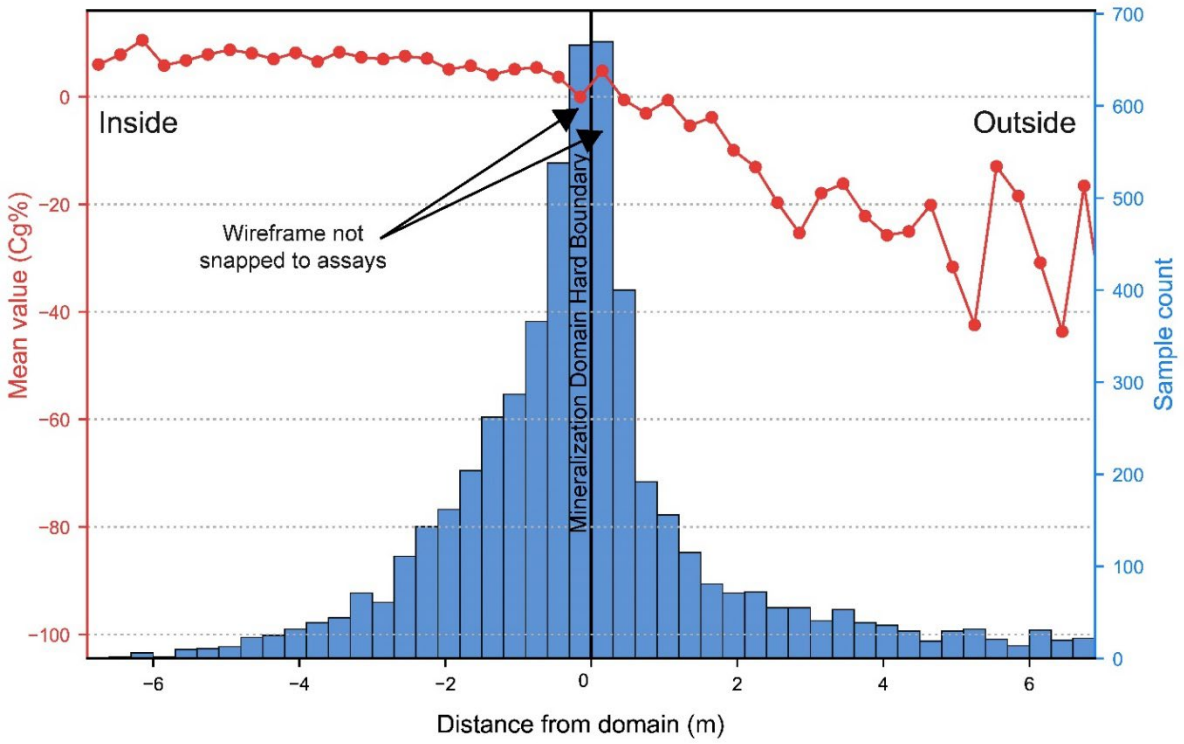


Figure 14-3: Contact Analysis of Graphite Grades at Mineralization Wireframe Boundaries

14.3 Statistical Analysis

14.3.1 Resource Assays, Capping, and Compositing

Drill hole assay samples located inside the mineralization wireframe (resource assays) were tagged for statistical analysis. Results were used to verify the modelling process. Statistics are summarized in Table 14-5 and the graphite grade histogram is illustrated in Figure 14-4.

Table 14-5: Descriptive Statistics of Resource Assay Grades and Lengths
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Statistic	Length (m)	Graphite (% Cg)
Count	2,727	2,727
Mean	1.11	6.93
St Dev	0.34	3.80
CV	0.31	0.55
Min	0.09	0.05
Median	1.00	6.94
Max	3.40	23.40

Note:

1. CV – coefficient of variation

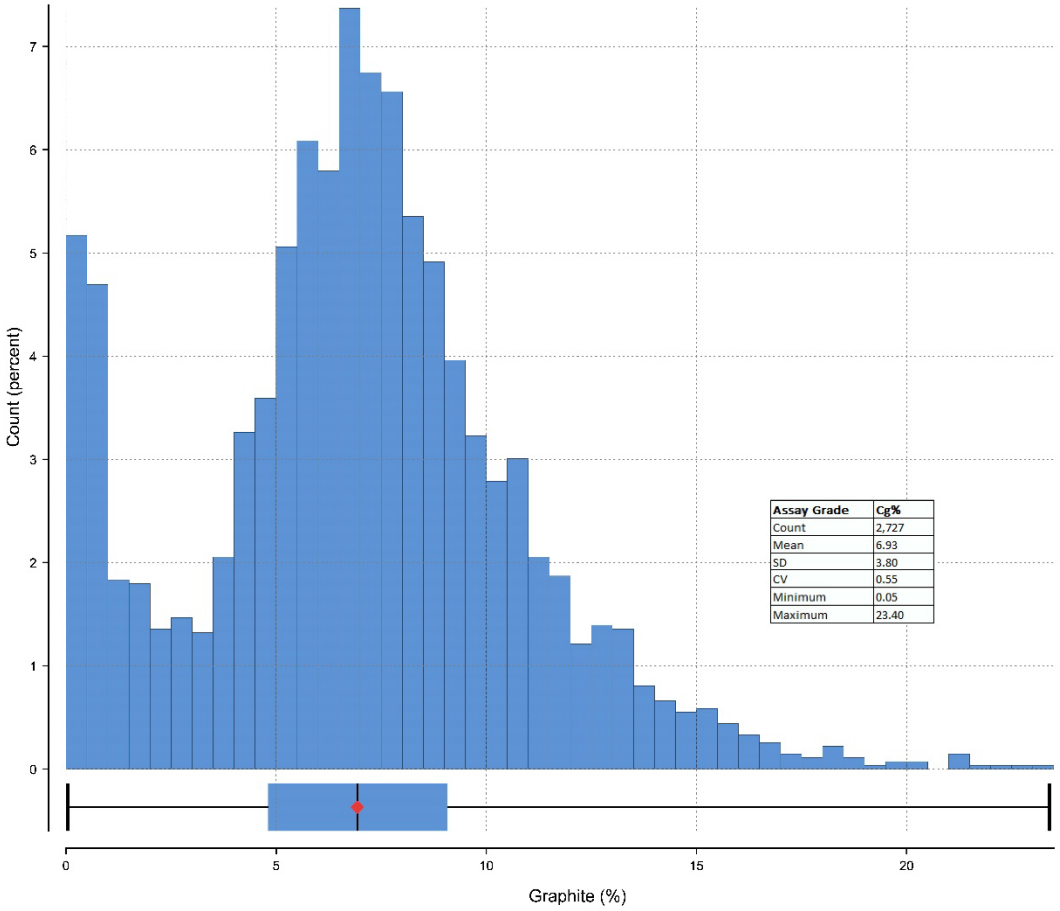


Figure 14-4: Resource Assay Histogram

14.3.2 Density

A density of 2.8 t/m^3 was assigned to all blocks in the Lac-des-Îles Quarry. This value was provided by Imerys and is based on production records and reconciliation. SLR was not provided with a density dataset to review. In the QP's opinion, the density value is appropriate for the deposit and mining method globally and cautions that local density variations are expected. For better reconciliation control, the QP recommends completing a program of density sampling across the deposit targeting both mineralized rock and waste.

14.3.3 Capping and Compositing

The drill hole assays flagged within the resource wireframe range from 0.09 m to 3.4 m and average 1.1 m. More than 56% of the assays have a length of 1.0 m and approximately 72% of all resource assays are less than or equal to 1.0 m. The histogram of resource assay lengths is shown in Figure 14-5.

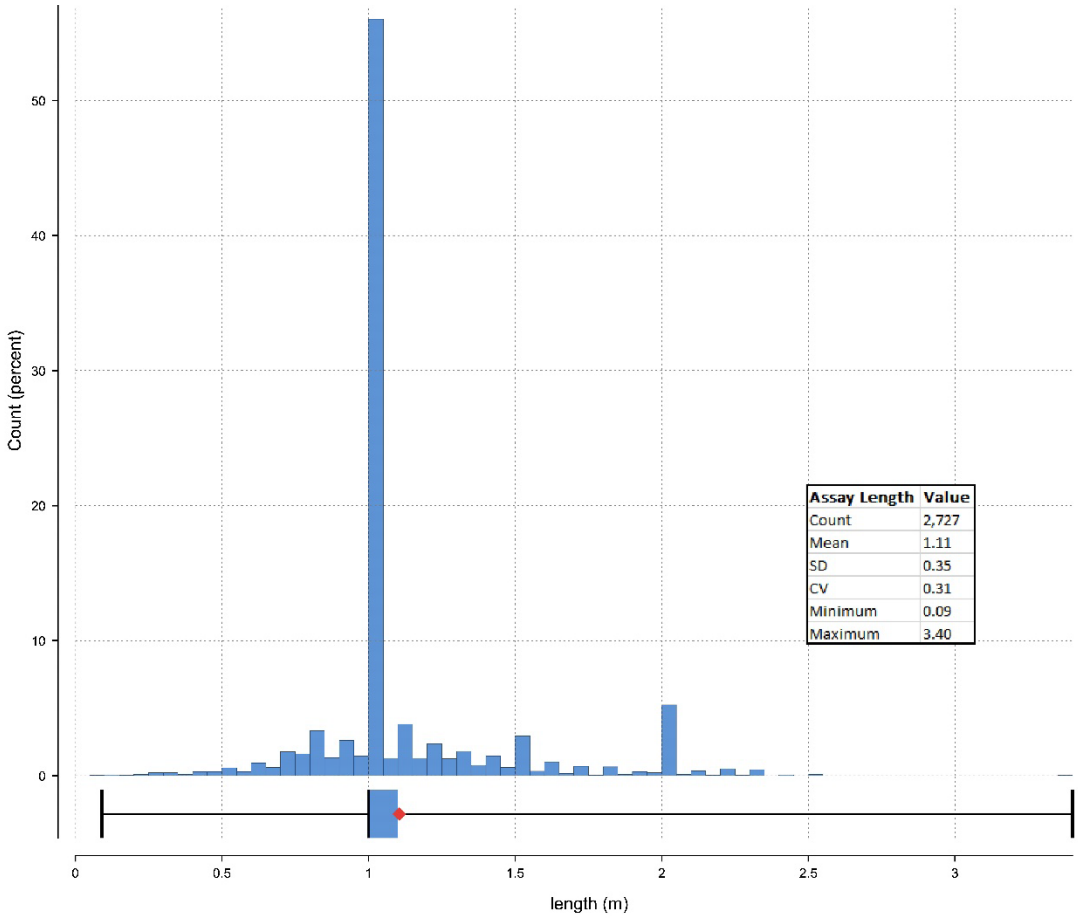


Figure 14-5: Histogram of Resource Assay Lengths

Imerys provided SLR with an assay composite point file comprising samples used to interpolated block grades. Assays composites were not regularized to a uniform support length for grade interpolation, instead original assay lengths were preserved and assays whose mid-point fell within the mineralization domain were tagged. The tagged resource assays were extracted as point data and used for variography and grade interpolation without length weighting.

SLR reviewed the relationship between sample grade and length and observed no bias; there is no correlation between sample length and grade and the sample variance is low. Although compositing assay samples to uniform lengths is best practice, in the QP's opinion, the impact is not material.

Resource assay samples were capped at 9% Cg. The distribution of high-grade assays is observed to be reasonably uniform throughout the deposit. A total of 695 composites were capped, or 25.5% of the samples, resulting in a 10% decrease in the sample mean and a loss of total metal.

SLR reviewed the grade histogram for assays and is of the opinion that the capping level is acceptable, but very conservative given the distribution of resource assay grades (Figure 14-4). SLR flagged the resource composites, and the statistics are summarized in Table 14-6.

Table 14-6: Resource Assay Statistics and Capping
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Statistic	Length (m)	Uncapped Graphite (Cg%)	Capped Graphite (Cg%)
Count	2,726	2,726	2,726
Mean	1.11	6.93	6.24
St Dev	0.35	3.79	2.77
CV	0.31	0.55	0.44
Min	0.09	0.05	0.05
Median	1.00	6.95	6.95
Max	3.40	23.40	9.00

Notes:

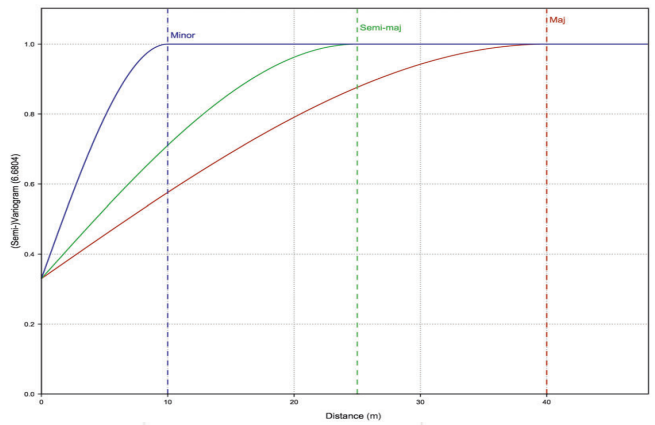
1. CV – coefficient of variation.
2. Composites are capped at 9% Cg.

SLR notes that unsampled intervals located within the mineralization wireframe appear to have been ignored. SLR observed that there are high-grade assay intersections offset from the mineralization wireframe with no informing samples, although local block estimates are consistent with nearby assay grades. SLR reviewed these sections and notes that occurrences are highly correlated to sections where the mineralization wireframe is offset from the high-grade intersections within the drill holes. Offsets are generally less than 10 m to 15 m. Between digitized sections, the wireframe was not snapped to assays and it appears that where the wireframe passes through waste, the assays or unsampled intervals were ignored during interpolation.

The QP recommends that the mineralization wireframe be snapped to assays both on section and between sections and that unsampled intervals be treated as zero grade during grade interpolation. In the QP's opinion, the global impact of ignoring unsampled intervals or intersections where the wireframe does not honour the high-grade assay intercepts is not material to the Mineral Resource estimate but would result in local shifts in the location of mineralization and the ore-waste boundary. SLR further notes that there are high-grade assay intersections within the mineralization wireframe with no composite samples, although local block estimates are consistent with assay grades.

14.4 Variography and Interpolation Parameters

Using parameters provided by Imerys as a guide, variography was reassessed on graphite composites. Figure 14-6 illustrates the variogram model with respect to the mineralization wireframe. In the QP's opinion, the orientation of the ellipse and the ranges of the variogram are consistent with the resource assay grades, that is, a north-south orientation dipping 40° to the east.



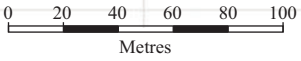


Figure 14-6

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Variogram Model for Graphite Mineralization

February 2022

Source: SLR, 2021

Interpolation parameters with ranges derived from the variogram are summarized in Table 14-7. SLR notes that block interpolation for the second run took precedence, overwriting grades interpolated from the first run with longer search ranges.

Table 14-7: Block Grade Interpolation Strategy
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Parameter		Pass 1	Pass 2
Method		OK	OK
Boundary Type		Hard	Hard
Min. No. Comps.		3	3
Max. Comps.		15	15
Max. Comps. Per Drill Hole		-	-
Search Ellipse	Range X (m)	100	36
	Range Y (m)	62.5	22.5
	Range Z (m)	20	10
Rotation	Z	90°	90°
	X	40°	40°
	Y	0°	0°

Note:

1. Surpac ZXY LRL Rotation.

In general, the Quarry graphite mineralization strikes north-south and fold limbs dip to the east. The fold limb dip steepens from south to north, and ranges from less than 20° to approximately 70°. Grades were interpolated by OK with three to 15 samples per block for the first and second passes. No limit was applied to the number of composites per drill hole. The first pass search ranges correspond to approximately double the variogram range and the second pass to approximately two thirds of the variogram ranges. Interpolation was constrained by the mineralized wireframe model, which was used as a hard boundary.

14.5 Block Model

One single block model was constructed in Surpac and provided to SLR in .csv file format. For validation purposes, SLR imported the block model into Leapfrog EDGE software. The model consists of 629,300 parent blocks. The mineralization wireframe was filled with parent cell blocks, sub-celled at wireframe boundaries. The parent cell measured five metres by five metres by six metres with a minimum sub-cell size of 1.25 m in the X and Y directions and 1.5 m in the Z direction. The model is not rotated and fully encloses the modelled mineralization wireframe. The extents and dimensions of the block model are summarized in Table 14-8. Key block model attributes relevant to the resource estimate are summarized in Table 14-9.

Table 14-8: Block Model Definition Data
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Description	Easting (X)	Northing (Y)	Elevation (Z)
Minimum (m)	9,900	11,550	131
Maximum (m)	10,250	13,000	317
Extents (m)	350	1,450	186
	Column	**Row**	**Level**
Block size (m)	5.0	5.0	6.0
Number of parent blocks	70	290	31
Minimum Sub-cell Size	1.25	1.25	1.5
Number of Parent Blocks		629,300	
Number of Total Blocks		2,955,743	
Rotation		0°	

Notes:

1. The origin is the highest block in lower left of the model

Table 14-9: Block Model Attributes
Northern Graphite Corporation – Lac-des-Iles Graphite Quarry

Attribute	Metadata
cat_min_cut4	Mining categories (Minerai, MT, Sterile)
geol_code	Lithology categories
gp_id	uncapped graphite grade estimate using ID²
gp_ok	uncapped graphite grade estimate using OK
gp_top9_id	capped graphite grade estimate using ID²
gp_top9_ok	capped graphite grade estimate using OK
int_waste	1 = internal waste
main_solid	1 = within mineralization wireframe
run_gp_top9_id	interpolation pass for gp_top9_id
run_gp_top9_ok	interpolation pass for gp_top9_ok
run_id	id passes
run_ok	ok passes
to_estimate	1 = estimate within mineralization domain

Notes:

1. Grade estimate gp_top9_ok used for reserve estimation.

SLR created additional attributes used for resource validation including:

- Block density.
- Flag for blocks included in the reserve estimate as of April 13, 2021.
- SLR check estimate grade of uncapped and capped graphite values from the drill hole assay interval file.
- Nearest neighbour (NN) estimate for uncapped and capped % Cg.
- The distance to the closest composite used to interpolate the SLR check block grade.
- The number of composite samples used to interpolate the SLR check block grade.
- Resource classification code.
- Flag for block centroids within the mineralization wireframe provided in .dxf file format.

14.6 Cut-off Grade

SLR was provided with a design pit that is used to constrain the Mineral Reserves. The assumptions and parameters used as inputs for the detailed pit design and cut-off grade determination are discussed in Section 15. When considering the objective of this Technical Report and mine life of the Quarry, SLR elected not to prepare an optimized pit shell to constrain the block model for open pit Mineral Resources. SLR used the Mineral Reserve cut-off grade of 4% Cg to constrain Mineral Resources. Consequently, SLR is of the view that the current resource estimate is conservative.

14.7 Classification

Imerys has not classified Mineral Resources at the Quarry: all blocks within the mineralization wireframe within the design pit have been declared as Mineral Reserves. SLR has classified all blocks within the mineralization wireframe situated in the pit design as Indicated Mineral Resources. The classification criteria used to define the Mineral Resources include demonstrating economical viability, production history, and reconciliation. In the QP's opinion, spatial analysis, drill hole spacing, and continuity of mineralization also support this classification.

14.8 Mineral Resource Reporting

The Quarry Mineral Resources are reported at a 4% Cg cut-off grade within a design pit generated by Imerys (Table 14-10). Indicated Mineral Resources are estimated to total 621 kt at an average grade of 7.1% Cg.

Table 14-10: Summary of Mineral Resources - Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Classification	Tonnage (kt)	Grade (% Cg)
Indicated	621	7.1

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within an optimized design pit using a 4% Cg block cut-off grade.
3. Mineral Resources include in-situ material only. Stockpiles have not been considered.
4. Bulk density is 2.8 t/m^3, applied to all material types.

5. Mineral Resources are reported inclusive of Mineral Reserves.
6. The numbers may not add due to rounding.

14.9 Mineral Resource Validation

SLR validated the block model in the following ways:

- Volumetric checks.
- Visual comparison of block grades with composite grades.
- Comparison of block grade with assay and composite statistics.
- Comparison of block grades to SLR check model.

The estimated total volume of the main wireframe, which includes mineralization and internal waste domains, is 1,502,0410 m^3, of which the volume of the mineralization domain is 1,396,700 m^3. The volume difference is only 0.02% between the block model and the main wireframe and only 0.03% between the block model and the mineralization wireframe, which the QP considers to be an acceptable result. Domain volumes are listed in Table 14-11.

Table 14-11: Volume Comparison
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Domain	Block Volume (m)	Wireframe Volume (m)	Difference (%)
Mineralization Domain	1,396,327	1,396,700	0.03%
Internal Waste Domain	105,715	105,710	0.00%
Total (Main Model)	1,502,041	1,502,410	0.02%

Block model grades were visually examined and compared with informing assay composite grades in cross section and in plans. SLR found grade continuity to be acceptable and reasonably consistent with local drill hole assay grades with no significant bias. Grade statistics for graphite assays, composites, and mineralization blocks were reviewed and compared (Table 14-12). Figure 14-7 and Figure 14-8 show the % Cg in plan and longitudinal section.

Table 14-12: Comparison of Grade Statistics for Informing Samples and Blocks
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Samples		Block Grades	
	% Cg Uncapped	% Cg Capped	% Cg Uncapped	% Cg Capped
Count	2,727	2,727	376,085	376,085
Mean	6.93	6.24	6.99	6.29
St Dev	3.80	2.77	1.88	1.32
COV	0.55	0.44	0.27	0.21
Minimum	0.05	0.05	0.00	0.00
Median	6.94	6.94	6.87	6.38
Maximum	23.40	9.00	16.07	9.00

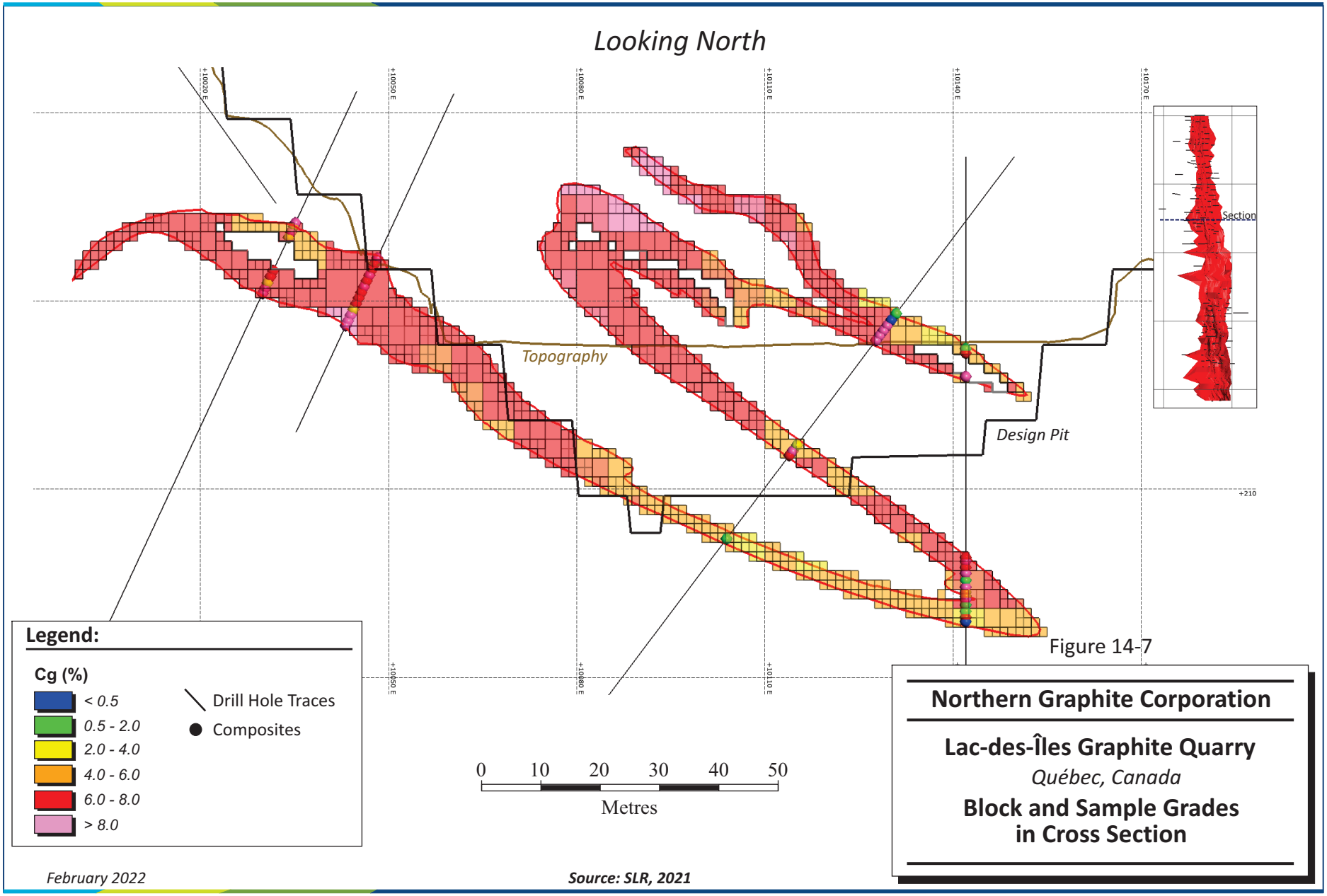


Figure 14-7

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Block and Sample Grades in Cross Section

February 2022

Source: SLR, 2021

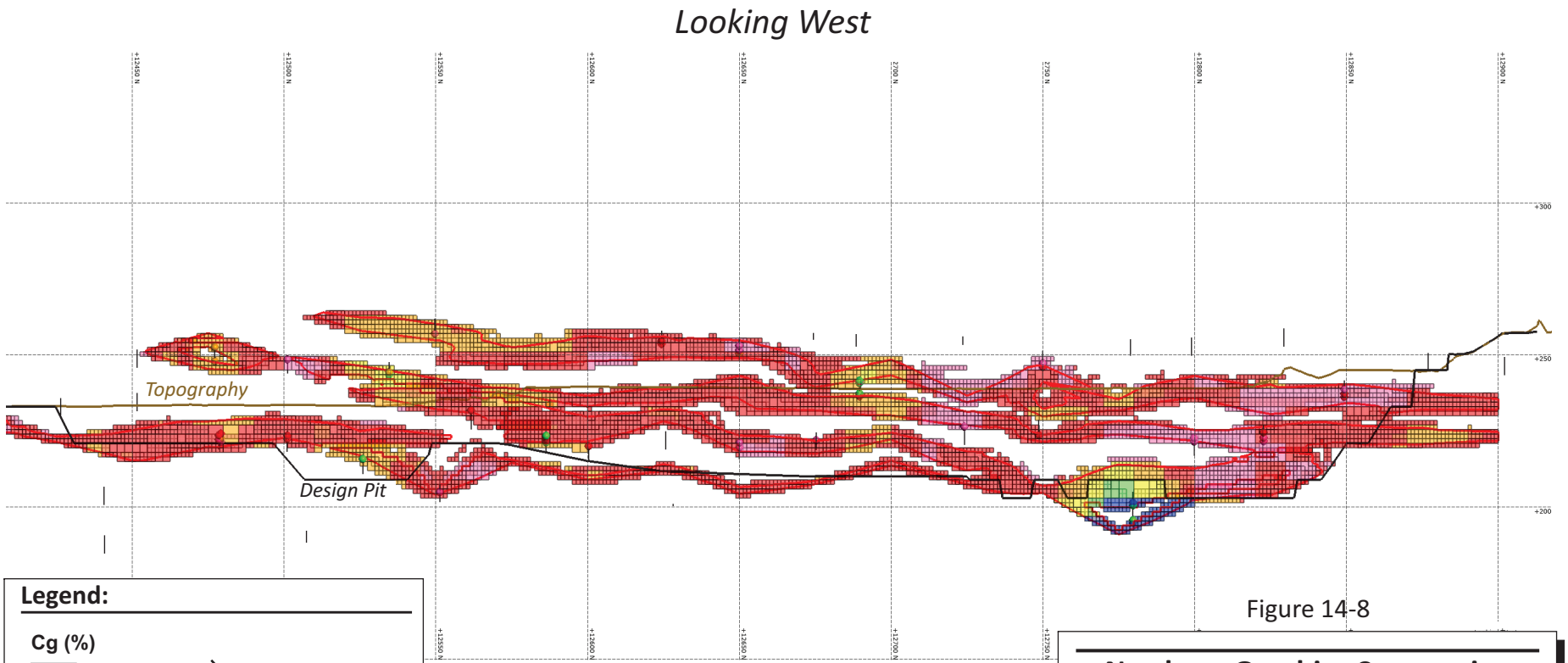


Figure 14-8

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Block and Sample Grades in Longitudinal Section

February 2022

Source: SLR, 2021

In addition, SLR compared the block statistics for both capped and uncapped graphite grades to the check model and reviewed the block grades in section. In the QP's opinion, in both cases the mean difference in global graphite grade was less than 3.0% and the block grade comparison in section was acceptable.

To evaluate the potential for over-estimation of grade, SLR produced swath plots using capped composited assays and capped block grades within the mineralization wireframe (Figure 14-9 to Figure 14-11). The QP notes that the NN estimate tends to bias low and visual review on cross section illustrates that the bias is a result of low-grade samples populating blocks in fold hinges from samples that are within an adjacent limb and not consistent with the direction of grade continuity. Apart from this observation, in the QP's opinion, block grades interpolated with OK show a fair degree of smoothing, however, there does not appear to be an obvious bias when compared to informing samples.

SLR compared the global statistics of capped block grades informed by OK, inverse distance squared (ID^2), and NN. Results are summarized in Table 14-13, and in the QP's opinion, further validate the robustness of the Mineral Resource estimate.

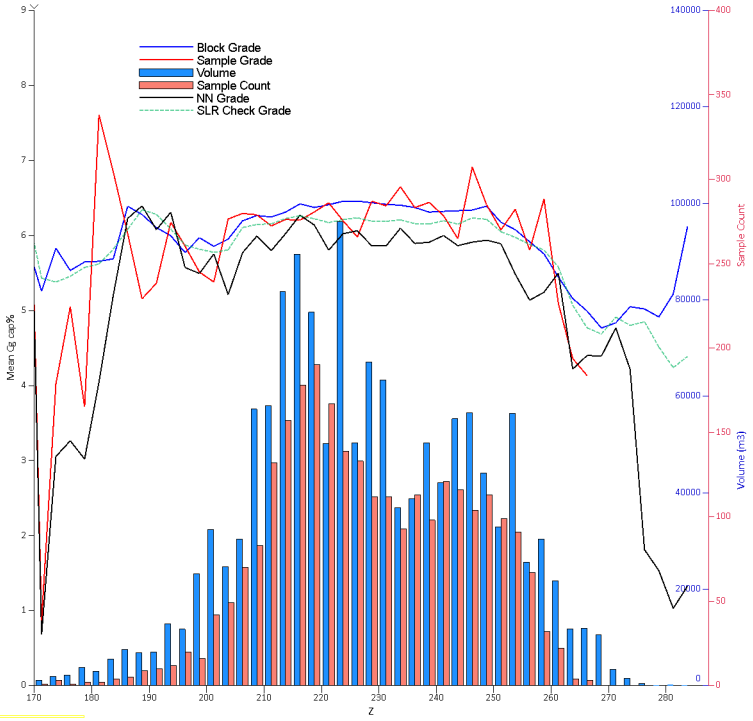


Figure 14-9: East-West Swath Plot of Block Versus Assay Composites Within Mineralization Wireframe

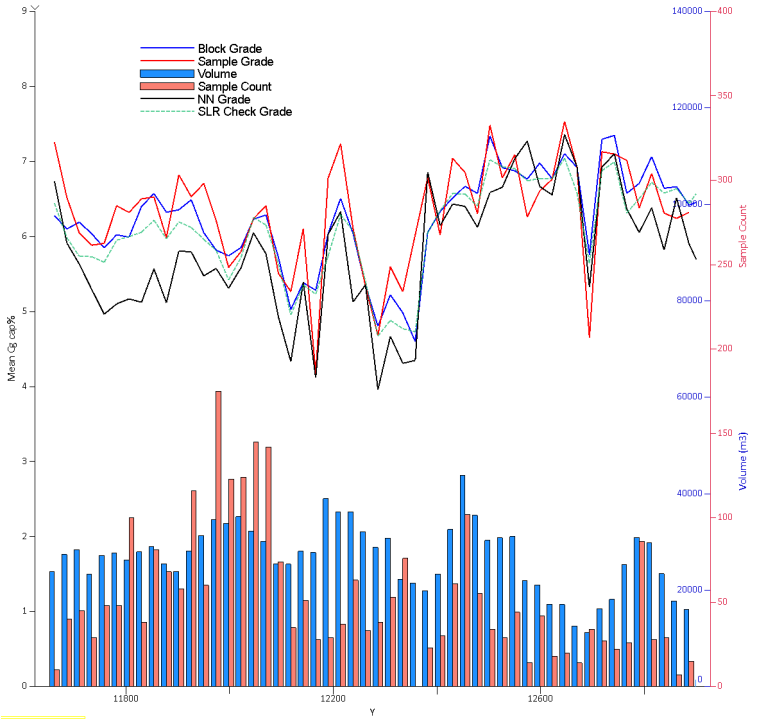


Figure 14-10: North-South Swath Plot of Block Versus Composite Samples Within Mineralization Wireframe

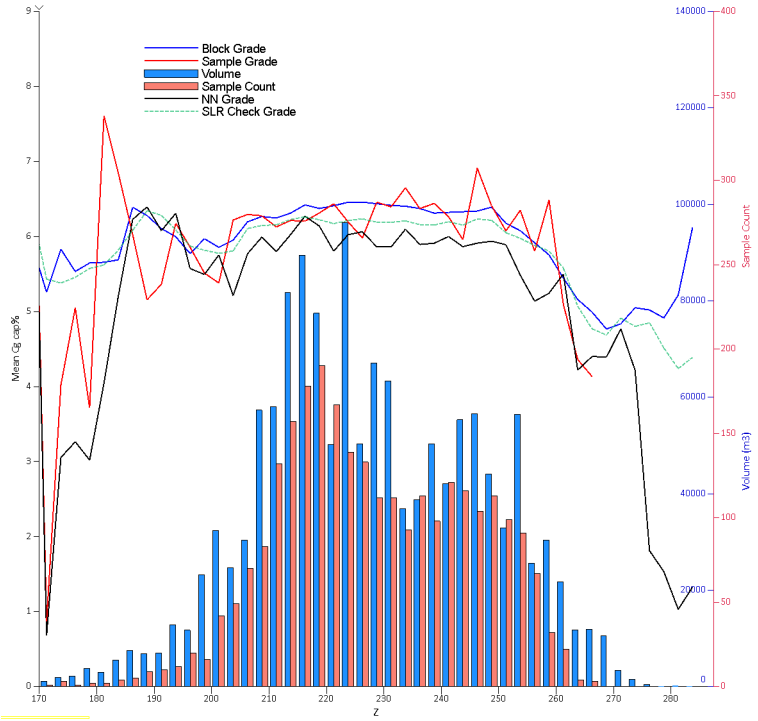


Figure 14-11: Elevation Swath Plot of Block Versus Composite Samples within Mineralization Wireframe

Table 14-13: Comparison of Block Grade Estimates Using OK, ID, NN, and SLR Check Model
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	OK	ID	NN	SLR Check
	% Cg Capped	% Cg Capped	% Cg Capped	% Cg Capped
Count	376,085	376,085	376,085	374,841
Mean	6.29	6.35	5.94	6.14
St Dev	1.32	1.40	3.01	1.24
COV	0.21	0.22	0.51	0.20
Minimum	0.00	0.00	0.05	0.31
Median	6.38	6.45	6.79	6.23
Maximum	9.00	9.00	9.00	9.00

15.0 MINERAL RESERVE ESTIMATE

15.1 Summary

Quarry personnel report that internal resource/reserve estimations are completed by Imerys' corporate division in Europe. The Quarry receives geology and mine engineering information from its corporate counterparts from which mining plans are developed.

Pit 2 is the last pit to be mined at the Quarry and is located at the north end of the property. Pit 2 is subdivided into Pit 2A (depleted south end) and Pit 2B, which lies north of Pit 2A. SLR was able to reproduce and confirm the remaining Pit 2B volumetrics using the pit design and the adjusted April 2021 pit and surface topography.

The Mineral Reserve estimate for the Quarry is based on the resource block model estimated by Imerys. Mineral Reserves have been classified as Probable in accordance with CIM (2014) definitions. Only those Mineral Resources that were classified as Indicated were given economic attributes in the mine design and when demonstrating economic viability. Mineral Reserves have been derived using several mining extraction and processing factors to arrive at plant feed physicals. These modifying factors are discussed in subsections 15.3 to 15.5.

No pit optimization was performed to inform the pit design. Such optimization work typically targets the highest pit value considering parameters such as commodity price, operating costs, pit slopes, etc. In the opinion of the QP, Pit 2 and stockpiled material at the Quarry can be declared a Mineral Reserve, though this Mineral Reserve may not be optimized from an economic standpoint.

Mineral Reserves for the Quarry are summarized in Table 15-1.

Table 15-1: Summary of Mineral Reserves – Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Category	Tonnage (t)	Grade (% Cg)	Contained Graphite (t)
Probable – Stockpiles	102,024	6.92	7,062
Probable – Pit 2	491,741	7.10	34,937
Total Proven + Probable	**593,764**	**7.07**	**41,999**

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 4% Cg. SLR has inferred that the mineralization domain wireframe was constructed using a nominal graphite cut-off grade of approximately 4%, a value that is used to delineate mineralized rock ("ore") from weakly mineralized or barren country rock ("waste").
3. Mineral Reserves are estimated using an average long-term price of US$1,600 per tonne, a metallurgical recovery of 89.2%, and a US$/C$ exchange rate of 1.25.
4. A minimum mining width of 5 m was used.
5. Bulk density is 2.8 t/m^3, applied to all material types.
6. Numbers may not add due to rounding.

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

15.2 Cut-off Grade

Graphite-bearing mineralization was delineated by sections following surrounding marble contacts, resulting in an observed natural cut-off grade of 4% Cg. The SLR LOM plan implies a cut-off grade of approximately 4.5% Cg. Imerys reports that graphite grades below 5% Cg are rarely seen in the production drill cutting assays as well as in the exploration drill hole assays. The reconciliation to production suggests that grade control selects for higher-grade areas.

In SLR's opinion, this discrepancy in applied vs. calculated cut-off grades does not have a material impact on the estimate of Mineral Reserves.

15.3 Dilution

Block grades in the block model are in-situ. No dilution (ore tonnage increase with material at low or zero grade) has been considered for the Mineral Reserve estimate. What Imerys defines as dilution is rather an additional mining extraction factor. This dilution factor is discussed in subsections 15.4 and 15.5.

15.4 Extraction

At the mine production scheduling stage, Imerys applies "dilution" and mining factors (mining recovery factors) to all run-of-mine (ROM) ore tonnage from Pit 2B to arrive at plant feed tonnages. The "dilution" factor of 0.94 is not applied to ROM ore grades. A mining factor of 0.85 is applied to all ore between elevations 209 and 251, while a factor of 0.75 is applied to the final 6 m bench in Pit 2B (elevation 203).

15.5 Pit 2 Reconciliation Practices

SLR reviewed available information on the Quarry's reconciliation practices (block model physicals versus drilled and hauled physicals). A summary of SLR's findings is presented in Table 15-2.

15.5.1 Tonnage Reconciliation

Since the start of mining in Pit 2 (Pit 2A plus Pit 2B), actual drilled and hauled ore tonnes have been 84% and 85% of the predicted block model tonnage, respectively. SLR notes actual haul tonnage information appears to be based on relatively static haul truck factoring (e.g., truck count data), though SLR was not able to confirm this from Imerys.

SLR notes that more recent reconciliation investigations of remaining ore at the Quarry (Pit 2B only) have yielded drilled and hauled ore tonnes closer to tonnages predicted by the block model, i.e., 102% and 90%, respectively.

Imerys' does not conduct monthly or quarterly reconciliation exercises.

Table 15-2: Reconciliation of Pit 2 Production Physicals vs. Block Model Mineral Reserves Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Pit Area	Bench	Date Mined	Block Model Ore Tonnes	Block Model Grade (% Cg)	Drill Production Ore Tonnes	Drill Production Grade (% Cg)	Haulage Production Ore Tonnes	Haulage Production Grade[1] (% Cg)
2A	269	9/11/2016	39	4.25	455	5.49	76	5.49
"	263	11/11/2016	13,305	4.64	7,615	5.82	8,113	5.82
"	257	2/5/2017	55,349	5.34	31,534	6.46	34,119	6.46
"	251	8/15/2017	115,416	6.35	71,883	6.55	86,920	6.55
"	245	8/28/2018	139,438	6.48	98,845	7.06	125,573	7.06
"	239	11/6/2018	95,479	6.63	77,600	7.97	77,191	7.97
"	233	6/21/2018	45,136	6.47	49,342	7.93	44,266	7.93
"	227	8/15/2018	24,790	5.81	23,008	6.87	25,274	6.87
"	221	10/23/2018	48,441	5.62	30,902	6.86	32,217	6.86
"	215	9/16/2019	75,148	6.04	62,148	7.24	52,950	7.24
"	209	10/31/2019	71,901	6.12	68,546	7.61	74,435	7.61
"	203	6/12/2019	19,980	6.41	27,652	8.86	29,274	8.86
Pit 2A Total		**Q3 2016 to Q2 2019**		**% of block model**	**78%**	**118%**	**84%**	**118%**
2B	269	8/10/2019	-		1,494	6.45	947	6.45
"	257	11/14/2019	7,605	5.70	15,502	6.87	10,695	6.87
"	251	1/15/2020	45,113	7.00	40,130	7.91	37,880	7.91
"	245	1/7/2020	71,000	7.00	61,818	8.38	62,321	8.38
"	239	In progress	79,529	8.05	86,080	8.26	77,663	8.26
"	233	In progress	40,975	7.26	44,079	8.02	30,602	8.02
Pit 2B Total		**Q2 2019 to Q3 2021**		**% of block model**	**102%**	**107%**	**90%**	**109%**
Pit 2 Total		**Q3 2016 to Q3 2021**		**% of block model**	**84%**	**115%**	**85%**	**115%**

Notes:

1. Set equal to drill production grade. Ore tonnage only from haul truck reporting.
2. Numbers may not add due to rounding.

15.5.2 Grade Reconciliation

Thus far in the life of Pit 2, both actual drilled and hauled ore grades have been 115% of predicted block model grades. SLR notes that more recent reconciliation investigations of remaining ore at the Quarry (Pit 2B only) have yielded drilled and hauled ore grades closer to tonnages predicted by the block model,

i.e., 107% and 109%, respectively. SLR assumes but could not confirm that this positive reconciliation history accounts for why Imerys has not further diluted block grades in the Quarry's reserve statement.

Although typical practice for introducing diluted tonnes and grade is to apply additional tonnes at low or zero grade, SLR notes that the approach used by Imerys appears to yield conservative grade reconciliation outcomes.

During SLR's review, Imerys indicated that its approach to application of modifying factors may lead to locally inaccurate predictions of tonnes and grade, but over longer periods of production has provided acceptable overall reconciliation results for the operation.

In the opinion of the QP, a satisfactory mechanism for the prediction of in-situ and plant feed tonnes and grades is achieved when the Quarry's current block model is combined with the application of Imerys' modifying factors.

15.6 Stockpiles

A drone survey (subsequently processed using Site Scan software) is completed by Imerys every six months to assist with reconciliation of stockpile volumes. Imerys reported total stockpiles of 102,024 t at 6.9% Cg, which form part of the April 2021 Mineral Reserve statement. SLR notes that stockpile tonnes account for approximately 17% of total mill feed. Imerys' stockpile estimate is derived from a drone survey analysis completed on April 13, 2021 and agrees well with estimates derived from haul truck counts (1% difference reported – see Table 15-3).

Topographic information was not available for SLR's review and thus the QP cannot independently verify the stockpile physicals provided by Imerys. SLR has thus relied on Imerys estimates presented in Table 15-3, classified this material as Probable Mineral Reserves, and cannot provide any other conclusions or opinions regarding the estimated quantities.

Table 15-3: April 13, 2021 Stockpile Estimate – Drone Survey vs. Haul Truck Estimate
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Sector	Pit	Volume (m^3)	Tonnes	Void (%)	Losses (%)	Estimated In-Situ Tonnes	Assumed Dilution (%)	Grade (% Cg)
1A	F2_Gros blocs	2,280	6,384	40	5	3,639	0	7.91
1B	F2_Gros blocs	2,200	6,160	40	5	3,511	0	7.91
2	F6_Gros blocs	434	1,215	40	5	693	5	6.56
3	F2_Gros blocs	1,078	3,018	40	3	1,757	0	6.33
4A	F2_Gros blocs	1,255	3,514	40	5	2,003	0	7.1
4B	F2 (High grade)	1,692	4,738	30	0	3,316	5	7.12
4C	F2_Gros blocs	4,354	12,191	40	0	7,315	0	7.10
6	F6_Gros blocs	1,523	4,264	40	3	2,482	5	6.21
7	F6	1,762	4,934	30	0	3,454	5	6.12
8	F6 et F2_Gros blocs	607	1,700	40	5	969	5	6.21
9	F6_Gros blocs	5,491	15,375	40	10	8,302	5	6.14
10	F12_Gros blocs	1,095	3,066	40	3	1,784	0	6.50
11	F2_Gros blocs	1,892	5,298	40	5	3,020	0	6.84
13	F2_Gros blocs	138	386	40	0	232	0	6.84
Réserve 1B (HAUT)	F2	2,088	5,846	30	0	4,092	0	7.48
Réserve 1C (HAUT)	F2_Blocs cassés au marteau	245	686	35	0	446	0	7.11
Réserve 1A (BAS)	F6 et F2	7,005	19,614	30	0	13,730	5	6.83
Réserve F2	F2	18,306	51,257	30	0	35,880	6	7.01
Réserve F12	F 12	2,755	7,714	30	0	5,400	0	7.00
Basse teneur A	Réserves 6 et 2	5,500	15,400	30	0	10,780	0	3.50
Basse teneur B	Réserve 2	679	1,901	30	0	1,331	0	3.50
Basse teneur C	Réserves 6 et 2	2,875	8,050	30	0	5,635	0	3.50
Total Calculated						**102,024**		**6.92**
Haul Truck Estimate						**102,870**		

Source: Imerys, 2021bb.

Notes:

1. Imerys assumption of 2.8 t/m^3 for density.
2. Numbers may not add due to rounding.

16.0 MINING METHODS

16.1 Current Operations

Mining of mineralized material and waste rock is carried out by both Imerys employees and long-term contractors using conventional open pit methods consisting of the following activities:

- Pit wall clean-up and mechanical scaling by Imerys personnel using a small excavator fleet.
- Pit wall control and production drilling by drill contractor Forexplo Inc. (Forexplo) using conventional production drills.
- Blast tie-in and initiation completed by Imerys personnel. All other blasting related tasks completed by Orica Canada Inc. (Orica) or Forexplo.
- Loading and hauling operations performed by Imerys personnel with front-end loader, hydraulic excavators, and rigid frame haulage trucks.
- Primary production equipment is supported by smaller front-end loaders, excavators, a dozer, and a grader.

The pit component of the Quarry has a maximum annual production rate of 235,000 tpa (1,000 tpd) of graphite-bearing material.

Pit 2 is the last pit to be mined at the Quarry and is located at the north end of the property. Ore is hauled from active Pit 2 benches to the on-site crusher, a distance of more than two kilometres. Pit 2 mining activities are progressing in a retreat fashion to the north end of the pit, allowing waste backfilling to proceed at the south end of Pit 2/Pit 6.

Recent ore production for the Quarry is summarized in Table 16-1.

Table 16-1: Historical Production (2018 to YTD 2021)
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Units	2018	2019[1]	2020[2]	2021[3] (estimated)
Ore mined	t	178,294	219,647	80,224	88,048
Waste mined	t	2,028,161	994,871	532,104	550,604
Total rock moved	t	2,206,455	1,214,518	612,328	638,652
Stripping ratio		11.38	4.53	6.63	6.25
Graphite grade	% Cg	7.25	7.91	8.19	7.70

Notes:

1. Two-month operations stoppage.
2. Six-month operations stoppage (COVID-19 pandemic).
3. Year-to-date as of June 2021.

To facilitate shorter waste hauls and limit visual impacts and reclamation obligations, waste rock is currently being dumped and dozed from several locations into the Pit 6 waste rock facility (south of Pit 2), forming three overlapping waste piles in the pit bottom. Below these waste piles, Pit 6 and Pit 2 have been mined out to their final pit limits.

Should any additional waste rock disposal capacity be required, waste rock could be hauled and placed in the water body located between Pits 12 and 16 where tailings are currently being deposited (immediately east of the process plant).

No additional capitalized waste or overburden stripping is required to the end of the Quarry mine life as these material movements were completed during pioneering activities during the development of Pit 2. Pit 2 has been excavated to all ultimate pit lateral limits, with all remaining extraction to occur as part of sinking to the ultimate pit bottom.

16.2 Geotechnical

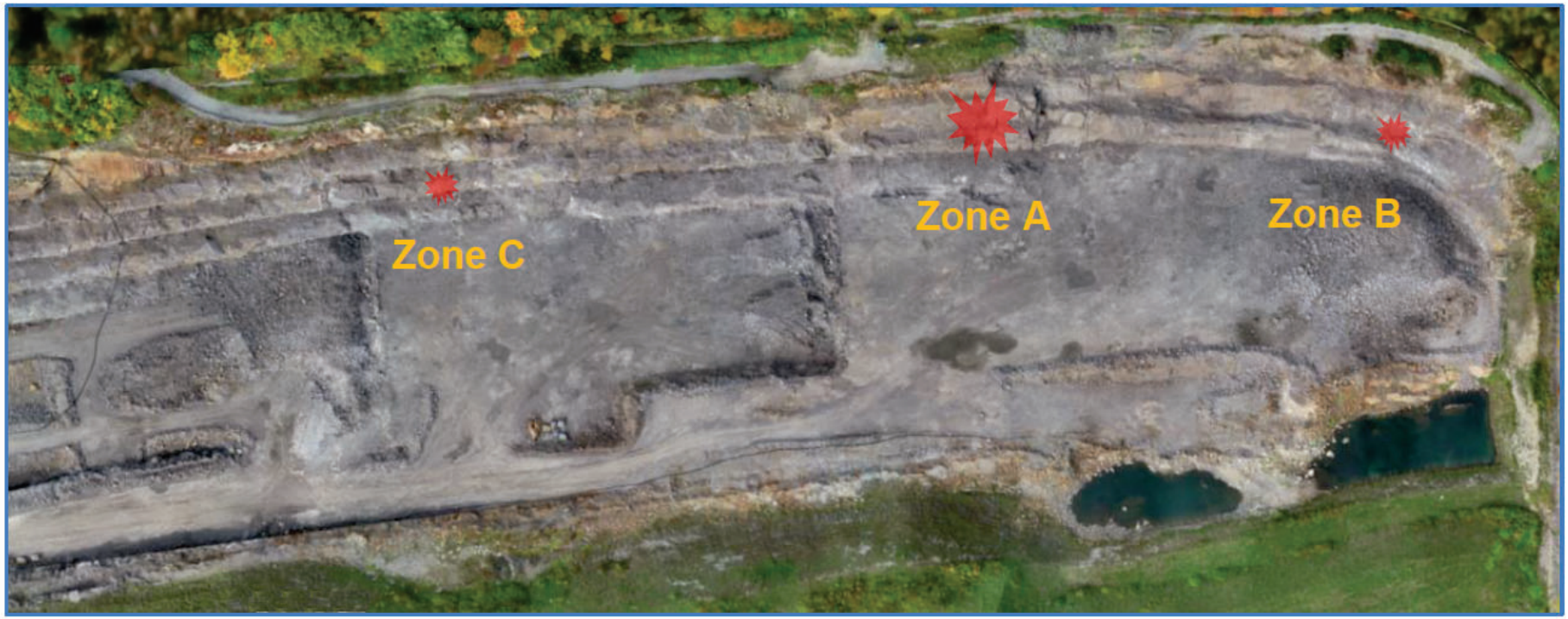
Pit wall designs are adjusted by Imerys based on performance and/or input from geotechnical consultant review/recommendations. Since at least March 2018, Imerys has retained the services of Sacha Friedlin, ing. of F8 Roc & Falaises Inc. (F8). F8 typically visits the Quarry at least four times a year to check for stability issues and develop mitigation measures where warranted.

To mitigate against rockfall hazards, localized bench cleaning is completed by specialized high-wall scalers, while protection berms, location access controls, and wall scaling with the Quarry's small excavator fleet form part of normal operating practice.

SLR notes that there have been some localized slope instabilities in Pit 2/Pit 6 in recent years (soft overburden locations near the pit crest and recently exposed flat-dipping structures on the northern portion of the west wall of Pit 2. Figure 16-1 illustrates three zones in the west wall of Pit 2 that were the subject of F8's December 2020 report (Friedlin, 2020). Zone A (Figure 16-2) required localized ground support installations to stabilize the area, Zone B required mechanical scaling that was also mentioned in F8's earlier October 2020 report, while Zone C was a small, localized bench failure. F8's March 2018 report (Friedlin, 2018) illustrates precautions taken during periods of higher risk associated with freeze-thaw cycling and serves as a reference for the bench losses that have occurred over the period (Figure 16-3 and Figure 16-4).

In general, SLR's review indicates that geotechnical hazards at the Quarry have been managed appropriately.

View Looking West



N

0 20 40 60 80 100
Metres

Figure 16-1

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry
Québec, Canada

Zones Identified by F8 December 2020 Inspection Report

February 2022

Source: Friedlin, 2020.

View Looking Northwest

Figure 16-2

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry

Québec, Canada

Zone A - Remote Drilling in Preparation for Ground Support Installation

February 2022

Source: Friedlin, 2020.

View Looking South

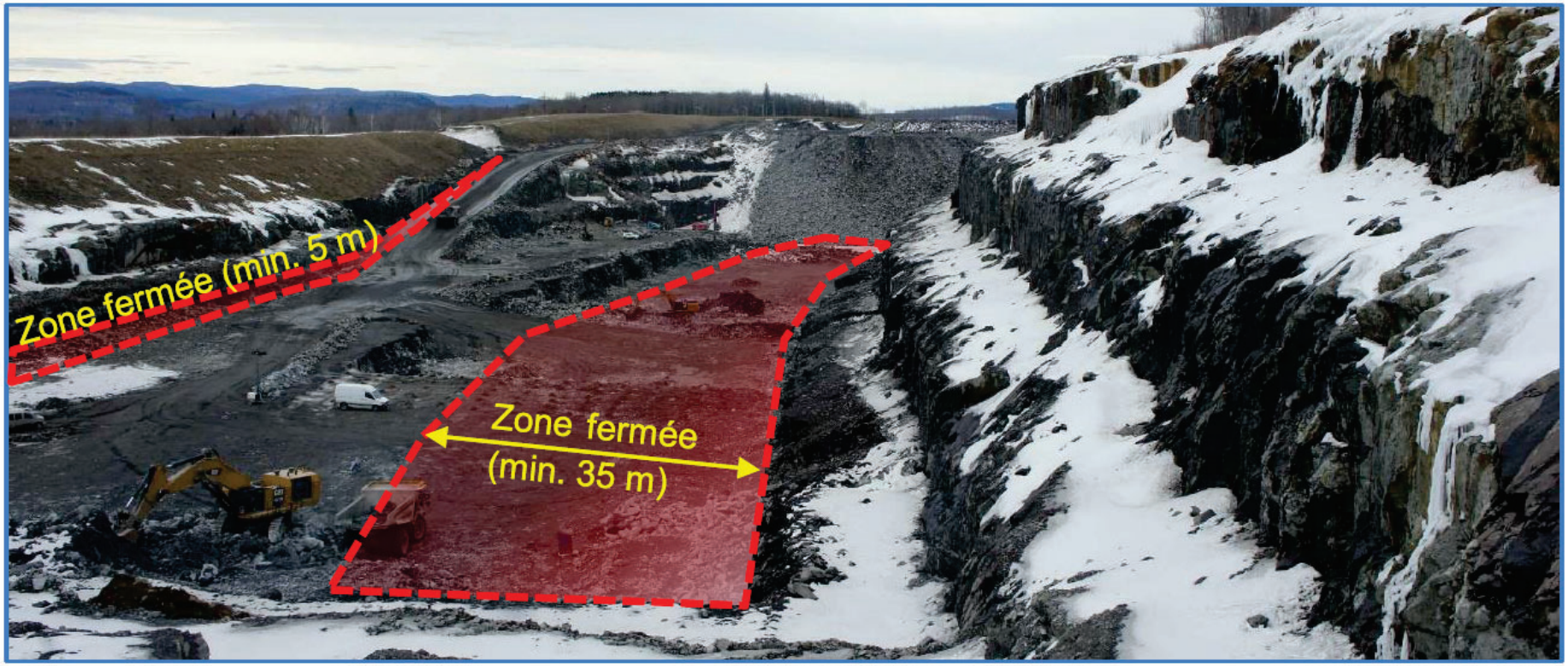


Figure 16-3

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry
Québec, Canada

West Wall of Pit 2 in March 2018 and F8 Access Controls

February 2022

Source: Friedlin, 2018.

View Looking South

Figure 16-4

Northern Graphite Corporation

Lac-des-Îles Graphite Quarry
Québec, Canada

West Wall of Pit 2 in December 2020 Inspection Report

February 2022

Source: Friedlin, 2020.

16.3 Pit Dewatering

In past years when Pits 12 and 16 were active, perimeter dewatering wells were operated to maintain adequately dewatered pit walls and floors. These historic pits were excavated to a lower elevation relative to Pit 2. As reported by Imerys, Pit 2 dewatering demand is reduced due to its favourable surface topography allowing mining activities to occur above the water table.

The pit dewatering system includes a pumping network to evacuate water collected in Pit 2. In-pit water is directed through the water treatment system (settling/polishing pond) prior to its release into the environment.

Other than minor and intermittent dewatering to evacuate water from occasional heavy rainfall and freshet events, no dedicated dewatering is required to manage inflows in Pit 2.

16.4 Mine Design

In line with production requirements and the size of the primary mobile equipment fleet, mining of Pit 2 is completed with 12 m high benches (double benching). The pit is accessed with a 20 m wide ramp, including ditches and safety berm. In-pit ramps are designed at gradients of +/- 10% with the ramp exit located at the south end of the pit to minimize haul distance to the process plant and waste rock dumps.

Inter-ramp angles are generally between 48° and 50°, except for the northern portion of the west wall where the inter-ramp angle was reduced to 42° per advice from F8.

SLR notes that the Pit 2 design available for review was trimmed below waste dumping activities at the pit crest, however, the design has not been trimmed beneath the rock pile located at the south end of the pit bottom (Figure 16-5). To confirm volumetrics (remaining quantities lying both above the pit design and under the current pit/surface topography), the pit bottom rock pile was delineated and corresponding tonnes were excluded from SLR's assessment. SLR was able to reproduce/confirm remaining Pit 2 volumes.

SLR finds the pit design parameters to be appropriate for the Quarry. Based on review of available information, SLR found no evidence that any pit optimization tasks are being carried out on the Pit 2 design.

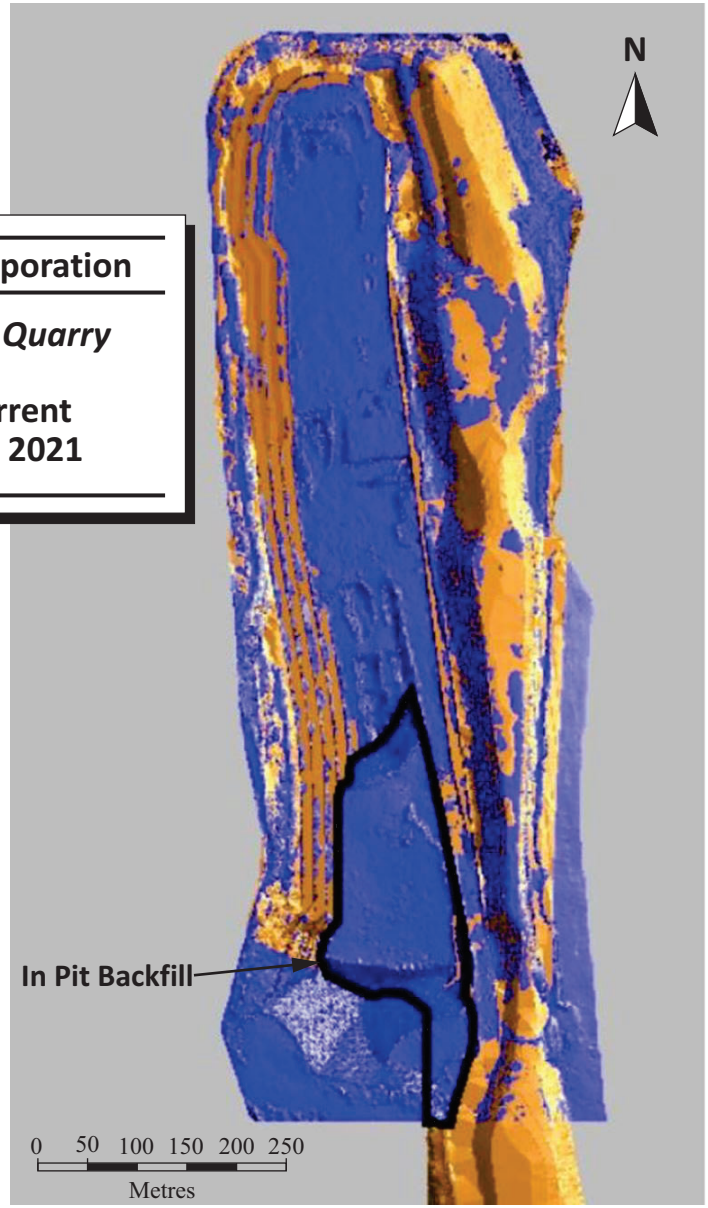
Figure 16-5

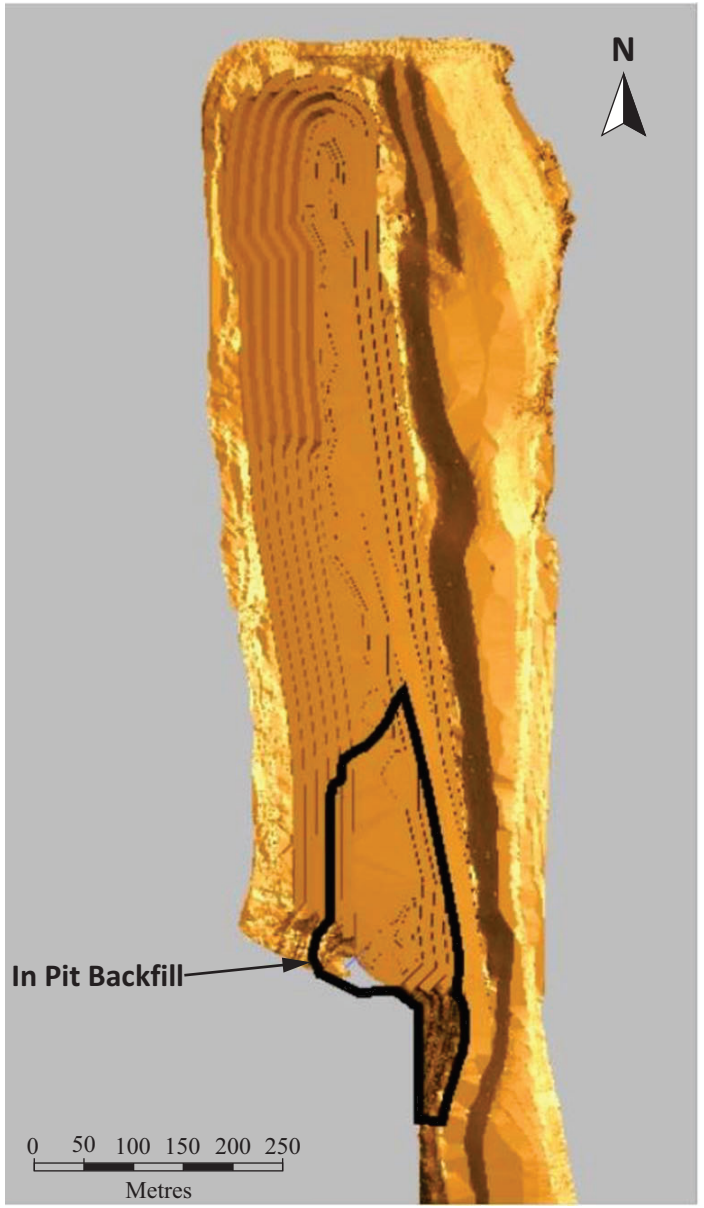
Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Québec, Canada

Pit 2 Design vs. Current Topography at May 2021





Legend:

Actual Surface

Design Surface

February 2022

Source: Imerys, 2021.

Looking Southeast

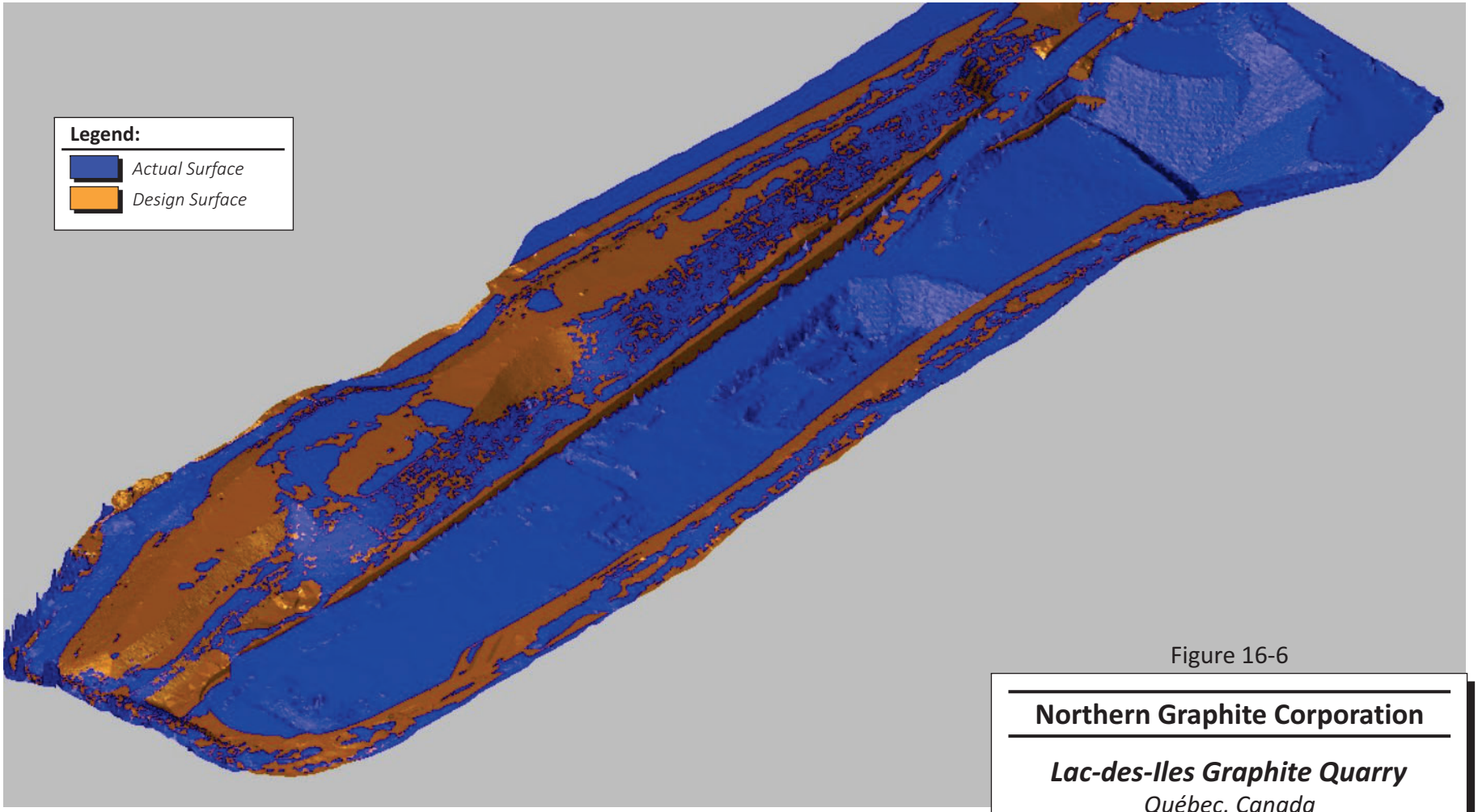


Figure 16-6

Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Québec, Canada

Pit 2 Design vs. Current Topography at May 2021

February 2022

Source: Imerys, 2021.

16.5 Drilling and Blasting Operations

Production and pre-shear drilling activities are under contract with Forexplo. Contract pricing was not available for SLR review. Services provided by Forexplo include:

- Provide drilling equipment and qualified personnel to facilitate an average blasted tonnage of 75 kt per week.
- Transport Forexplo equipment, personnel, materials, fuel, and mobilize/de-mobilize related site installations as required.
- Provide an on-site inventory of spare parts to support contract delivery.
- Provide daily reports of drilling operations, including actual hole locations, angles, depths, penetration rate, and rock hardness.

The drilling contract stipulates that drill patterns be as follows:

- Pioneering: 4-inch diameter holes on a 3 m x 3 m pattern.
- Pre-shear: 4-inch diameter holes on a 1 m spacing.
- Ore: 5¾-inch diameter holes on a 4.25 m x 4.25 m pattern.
- Waste: 5¾-inch diameter holes on a 4.5 m x 4.5 m pattern.

Sample drill and blast design packages were not available for SLR review. Ore-only blasts are rare – most blasts are now a combination of ore and waste with some waste-only blasts.

The main blasting consumable at the Quarry is an emulsion blend for production holes using a downhole delay initiation system. The emulsion blend is supplied by Orica along with all necessary detonators, primers, detonating cord, and other blasting accessories. Contract pricing was unavailable for SLR review.

Loading of production holes is completed by the Imerys blaster who also manage all pre- and post-blast activities (e.g., blast guarding, warnings, clearing of fumes). When the Imerys blaster is on leave or otherwise unavailable, Forexplo assumes the Imerys blaster's responsibilities.

16.6 Grade Control

Grade control is accomplished by sampling on-bench production drill cuttings, assaying the cuttings at an on-site laboratory, estimating ore grades from the assays, and then muck-staking ore polygons in the field.

16.7 Mining Equipment

Primary mining equipment at the Quarry includes Caterpillar 60-ton rigid frame haul trucks and a 6015B shovel. A list of mine and ancillary mobile equipment is presented in Table 16-2 along with known ownership status.

Imerys relies on its individual Toromont-Hewitt equipment maintenance contracts for its maintenance strategy. An additional maintenance resource is supplied by Toromont-Hewitt (40 hours per week) to maintain all other site mobile equipment not covered under individual contracts. Contract pricing and primary equipment hours (e.g., engine and frame hours) were not available for SLR review.

SLR reviewed the Quarry's mobile equipment list and compared it to equipment used at similar operations. The Quarry appears to have slightly more primary fleet units with higher capacity compared to similar operations. In the QP's opinion, the larger haul trucks and corresponding larger loading units are likely due to longer ore and waste hauls at the Quarry compared to the reference operations reviewed.

The QP notes that there are several smaller loading units in the equipment list. These can be used for selective mining where the dip of the deposit is close to horizontal with thicknesses of less than six metres (height of mining benches) and for breaking of oversize, pattern preparation, bench cleaning, and wall scaling. Production drilling and explosives transport/charging equipment are included in the respective contracts the Quarry has with Forexplo and Orica.

Table 16-2: Mine and Ancillary Mobile Equipment Fleet
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Type	Model	Quantity	Ownership
Hydraulic Excavator	Caterpillar 6015B	1	Leasing
Hydraulic Excavator	Caterpillar 349FC	1	Leasing
Hydraulic Excavator	Caterpillar 336EL	1	Leasing
Hydraulic Excavator	Komatsu PC800	1	
Front-End Loader	Komatsu WA600	1	
Front-End Loader	Caterpillar 980M	1	Leasing
Front-End Loader	Caterpillar IT14G	1	
Front-End Loader	John Deere 624K	1	Leasing
Haul Trucks 60 t	Komatsu HD605	4	
Haul Trucks 70 t	Caterpillar 775G	1	Leasing
Dozers	Komatsu D-155	1	
Graders	Caterpillar 140M	1	Leasing
Hammers	Caterpillar H160ES	1	Leasing
Pumps		6	
Boom Truck		1	
Pumps		6	
Light Plants		5	
Compressors		2	
Power Generators		1	
Light Duty Trucks		10	

Source: Imerys, 2021.

16.8 Mine Infrastructure and Services

SLR did not have any fixed mining equipment information available for review and no photos were permitted during the SLR and Soutex site visits. Based on recent operational performance and the site visits, existing mining infrastructure appears to be suitable for supporting Quarry operations.

16.8.1 Mine Maintenance Facilities

Earlier in the life of the Quarry, when the haul truck fleet was composed of smaller units (35 short ton), the primary mine maintenance facility was located close to the process plant. Now that the fleet size has increased, a larger facility is needed. At the time of Soutex's site visit, a new geotextile dome facility was being erected on an elongated concrete slab. It is located close to Pit 2.

16.8.2 Materials Handling

Mineralized material and waste are hauled out of Pit 2 with the haulage fleet described in Table 16-2. Waste is transported and placed in the in-pit waste rock dump at the south end of Pit 2.

Ore is delivered to the grizzly at the primary crusher or to various ore stockpiles on the property. Crushed product (minus six inch) feeds a silo which has a 24-hour retention time.

Oversize is sent to designated locations on the stockpile for subsequent rock breaking with an excavator hammer attachment.

The ore is characterized as being blocky with very rounded edges (like potatoes). Typically, waste breaks along distinct cleavage planes.

16.8.3 Explosive Magazines

Detonators and boosters are stored in explosives magazines located away from the mining operations, buildings and working areas, on an inactive waste rock dump southwest of the process plant. Orica delivers detonators and boosters directly into their respective magazines for storage until required.

16.9 Production Schedule

16.9.1 Imerys Production Schedule

Imerys' Pit 2 production schedule for the life of the Quarry (LOM) is presented on a level-by-level (or bench-by-bench) basis, from highest elevation to lowest. SLR notes the production schedule does not incorporate feed from stockpiles nor any other modifying factors beyond those previously described in Section 15 of this report.

The Imerys Pit 2 production schedule has time periods of various durations, in some cases overlapping by two years. This complicated SLR's review and linking of physicals with revenues and costs provided in Imerys' Business Plan (BP) (Imerys, 2021cc) and its Profit and Loss Statements for 2018, 2019, 2020, and H1 2021 (Imery, 2021ff).

Later in SLR's review, an annualized production schedule (Imerys LOM plan) was received, however, the plan did not contain graphite grades. SLR's back-calculation of annual graphite grades using the Imerys LOM plan, Imerys' modifying factors, and the Imerys BP finished product production generated a high variation in graphite grades, with one year above 9% Cg, whereas the Imerys block model caps Cg grades at 9%.

16.9.2 Modifications to Imerys LOM Plan

SLR opted to refer to the uneven time period plan containing graphite grades and constructed a new LOM plan (SLR LOM plan) targeting the tonnes provided in the Imerys LOM plan. In developing the SLR LOM

plan, SLR assumed that all stockpile tonnage in the Mineral Reserve estimate would be processed in the final year of Quarry operations (2024).

The SLR LOM plan closely matches the annual ore tonnages of the Imerys LOM plan. Annual waste tonnages and ore grades were correlated with the Imerys LOM plan. Total LOM physicals in the SLR LOM plan match those presented in the Mineral Reserve statement.

16.9.3 Blending and Stockpiles

SLR notes on-bench blending of ore is rare given the geometry of the deposit in Pit 2 and operating room within the pit itself. Ore hardness was noted as causing plant throughput issues in a bulk sample (mini pit) drawn from Pit 6. The issue is reported to be the result of a small occurrence of quartz within the graphite mineralization and from surrounding waste rock. During extraction of Pit 6, the hardness issue was rare. Imerys reports the issue has also been rare in Pit 2 and has not disrupted operations in any material way. When ore hardness issues do present, they generally last only a few days. Imerys' planning activities do not account for the ore hardness issue.

As required, the process plant is fed directly from Pit 2, from stockpiles, or a mix of both. SLR notes stockpile variations (in/out) are not planned by Imerys, nor are they integrated with a Pit 2 feed plan to construct an overall feed plan for the process plant.

When ore production from the pit exceeds plant capacity, ore is stockpiled, primarily on top of the in-pit waste dump in Pit 16, which is close to the plant. Conversely, when the strip ratio is high in the pit and ore supply cannot meet plant demand, ore is drawn from stockpiles to maintain a constant feed rate at the plant.

16.9.4 Finished Inventory

Finished product inventory (graphite concentrate packaged in bulk bags) is prioritized to meet customer demand and at the time of report preparation, Imerys had approximately 11 kt of finished inventory bagged and awaiting sale on the Quarry site. This situation permits the Quarry to halt and then resume mining and processing operations on an as-needed basis. These stoppages are not reflected in any planning information available for review.

16.9.5 SLR LOM Plan

Under both the Imerys and SLR LOM plans, pit mining activities are from April 2021, ceasing in November 2023 while a partial year of stockpile processing and completion of final product production are set to occur in 2024.

Additional highlights of the SLR LOM plan are summarized as follows:

- Mine operating days – based on operating information provided by Imerys:
  - 170 days in 2021
  - 240 days in 2022
  - 225 days in 2023
- Process operating days – based on 4.5 days per week (nine, 12 hour shifts per week):
  - 153 days in 2021

  - 216 days in 2022
  - 203 days in 2023
  - 90 days in 2024
- Total in-situ resource – 620,780 t at 7.1% Cg.
- Total Pit 2 ore mining – 491,741 t at 7.10% Cg.
- Total waste mined of 2.39 Mt at a strip ratio of 4.85.
- LOM feed to the process plant including stockpiles – 593,764 t at 7.1% Cg.
- Average metallurgical recovery – 89.2% (all years).
- Average graphite concentrate grade – 96.5% Cg (all years).
- Total graphite concentrate produced – 38,834 t. The Imerys value is 39,767 t assuming a 91.3% process recovery.
- Total on-site graphite concentrate inventory – 11,001 t. This is equal to the value implied by the Imerys BP.
- Total payable graphite concentrate – 49,835 t. The Imerys implied value is 50,768 t. Per the Imerys BP, concentrate sales extend into 2026 (3,951 t in 2025 and 1,241 t in 2026).

No capitalized waste or overburden stripping required to end of mine life – all completed at start of Pit 2.

Based on historical performance for both mined and finished product production, SLR considers both the Imerys and SLR LOM plans to be achievable. The details of the SLR LOM plan are shown in Table 16-3.

Table 16-3: SLR LOM Plan
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Units	2021	2022	2023	2024	Total
In-Situ						
Ore	t	140,911	181,781	298,088		620,780
Waste	t	656,056	678,764	923,332		2,258,152
Total Material	t	796,967	860,545	1,221,420		2,878,932
Recovered/Diluted						
Production	t	112,588	145,243	233,910		491,741
Graphite	% Cg	7.02	7.28	7.04		7.10
Waste	t	684,379	715,302	987,510		2,387,191
Total Moved	t	796,967	860,545	1,221,420		2,878,932
Stripping Ratio	---	6.08	4.92	4.22		4.85
Stockpile Rehandling						
Tonnage	t				102,024	102,024
Graphite Grade	% Cg				6.92	6.92
Processing						
Ore to Mill	t	112,588	145,243	233,910	102,024	593,764
Head Grade	% Cg	7.02	7.28	7.04	6.92	7.07

16.9.6 LOM Plan Opportunities

SLR briefly investigated an accelerated LOM plan that allows for continuous processing at the end of Pit 2 life using ore stockpiles. Key results of the plan, which was used to assess potential improvements in the Upside Case cash flow, are summarized below:

- Process plant operating days – 4.5 days per week (nine 12-hour shift per week), 153 days in 2021, 216 days in 2022, 216 days in 2023, and 77 days in 2024.
- All other assumptions of the SLR LOM plan remain unchanged.
- Plant processing ends 13 days earlier in 2024 with no impact on mining activities.
- A slight improvement is observed in the Quarry Net Present Value (NPV) results.

SLR notes there appears to be sufficient process plant capacity in 2022 to increase throughput and potentially improve Quarry economics (28 tonnes per hour (tph) processed compared to 40 tph to 50 tph capacity). A LOM plan optimization exercise is recommended. Details of SLR's accelerated LOM plan are presented in Table 16-4.

Table 16-4: Accelerated SLR LOM Plan
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Units	2021	2022	2023	2024	Total
In-Situ						
Ore	t	140,911	181,781	298,088		620,780
Waste	t	656,056	678,764	923,332		2,258,152
Total Material	t	796,967	860,545	1,221,420		2,878,932
Recovered/Diluted						
Production	t	112,588	145,243	233,910		491,741
Graphite	% Cg	7.02	7.28	7.04		7.10
Waste	t	684,379	715,302	987,510		2,387,191
Total Moved	t	796,967	860,545	1,221,420		2,878,932
Stripping Ratio	---	6.08	4.92	4.22		4.85
Stockpile Rehandling						
Tonnage	t			**15,592**	**86,432**	102,024
Graphite Grade	%Cg			**6.92**	**6.92**	6.92
Processing						
Ore to Mill	t	112,588	145,243	**249,502**	**86,432**	593,764
Head Grade	%Cg	7.02	7.28	**7.03**	**6.92**	7.07

17.0 RECOVERY METHODS

Content in this section has been prepared primarily by Soutex, with Guy Comeau of Soutex acting as the QP.

17.1 Site Visit

The QP conducted a tour of the site and process plant on October 4, 2021. During the time of the visit, the process plant was not operating. Processing equipment appeared to be clean and well maintained and plant equipment was well identified.

17.2 Process Description

ROM feed from Pit 2 and stockpiles is crushed in a conventional jaw crusher. Crusher product is fed to the silo via a conveyor where a 24-hour retention time is possible. Calcium chloride is added to the feed to minimize ore freezing in the silo. Vibrating feeders at the bottom of the silo feed the grinding circuit (semi-autogenous grinding mill and ball mill).

From the grinding circuit, the ore is treated in the flotation and gravity separation circuits. The circuit is designed to recover coarse graphite as early as possible during the separation process to avoid damaging the coarse flakes.

Graphite concentrate is filtered on a drum filter followed by drying in a kiln. Kiln product is screened into different product size fractions. Products are bagged in 25 kg or 1,000 kg bags depending on customer requirements. A sample from each bagged product is checked for quality control and kept for a period of six months.

A simplified process flowsheet is presented in Figure 17-1.

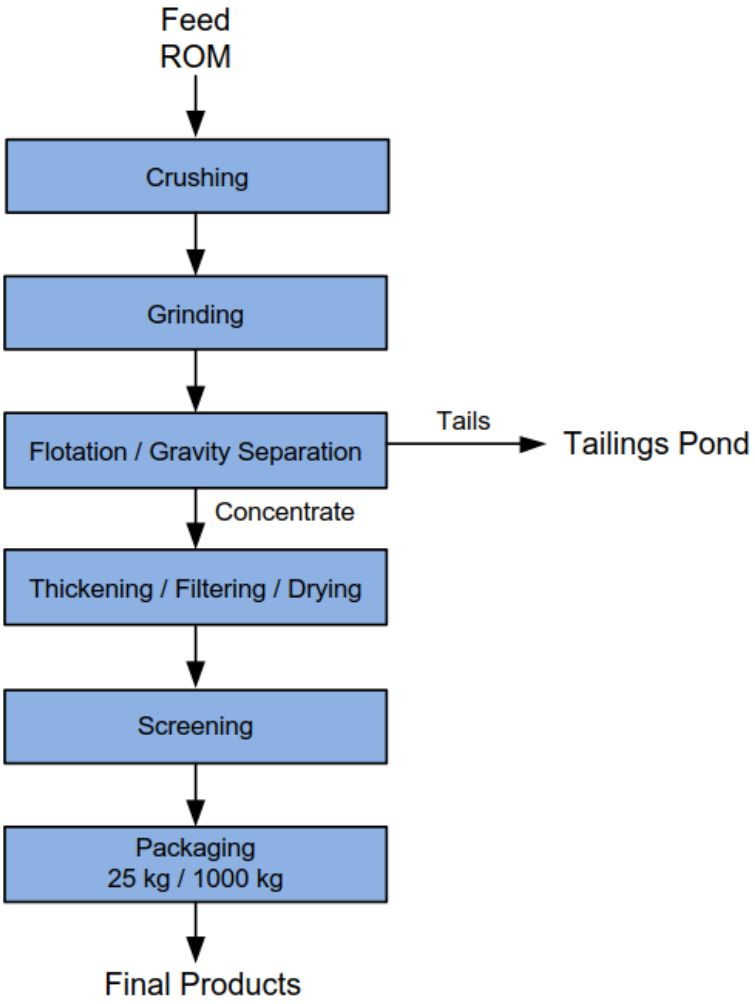


Figure 17-1: Simplified Process Flowsheet

17.3 Plant Equipment

17.3.1.1 Crushing Circuit

The crushing circuit was visited on October 4, 2021, corresponding with a plant shutdown. Overall, the crushing circuit was orderly and relatively clean.

The rock breaker showed normal wear and tear for the age and functionality of this equipment. The grizzly screen has been replaced recently and appears adequate.

During the tour of the graphite circuit, it was mentioned that ore tended to slip upwards in the jaws of the crusher. To minimize this, a permanent moveable rod had been placed above the crusher to keep ore from slipping out. This setup was implemented by the Quarry and it is unclear if the crusher manufacturer was consulted prior to installation.

17.3.1.2 Grinding and Flotation Circuits

Imerys reports that operation of the grinding and flotation circuits is very hands on and there is little automatic process control. The circuits were relatively clean, and equipment was clearly identified. There were no obvious signs of major equipment failures.

17.3.1.3 Thickening

It was mentioned during the site visit that the beams supporting the thickener rake mechanism had recently been changed because of corrosion. The QP considers this to be expected in a plant of this age.

17.3.1.4 Equipment List

Plant equipment appears to have adequately facilitated graphite concentrate production over the last 30 years. During the site visit, there were no obvious signs that equipment was in poor condition.

Table 17-1 to Table 17-6 summarize the main plant equipment by area. Equipment capacities and design criteria were not available for review.

Table 17-1: Crushing Circuit
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Equipment Number	Equipment Name
-	Rock Breaker
-	Crusher

Table 17-2: Grinding Circuit
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Equipment Number	Equipment Name
240-410-002 M1	SAG Mill
240-411-001 M1	Tyler Screen
240-410-005 M1	6 ft x 10 ft Ball Mill

Table 17-3: Flotation Circuit
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Equipment Number	Equipment Name
-	Flotation Column
-	20 in. Cyclone
240-410-003 M1	8 ft X 12 ft Secondary Mill
240-412-023/024	Swecos Screens #23, #24
240-412-005 (M1 to M3) / 240-412-006 M1	Flotation Banks: Cleaners #2 and #3
240-412-003 (M1 to M3) / 240-412-004 M1	Flotation Banks: Cleaners #4 and #5
240-412-013 (M1 to M4)	Flotation Bank: Cleaners #6
240-412-008 (M1/M2) 240-412-009 M1 240-412-010 (M1/M2)	Flotation Banks: Cleaners #7 and #8
240-412-001 (M1 to M5) 240-412-002 (M1 to M3)	Scavenger #1 and #2
240-462-001 M1	Scavenger Blower
-	10 inch Cyclone
240-410-004 M1	6 ft X 5 ft Re-grind Mill
240-461-002 M1	750 CFM Compressor

Table 17-4: Gravity Separation
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Equipment Number	Equipment Name
240-411-019 M1	Swecos Screens #1
240-411-003/004	Swecos Screens #2
240-411-007/009/010	Swecos Screens #3
240-411-011/012/013	Swecos Screens #4
-	Spiral #1
-	Spiral #2
-	Spiral #3
-	Spiral #4

Table 17-5: Thickening – Filtering – Drying Circuits
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Equipment Number	Equipment Name
240-426-001 (M1/M2)	Thickener
240-413-001 M1	Belt Filter
240-420-001 M1 240-486-037	Rotary Dryer

Table 17-6: Screening and Packaging Circuits
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Equipment Number	Equipment Name
240-411-005 M1 240-411-008 M1	North and South Rotex Screens
240-446-001	1,134 kg Packaging Machine
240-446-004 M1	25 kg/50 kg Packaging Machine

17.4 Plant Operating History

Imerys reports that the ideal plant feed range falls between 7% Cg and 7.5% Cg. Typically, actual feed grades range between 6% Cg and 8% Cg. According to Imerys, the less-than-ideal actual grade range is a result of challenges primarily related to the availability of experienced staff and the manual-intensive nature of the Quarry's grade control program. Plant feed grades are verified twice a day from three stockpiles of differing grade ranges. The following data was not available for Soutex review:

- Hourly grinding tonnage.
- Mill availability.
- Fineness of grind.
- Reagent consumption.

17.5 LOM Processing Plan

Feed from Pit 2 continues through November 2023, after which there is no planned tonnage. The SLR LOM processing plan is summarized in Table 17-7. Imerys calculated the concentrate recoveries by using the following assumptions:

- Graphite Plant Recovery = 91.3 %
- Graphite Concentrate Grade = 96.5 %

It is not known which methods were used by Imerys to arrive at these assumptions.

The QP notes that no information was provided on the calculation method used to determine the recovery of 91.3%.

The yearly feed grades for 2021 to 2023 are slightly less than the feed grades from 2018 to 2021.

Table 17-7: SLR LOM Processing Plan
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Ore Processed (tpa)	Ore Grade (% Cg)	Ore Processed (tph)	Concentrate (t)
2021	112, 588	7.02	31	7, 479
2022	145, 243	7.28	28	9,429
2023	233, 910	7.04	48	14, 685
2024	102, 024	6.92	47	6, 300

Based on the past plant throughput and head grades from 1990 to 2018, in the opinion of the QP, the plant has the capacity to process the expected plant feed tonnages at the stated grades in the years 2021 to 2023.

The graphite recovery was calculated by the QP from daily production data provided by Imerys. The daily production data was from January 2018 to mid-April 2021. The average graphite recovery for this period was calculated to be 89.2%. The forecasted head grades in the years 2021 to 2024 are slightly lower than the head grades of 2018 to 2021. As a rule of thumb, a lower head grade will result in a lower recovery at the same concentrate grade. For these reasons, an average graphite recovery of 89.2% was used to calculate the concentrate tonnage in the LOM.

The actual and projected hourly tonnages for the years 2021 and 2022 at 31 tph and 28 tph are lower than the stated hourly typical production rates between 40 tph and 50 tph. During the October site visit, it was mentioned that the ball mill is sometimes used for primary grinding as it offers a gentler grinding action. The ball and semi-autogenous grinding (SAG) mill loads are checked once a week and the ball addition is adjusted as required. The QP assumes that the SAG mill and ball mill loads are adjusted as required to compensate for a decreased feed tonnage to avoid overgrinding during the years 2021 and 2022.

The QP assumes the stockpiled ore of 102,024 t will be processed in 2024.

These assumptions are used by the QP to calculate the hourly production for the years 2021 through 2024:

- Weekly production work schedule is 4.5 days per week at 24 hours per day.
- Four weeks of downtime in 2022.
- Seven weeks of downtime in 2023.

During SLR's site visit in May 2021, Imerys reported experiencing issues with SAG mill throughput relating to the quartz content in the mill feed (ore hardness). Quartz content was reported to be disseminated and/or in small boudined veinlets which are difficult to model. As discussed in Section 16, hardness issues are reported to be rare, on the order of a few days per occurrence, and have been managed with relative ease from existing ore sources/stockpiles.

18.0 PROJECT INFRASTRUCTURE

Primary infrastructure at the Quarry comprises:

- Open pits
  - Pit 2 – active quarry mining operations and in-pit, non-mineralized waste rock disposal.
  - Pit 6 – historic mined-out pit used as non-mineralized waste rock storage facilities.
  - Pits 12 and 16 – historic mined-out pits used as mineralized waste rock storage and site of current tailings storage and deposition.
- Waste rock storage facility constructed above original ground surface at the southwest corner of the property.
- Primary crusher facility with rock breaker and conventional jaw crusher.
- Processing plant – see Section 17 for additional detail.
- Tailings management facility (TMF) located within Pits 12 and 16.
- Mechanical shop.
- Warehouse.
- Administrative offices.
- Gatehouse.

The location of the Quarry and its primary infrastructure are shown in Figure 18-1, Figure 18-2, and Figure 18-3.

18.1 Access Roads

As presented in Figure 18-1, the Quarry is located approximately two kilometres south of Lac-des-Îles, Québec, Canada and approximately 110 km northeast of Ottawa and 180 km northwest of Montréal. The Quarry is accessed via public Route 309 and the Chemin du Graphite, located approximately 22 km south of the town of Mont-Laurier.

18.2 Electricity

There are three electricity meters at the Quarry. Electricity is supplied to the Quarry by Hydro Québec under Rate M (Hydro Québec, 2021). This rate is a general rate for medium-power customers and applies to a contract whose maximum power demand has been at least 50 kW during a consumption period included in the last 12 monthly periods.

18.3 Water

Fresh water for the Quarry is drawn from the Lac-des-Îles River via a pumping station located adjacent to the river. Further information on the Quarry's potable and process water systems was not available for review. Fresh water volumes drawn in 2018, 2019, and 2020 were well below permitted volumes. Information on the Quarry's dewatering system was not available for review.

Figure 18-1

Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Province of Québec, Canada

Site Access and Nearby Population Centres

February 2022

Source: Google Earth, 2021.

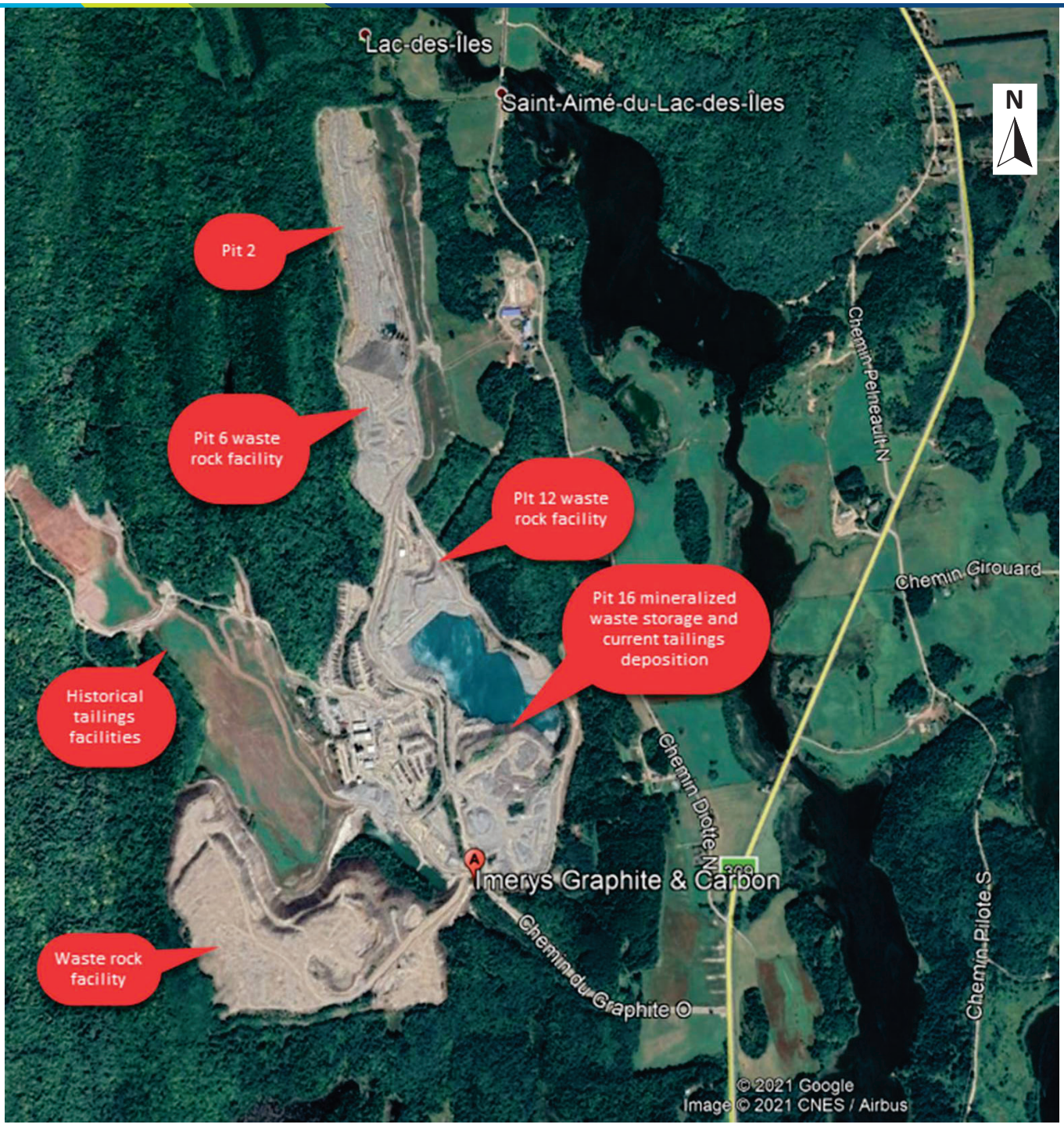


Figure 18-2

Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Québec, Canada

Site Extents and Location of Pits and Waste Facilities

February 2022

Source: Google Earth and Imerys, 2021.

Figure 18-3

Northern Graphite Corporation

Lac-des-Iles Graphite Quarry

Québec, Canada

Site Layout and Main Infrastructure

0 50 100 150 200 250

Metres

February 2022

Source: Imerys, 2021.

18.4 Waste Rock Facilities

Since at least 2014, all waste rock has been placed in the Quarry's mined-out pits.

Previously, the stability of waste rock placed outside mined-out pits was evaluated by Roche Ltée (Roche) using the Dump Stability Rating (DSR), a classification method developed by the British Columbia Mine Waste Rock Pile Research Committee (Roche, 1997). The assessment is based on a series of scoring criteria that classify the facility as being of negligible stability risk, low stability risk, moderate stability risk, or high stability risk. Using this classification scheme, Roche classified the Quarry waste rock facilities (WRFs) as low risk. During Soutex's site visit, Imerys confirmed that no other geotechnical stability studies have been carried out on the Quarry's WRFs, and as this waste rock placement occurred directly on bedrock, is of the view there is low risk of instability.

SLR and Soutex have relied on the conclusions of Roche and Imerys and provide no conclusions or opinions regarding the stability of the WRFs.

18.5 Tailings Management Facilities

The historic TMF, located in the southwest corner of the property, was in operation from 1989 and ceased to receive tailings in 2013. The QP notes there has been no information provided on the TMF construction method.

In early 2014, tailings deposition began in the historic Pit 12 in co-deposition with waste rock mined from Pit 6. Final closure activities for the TMF began in 2015. At the time of Soutex's site visit, the TMF was fully revegetated.

A geotechnical study was carried out in 1996 aimed at expanding the capacity of the TMF (Roche, 2002). The design of the North dike (May 1999) was also the subject of a geotechnical study, a copy of which is included in the 2002 Closure Plan prepared by Roche.

Imerys reports that independent consulting firms have completed annual inspections of the Quarry's TMF tailings dikes to ensure that their construction and maintenance continues to adhere to good practice and specialized recommendations made by the consultants. Not all annual reports/inspections were available for review.

The 2002 and 2004 Quarry rehabilitation plans include a copy of the inspection reports of the TMF tailings dikes carried out by the consulting firm Laboratoire d'Expertises du Québec ltée (LEQ). The most recent report available for review is dated June 2004 and is included with the Quarry's 2007 Closure Plan. Annual inspections were reportedly completed in 2020 and 2021, however, these reports were not available for review.

During Soutex's site visit, Imerys indicated that stability checks on the TMF are carried out by a consulting firm and no issues have been identified. Documentation of these stability checks was not available for review and thus it is unclear how often these checks are undertaken, and what TMF performance aspects are being assessed during the checks/inspections.

SLR and Soutex have relied on the conclusions of Imerys and its independent consultants and provide no conclusions or opinions regarding the stability of any of the Quarry's TMFs.

The QP notes that the following information was not available for review on the Quarry's TMFs and WRFs:

- TMFs and WRFs – design aspects/construction methods.
- TMFs – Operating, Maintenance and Surveillance (OMS) manual and associated risk assessments.

- TMFs and WRFs – total and remaining capacities of permitted facilities, including disposal in mined-out pits.

19.0 MARKET STUDIES AND CONTRACTS

19.1 Markets

Information provided in subsections 19.1.1 and 19.1.2 has been summarized from comments and market study information provided by Benchmark and NGC on November 6, 2021 (Benchmark, 2021; NGC, 2021a). See Appendices 1 and 2 for further detail.

19.1.1 Issuer Market Study Summary

19.1.1.1 Graphite Industry

Graphite is one of only two naturally occurring forms of pure carbon, the other being diamonds. Diamonds have a three-dimensional crystal structure whereas graphite consists of a "two dimensional", planar molecular structure. For this reason, graphite generally occurs as flakes, which are multiple layers of "graphene" held together by weak bonds. Graphene is a single, one atom thick layer of carbon atoms arranged in a "honeycomb" or "chicken wire" pattern. It has been estimated that there are three million layers of graphene in a one millimetre thickness of graphite. The delamination or exfoliation of graphite flakes is therefore one method of producing graphene.

Graphite is formed by the metamorphism of carbon rich materials which leads to the formation of either crystalline flake graphite, fine grained amorphous graphite, or crystalline vein or lump graphite. Graphite is a non-metal but has many properties of metals and is desirable as a strong, light weight, heat, and corrosion resistant reinforcement material with a high aspect ratio. It also has high thermal and electrical conductivity, chemical inertness, and a natural lubricity.

Because of supply concerns relating to the fact that China is the world's dominant producer, and potential demand growth from new applications such as lithium-ion batteries (LiBs), the European Union considers graphite to be one of 14 "critical mineral raw materials" with high supply risk. The United States has also included graphite on a list of mineral resources whose loss could critically impact the public health, economic security, and/or national and homeland security of the United States.

NGC notes that there is very little recycling of, or substitution for, graphite.

19.1.1.2 Graphite Supply

Benchmark Mineral Intelligence (Benchmark) estimates that worldwide production of natural flake graphite in 2021 will be just over one million tonnes of which China will produce approximately 75%. Brazil (8%) and Mozambique (6%) are expected to make up the bulk of the production balance, with minor percentages coming from Madagascar, Tanzania, and Europe.

Historically, most Chinese flake graphite production came from Shandong province, however, production has declined as mines become older and deeper, costs rise, resources are depleted, and environmental regulations have become increasingly stricter. Most Chinese production now comes from Heilongjiang province where deposits are generally higher grade but smaller flake and lower quality. As a result, Chinese production of the larger flake sizes is declining. Heilongjiang has substantial small flake resources and excess production capacity, most of which is targeting the LiB market.

In May 2021, at the 14th ICCSINO Anode Material and Feedstock Market Conference (ICCSINO) held in Qingdoa, China, NGC noted that flake graphite production from the two main areas in China was reported

to be 731 kt in 2020. Including output from other provinces, NGC estimates annual Chinese flake graphite production at approximately 850 kt, which indicates that this production is being somewhat underestimated by western commentators including Benchmark, Roskill, and Fastmarkets, which estimate Chinese production at approximately 750,000 tpa.

NGC considers surplus Chinese supply to be largely related to a large mine in Loubei which is owned by Minmetals, a state-owned company that is one of the largest metals and minerals trading companies in the world. The mine is reported to have only been operating about four months per year and producing approximately 300,000 tpa of flake graphite. Based on the ICCSINO Chinese graphite production estimate, NGC estimates that the Loubei mine is near full production at this time. Minmetals, which is the largest Chinese natural graphite producer, previously forecast a supply deficit in 2020 (which did not occur due to the COVID-19 pandemic) and a very large supply deficit by 2025.

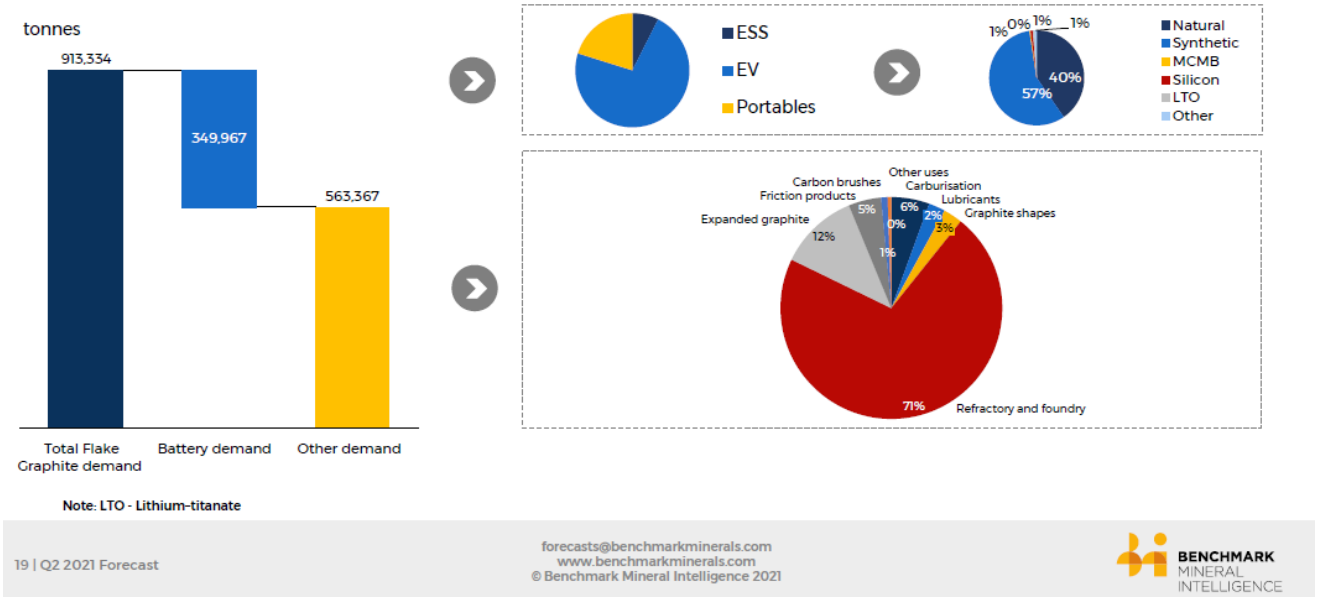
In 2018, a large, new graphite mine was built in Mozambique, substantially increasing world natural flake graphite supply. NGC notes that most of the mine's production has been sold into the Chinese steel market as China does not find its production suitable for the battery market.

Because of potential demand from the growing electric vehicle (EV)/LiB markets, NGC notes that there are over 20 advanced stage graphite projects outside of China that have completed feasibility studies. Most are in Tanzania, Mozambique, Australia, and Canada. They represent a significant source of future supply, however, NGC is of the opinion that overall supply is expected to remain constrained given that not all projects are expected to produce battery grade graphite products and due to typical project development factors and risks such as country/political risk and project permitting, financing, and construction timelines.

19.1.1.3 Graphite Demand

19.1.1.3.1 Refractories

In its Q2 2021 forecast, Benchmark estimates that worldwide demand for natural flake graphite in 2021 will be 913 kt (Figure 19-1). Historically, the major use of graphite has been for the manufacture of refractories for the steel industry (blast furnace brick), which accounts for over 40% of demand or 400 kt. Graphite is thus a consumable in the steel making process, not an alloy, although graphite is sometimes added to steel to increase the carbon content.



Source: NGC, 2021a.

Figure 19-1: Flake Graphite Demand by End Use (Q2 2021 Forecast)

19.1.1.3.2 Anode Material

Graphite is the anode material in LiBs and is their largest single component. NGC notes that there are no substitutes in this application although the anode material can be either synthetic or natural graphite. Natural graphite is less expensive and has a higher capacity whereas synthetic graphite charges faster and has a longer cycle life. Natural graphite-based anode material is called spherical graphite (SPG) and is manufactured from mined natural graphite concentrates through a process that involves micronization, rounding, purification, high temperature heat treatment, and coating. Micronizing and rounding flake graphite concentrate provides an SPG yield of 35% to 40%. The rejects have little value.

NGC notes that to be used in the manufacture of SPG, mined concentrates should have a purity of 94% or higher, have a high bulk density, high crystallinity, and capable of being economically rounded and purified. Not all mine concentrates, nor even all concentrates from any one mine, will be “battery grade”.

Benchmark estimates that demand for flake graphite from the anode material market will be approximately 350 kt in 2021 and that flake graphite production needs to more than double by 2025 to meet this demand.

At the ICCSINO conference, the anode material market was reported to have grown by 39% in 2019 and 30% in 2020 and spherical graphite production in 2020 was just over 200 kt. This equates to LiB demand accounting for approximately 500,000 tpa, or 50% of the flake market supply.

19.1.1.3.3 Other Uses

Graphite also has other uses including in the automobile industry (gaskets, brake linings and clutch parts), thermal management in consumer electronics, insulation products, electric motors (carbon brushes), heat

and corrosion resistant gaskets, fuel cells, fire retardants, and lubricants. NGC notes that such other uses are estimated to account for approximately 160 kt of demand, of which 100 kt are attributable to expandable graphite products.

19.1.1.4 Graphite Pricing

There is no posted spot price or futures market for graphite. Sales are negotiated between producers and consumers. Some have long standing relationships and negotiate prices and volumes annually, however, typically there are no long-term contracts or off-take agreements. Several industry sources (including Industrial Minerals magazine and Benchmark) publish prices for the most popular product grades and typically provide a conservative view of pricing for large, high-volume buyers. To consistently attract buyers and achieve favourable prices, concentrates must generally be above 150 mesh in size (small flake), have a carbon content greater than 94%, and not have any undesirable impurities.

Prices increase with flake size and carbon content. Premiums are relatively small moving from +150 mesh (small) flake to +100 mesh (medium) and +80 mesh (large flake). Prices are notably higher for rarer sizes (+50 mesh (XL) and +32 mesh (XXL) flake sizes).

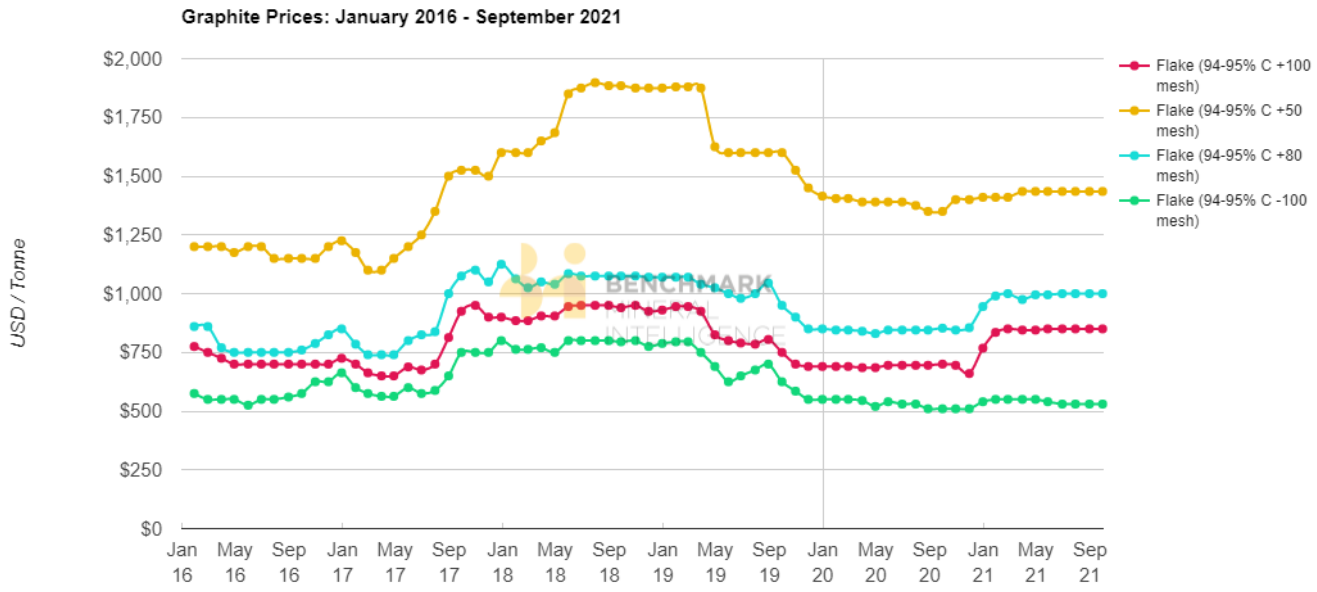
Most graphite mine concentrates, produced by flotation alone, range between 94% Cg and 98% Cg, with a substantial amount of -150 mesh material (micro flake and fines) also produced at less than 94% Cg. This material presents a marketing challenge as it is not suitable for many of the major markets.

In the late 1980s, graphite prices peaked in the US$1,300/t range for premium grade products (large flake, +80 mesh, 94% to 97% Cg). These prices declined sharply as Chinese producers entered the market, causing western mines to close and development projects to be shelved.

Prices did not begin to recover until 2005, peaking in the US$2,500/t to $3,000/t range in 2012 when some shortages were reported due to economic growth in China, the commodity super cycle, and the resultant demand from the steel market.

The subsequent slowdown in the Chinese economy, combined with a lack of growth in the United States, Japan, and Europe, caused prices to fall approximately 50% from 2012 levels. In the second half of 2017, prices rebounded 30% to 40% due to a recovering steel industry, continued growth in LiB demand, and environmentally related capacity shutdowns in China.

Current European Cost, Insurance, and Freight (CIF) prices are approximately US$1,650/t for 94% to 95% Cg +50 mesh flake, US$1,200/t for 94% Cg +80 mesh flake, US$1,050/t for 94% Cg +100 mesh medium flake, and US$750/t for -100 mesh small flake. These prices consist of Benchmark's FOB China prices (Figure 19-2) with approximately US$200/t added for freight and handling. Due to the current state of container markets, European prices may be understated.



Source: NGC, 2021a.

Figure 19-2: Flake Graphite Prices – Benchmark FOB China

19.1.2 Issuer Comments on Realized Prices for Quarry Concentrates

The Quarry has been able to achieve an average price of approximately US$1,575/t for its concentrates over the 2019 to 2021 period, which represents a premium to the above prices. This average realized price excludes any shipping/insurance costs incurred by the quarry to ship its finished graphite products to its customers. This premium is primarily the result of the following factors:

- The quality and distribution of flake size in the Quarry's concentrates.
- The Quarry is selling relatively small quantities of concentrate to customers with whom it has long term relationships.
- The Quarry's Northern American location is favourable, providing customers with a secure, politically stable source of supply and relatively straightforward inventory management.

Both graphite prices and the premium earned by the Quarry are expected to benefit from the following circumstances:

- Growing demand for LiBs.
- Constrained supply from China.
- Supply chain/freight market difficulties/disruptions and associated cost implications (e.g., current shortage of containers, container ships, and unloading capacity at western ports).
- Increasing scrutiny of mine operators with respect to their Environmental, Social, and Governance (ESG) performance.

The QP has reviewed the issuer market study information and used its findings to support the assumptions used in this Technical Report.

19.1.3 SLR Review

19.1.3.1 Recent Quarry Concentrate Production and Realized Prices

SLR reviewed available information on Quarry concentrate volumes sold and corresponding revenues. Data reviewed is also drawn from information presented in Imerys' performance review reports for January, February, and March 2021, a summary of which is presented in Table 19-1.

Table 19-1: Recent Quarry Production and Sales
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

January to March Period	Volumes (t)	Realized Sales (C$ millions)	Average Unit Price[1] (US$/t)
2019	3,373	5.576	1,344
2020	2,816	5.040	1,455
2021	3,126	5.583	1,452

Notes:

1. Calculated average unit prices assuming a US$/C$ exchange rate of 1.23.
2. Source: Imerys, 2021gg.

NGC provided SLR with realized annual graphite concentrate production and revenue from the Quarry for review (NGC, 2021b). From this information, average unit prices are calculated to have been US$1,556/t in 2019 and US$1,751/t in 2020, assuming a US$/C$ exchange rate of 1.23.

Imerys BP assumptions imply annual average unit prices for graphite concentrate increasing from US$1,508/t to US$1,743/t over the 2021 to 2025 period. SLR notes that while Imerys' implied 2026 forecast price appears to be an outlier at US$2,780/t, only 1,200 t of concentrate is forecast to be sold by Imerys in that year.

In general, SLR finds the implied/Imerys forecasted unit prices to be reasonable and consistent with calculated prices derived from recent product volumes and revenues.

SLR reviewed the Quarry graphite flake size production distribution for the period from January 1, 2018 through July 30, 2020. The Quarry produced the distribution shown below and reproduced in Table 19-2. The percentage splits are approximate weighted annual averages over the aforementioned period.

- 16.6% Jumbo (+50 mesh, XL flake)
- 20.3% Large (+80 mesh, large flake)
- 18.0% Medium (medium flake)
- 45.1% Fines (-150 mesh fines)

As of June 30, 2021, the finished flake size distribution for on-site Quarry inventory is shown below and in Table 19-2. Percentage splits were provided by Imerys.

- 43.6% Jumbo (+50 mesh, XL flake)
- 8.9% Large (+80 mesh, large flake)
- 1.9% Medium (medium flake)

- 45.7% Fines (-150 mesh fines)

Pricing information by flake size was not available for SLR review.

Table 19-2 also presents adjusted flake graphite pricing prepared from internal research by SLR in 2012 (then Roscoe Postle Associates Inc.) and the weighted average price used by SLR in its current cash flow modelling of the Quarry. The weighted flake size distribution is derived from the reported flake size distribution in concentrate production from January 1, 2018 through July 30, 2020 and the flake size distribution of on-site inventory at December 31, 2020.

SLR finds that the implied pricing from forecasted Imerys revenues and volumes sold is generally consistent with past pricing research conducted by SLR. SLR notes there could be a material difference in Quarry LOM revenues based on the realized flake size distribution in production volumes. Imerys does not currently forecast flake size distribution in its Quarry production plans.

SLR's economic analysis is thus based on pricing that is effectively a weighted average of all flake sizes expected to be produced annually at the Quarry and assumes future flake size distributions will be similar to recent Quarry production.

Table 19-2: Graphite Concentrate Pricing Review
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Imerys Flake Description	SLR 2012 Comparable Size Class (mesh)	Weighted Average Flake Size Distribution[1] (%)	Weighted Average Flake Size Distribution[2] (%)	Weighted Average Flake Size Distribution[3] (%)	SLR 2012 Price (US$/t)	SLR 2021 Weighted Average Price (US$/t)
50 (Jumbo)	+48	16.6	43.6	22.6	2,000	2,440
80 (Large)	+100	20.3	8.9	17.8	1,750	2,130
80x150 (Medium)	+200	18.0	1.9	14.4	1,300	1,580
Fine	-200	45.1	45.7	45.2	800	980
Total	**-**	**100.0**	**100.0**	**100.0**	**1,312[4]**	**1,600[5]**

Notes:

1. Concentrate production from January 1, 2018 through July 30, 2020.
2. Flake size distribution from on-site finished product inventory as of June 30, 2021.
3. Combined distribution from concentrate production and the finished product inventory.
4. SLR 2012 average unit price for all flake sizes, adjusted for flake size distribution for the period January 1, 2018 through July 30, 2020.
5. Back-calculated (implied) weighted average price (all Quarry production years) used in SLR's economic analysis. Based on the Imerys BP forecasted revenues and volumes sold.

Accordingly, an average LOM price of US$1,600/t has been used in the Base Case economic analysis.

19.2 Contracts

19.2.1 Terrebonne Business

SLR notes that graphite concentrate sales currently exist between Imerys' Quarry and Terrebonne businesses. On closing of the acquisition, Imerys and NGC will enter into a forward sales agreement whereby Imerys will pay in advance for 5,000 t of product to be delivered at future dates of its choosing.

19.2.2 Review of Main Contractual Relationships

SLR offers the following comments on the main contractual (customer) relationships Imerys has in relation to Quarry sales:

- Imerys reports that its 10 most important customers are mostly governed by monthly or yearly purchase orders.
- Imerys reports having business relationships with its top eight customers for over 15 years, with these customers accounting for approximately 85% of Quarry revenues.
- Concentrate unit prices, the seller's grade, and technical specifications were redacted and unavailable for SLR review.
- Customer agreements available for review include:
    - One master supply agreement.
    - Three consignment stock agreements.
    - Two agency/distribution agreements.
- In the opinion of the QP, the master supply agreement appears reasonable and contains agreement language that is generally consistent with industry norms.
    - The agreement has terms that are generally favourable to the customer, including a contingency (minimum) stock agreement covering concentrate inventory that must be maintained at the Quarry site and that cannot be sold to others without prior customer consent.
    - Annual target and annual maximum volumes are prescribed for the duration of the agreement (January 1, 2020 to December 31, 2022). The Quarry is not obligated to supply quantities beyond the annual maximum volumes.
    - Termination conditions appear reasonable for both the Quarry and the customer.
- In the opinion of the QP, the consignment stock agreements appear reasonable and contain agreement language that is generally consistent with industry norms.
    - Any stock withdrawals are considered to have their own purchase contract and purchase conditions agreed upon separately by the Quarry and the customer.
    - Two of the agreements stipulate that six-month forecasts of expected customer demand will be provided to the Quarry each month by the customer.
    - The agreements automatically renew year to year with termination on three months notice or for defined material reasons (which appear reasonable).

- In the opinion of the QP, the agency/distribution agreements appear reasonable and contain agreement language that is generally consistent with industry norms.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

The following section summarizes Soutex and SLR findings on the environmental and social aspects of the Quarry and has been prepared with the assistance of Linda Munro, Environmental Scientist, SLR. Jean Dionne visited the Quarry on October 4, 2021.

This section incorporates certain information (verbal accounts) provided by Mr. Matteo Zenone, Natural Graphite Operations Leader and Quarry General Manager, Imerys. Where claims could not be verified, Soutex and SLR have stated so.

Documents made available for review include:

- Relevant permits, leases, and licences.
- Internal and external audit reports.
- Reporting under the National Pollutant Release Inventory (NPRI) for 2018, 2019, and 2020.
- Annual regulatory reporting (2018 to 2020).
- Geochemistry report (1999).
- Environmental aspects presented in an MS Excel spreadsheet identifying and assessing environmental impacts.
- Stakeholder information presented in an MS Excel spreadsheet identifying stakeholders and their interests.
- Closure planning and rehabilitation commitments as well as closure costing, the letter of approval for the Quarry's restoration plan, and the amount held as a financial guarantee by MERN.
- Human Resources information.
- MS Excel spreadsheet of safety statistics.
- The table of contents of the ISO system in place at the Quarry which is aimed at addressing environmental and social aspects as deemed relevant by the Quarry.
- CPTAQ decisions.
- A notice of non-compliance issued by the Ministère du Développement Durable, de l'Environnement et de la Lutte contre les Changements climatiques (MDDELCC).
- Surface rights agreement with landowners.
- Emergency Measures (response) Plan.
- TMF and WRF information noted in Section 18.

20.1 Environmental Studies

Soutex notes that no Environmental Impact Assessments (EIAs) were conducted for the Quarry as this was not required by federal or provincial legislation at the time, however, the Closure Plan of November 2002 submitted by Roche (Roche, 2002) provides a detailed description of the ambient environment as submitted to the MDDELCC in 1989, when the authorization was sought for the development of the concentrator and historic TMF. Study updates were completed in 1995 (part of a request for the expansion of the historic TMF), in February 2002 (part of the Quarry's dewatering project), and in 2012 (certificate request for Pit 2 Exploitation).

Soutex consulted the Protected Areas Register on MDDELCC's web site (information current as of March 31, 2021) and can confirm that the Quarry is not located in the vicinity of:

- A national park of Québec.
- A biological refuge.
- A recognized nature reserve.
- An exceptional forest ecosystem.
- A wildlife habitat.
- A national park and national park reserve of Canada.
- An ecological reserve (and planned).
- A reserve of territory for the purposes of a protected area.
- A biodiversity reserve (and proposed).
- A natural environment for voluntary conversation.

Per a review completed by Roche in 2002 (Roche, 2002), there was no mention of threatened or vulnerable species, those likely to be so designated, nor any species of interest noted on the Quarry property nor within the Quarry's mining area of influence, however, the request for a certificate of authorization submitted to the MDDELCC in 2002 (Pit 2) indicated a species that would likely be designated threatened or vulnerable outside but close to the project study area, i.e., the hoary bat (*Lasiurus cinereus*).

20.2 Regulation Context and Permitting

20.2.1 Federal

Imerys submits annual declarations to Environment Canada on contaminants emitted to the environment. The information is compiled in the National Pollutant Release Inventory (NPRI). Imerys provided declarations for years 2018 to 2020 for review. Soutex has reviewed the declarations and did not note any issues.

20.2.2 Provincial

20.2.2.1 Environmental Permitting

20.2.2.1.1 Environmental Quality Act

Imerys operates the Quarry under authority of Industrial Sanitation Certificate No. 201315001 (the Certificate), which the MDDELCC issued to Imerys on February 25, 2015 (a modification of the first issue of attestation dated October 22, 2013). The Certificate was issued under the Québec Environmental Quality Act (EQA RLRQ, Chapter Q-2, section IV.2).

On December 16, 2021, Imerys informed NGC that the application for renewal of the Certificate has been submitted to MDDELCC, however, no response has yet been received, with delays possibly due to the COVID-19 pandemic. During the application review process, the Quarry operates under the conditions of the previous Certificate.

The Certificate establishes the environmental conditions under which Imerys must carry out its mining activities. The Certificate includes a series of approval conditions divided into seven parts, as follows:

- Section I: Abbreviations and applicable regulations.
- Section II: Effluents.
- Section III: Air emissions and noise.
- Section IV: Waste management.
- Section V: Receiving environment.
- Section VI: Emergency measures.
- Section VII: Annexes, including:
    - Annex I: Integration with previous authorizations delivered by the MDDELCC (Annex 1-A). Annex 1-B contains details on the integration of the operating conditions contained in the authorizations issued (requirements, standards, and applicable monitoring program, if applicable).
    - Annex 2: Location of discharge points, emission points, storage and final disposal sites and measurement points in the environment.
    - Annex 3: Specifications for the verification of flow measurement and sampling of wastewater.

The Certificate relates to the operation of a graphite ore processing plant, however, it specifies that under the provisions of Section 31.13 of the Environmental Quality Act (EQA), the authorizations already issued under Sections 22, 32, and 48 of the EQA cease to be part of it, as they are deemed to be included in the Certificate. In the QP's opinion, the following authorizations thus form part of the Certificate:

- Operation of Pit 2 (Certificate No. 401139797) issued on June 10, 2014.
- Storage of mining residues from the processing plant in Pit 12, as well as mine tailings from maintenance of the polishing pond, and if applicable, those residues which may come from the tailings site (Certificate No. 401087727 issued on November 13, 2013).
- Expansion of the TMF (Certificate No.401075317 issued on September 30, 2013). This Certificate covers:
    - Replacement of the main dike.
    - Construction of a lateral tailings retention structure in the valley upstream to the west of the park.
    - Construction of a baffle in the TMF (tailings pond).
    - Use of amphibious equipment for the maintenance of the TMF (polishing pond).
    - Abandonment of the road along the TMF (polishing pond).

The Certificate also establishes annual variable fees that Imerys must pay for the contaminants released to the environment. Insofar as the Quarry's tailings are considered to have a low environment risk by Imerys and are deposited in old open pits to be used as backfill material, Imerys has indicated that the amount of annual variable fees associated with tailings is zero (annual reports of 2018, 2019, and 2020). The annual reports demonstrate that the annual fee for the emission of contaminant loadings into the environment would be less than $200.

During preparation of this report, Imerys verbally indicated that all required permits are in place and no new permits or authorizations are required for the foreseeable future. While various permits will need to be renewed, the QP anticipates that this will be a relatively straightforward administrative process.

20.2.2.1.2 Storage of Petroleum Products

The Quarry holds a permit for the storage of petroleum products in four surface tanks issued by the Régie du Bâtiment du Québec (No. 1012110). The reservoirs have the following capacity:

- Two diesel tanks of 45,000 L capacity each.
- One fuel tank of 4,000 L capacity.
- One fuel oil (mazout) tank of 45,000 L capacity.

The permit is valid until June 30, 2022.

20.2.2.1.3 Commission for the Protection of Agricultural Land

As described in Section 4, part of the mining lease (BM 788) held by Imerys is located on Lot V, land which is zoned as agricultural. Imerys has obtained authorization from the CPTAQ to use these lands for their operating activities. These lands represented 200 ha of the 676 ha of the mining lease.

20.3 Environmental Compliance

20.3.1 Summary

Imerys maintains a list of permits and authorizations. In compliance with permit requirements, Imerys reports annually to MDDELCC on the following items:

- Water abstraction.
- Effluent discharge quality.
- Air emissions (sulphur dioxide emissions calculated from the sulphur content of the fuels used on the site and the quantities consumed from those fuels, and calculated dust emissions).
- Noise and vibrations.
- Waste management.
- Mine tailings and waste rock deposition volumes.

Annual reports to MDDELCC include groundwater levels and quality in a set of boreholes around the pits.

For years 2018 to 2020, Imerys' reporting data had no exceedances of authorized abstraction volumes, effluent discharge standards, water quality standards in surface and groundwater, nor any noise or vibration issues. Annual sulphur emissions were well below the reporting threshold set out in the Canadian Environmental Protection Act (threshold of 20 t). The total particulate matter for 2018 and 2020 ($PM_{2.5}$, and PM_{10}) was below the reporting thresholds for the NPRI and the Québec Inventory of Atmospheric Emissions (IQEA), except for 2018 where the total particulate matter exceeded the reporting thresholds limit.

According to Roche (Roche, 2014), apart from a burst of water that occurred at the historic TMF in the spring of 2011 (which resulted in significant suspended solids in the Quarry's final effluent), analyses carried out since 1990 demonstrate that the Quarry's final effluent generally complies with the applicable

regulation (criteria of Directive 019). According to Roche, controls put in place following the 2011 incident have proven to be effective in controlling the entrainment of suspended solids (Roche, 2014).

A corresponding notice of infringement was published by the MDDELCC specifying an infringement with respect to final effluent quality that occurred between March 13 and October 17, 2012. During Soutex's site visit, Imerys reported that the Quarry's final effluent meets the criteria of Directive 019, and the 2012 non-compliance is the only exceedance that has occurred during the Quarry's operating history. Further information on the 2012 non-compliance is provided in subsection 20.3.2.

20.3.2 Non-Compliance (2011 TMF Incident)

The MDDELCC infringement register states that Imerys infringed on Section 123.1 of the EQA between March 13 and October 17, 2012. During this period, Imerys failed to respect the operating conditions of the structure, exceeding the maximum permissible concentration of suspended solids in the final effluent, i.e., 25 mg/L. According to Roche (Roche, 2014), the non-compliance was triggered by a sudden water surge event in the spring of 2011, which resulted in tailings reporting to the settling pond, exceeding the settling pond's retention capacity. Subsequently, tailings passed through the settling pond's tower and began to accumulate in the polishing pond, leading to an exceedance in the criteria for suspended solids in the final effluent.

The non-compliance resulted in Imerys being ordered to pay a fine of $11,250, in addition to legal costs in the amount of $1,278. According to Roche (Roche, 2014), several actions were taken to prevent re-occurrence, including the construction of a baffle inside the TMF, and the installation of by-pass ditches on the east and west sides of the TMF to limit the water supply from the natural environment.

The QP expresses no opinion on the adequacy of any of the aforementioned corrective or preventative measures recommended or introduced by Imerys or its independent consultants.

20.4 Water Management

The Quarry is authorized to withdraw water from the Lac-des-Îles River and re-use water on site. Fresh water is drawn from the Lac-des-Îles River via a pumping station located near Route 309. According to annual reports submitted by Imerys to the MDDELCC in 2018, 2019, and 2020, the volumes of water withdrawn from the river were well below the volumes authorized by the MDDELCC.

The Quarry is authorized to discharge effluent to the Lac-des-Îles River. A measuring station is installed at the final effluent of the polishing pond and ensures continuous recording of pH, flow, and effluent quality. The function of the polishing pond is to provide adequate time for fine suspended particles to settle before the effluent is discharged to the environment.

According to Roche (Roche, 2002), the Quarry's source materials, mineral processing, and tailings management operations do not produce acid mine drainage (AMD) and thus there is no water treatment required for the final effluent.

Imerys reports annually to MDDELCC on the volume of discharges and its compliance with discharge standards.

Documentation confirming implementation of water management plans at the Quarry was not available for review. During discussions prior to and during Soutex's site visit, Imerys indicated that the Quarry currently has no water management issues and reports on effluent quality to the regulators as required by current permits.

20.5 Tailings and Waste Rock

20.5.1 Geochemistry

According to a geochemical study of the waste rock produced by Roche in 1999 (Roche, 1999), Quarry waste rock has low sulphide content and a high neutralization potential. According to the same study, measurements of acid generating potential were also completed for one Quarry ore sample and confirmed that the ore's neutralization potential is much greater than acid generation potential (Roche, 2014).

For Quarry tailings, Roche (Roche, 2002) asserts that given the high neutralization potential of the ore, the tailings do not present any risk of AMD. Furthermore, Roche notes that empirical data and observations support the high neutralization potential of the ore given that the Quarry has been in operation since 1989, and at the time of their reporting, there had been no evidence of AMD (Roche, 2012).

According to a work document of the MDDELCC (Roche, 2002), Quarry tailings may be considered low risk as the tailings metal concentrations do not exceed Level A Criteria stipulated by the MDDELCC's Soil Protection and Contaminated Land Rehabilitation Policy. TCLP-1311 and SPLP-1312 leaching tests completed in 2008 on five samples (Roche, certificate request 2012) indicate that the Quarry waste rock piles are "low risk" within the meaning of Directive 019 of the MDDELCC.

During Soutex's site visit, Imerys reported that the only AMD testing completed on Quarry tailings and waste rock was the 1999 testing for the reasons specified above/by Roche. In the QP's opinion, additional AMD testing should be completed to confirm previous AMD risk findings for the Quarry.

20.5.2 Tailings and Waste Rock Management

The TMF, located in the southwest corner of the property, was in operation from 1989 and ceased to receive tailings in 2013. From 2002 until 2013, tailings generated from mining of Pit 12 were deposited in the mined-out Pit 16. In early 2014, tailings deposition began in the mined-out Pit 12 in co-deposition with waste rock mined from Pit 6.

Tailings produced from 2018 to 2020 are presented in Table 20-1. No other information pertaining to historical tailings and waste rock management operations was available for review.

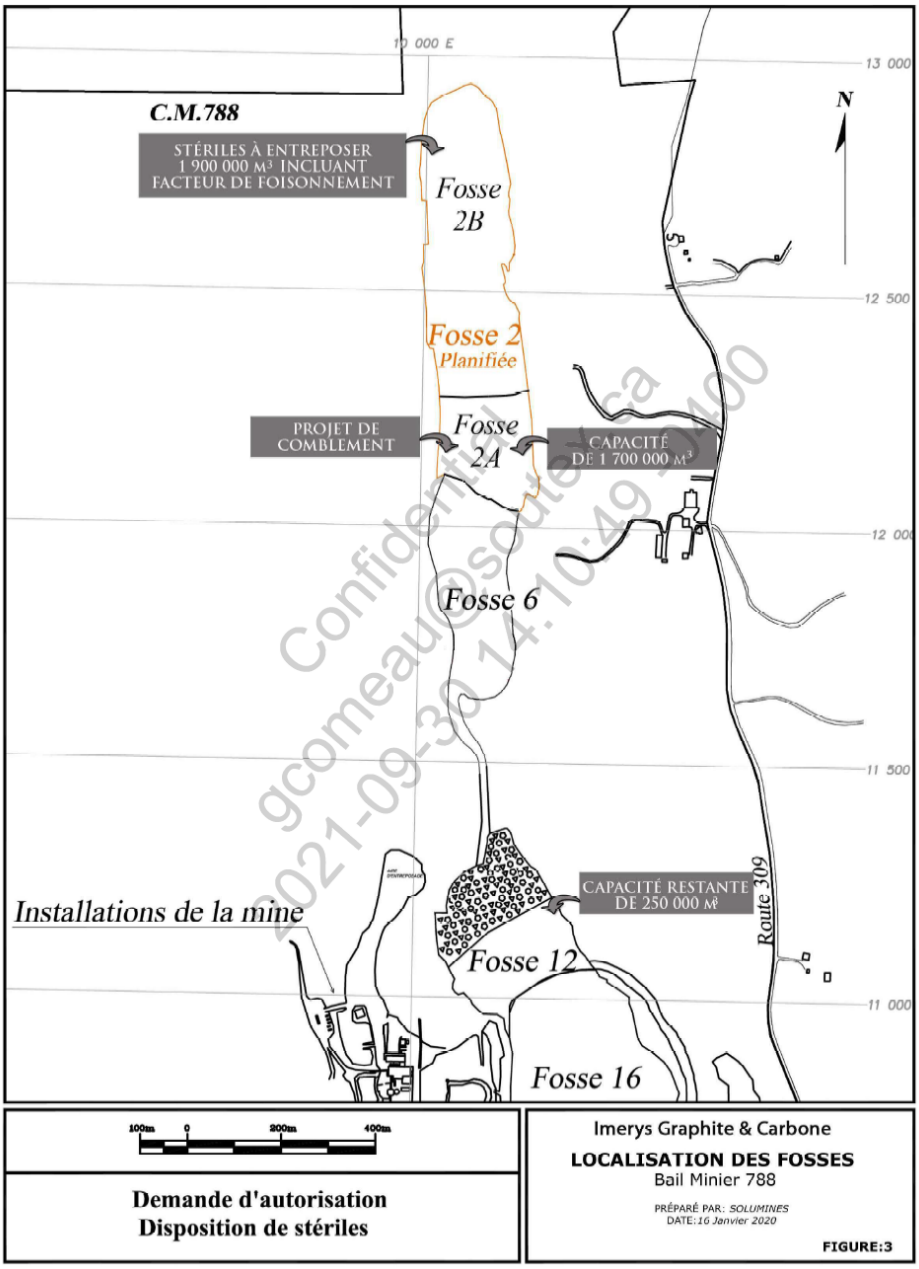
Table 20-1: Tailings and Waste Rock Management (2018-2020)
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Tailings	Tailings Location	Waste Rock	Waste Rock Location
2018	202,548 t 135,032 m^3	Pit 12	Not available	Not available
2019	208,539 t 139,026 m^3	Pit 12	975,631 t 348,440 m^3	Pit 6: 774,311 t Pit 12: 133,802 t Pit 2: 45,063 t Unspecified: 22,455 t
2020	109,827 t 73,218 m^3	Pit 12	595,272 t 212,597 m^3	Pit 2A

Source: Imerys, 2018a, 2019a, 2020a.

Soutex notes that Imerys has applied for an authorization for the disposal of waste rock and tailings in Pit 2 (Solumines, 2020). In the supporting report, Solumines indicated that the remaining capacity of Pit 12 was 250,000 m^3 (Figure 20-1). The report indicated that a volume of 204,000 m^3 of waste rock will be deposited in Pit 12, which leaves capacity for an additional 46,000 m^3 for disposal of additional waste rock.

During the Soutex site visit, Imerys indicated that a bathymetry evaluation had been carried out to inform the status of tailings and waste rock deposition in Pit 12 and that the evaluation confirmed sufficient storage capacity for the life of Quarry operations. A copy of the bathymetry results was not provided for review and thus Soutex cannot confirm Imerys's statements regarding the storage capacity available.



Source: Imerys, 2021.

Figure 20-1: Waste Rock Storage Capacity in Open Pits

20.5.3 Stability of Quarry WRFs and TMFs

For additional information on these aspects, please refer to Section 18.

20.6 Non-Hazardous and Hazardous Waste Management

There is no long-term/permanent non-hazardous or hazardous waste disposal at the Quarry. Solid waste is deposited in appropriate containers and directed to recycling centres, for recovery, or to the municipal disposal site.

Residual hazardous liquid materials are stored in a specially equipped tank comprising a shelter and a retention pond. The old batteries are stored in the garage while waiting to be recycled. Recovery and disposal are carried out by specialized firms duly authorized by the MDDELCC.

Non-hazardous waste volumes for re-use and recycling were reported in Imerys' annual regulator reports (2018, 2019, and 2020) and include paper products, metal and wood, and other solid waste that is disposed of at a municipal landfill.

20.7 Health and Safety

In Québec, occupational health and safety is the responsibility of the Commission des Normes, de l'Energie, de la Santé et de la Sécurité du Travail (Occupational Standards, Equity, and Health and Safety Commission (CNESST)). CNESST's mission is to promote the rights and obligations of employees and employers throughout Québec. The operation of the CNESST is governed by several laws, policies, and regulations as well as the rights and obligations of employers and workers in Québec.

The employer must ensure that all industrial incidents/accidents occurring in the workplace are entered in their register and only those which prevent a worker from carrying out employment beyond the day on which the injury occurred. Register entries are required to help identify and effectively manage risks in industrial work settings.

Imerys provided key health and safety metrics which are clearly being tracked by the company. The Quarry reported 34 incidents in 2018, 28 in 2019, and 12 in 2020. These included two lost-time accidents (LTAs) in 2018, two in 2019, and none in 2020. Data for 2021 was not available for review.

The Soutex site visit confirms that Imerys appears to place a high importance on safety performance. During the visit, health measures related to COVID-19 were strictly applied. The Quarry was CNESST's 2016 regional winner of the Laurentides leader in the occupational health and safety category.

20.8 Other Compliance Issues

Imerys confirmed to the QP that there are no on-going compliance issues at the Quarry.

20.9 Social and Stakeholder Engagement

20.9.1 Environmental and Social Management System

20.9.1.1 External Certification

Imerys conducts internal and external audits and has been certified under ISO 14001 and 18001 standards. Imerys provided four external certification and verification audit reports for Soutex's review (dated May 2018, March 2019, March 2020, and February 2021) which state that:

- Imerys has established a management system in accordance with the requirements of ISO 14001:2015 and OHSAS 18001:2007.
- Imerys' management system has demonstrated that it can systematically meet requirements within the scope of the aforementioned certifications and the organization's objectives and policies.
- The aforementioned certifications and verification audits identified minor compliance issues (eight in 2018, 0 in 2019 and 2020, and three in 2021).

Key findings of the certification process include the following:

- Management is responsible for the effectiveness of the management system, with defined tasks and responsibilities. A list of issues, risks, and opportunities appear in the documentation. The same applies to interested parties whose needs and expectations are identified.
- The management system documentation reflects compliance with the requirements of the auditing standards and provides an adequate structure to support the implementation and maintenance of the integrated management system.
- Imerys demonstrated the establishment and monitoring of appropriate key performance goals and objectives, in addition to monitoring progress towards their implementation.
- An internal audit program has been fully implemented by Imerys and has proven to be effective as a tool for maintaining and improving the management system.
- When a non-conformance or failure to meet the requirements of the standard is revealed (complaints received), Imerys reviews its own systems and procedures and takes appropriate corrective action.
- The management review process has proven to be effective in ensuring the compliance, relevance, and continued effectiveness of the management system.

The QP notes that while the ISO system table of contents provided by Imerys includes permit requirements, health and safety, emergency planning, and internal and external auditing, no environmental management and monitoring procedures are mentioned.

Imerys reports the Environmental and Social Management System (ESMS) addresses all legal requirements pertaining to environmental management, however, Imerys' internal audit reports do not appear to audit against specific permit and authorization requirements.

20.9.1.2 Internal Audit

In 2019, Imerys carried out an internal audit on site security. The audit activities do not appear to audit against specific permit and authorization requirements. Imerys confirmed that all actions raised by the

audit that required intervention have been implemented. No other internal audit has been carried out since 2019.

20.9.1.3 Environmental Management

Imerys provided a spreadsheet identifying environmental impacts and associated controls for both normal and abnormal operating conditions. These impacts were identified through a risk assessment process conducted internally by Imerys. Imerys reports stakeholders were identified and engaged to identify impacts, although no formal records of these interactions were kept. Stakeholders engaged in this process were reported to include regulators, the municipality, and landowners.

All identified impacts were assessed as being insignificant, except for a change in the landscape caused by ore and waste rock piles and soil contamination through oil leaks at the crusher. Quarry decontamination and restoration measures are listed as controls. A spill response procedure is in place and emergency spill stations are installed at several locations around the Quarry to assist with immediate response.

The impacts and controls spreadsheet identifies noise and ground vibration as a potential impact on people. The spreadsheet indicates that noise and vibration levels fall within legal requirements and indicate a noise barrier and limiting of blasting and drilling activities as controls. Imerys has identified these impacts as being not significant.

Dust emissions and water quality impacts due to contamination were also identified as potential impacts. Imerys has identified these impacts as being not significant.

Social impacts identified by Imerys do not appear to be comprehensive and stakeholders involved in identifying impacts were limited to the regulators, the municipality, and landowners. There are no formal records of stakeholder engagement to identify potential impacts.

20.9.2 Stakeholder Identification and Engagement

Imerys provided a spreadsheet identifying stakeholders and their interests. In this spreadsheet, Imerys' states that Corporate Social Responsibility is at the heart of Imerys' strategy to support its growth and strengthen long-term relationships with stakeholders around the world.

Imerys identified stakeholders to include:

- National and provincial regulators.
- The municipality of Saint-Aimé du Lac-des-Îles.
- Shareholders, employees, suppliers and subcontractors, and worker unions.
- Customers, landowners, environmental organizations, and college and university students.
- The media, residents, and users of the territory of the municipality of Saint-Aimé-du Lac-des-Îles.
- Immediate neighbours and emergency services.

Imerys identifies the following primary concerns raised by landowners, environmental organizations, residents, and neighbours:

- Environmental protection.
- Groundwater contamination.
- Being kept informed of Quarry activities and how these may affect people.

During the Soutex site visit, Imerys reported that stakeholders are consulted and the public can approach the Quarry directly with any concerns. The QP notes that the Quarry has no standing social committees or groups to monitor social impacts of mining activities.

20.9.3 Landowner Agreement

As described in Section 4, on December 11, 2003, TIMCAL signed an agreement (amendment) with the surface rights holders of certain lots of the mining lease for the use of land for mining purposes. The agreement states that TIMCAL must pay the owner of the surface rights a royalty per metric tonne of ore extracted and treated. This must be adjusted annually based on consumer prices published by Statistics Canada. The agreement is valid until the end of the validity of the mining lease.

20.9.4 Working Conditions

A contract template was provided for SLR and Soutex's review which is understood to be used when employing salaried employees. The template specifies salaries and benefits, hours of work, and three weeks paid annual leave. Imerys has established a labour relations working group and minutes of meetings were provided for review. SLR and Soutex note that several of the meeting minutes appear to discuss temporary stoppages of the Quarry, suggesting that there is some degree of on-going communication among Imerys and its employees on the Quarry's longer term operating plans.

Imerys has a collective bargaining agreement (CBA) with the Union of Works Timcal Canada Works Inc. (the Union) signed in November 2016 and valid until October 31, 2021. The CBA includes sections on the trade union scheme, freedom of trade union action, discrimination, grievance procedures, disciplinary measures, layoffs and call back to work, working week/hours, public holidays, sick and family responsibility leave, annual holidays, group insurance scheme, health and safety, vocational training, clothing, and work tools.

In May 2021, an agreement was concluded with the Syndicat des Ouvriers et Travailleurs (Imerys) and the Union establishing a scheme for supplementary unemployment benefits in the event of layoffs, retention bonuses, and the temporary creation of security guard positions.

During Soutex's site visit, Imerys confirmed that discussions for the renewal of the CBA will be undertaken in November 2021 and that it does not foresee any issues in achieving renewal. NGC reports that contract negotiation has been deferred until after NGC's acquisition of the Quarry closes.

20.9.5 Indigenous Communities

The QP notes that Indigenous communities are not mentioned in any of the Imerys-supplied documentation. A preliminary search using the Government of Canada First Nations Interactive Map identifies the Kitigan Zibi Anishinabeg First Nation reserve approximately 40 km to the southwest of the Quarry, near Maniwaki. Based on the QP's review, this Indigenous community has not been consulted nor has it been determined if their traditional way of life has been impacted by the Quarry and associated activities.

20.10 Closure Plan Requirements

20.10.1 Regulatory Context

In Québec, anyone initiating or engaged in regulated mining operations must submit a Rehabilitation and Restoration Plan (Closure Plan) for approval by MERN in respect of the end land use on which the activities take place. This requirement is stipulated by M-13.1 – Sections 232.1 to 232.12 of Québec's Mining Act. Approval from MERN is conditional upon a favourable opinion received from the MDDELCC.

In Québec, quarries are governed by the Mining Act under a lease to mine surface mineral substances, however, these do not have the obligation to submit a rehabilitation plan. According to the Mining Act, graphite is not a surface mineral substance (Section 1, M-13.1). Consequently, for graphite exploitation, a mining lease is required and the exploiting company must submit a rehabilitation plan and deposit a financial guarantee to achieve rehabilitation.

In Québec, closure planning, closure plan cost estimates, and provision of financial assurance for closure are subject to guidelines prepared jointly by MERN and MDDELCC. The guidelines set out the regulations and requirements that must be met when reclaiming mining sites, the content of the plan, and the steps to be completed to obtain approval.

As defined in the MERN guidelines, the restoration of a mine site (the Quarry) must aim to restore the site to a satisfactory condition, which includes the following:

- Eliminate unacceptable health hazards and ensure the safety of the public.
- Limit the production and spread of contaminants that could damage the receiving environment and, where appropriate, target eventual elimination of all forms of maintenance and monitoring over the longer term.
- Return the site to a condition in which it is visually acceptable.
- Return infrastructure areas (excluding TMFs and WRFs) to a state compatible with future use.

20.10.2 Restoration Work After Cessation of Mining Activities

*In this section, "**mining activities**" has the meaning of extracting, concentrating, smelting, or refining mineral substances from an ore deposit.*

When **mining activities** cease, restoration work is subject to specific authorization requests to the MDDELCC before it is carried out. Section 232.12 of the Mining Act specifies that Sections 232.1 to 232.12 (rehabilitation and restoration measures) do not affect or restrict the application of the EQA and thus the MDDELCC has discretionary power to request modifications to approved closure plans as they see fit.

After confirmation that restoration work has been carried out in accordance with an approved closure plan, MERN may release the amount of financial guarantee corresponding to the work carried out.

According to Section 232.10 of the Mining Act, a certificate of release may be issued when:

- MERN is satisfied that the closure work has been completed in accordance with the closure plan, and no sum of money is due with respect to the performance of the work.
- MERN is satisfied that the condition of the land affected by the **mining activities** no longer poses a risk for the environment or human health and safety.

Imerys may also be released from the obligations set out in sections 232.1 to 232.8 of the Mining Act if MERN agrees to let a third person assume those obligations.

- MERN issues the certificate of release after having received a favourable decision from the MDDELCC.

20.10.3 Current Status of Closure Plan Authorization

The fourth revision of the Quarry's Closure Plan was submitted to MERN in October 2014. It was approved after consultation with MDDELCC on July 23, 2020. The next revision of the Quarry's Closure Plan must be submitted to MERN no later than August 2022.

New and amended Closure Plan approvals are contingent on the payment of a financial guarantee. The current estimated cost of Closure Plan restoration work is $8,232,941. As of November 5, 2021, the amount paid as security is $6,535,055. The guarantee held by MERN consists of a sum of $1,531,396 in cash and an irrevocable letter of credit in the amount of $5,003,659 (No. 10011689) issued on January 20, 2021, by the Royal Bank (RBC). The letter of credit is valid until January 19, 2022. The last payment ($1,667,886) is due July 23, 2022.

The QP has reviewed the November 5, 2021 approval letter issued by MERN. Other than the payment of the financial guarantee, there are no additional requirements requested by MERN, however, MDDELCC noted some recommendations to improve revegetation (native species adapted to the local environment) and agronomic monitoring (follow-up over a minimum period of two years, replacement of dead specimens, and annual report submitted).

20.10.4 Closure Plan Components

*In this section, "**mining activities**" has the meaning of extracting, concentrating, smelting, or refining mineral substances from an ore deposit.*

Current closure planning, cost estimates, and financial insurance are based on the 2014 Mine Rehabilitation and Restoration Plan (2014 Closure Plan) prepared by Roche, and subsequent amendments to the 2014 Closure Plan by Norda Stelo (formerly Roche) in 2018 (2018 Closure Plan) and 2020 (2020 Closure Plan). The amendments were completed to incorporate revised closure cost estimates and to respond to questions and requests for further information from regulatory authorities during their review of the Closure Plans. The 2014 Closure Plan, as amended in 2018 and 2020, has been approved by MERN and financial insurance is based on this approval.

Imerys assumes that Quarry restoration activities will occur over two years, beginning in 2023.

The 2020 Closure Plan incorporates the following principal commitments with respect to closure:

Open Pits:

- Completely scarify and revegetate backfilled pits (Pit 6 and Pit 16) and partially backfilled pits (Pits 2 and 12) with a mixture of grasses, legumes, and fertilizer.
- Create conditions that allow natural flooding of the partially backfilled Pit 2 and install an outlet.

The TMF and Polishing Pond:

- Revegetation of the TMF has been completed and rock ditches have been dug to facilitate the evacuation of surface water from the by-pass ditch that bypasses the existing polishing pond.
- Enhance the polishing pond to create an engineered wetland.

- Dismantle the Lac-des-Îles River pumping station and restore the site to a natural state.

WRFs and Temporary Ore Storage Area:

- Revegetate in accordance with the 2020 Closure Plan approved by MERN, including revegetation of those portions of the WRFs visible from provincial Route 309. The QP notes that inactive WRFs are revegetating naturally over more than half of their area. Of the total surface of 29.2 ha to be revegetated, there are 17 ha remaining to revegetate, primarily portions of flat areas and all slopes. During the Soutex site visit, Imerys indicated that the WRFs will be revegetated in their entirety, not only the portions that are visible. This is more work than what was stipulated in the 2018 Closure Plan (Norda Stelo, 2018).
- Revegetation of the temporary ore storage area (buffer ore pile).

Buildings and Surface Infrastructure:

- Dismantle buildings and surface infrastructure and perforate foundation slabs to prevent the accumulation of water. All materials that cannot be sold or recycled are to be disposed of appropriately at an approved MDDELCC disposal site.
- All petroleum and chemical products, tanks, and associated pipelines will be managed in accordance with applicable regulations.
- All contaminated soils beyond MDDELCC Criteria C will be treated in accordance with the policy in force.
- No residual hazardous materials and solid wastes will be present on the site after the cessation of the **mining activities**.

Fixed and Mobile Equipment:

- All fixed and mobile equipment will be sold, recycled, or sent to an authorized management site.

Revegetation:

- Vegetation of all disturbed surface areas (other than TMF and open pits) of the Quarry.

Environmental, Agronomic, and Geotechnical Post-closure Monitoring Programs:

- Environmental monitoring will include:
  - Sampling of the final effluent over a five-year period six times per year.
  - Groundwater quality sampling (observation wells) twice a year for five years.
  - Monitoring in the receiving environment upstream and downstream of the final effluent discharge point.
- Monitoring the physical stability of Quarry infrastructure (visual inspection) twice a year.
- Agronomic monitoring for a period of five years after the cessation of **mining activities** (post-closure). If necessary, revegetation work will be carried out in areas where natural recovery will not be satisfactory.
- In accordance with MERN obligations, the performance of environmental, agronomic, and geotechnical monitoring programs must be reviewed with MERN at least every five years. During the reviews, MERN, in consultation with MDDELCC, could ask to continue monitoring for as long as it deems necessary.

20.10.5 Current Closure Plan Cost Estimate

- In completing amendments associated with the 2018 and 2020 Closure Plans, Norda Stelo prepared the current Quarry closure cost estimates. Norda Stelo carried out this work in accordance with the requirements of MERN's restoration guide.

20.10.5.1 Dismantling Costs

- Costs associated with dismantling are estimated by Norda Stelo at $2,486,836 with the work carried out over a nine-month period. These costs exclude any income that could be obtained from the sale of the steel, which is estimated to be $135,000.
- The accuracy of the dismantling cost estimate is ± 15%. Engineering costs have been estimated at 10% of the cost of dismantling the facilities.

20.10.5.2 Site Restoration Costs

- The cost estimate for site restoration work is $5,419,667. Revegetation represents more than $2.6 million of the total given the extent of disturbed areas requiring revegetation.
- Due to the complexity of the work, Norda Stelo assesses the accuracy of the design costs, plans and specifications, and technical analyses at ± 30%, while the accuracy of the restoration cost estimate is assessed at ± 15%.
- For the cost estimate associated with restoring contaminated soils, Norda Stelo assesses the accuracy of the estimate at ± 15%.

20.10.5.3 Post-Closure Monitoring Costs

- The cost estimate for post-closure monitoring is $326,438 or approximately $65,300 per year. Once the Quarry has been restored, MERN and MDDELCC could ask to extend the duration of the monitoring period beyond the proposed five years.

20.10.5.4 Total Cost

- The total cost of Quarry restoration work is estimated to be $8,232,941 and corresponds with the amount required by MERN as a financial guarantee. This estimate accounts for adjustments formulated by MERN following analysis of the 2018 Closure Plan update.

20.10.6 Review of Current Closure Plan Cost Estimate

In general, the total 2020 Closure Plan cost estimate of $8,232,941 appears reasonable and reflects the state of knowledge of the site. Norda Stelo's unit costs for estimating restoration costs are realistic and within the range of values commonly used by consulting firms that prepare similar estimates.

Additional comments on Norda Stelo's 2020 Closure Plan cost estimates are summarized in the sub-sections that follow.

20.10.6.1 Comments on Dismantling and/or Removal of Infrastructure and Equipment

The cost of dismantling permanent infrastructure includes:

- Disposal of residual materials (approximately $100,000).

The cost of dismantling permanent infrastructure does not include:

- Disposal of residual liquids or solids not consumed.
- Characterization and treatment or disposal of contaminated soils and concrete.
- Disposal of refractory materials.
- Emptying and filling septic tanks.
- Scarification of asphalt roads.
- Owner costs (Imerys staff salaries).
- The cost of dismantling/removing mobile infrastructure and fixed and mobile equipment.

The QP finds the accuracy of the dismantling cost estimate (± 15%) to be reasonable given the information made available to Norda Stelo.

20.10.6.2 Comments on Post-Closure Monitoring Costs

- The cost estimate for post-closure monitoring is $326,438, or approximately $65,300 per year. Once the Quarry has been restored, MERN and MDDELCC could ask to extend the duration of the monitoring period beyond the proposed five years.

20.10.6.3 Comments on Current Status of Restoration Work

*In this section, "**mining activities**" has the meaning of extracting, concentrating, smelting, or refining mineral substances from an ore deposit.*

The QP offers the following comments on the status of restoration work at the Quarry:

- Imerys complies with the obligations provided for in Sections 232.1 to 232.12 of the Mining Act, and the restoration measures proposed by Imerys have been approved by the MERN and the MDDELCC.
- As indicated in the MERN approval letter, an update to the 2020 Closure Plan cost estimate will have to be filed during the next Closure Plan review, which is scheduled for July 23, 2022.
- The total amount of $8,232,941 advanced by Imerys appears reasonable and reflects the state of knowledge of the site. The unit costs used by Norda Stelo (Norda Stelo 2020) for estimating restoration costs are realistic and within the range of values commonly used by consulting firms. The estimate includes reasonable indirects and contingencies.
- Post-closure monitoring cost estimates appear to be appropriate and reasonable.
- Restoration measures proposed by Norda Stelo assume that mined waste rock and tailings are not generating any AMD. Consequently, measures to restore the TMF, WRFs, and all in-pit wastes will be limited to water management and the establishment of plant cover.
- The polishing pond will be transformed into a wetland. A hydrological and hydrogeological study should be carried out to inform this work.
- Given the height of the retaining dike, Imerys will have to seek an opinion from MDDELCC on whether the structure is subject to the Dam Safety Act. If subject to the act, a long-term follow-up program could be requested by MDDELCC. The Closure Plan monitoring cost estimate does not include this expense.
- The Quarry was the subject of a Phase I characterization study to identify soils with risk of contamination from hydrocarbons. A Phase II assessment of soil quality will be carried out when

mining activities cease, in places where contamination is likely to have occurred. The current estimate of soil decontamination costs seems to be based on a visual estimate of the contaminated soils volume.

- Imerys completed a geochemical study in 1999 that reported that Quarry waste rock has low sulphide content and a high neutralization potential. No AMD testing has been completed on Quarry waste rock or tailings since 1999. In the QP's opinion, such testing should be completed to support Imerys' claims and verify previous work.
- Stability studies for pit and WRF slopes will be carried out when **mining activities** cease. Stabilization measures may be required to meet the stability criteria of the MERN restoration Guide. Norda Stelo's cost estimate assumes that no additional work will be triggered from study findings.
- Security and site access restrictions will be put in place for Pits 2 and 12. The proposed measures will be subject to agreement with the surface rights holders.

21.0 CAPITAL AND OPERATING COSTS

21.1 Capital Cost Estimate

Typically, in the final years of a mineral asset, growth and sustaining capital expenditures are minimal. As production activities began at the Quarry in the early 1990s, and closure activities are planned for the 2024 to 2028 period, SLR considers the Quarry to be in the final years of mine life.

Table 21-1 presents a summary of the capital cost estimates assumed in the economic analysis of the Quarry. In the sub-sections that follow, additional commentary is provided discussing the basis for the cost assumptions.

Table 21-1: Summary of Capital Cost Estimate
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Cost Type	C$000	Total C$000	Comment
Capitalized waste and overburden removal	-	-	Complete at start of Pit 2
New mine maintenance facility	500	500	Allowance in 2021
Closure	Years 2023 to 2028	8,233	See Sections 20 and 22
Total		**8,733**	

21.1.1 Quarry and Plant

SLR notes that half of the primary mining fleet units are leased units. Imerys captures these costs as operating expenses. Should it be required, SLR has assumed that additional or replacement mining equipment will be similarly leased or rented, though no additional expense has been allowed for in the operating costs or economic analysis. SLR has assumed that Imerys has considered this potential eventuality in preparing its operating cost estimates.

Imerys reports that all capitalized waste and overburden stripping required to the end of Quarry life was completed at the start of Pit 2 mining activities. SLR has thus assumed these costs to be zero for the purpose of capital cost estimation and economic analysis.

SLR notes that during the two site visits, a new mine maintenance (dome-type) facility was being constructed. SLR does not have any cost estimate nor information on the full timing of this expense and has assumed a $500,000 capital cost allowance in 2021 for the completion of this facility.

The Imerys BP forecasts that remaining mine production activities will be carried out at a mining rate that is below or equal to process plant capacity, so no expansion/additional capital spending is expected at this time.

21.1.2 Closure Cost Estimate

As discussed in Section 20, the total 2020 Closure Plan cost estimate of $8,232,941 appears reasonable and reflects the state of knowledge of the site. Norda Stelo's unit costs for estimating restoration costs

are realistic and within the range of values commonly used by consulting firms that prepare similar estimates.

21.1.3 Exclusions

The following is excluded from the capital cost estimate:

- Acquisition costs
- Interest charges
- Escalation
- Permit costs
- Import duties and custom fees
- Costs of fluctuations in currency exchanges

21.2 Operating Cost Estimate

Actual and forecast operating costs for the Quarry were made available for review at a high level of consolidation, i.e., profit and loss statement and balance sheet accounting formats. Most of the relevant annual Canadian dollar amounts were expressed as fixed and variable cost of sales. Actual cost data was made available for 2019, 2020, and the first six months of 2021 and is presented in Table 21-2.

Table 21-2: Summary of Actual Operating Costs
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Category	2019[1] (C$000)	2020[2] (C$000)	2021[3] (C$000)
Direct Labour	3,169	1,944	1,366
Direct Energy	2,197	1,353	1,045
Consumables	928	452	464
Packaging	642	437	362
Freight In	99	77	31
Freight Out	314	134	173
Contract Drilling	618	266	186
Rent and Leases	583	515	236
Other Variable	138	65	52
Indirect Labour	1,203	1,154	667
Maintenance	5,630	3,395	2,143
Provisions	-	67	-
Other Fixed	1,069	565	251
Inventory Variation	(944)	1,126	1,042
Sub-total	**15,646**	**11,549**	**8,015**
Amortization PPE	2,997	1,367	1,264

Category	2019[1] (C$000)	2020[2] (C$000)	2021[3] (C$000)
Selling and G&A	386	449	234
Sub-total	**18,643**	**12,916**	**9,279**
Other revenue (expense)	1	(1)	6
Forex gain (loss)	177	183	166

Source: Imerys, 2021.

Notes:

1. No mining activity in January and February.
2. Mining and production activities suspended for approximately five months due to COVID-19 pandemic. Shipping continued with no interruptions.
3. Costs to June 30, 2021.
4. Totals may not sum due to rounding.

Electricity is supplied to the Quarry by Hydro Québec under Rate M (Hydro Québec, 2021). This rate is a general rate for medium-power customers and applies to a contract whose maximum power demand has been at least 50 kW during a consumption period included in the last 12 monthly periods.

Billing for Rate M includes the following:

- An amount for the energy in kWh, consumed during the period in question. Two different prices apply depending on the amount of energy consumed:
  - A price for the first 210,000 kWh
  - A lower price for the remaining consumption
- An amount for the billing demand in kW

Rate M is a monthly rate, which means the first-tier consumption limit, and the amount billed as demand, and the minimum charge is based on a 30-day period.

As of April 1, 2021, Rate M prices were as follows:

- Price of energy:
  - First 210,000 kWh - $0.051 per kWh
  - Remaining consumption - $0.038/kWh
- Price of power - $14.77/kW

If applicable, Imerys may be eligible for credits for supply at medium or high voltage and/or adjustment for transformation losses. These credits vary in amount from $0.179/kW for transformation losses to $3.57/kW for supply of voltages of 170 kV or more.

In general, the QP notes that the rates being charged are reasonable and, combined with the opportunity for credits, offer some of the lowest electricity rates in North America.

A summary-level category breakdown was provided for actual 2019 and 2020 operating costs and is re-produced in Table 21-3, along with the average split of total operating costs by category.

Table 21-3: Summary of Actual Operating Costs by Category
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Year	Mining (C$000)	Process Plant (C$000)	Overhead (C$000)	Shipping (C$000)	Total (C$000)
2019[1]	10,157	6,181	1,743	562	18,643
% of total	54	33	9	3	100
2020[2]	5,403	5,706	1,458	349	12,916
% of total	42	44	11	3	100
Average Split (%)	48	39	10	3	100

Source: Imerys, 2021.

Notes:

1. No mining activity in January and February.
2. Mining and production activities suspended for approximately five months due to COVID-19 pandemic. Shipping continued with no interruptions.
3. Aggregated information including total operating expenses, plus amortization of property, plant, and equipment.
4. Totals may not sum due to rounding.

Table 21-4 summarizes the Imerys BP operating costs. During mining activities (up to 2023), the Imerys BP forecasts total annual operating costs (fixed plus variable) of $15 million to $19 million, decreasing to approximately $11 million in 2024 (stockpile feed). The following years of the Imerys BP identify total annual operating costs reducing to approximately $300,000 given only shipping of finished product inventory is envisioned in these years along with a reduced on-site labour requirement to manage final closure activities.

SLR notes that total annual operating costs reported by Imerys for 2019 and 2020 were $18.6 million and $12.9 million, respectively, and thus the Imerys BP forecasted annual operating costs appear reasonable relative to recent cost performance at similar production rates.

Table 21-4: Summary of Imerys Business Plan Operating Costs
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Category	Total	2021[1]	2022	2023	2024	2025	2026	2027	2028	2029
(C$ millions)										
Consumables	**2.9**	0.7	0.7	0.9	0.5	-	-	-	-	-
Electricity - Gas - Energy	**8.2**	1.9	2.1	2.7	1.5	-	-	-	-	-
Overburden and stripping costs	**4.3**	1.1	1.7	1.5	-	-	-	-	-	-
Other variable costs[2]	**7.9**	1.8	1.7	3.1	1.3	0.0	0.0	-	-	-
Total - Variable costs	**23.3**	**5.5**	**6.2**	**8.2**	**3.4**	**0.0**	**0.0**	**-**	**-**	**-**
Staff expenses	**15.2**	3.9	4.0	4.2	3.1	-	-	-	-	-
Maintenance	**16.1**	3.8	4.1	4.9	3.4	-	-	-	-	-
Rents and leases	**2.2**	0.6	0.6	0.6	0.4	-	-	-	-	-

Category	Total	2021[1]	2022	2023	2024	2025	2026	2027	2028	2029
Depreciation	**1.3**	0.6	0.6	0.2	-	-	-	-	-	-
Other fixed costs[3]	**4.1**	0.8	0.8	0.8	0.4	0.3	0.3	0.3	0.3	0.0
Total - Fixed costs	**38.8**	**9.6**	**10.0**	**10.7**	**7.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.0**
Inventory variation	**17.4**	4.6	1.6	(6.3)[4]	10.4	5.3	1.9	-	-	-
Total Cost of Sales	**79.6**	**19.7**	**17.7**	**12.5**	**21.1**	**5.7**	**2.2**	**0.3**	**0.3**	**0.0**

Source: Imerys, 2021.

Notes:

1. Based on SLR review, appears to reflect a full calendar year.
2. Other variable costs include mineral reserve depletion and royalties, purchases of freight on sales, internal freight, chemical products, packaging, sub-contracting drilling.
3. Other fixed costs include insurance, interests on credit letter and others.
4. Credit amount.
5. Totals may not sum due to rounding.

To construct indicative operating costs, SLR and Soutex completed a review of data provided for 2019 and 2020.

SLR determined that the Quarry has an indicative unit mining cost in the range of $8/t to $9/t of rock mined. Comparable surface operations (4,000 tpd to 6,000 tpd of rock moved) typically have unit mining costs of approximately $7/t of rock mined. Reasons for a more elevated unit mining cost at the Quarry include:

- A longer than typical ore haul distance.
- Deposit geometry and the corresponding need for in-pit rehandling to selectively mine the ore (e.g., small excavator, dozer pushing ore down along dip).

Soutex determined an indicative unit processing cost in the range of $31/t to $35/t processed and finds it reasonable given the relatively low plant throughput over the LOM (ranges from 28 tph to 48 tph).

For estimating unit overhead costs, SLR referenced the average of 2019 and 2020 actual costs and prorated these costs according to the LOM yearly finished product sales; the reference yearly cost being $1.7 million. For estimating unit shipping costs, a similar estimation method was used to derive an average unit delivery cost per tonne of finished product of $47.92. The methodology assumes the Quarry's primary customer sales distributions remain similar over the coming years.

Table 21-5 presents a summary of the operating cost estimates used by SLR in the economic analysis of the Quarry. Additional commentary on the estimates is provided in subsection 21.2.1.

Table 21-5: Summary of Operating Cost Estimate
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Cost Category	LOM (C$000)	LOM Average (C$/t mined)	LOM Average (C$/t processed)	LOM Average (C$/t shipped)
Mining	24,558	8.53	41.36	492.78
Processing	19,574	6.80	32.97	392.78
Overhead	6,885	2.39	11.60	138.16
Shipping	2,388	0.83	4.02	47.92
Total	**53,405**	**18.55**	**89.94**	**1,071.63**

21.2.1 Comments on SLR Operating Cost Estimate

- SLR and Soutex estimate total LOM operating costs of $53.4 million compared to $56.5 million in the Imerys BP. On further inspection, the QPs are of the opinion that the Imerys 2021 cost estimate is for a full calendar year rather than an estimate of costs from mid-April to year end.
- Imerys annual operating costs for 2019 and 2020 were escalated to 2021 dollars using mine and milling operating costs and mine labour cost index factors (1.02, 1.07, and 1.02 respectively) found in InfoMine's July 2021 publication (InfoMine, 2021).
- Unit operating costs for mining and ore processing were derived from actual 2019 and 2020 total operating costs and corresponding total tonnages mined and back-calculated total tonnages processed.
- Unit cost estimates were selected from 2019 as the QPs consider these estimates to be more representative of Quarry operations (10 months of operations in 2019 versus seven months in 2020).
- Forecasted LOM unit costs are estimated to be $8.53/t mined and $32.97/t processed. In years 2023 and 2024, the processing unit operating cost was reduced using an empirical equation relating to the forecasted higher daily processing throughput.
- As presented in Table 21-3, the proportion of overhead costs is estimated to be 10% of total site costs over the last two years. This proportion was applied to an annualized 2021 total site cost to obtain a $1.7 million annual reference cost. The annual reference cost was subsequently adjusted to account for a partial year in 2021 and prorated in subsequent years according to annual tonnes sold using year 2022 as a reference. Minimum overhead amounts of approximately $650,000 were retained for years 2025 and 2026.
- The shipping cost estimate was determined using a similar approach to that used to determine overhead costs, i.e., 3% average proportion of the total site cost (Table 21-5) applied to the 2021 projected total site cost. A shipping unit cost of $47.92/t of finished product was calculated based on tonnes sold in 2021 and this value was assumed for all subsequent years in which shipping is projected to occur.

22.0 ECONOMIC ANALYSIS

22.1 Base Case Cash Flow (Imerys BP)

22.1.1 Physicals

SLR's cash flow model includes the following key physical inputs/assumptions:

- Pit mining activities from April 2021, ceasing in November 2023 while a partial year of stockpile processing and completion of final product production are set to occur in 2024.
- Mine operating days – based on operating information provided by Imerys:
  - 170 days in 2021
  - 240 days in 2022
  - 225 days in 2023
- Process operating days – based on 4.5 days per week (nine, 12 hour shifts per week):
  - 153 days in 2021
  - 216 days in 2022
  - 203 days in 2023
  - 90 days in 2024
- Total in-situ resource – 620,780 t at 7.1% Cg.
- Total Pit 2 ore mining – 491,741 t at 7.10% Cg.
- Total waste mined of 2.39 Mt at a strip ratio of 4.85.
- LOM feed to the process plant including stockpiles – 593,764 t at 7.1% Cg.
- Average metallurgical recovery – 89.2% (all years).
- Average graphite concentrate grade – 96.5% Cg (all years).
- Total graphite concentrate produced – 38,834 t. The Imerys value is 39,767 t assuming a 91.3% process recovery.
- Total on-site graphite concentrate inventory – 11,001 t. This is equal to the value implied by the Imerys BP.
- Total payable graphite concentrate – 49,835 t. The Imerys implied value is 50,768 t. Per the Imerys BP, concentrate sales extend into 2026 (3,951 t in 2025 and 1,241 t in 2026).
- No capitalized waste or overburden stripping required to end of mine life – all completed at start of Pit 2.

22.1.2 Economic Inputs

The Base Case cash flow model includes the following key economic inputs/assumptions:

- Revenue is recognized at the time of production.
- US$/C$ exchange rate of 1.23 in 2021 and 1.25 thereafter.
- Marketing and concentrate transportation/insurance charges included in operating costs.

- Landowner royalty of $0.48 per tonne processed, totalling $285,000 over the LOM.
- LOM operating costs as follows:
  - LOM unit mining cost averaging $8.53/t mined.
  - LOM unit processing cost averaging $32.97/t processed.
  - LOM overhead costs totalling $6.9 million or an average of $11.60/t processed.
  - LOM shipping costs totalling $2.4 million or an average of $47.92/t shipped.
  - LOM total unit operating cost averaging $89.94/t processed.
- Management fees of $2.5 million per year, totalling $10.2 million over the LOM. Fees pro-rated from April in 2021 and reduced to $500,000 in each of 2025 and 2026.
- Based on the average of 2019 and 2020 amortization identified by Deloitte LLP, a cost reduction for amortization amounts included in Imerys cost data totalling $6.9 million over the LOM.
- Allowance of $500,000 in 2021 to reflect expense of new mine maintenance facility near Pit 2.
- Reclamation capital costs totalling $8.23 million, introduced in the cash flow model as follows:
  - 2023 – 2.00 million. Final year of pit mining activities.
  - 2024 – 4.16 million. Stockpile rehandling and processing. Processing activities cease.
  - 2025 – 1.77 million.
  - 2026 through 2028 – $100,000 per year.
- Reclamation bond – $8.23 million required in 2021 and gradually credited back until final regulatory release from obligations (assumed to occur in 2029 for cash flow purposes).
- LOM capital costs of $8.73 million.
- SLR assumptions related to income tax payable:
  - Provincial corporate tax rate of 11.5%.
  - Federal corporate tax rate of 15.0%.
  - SLR assumes that there are no other tax obligations as part of the economic analysis.
  - Effective tax rate of 24.78% calculated via straight line depreciation.
  - LOM income taxes payable of approximately $6.4 million.
- Discount rate of 5%. The Quarry is a current producer with some historical physicals and cost information provided.

22.1.3 Cash Flow Analysis – Base Case

Considering the Quarry on a stand-alone basis, SLR's economic analysis yielded the following results:

- LOM gross revenue – $99.5 million.
- LOM net revenue - $99.2 million.
- LOM average Net Smelter Return – $167.01 per tonne processed.
- LOM operating margin – $42.5 million.
- LOM undiscounted pre-tax cash flow – $33.7 million.

- LOM undiscounted after-tax cash flow – $27.3 million.
- Pre-tax Net Present Value (NPV) at a 5% discount rate – $27.3 million.
- After-tax NPV at a 5% discount rate – $21.8 million.
- Simple payback of 1.3 years (from April 2021).

SLR's cash flow model is informed by and consolidates physical and economic information provided by Imerys and NGC. The distribution of mining physicals differs slightly between the SLR LOM plan and the Imerys BP, however, SLR's assumptions are not materially different from the Imerys BP.

SLR notes that the Quarry's operating margin is positive in all operating years, thus supporting the declaration of Mineral Reserves.

The undiscounted pre-tax and after-tax cash flows are positive in all Quarry operating years, apart from 2021 (negative $2.1 million pre-tax and negative $2.9 million after-tax). This is primarily due to the reclamation bond deposit.

22.1.4 Sensitivity Analysis – Base Case

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by varying the following parameters:

- Graphite concentrate price
- Plant head grade
- Metallurgical recovery
- Operating cost
- Capital cost

For an after-tax NPV at a 5% discount rate, sensitivities have been calculated for -20% to +20% variations. Metallurgical recovery sensitivities have been calculated for -5% to +5% variations. Sensitivity results are presented in Table 22-1 and Figure 22-1.

Of the parameters examined, Quarry economics are most sensitive to changes in graphite price, followed by metallurgical recovery, head grade, operating cost, and capital costs.

Table 22-1: After-Tax Sensitivity Analysis
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

	Head Grade (%Cg)	NPV at 5% (C$M)
0.80	5.66	11.1
0.90	6.37	16.9
1.00	**7.07**	**21.8**
1.10	7.78	27.0
1.20	8.49	32.1
	% Metallurgical Recovery	**NPV at 5% (C$M)**
0.95	84.7	19.3
0.97	86.5	20.3
1.00	**89.2**	**21.8**
1.03	91.9	23.4
1.05	93.7	24.4
	Graphite Price (US$/t)	**NPV at 5% (C$M)**
0.80	1,281	8.3
0.90	1,441	15.4
1.00	**1,601**	**21.8**
1.10	1,761	28.3
1.20	1,921	34.8
	Operating Costs (C$M)	**NPV at 5% (C$M)**
0.80	42.7	31.3
0.90	48.1	26.6
1.00	**53.4**	**21.8**
1.10	58.8	17.1
1.20	64.1	12.3
	Capital Costs (C$M)	**NPV at 5% (C$M)**
0.80	7.0	23.6
0.90	7.9	22.7
1.00	**8.7**	**21.8**
1.10	9.6	21.0
1.20	10.5	20.1

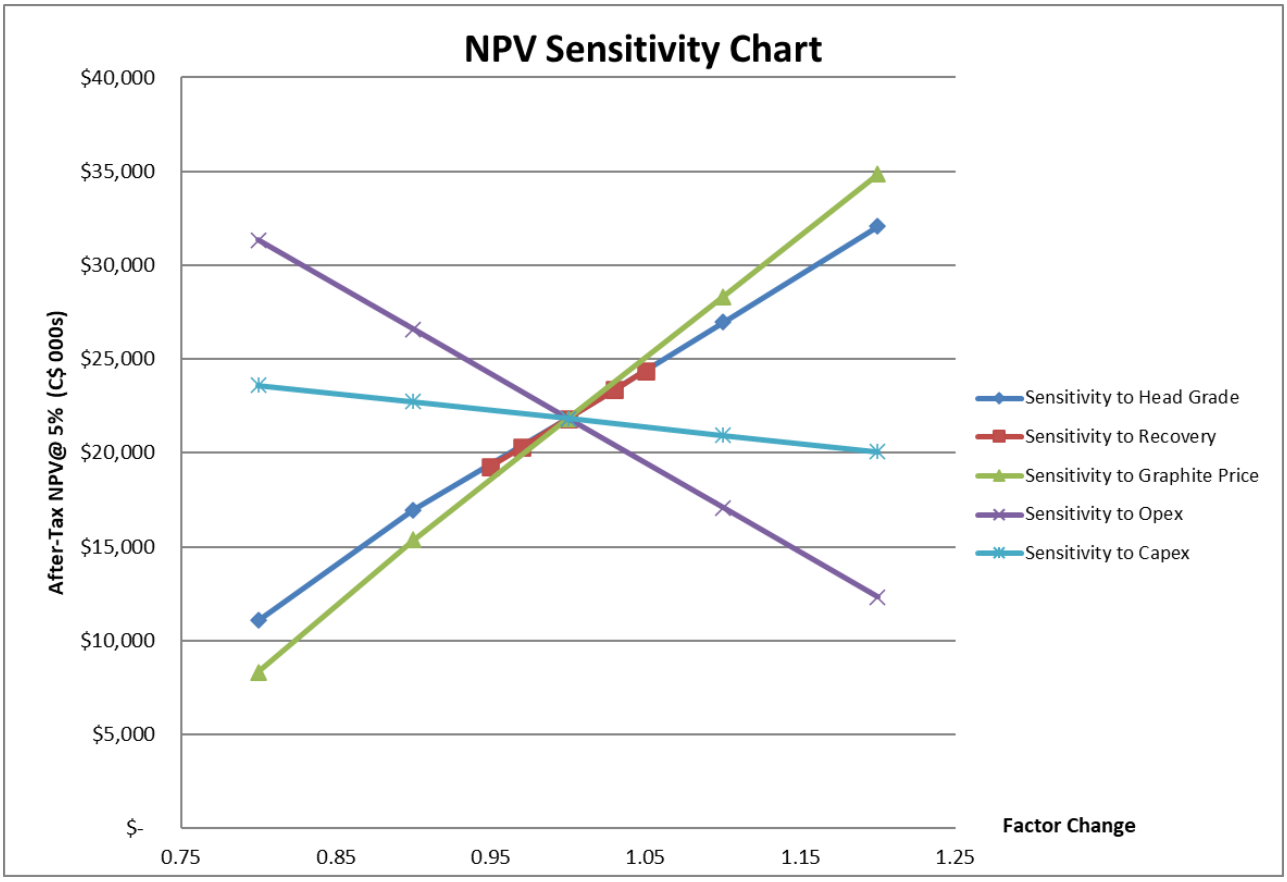


Figure 22-1: After-Tax Sensitivity Analysis

22.2 Upside Case Cash Flow

SLR prepared an Upside Case cash flow model that explores the economic impact of certain potential improvements that NGC has identified for the Quarry, post-closing of the acquisition.

SLR notes that certain simplifying assumptions were introduced in the Upside Case at a high level of resolution and assumptions will require further analysis and verification by NGC. Physical and economic inputs that have been modified from the Base Case are reviewed in the sub-sections that follow.

22.2.1 Physicals

Under the Imerys BP, the process plant is operated below its historical throughput capacity of 40 tph to 50 tph and approximately 102 kt of stockpiles are processed in 2024. SLR's review indicates plant operating days per week can be increased to five and the 102 kt of stockpile material can be processed together with all Base Case pit feed in 2022 and 2023 without exceeding the plant's maximum historical throughput. With these changes, there is a corresponding opportunity to increase payable graphite concentrate sold in years 2022, 2023, and 2024, though further investigation would be needed to determine if existing and/or new customer agreements could accommodate the revised production plan in order to realize revenue sooner.

SLR notes that based on the current mining shift schedule (one shift per day, five days per week), there appears to be opportunity to accelerate extraction of Pit 2 Mineral Reserves and improve the Quarry's overall cost profile.

With accelerated mining and/or processing, an integrated stockpiling, finished product inventory, and product sales strategy will need to be developed and optimized. SLR recommends NGC undertake a formal LOM optimization study to evaluate the optimal combination of improvements in connection with the terms of customer and Quarry workforce agreements.

Table 22-2 presents the physical assumptions introduced in the Upside Case relative to Base Case assumptions.

Table 22-2: Upside Case vs. Base Case - Physicals
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Potential Improvement	Upside Case	Base Case	Comment
Increase process plant operating time	24 hours per day, five days per week	24 hours per day, 4.5 days per week	Begins start of Q2 2022 (post-closing and labour negotiations concluded)
Process stockpiles earmarked for 2024 in 2022 and 2023	Process approximately 62 kt in 2022 and 40 kt in 2023	Process all 102 kt of stockpile in 2024	Combined pit and stockpile feed plan adheres to maximum historical plant throughput (48 tph)
Increase payable graphite concentrate sold in years 2022, 2023, and 2024	Approximately 15.5 kt sold in each of 2022 and 2023 and 8.6 kt in 2024	Approximately 11.3 kt in 2022, 13.2 kt in 2023, 10 kt in 2024, 4 kt in 2025, and 1.2 kt in 2026	Assumes new and/or existing customer agreements can accommodate revised production plan

22.2.2 Economic Inputs

Base Case graphite concentrate pricing is informed by projected revenues and volumes sold under the Imerys BP (May 2021). An Imerys April 2021 preliminary business plan included a forecast of revenue and volumes sold demonstrating the potential for realizing higher average concentrate prices relative to the Imerys BP. The Upside Case includes graphite concentrate pricing implied by Imerys' preliminary April 2021 forecast.

Assuming accelerated processing could begin in Q2 2022, the Upside Case introduces a lower unit process operating cost in 2022. This also assumes that no further capital is required to bring the process plant back to its historical maximum throughput.

Analysis by NGC and its consultants identified the following additional opportunities:

- Elimination of Imerys management fees and reallocation of certain geology and mine engineering tasks to Quarry personnel.
- Realizing salvage credits during the reclamation spend period. Imerys identified approximately $2.5 million in credits from salvage of plant equipment and materials. NGC and its consultants identified an additional $1.5 million that could potentially be realized from the sale of mobile equipment.

- Less income tax related to the Quarry as a result of the acquisition, the resetting of tax pools, and associated debt.

Table 22-3 presents the economic assumptions introduced in the Upside Case relative to Base Case assumptions.

Table 22-3: Upside Case vs. Base Case – Economic Inputs
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Potential Improvement	Upside Case	Base Case	Comment
More favourable LOM average prices for concentrate	LOM average of US$1,641/t	LOM average of US$1,600/t	Higher prices in Imerys April 2021 data vs. May 2021 Imerys BP
Lower unit process operating costs in 2022	$31.59/t milled	$34.76/t milled	Adjusted for maximum historical plant throughput with no additional capital requirements
Elimination of Imerys management fees	Nil	$10.2 million over LOM	NGC and independent analysis
Realize salvage credits during reclamation spending period	$4 million credit	Nil	NGC and independent analysis
Income tax payable	$1.9 million over LOM	$6.4 million over LOM	NGC analysis and independent auditor data

22.2.3 Cash Flow Analysis – Upside Case

Table 22-4 presents SLR's analysis of the Upside Case relative to Base Case results.

Table 22-4: Upside Case vs. Base Case – Cash Flow Analysis
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Cash Flow Model Metric (C$ millions)	Upside Case	Base Case	Difference
LOM gross revenue	102.0	99.5	2.5
LOM net revenue	101.7	99.1	2.6
LOM average NSR (C$/t milled)	171.21	167.01	4.20
LOM operating margin	55.9	42.5	13.4
LOM undiscounted pre-tax cash flow	51.2	33.7	17.5
LOM undiscounted after-tax cash flow	49.3	27.3	22.0
Pre-tax NPV @ 5%	43.5	27.3	16.2
After-tax NPV @ 5%	41.8	21.8	20.0

23.0 ADJACENT PROPERTIES

The property lies within an area of active exploration. Except for the Lac aux Bouleaux Graphite Property to the southwest of the Quarry, adjacent areas are mainly privately staked and information on mineralization is not publicly available. The following information is summarized from the June 2021 NI 43-101 Technical report completed over the Lac aux Bouleaux Property and led by Hinterland Geoscience and Geomatics (2021).

The Lac aux Bouleaux Property is located within the Precambrian metasedimentary rocks of the Grenville series. The series is comprised of garnetiferous paragneiss, quartzofelsdpathic and limestone/marble beds, with some quartzites locally. The metasedimentary sequence was intruded by igneous rocks such as monzonites, anorthosites, gabbros, and diabase. The paragneiss has a variety of compositions and all contain some graphite. East-west trending post-Grenville diabase dikes intrude the paragneiss rocks and the Quaternary lithologies such as lacustrine, glacial, and fluvial surficial deposits cover most of the property and region.

At Lac aux Bouleaux, the graphite mineralization is considered to have been injected with quartz into the metasedimentary sequence from a deeper source and redistributed through fractured incompetent beds of limestone creating graphite mineralization channels (Hinterland Geosciences and Geomatics, 2021). The large crystalline graphite flakes present at Lac aux Bouleaux are believed to be the result of the mineralized rock slow cooling.

The Lac aux Bouleaux is still at the exploration stage and additional work is required to improve the understanding of the property.

The QP has not independently verified this information and this information is not necessarily indicative of the mineralization at the Quarry.

24.0 OTHER RELEVANT DATA AND INFORMATION

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

25.0 INTERPRETATION AND CONCLUSIONS

The Quarry is one of many operated by Imerys using a central technical hub to address long-term planning and Mineral Resource/Mineral Reserve estimation. This mode of operation meant that supporting data and information available for review was limited, in comparison to equivalent metal mines. Despite these data gaps, in the opinion of the QPs the estimates of Mineral Resources and Mineral Reserves are reasonable, as the Quarry is a mature operation, with a track record of production that reconciles to plans.

SLR offers the following additional conclusions by area.

25.1 Geology and Mineral Resources

- As of April 30, 2021, using a 4% Cg cut-off grade, Indicated Mineral Resources, inclusive of Mineral Reserves, are estimated to total 621,000 t averaging 7.1% Cg (Table 25-1).

Table 25-1: Summary of Mineral Resources - Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Classification	Tonnage (kt)	Grade (% Cg)
Indicated	621	7.1

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within a design pit using a 4% Cg block cut-off grade.
3. Mineral Resources include in-situ material only. Stockpiles have not been considered.
4. Bulk density is 2.8 t/m^3, applied to all material types.
5. Mineral Resources are reported inclusive of Mineral Reserves.
6. The numbers may not add due to rounding.

- There is no current exploration on the deposit and past exploration by either the current owner or past operators has not been digitally documented. Archived data has been retained in various non-digital formats by Imerys, however, this information has not been made available to SLR.
  - Drilling indicates the presence of significant graphite mineralization outside the Quarry and significant graphite mineralization has been intersected in drill holes outside the mineralization wireframe.
- Diamond drilling occurred at the Quarry from 1998 to 2006. Drilling campaigns were undertaken in 1998, 2000, 2001, 2004, and 2006. No information has been retained in the drilling database regarding the drilling procedures, recovery, or sampling during any of the drilling programs. A total of 277 surface core drill holes comprises the resource drill hole database for the Quarry.
- No information has been provided pertaining to the QA/QC programs in place during the drilling of the deposit.
- On-bench sampling, sample preparation, analysis, and security procedures at the Quarry are adequate for use in the estimation of Mineral Resources. In the QP's opinion, Quarry sample preparation, analysis, and security procedures do not meet industry best practices, however, the mine production and reconciliation history suggest that the resource estimation is performing well and that the underlying data is acceptable. In the QP's opinion, given the mining history and

limited remaining mine life of the Quarry, obtaining additional information is neither practical nor beneficial.

- A single density value of 2.8 t/m^3 was assigned to all blocks within the resource model, regardless of lithology.
- A design pit has been prepared and used for resource reporting purposes at a cut-off grade of 4% Cg. Constraining the Mineral Resources within a design pit satisfies the requirement of CIM (2014) definitions that Mineral Resources demonstrate reasonable prospects for eventual economic extraction.
- In the QP's opinion, there are no significant risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information or Mineral Resource estimate. Risks and uncertainties in exploration information and underlying geologic data are largely mitigated given the production and reconciliation history of the Quarry.

25.2 Mineral Reserves

- The Mineral Reserve estimate for the Quarry is based on the resource block model developed by Imerys. Mineral Reserves have been classified as Probable in accordance with CIM (2014) definitions. Only those Mineral Resources that were classified as Indicated were given economic attributes in the mine design and when demonstrating economic viability.
- As of April 30, 2021, using a 4% Cg cut-off grade, total Probable Mineral Reserves are estimated to be approximately 594,000 t averaging 7.07% Cg (Table 25-2).

Table 25-2: Summary of Mineral Reserves – Effective April 30, 2021
Northern Graphite Corporation – Lac-des-Îles Graphite Quarry

Category	Tonnage (t)	Grade (% Cg)	Contained Graphite (t)
Probable – Stockpiles	102,024	6.92	7,062
Probable – Pit 2	491,741	7.10	34,937
Total Probable	**593,764**	**7.17**	**41,999**

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 4% Cg. SLR has inferred that the mineralization domain wireframe was constructed using a nominal graphite cut-off grade of approximately 4%, a value that is used to delineate mineralized rock ("ore") from weakly mineralized or barren country rock ("waste").
3. Mineral Reserves are estimated using an average long-term price of US$1,600 per tonne, a metallurgical recovery of 89.2%, and a US$/C$ exchange rate of 1.25.
4. A minimum mining width of 5 m was used.
5. Bulk density is 2.8 t/m^3, applied to all material types.
6. Numbers may not add due to rounding.

- Reconciliation of the block model to Pit 2 production from Q3 2016 to Q3 2021 shows 85% of the modelled tonnes mined as ore, at grades averaging 115% of modelled. More recent results (mid 2019 to Q3 2021) are closer, at 90% of tonnes and 109% grade.
- At the mine production scheduling stage, Imerys applies modifying factors (mining recovery factors) to all ROM ore tonnage from Pit 2B to arrive at plant feed tonnages. A mining factor of

0.85 is applied to all ore between elevations 209 and 251, and a factor of 0.75 is applied to the final 6 m bench in Pit 2B (elevation 203). No adjustment is applied to grades.

  - Although global factoring is not best practice for addressing dilution and extraction, this methodology provides a conservative estimate relative to reconciliation results.
  - In the opinion of the QP, a satisfactory mechanism for the prediction of in-situ and plant feed tonnes and grades is achieved when the Quarry's current block model is combined with the application of Imerys' modifying factors.

- The provided Pit 2 design has been trimmed below waste dumping activities at the pit crest, however, the design has not been trimmed beneath the rock pile located at the south end of the pit bottom. To confirm volumetrics, the pit bottom rock pile was delineated and the corresponding material was excluded from SLR's assessment.
- No pit optimization was performed to inform the pit design. Such optimization work typically targets the highest pit value considering parameters such as commodity price, operating costs, pit slopes, etc. In the opinion of the QP, Pit 2 and stockpiled material at the Quarry can be declared a Mineral Reserve, though this Mineral Reserve may not be optimized from an economic standpoint.
- Total stockpiles of 102,024 t at 6.9% Cg form part of the April 2021 Mineral Reserve statement. The stockpiles account for approximately 17% of total mill feed.
- Imerys' stockpile estimate is derived from a drone survey analysis completed on April 13, 2021 and agrees well with estimates derived from haul truck counts. Topographic information was not available for SLR's review and thus the QP cannot independently verify the stockpile physicals provided by Imerys.
- The QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

25.3 Mining

- Imerys reports that pit wall designs are adjusted based on performance and/or geotechnical consultant review/recommendations. The QP notes that there have been some localized slope instabilities in Pit 2/Pit 6 in recent years. Imerys reports that the Quarry uses the services of a geotechnical consultant at least four times a year to check for stability issues and develop mitigation measures where warranted. In general, the QP's review indicates that geotechnical hazards at the Quarry have been managed appropriately.
- Imerys relies on its individual Toromont-Hewitt equipment maintenance contracts for its maintenance strategy. An additional maintenance resource is supplied by Toromont-Hewitt to maintain all other site mobile equipment not covered under individual contracts. Contract pricing and primary equipment hours were not available for SLR review.
- The Quarry appears to have slightly more primary fleet units with higher capacity compared to similar operations. As a result, there may be opportunities to optimize and/or further leverage the capability of the Quarry's mining mobile equipment fleet by mining faster.
- Imerys' Pit 2 production schedule for the LOM was provided on a non-annualized, level-by-level (or bench-by-bench) basis. As required, the process plant is fed directly from Pit 2, from stockpiles, or a combination of both. SLR notes stockpile variations (in/out) are not planned by Imerys, nor are they integrated with a Pit 2 feed plan to construct an overall feed plan for the process plant.

- SLR constructed an annualized LOM plan (SLR LOM plan) based on inputs from Imerys. In developing the SLR LOM plan, SLR assumed all stockpile tonnage in the Mineral Reserve estimate would be processed in the final year of Quarry operations (2024). The SLR LOM plan closely matches the annual ore tonnages of the Imerys LOM plan and total LOM physicals in the SLR LOM plan match those presented in the Mineral Reserve statement. Based on historical performance for both mined and finished product production, SLR considers both the Imerys and SLR LOM plans to be achievable.
- Finished product inventory is prioritized to meet customer demand. As of May 2021, Imerys had approximately 11,000 t of finished inventory bagged and awaiting sale on the Quarry site. This situation permits the Quarry to halt and then resume mining and processing operations on an as-needed basis. These stoppages are not reflected in any planning information available for review.

25.4 Mineral Processing

- The QP has not reviewed any metallurgical information that would suggest that future plant feed will be materially different from past plant feed.
- The percentage of coarse graphite (+80 mesh and +50 mesh fractions) increased slightly from 2018 to through 2020, thus providing more value for the concentrate. The QP is unable to determine the causes of the increase.
- During the site visit, Imerys indicated that a sample from each concentrate product bag is drawn for grade monitoring. The sample is kept in storage for a period of six months. The Quarry's metallurgical laboratory was visited and the facility seemed well stocked and fully functional. Imerys indicated that the laboratory had analytical sampling procedures, however, none were provided for review.
- No recovery models exist for future production and Imerys has indicated that the relationship between grade and recovery, if any, is not clear.
- The plant circuit configuration is modified to achieve a concentrate grade of either 95% Cg or 97% Cg, depending on customer requirements.
- Actual concentrate grades for the produced graphite concentrate were not available for review, although the QP notes that the Imerys internal Mineral Reserve statement (April 2021) assumes a concentrate grade of 96.5% Cg.
- The QP conducted a tour of the site and process plant on October 4, 2021. During the time of the visit, the process plant was not operating. Plant equipment appears to have adequately facilitated graphite concentrate production over the last 30 years. Processing equipment appeared to be clean and well maintained and plant equipment was well identified.
- Equipment capacities and design criteria were not available for review.
- Imerys reports that operation of the grinding and flotation circuits is very manual-intensive and there is little automatic process control. The circuits were relatively clean, and equipment was clearly identified. There were no obvious signs of major equipment failures.
- Imerys reported that the ideal feed grade ranges between 7% Cg and 7.5% Cg. Typically, actual feed grades range between 6% Cg and 8% Cg. According to Imerys, the less-than-ideal actual grade range is a result of challenges primarily related to the availability of experienced staff and the manual-intensive nature of the Quarry's grade control program. Plant feed grades are verified twice a day from three stockpiles of differing grade ranges.
- Imerys calculated the concentrate recoveries by using the following assumptions:

- Graphite Plant Recovery = 91.3 %
- Graphite Concentrate Grade = 96.5 %

It is not known by which methods these assumptions were arrived at by Imerys.

- The graphite recovery was calculated by the QP from daily production data provided by Imerys for the period January 2018 to mid-April 2021. The average graphite recovery for this period was calculated to be 89.2%. The forecasted head grades in the years 2021 to 2024 are slightly lower than the head grades of 2018 to 2021. An average graphite recovery of 89.2% was used to calculate the concentrate tonnage in the SLR LOM processing plan.
- The actual and projected hourly tonnages for the years 2021 and 2022 at 31 tph and 28 tph are lower than typical production rates (between 40 tph and 50 tph). Based on recent historical data and past plant feed tonnages from 1990 to 2018, the plant has the capacity to process the expected plant feed tonnages, grades, and concentrate tonnages in the years 2021 to 2024.
- During SLR's site visit, Imerys reported experiencing issues with SAG mill throughput relating to the quartz content in the mill feed (ore hardness). Quartz content was reported to be disseminated and/or in small boudined veinlets which are difficult to model. The hardness issues are reported to be rare, on the order of a few days per occurrence, and have been managed with relative ease from existing ore sources/stockpiles.

25.5 Infrastructure

- Fixed equipment information was not available for review and photos were not permitted during the limited site visit. Based on recent operational performance, existing mining infrastructure appears to be suitable.
- Electricity is supplied to the Quarry by Hydro Québec under Rate M. This rate is a general rate for medium-power customers and applies to a contract whose maximum power demand has been at least 50 kW during a consumption period included in the last 12 monthly periods.
- Other than work by Roche, Imerys confirmed that no other geotechnical stability studies have been carried out on the Quarry's WRF. The QP has relied on the conclusions of Roche and Imerys and provides no conclusions or opinions regarding the stability of the aforementioned facilities.
- The QP notes there has been no information provided on the historic TMF construction method. Imerys reports that independent consulting firms have completed annual inspections of the Quarry's TMF tailings dikes to ensure that their construction and maintenance continues to adhere to good practice and specialized recommendations made by the consultants.
- The 2002 and 2004 Quarry rehabilitation plans include a copy of the inspection reports of the TMF tailings dikes carried out by the consulting firm LEQ. The most recent report available for review is dated June 2004 and is included with the Quarry's 2007 Closure plan. Annual inspections were reportedly completed in 2020 and 2021, however, these reports were not available for review.
- During Soutex's site visit, Imerys indicated stability checks on the TMF are done by a consulting firm and no issues have been identified. Documentation of these stability checks was not available for review and thus it is unclear how often these checks are undertaken, and what TMF performance aspects are being assessed during the checks/inspections.
- The QP has relied on the conclusions of Imerys and its independent consultants and provides no conclusions or opinions regarding the stability of any of the Quarry's TMFs.

25.6 Markets and Contracts

- Global graphite market information was provided by Benchmark and NGC.
- There is no posted spot price or futures market for graphite. Sales are negotiated between producers and consumers of which there are many. Some have long standing relationships and negotiate prices and volumes annually, however, typically there are no long-term contracts or off-take agreements.
- As a result, forecasting graphite revenue is inherently less certain than for commodities with global market-setting, such as base or precious metals.
- The Quarry has been able to achieve an average price of approximately US$1,575/t for its concentrates over the 2019-2021 period. Imerys BP assumptions imply annual average unit prices for graphite concentrate increasing from US$1,508/t to US$1,743/t over the 2021 to 2025 period. In general, SLR finds the implied/Imerys forecasted unit prices to be reasonable and consistent with calculated prices derived from recent product volumes and revenues and generally consistent with past pricing research conducted by SLR.
- SLR notes graphite concentrate sales currently exist between Imerys' Quarry and Terrebonne businesses. As part of an acquisition transaction involving the Quarry only, a new supply agreement would need to be established between the Quarry and Terrabonne.
- Imerys reports that its 10 most important customers are mostly governed by monthly or yearly purchase orders.
- Imerys reports having business relationships with its top eight customers for over 15 years, with these customers accounting for approximately 85% of Quarry revenues.
- Concentrate unit prices, the seller's grade, and technical specifications were redacted and unavailable for SLR review.
- In the opinion of the QP, master supply, consignment stock, and agency/distribution agreements appear reasonable and contain agreement language that is generally consistent with industry norms.

25.7 Environmental and Social Considerations

25.7.1 General

- The QP has not identified any issues with respect to Quarry permitting and is not aware of any environmental liabilities pertaining to the property. Imerys confirmed to the QP that there are no on-going compliance issues at the Quarry.

25.7.2 Closure Plan

- Imerys complies with the obligations provided for in Sections 232.1 to 232.12 of the Mining Act and the restoration measures proposed by Imerys have been approved by the MERN and the MDDELCC.
- MERN approved the Quarry's 2020 Closure Plan on July 23, 2020, including a total closure cost estimate of $8.23 million. As of November 5, 2021, the amount paid as security is $6,535,055. The last payment ($1,667,886) is due July 23, 2022. The next revision of the Quarry's Closure Plan must be submitted to MERN no later than August 2022. The QP's review of the closure cost estimate did not identify any material omissions and the estimate includes reasonable indirects

and contingencies. Post-closure monitoring cost estimates appear to be appropriate and reasonable.

- Restoration measures proposed by Norda Stelo assume that mined waste rock and tailings are not generating any AMD. Consequently, measures to restore the TMF, WRFs, and all in-pit wastes will be limited to water management and the establishment of plant cover.
- In line with indications from regulators, applicable guidelines, and typical practice, the QP agrees with excluded credits against closure cost estimates that include re-use and salvage values of scrap materials and used equipment.
- Other than the last payment of $1,667,886 due on July 23, 2022, there are no additional requirements requested by MERN.

25.7.3 Regulatory

- No EIAs were conducted for the Quarry as this was not required by federal or provincial legislation at the time of initial project development.
- Imerys submits annual declarations to Environment Canada on contaminants emitted to the environment. The QP reviewed declarations provided for years 2018 to 2020 and did not note any issues.
- Imerys operates the Quarry under authority of Industrial Sanitation Certificate No. 201315001 (the Certificate), which the MDDELCC issued to Imerys on February 25, 2015. On December 16, 2021, Imerys informed NGC that the application for renewal of the Certificate has been submitted to MDDELCC, however, no response has yet been received, with delays possibly due to the COVID-19 pandemic. During the application review process, the Quarry operates under the conditions of the previous Certificate.

25.7.4 Compliance

- According to Roche, apart from a burst of water that occurred at the TMF in the spring of 2011 (which resulted in significant suspended solids in the Quarry's final effluent), analyses carried out since 1990 demonstrate that the Quarry's final effluent generally complies with the applicable regulation (criteria of Directive 019).

25.7.5 Waste and Water Management

- According to studies by Roche, the Quarry's source materials, mineral processing, and tailings management operations do not produce AMD and thus there is no water treatment required for the final effluent. The QP has no information on more recent studies nor any direct monitoring data to confirm these findings.
- During the Soutex site visit, Imerys indicated that a bathymetry evaluation had been carried out to inform the status of tailings and waste rock deposition in Pit 12 and that the evaluation confirmed sufficient storage capacity for the life of Quarry operations. A copy of the bathymetry results was not provided for review and thus the QP cannot confirm Imerys' statements regarding the storage capacity available.
- There are no formal documented waste and water management plans for the Quarry. Imerys indicated that currently the Quarry has no water management issues and the Quarry reports on effluent quality to the regulators as required by current permits.

25.7.6 Stakeholder Management

- The QP notes that the Quarry has no standing social committees or groups to monitor social impacts of mining activities and Indigenous Communities are not mentioned in any of the Imerys-supplied documentation.

25.7.7 Environmental and Social Management System

- The Quarry ESMS reflects compliance with the requirements of the auditing standards and provides an adequate structure to support the implementation and maintenance of the integrated management system.
- The QP notes that the ISO system table of contents provided by Imerys includes permit requirements, health and safety, emergency planning, internal and external auditing, however, no environmental management and monitoring procedures are mentioned.
- Imerys reported that the ESMS addresses all legal requirements related to environmental management, however, Imerys' internal audit reports do not appear to audit against specific permit and authorization requirements.

25.8 Capital and Operating Costs

25.8.1 Capital Costs

- SLR notes that half of the primary mining fleet units are leased units. Imerys captures these costs as operating expenses. Should it be required, SLR has assumed that additional or replacement mining equipment will be similarly leased or rented, though no additional expense has been allowed for in the operating costs or economic analysis. SLR has assumed that Imerys has considered this potential eventuality in preparing its operating cost estimates.
- Imerys reports that all capitalized waste and overburden stripping required to the end of Quarry life was completed at the start of Pit 2 mining activities. SLR has thus assumed these costs to be zero for the purpose of capital cost estimation and economic analysis.
- During the two site visits, a new mine maintenance (dome-type) facility was being constructed. SLR does not have any cost estimate nor information on the full timing of this expense and has assumed a $500,000 capital cost allowance in 2021 for the completion of this facility.
- The Imerys BP forecasts that remaining mine production activities will be carried out at a mining rate that is below or equal to process plant capacity, so no expansion/additional capital spending is expected at this time.
- The total 2020 Closure Plan cost estimate of $8,232,941 appears reasonable and reflects the state of knowledge of the site. Norda Stelo's unit costs for estimating restoration costs are realistic and within the range of values commonly used by consulting firms that prepare similar estimates.
- Imerys and NGC identified salvage values that could be realized at final closure during dismantling and removal of Quarry buildings and structures. The saving opportunity is presented under Economic Analysis alongside other cost saving opportunities.

25.8.2 Operating Costs

- Electricity is supplied to the Quarry by Hydro Québec under Rate M. In general, the rates being charged are reasonable and, combined with the opportunity for credits, offer some of the lowest electricity rates in North America.
- Total annual operating costs reported by Imerys for 2019 and 2020 were $18.6 million and $12.9 million, respectively, and thus the Imerys BP forecasted annual operating costs appear reasonable relative to recent cost performance at similar production rates.
- SLR determined that the Quarry has an indicative unit mining cost in the range of $8/t to $9/t of rock mined. Comparable surface operations (4,000 tpd to 6,000 tpd of rock moved) typically have unit mining costs of approximately $7/t of rock mined. Reasons for a more elevated unit mining cost at the Quarry include:
  - A longer than typical ore haul distance.
  - Deposit geometry and the corresponding need for in-pit rehandling to selectively mine the ore (e.g., small excavator, dozer pushing ore down along dip).
- Soutex determined an indicative unit processing cost in the range of $31/t to $35/t processed, which the QPs find reasonable given the relatively low plant throughput over the LOM (ranges from 28 tph to 48 tph).
- For estimating unit overhead costs, SLR referenced the average of 2019 and 2020 actual costs and prorated these costs according to the LOM yearly finished product sales; the reference yearly cost being $1.7 million. For estimating unit shipping costs, a similar estimation method was used to derive an average unit delivery cost per tonne of finished product of $47.92. The methodology assumes that the Quarry's primary customer sales distributions remain similar over the coming years.
- SLR and Soutex estimate total LOM operating costs of $53.4 million compared to $56.5 million in the Imerys BP. On further inspection, the QPs are of the opinion that the Imerys 2021 cost estimate is for a full calendar year rather than an estimate of costs from mid-April to year end.
- Forecasted LOM unit costs are estimated to be $8.53/t mined and $32.97/t processed. In years 2023 and 2024, the processing unit operating cost was reduced using an empirical equation relating to the forecasted higher daily processing throughput.
- NGC identified several operating cost saving opportunities which are presented under Economic Analysis. Opportunities include:
  - A reduction in annual management fees allocated to the Quarry by Imerys (fees of $2.5 million in 2020).
  - In connection with acquisition of the Quarry, a reduction in the taxes payable by NGC upon reset of tax pools.
  - Operation of the Quarry closer to full capacity, thereby reducing unit costs and certain fixed costs.

26.0 RECOMMENDATIONS

26.1 Geology and Mineral Resources

1. Historical paper records documenting the exploration on the property should be collated and the graphite mineralization wireframe interpretation should be reviewed for potential areas of extension.
2. Snap the mineralization wireframe to assay intervals both on section and between sections and treat unsampled intervals as zero grade during grade interpolation.
3. For better reconciliation control, complete a program of density sampling across the deposit targeting both mineralized rock and waste.

26.2 Mining, Processing, and Mineral Reserves

1. To determine more appropriate graphite feed grades for the processing plant, review the availability (and retention) of experienced staff and the manual-intensive nature of the Quarry's grade control program.
2. Review the Quarry's reconciliation methods and create a more typical process for estimating modifying factors. Corresponding documentation should be prepared for others to follow and in the event of new personnel/high staff turnover.
3. Review the Quarry's LOM plan preparation process and ensure that the LOM plan is fully integrated with the stockpile processing plan, includes graphite grades and forecasted graphite flake size distribution, and is annualized.
4. The large volume of finished product inventory stored at the Quarry suggests that there may be opportunities to better align operating plans with anticipated sales/commitments.
5. There appears to be sufficient process plant capacity in 2022 to increase throughput and potentially improve Quarry economics (28 tph processed compared to 40 tph to 50 tph capacity). A LOM plan optimization exercise is recommended.

26.3 Environmental and Social Considerations

1. Carry out more detailed work to review and assess risk associated with the following aspects:
    - Stakeholder identification and engagement, including Indigenous Community engagement and an assessment of potential impacts on these communities.
    - The Quarry's ESMS and how legal requirements are tracked to determine the possible impact to a financial assurance package.
    - The Quarry's GHG emissions and potential financial obligations.
2. Review available water quality monitoring data and compare this to relevant regulatory standards to confirm that post-closure effluent will comply with regulatory requirements before being discharged.
3. Perform acid base accounting test work on representative samples of tailings and waste rock materials to verify that these materials continue to be non-acid generating.

4. The polishing pond will be transformed into a wetland. A hydrological and hydrogeological study should be carried out to inform this work.
5. Verify that the polishing pond dike does not need to comply with Dam Safety Regulations.
6. Complete soil characterization work (Phase II) to identify any additional soil contamination sites, other than those identified in the crusher area.
7. Revisit the likely costs of equipment dismantling and removal as part of the next Closure Plan amendment.
8. Discuss the Closure Plan's supporting agronomist report with the author to understand the closure plan more fully.

26.4 Operating Costs

1. To facilitate future cost reviews, public reporting, and internal benchmarking of performance, develop and report operating costs by department/functional area (e.g., mining, processing, and G&A) alongside the Quarry's existing fixed and variable consolidation.

27.0 REFERENCES

Benchmark Mineral Intelligence, 2021: Flake Graphite Forecast | Q2 2021. www.benchmarkminerals.com

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2014: CIM Definition Standards for Mineral Resources and Mineral Reserves, adopted by the CIM Council on May 10, 2014.

Consul-Teck, 2015: Compilation Work Report for Lac des Îles Property, prepared Canada Strategic Metals Inc., October 30, 2015.

CWB Group, 2018: Stage 2 ISO 14001 and 18001 report.

CWB Group, 2019: Stage 2 ISO 14001 and 18001 report.

CWB Group, 2020: ISO 14001 and 18001 Audit Report.

CWB Group, 2021: ISO 14001 and 18001 Audit Report.

Dickin, A.P., and McNutt, R.H., 2007: The Central Metasedimentary Belt (Grenville Province) as a failed back-arc rift zone: Nd isotope evidence. Earth and Planetary Science Letters 259, pp 97-109.

Dubus, A., 2010: Contexte géologique de la mine de Lac des Îles. Imerys Draft Internal Memorandum. February 12, 2010.

Friedlin, S., 2020: Fosse 2 Inspection et installation d'ancrages. F8 Roc & Falaises Inc. December 2020.

Friedlin, S., 2018: Fosse 2 Inspection et travaux de sécurisation – Compte rendu de la visit du 29 mars 2018. F8 Roc & Falaises Inc. March 2018.

Government of Canada, First Nationals Profile Interactive Map, 2021: First Nation Profiles Interactive Map (aadnc-aandc.gc.ca)

Harben, P. W., Kuzvart, M., 1996: A global Geology. Industrial Minerals, Industrials Information Ltd., Metal Bulletin, PLC London.

Hinterland Geosciences and Geomatics, 2021: Updated NI43-101 Technical Report on Lac aux Bouleaux Graphite Property, prepared for Graphano Energy Ltd., filed on SEDAR/available at www.sedar.com (June, 8, 2021).

Hydro-Québec, Rates for Business Customers, 2021: Base Rate M, https://www.hydroquebec.com/business/customer-space/rates/, April 1, 2021.

Imerys Graphite & Carbon (Imerys), 2021aa: Pit 2 and Pit 6 designs and surface topography .dtm files, May 2021.

Imerys, 2021bb: April 13, 2021 stockpile estimate by A. Boada and J. Carreno, April 2021.

Imerys, 2021cc: Project Eagle Business Plan, May 2021.

Imerys, 2021dd: Site Plan of Imerys Graphite Quarry (French), May 2021.

Imerys, 2021ee: Imerys presentation including discussion of MERN financial guarantees, May 2021.

Imerys, 2021ff: Imerys Profit and Loss Statements 2018, 2019, 2020, and H1 2021, September 2021.

Imerys, 2021gg: Lac des Iles Performance and Plant Performance Reviews for December 2020, January 2021, February 2021, and March 2021.

Imerys, 2021a: Environmental aspects Excel Spreadsheet.

Imerys, 2021b: Stakeholder Information and Corporate Social Investment Information Excel Spreadsheet.

Imerys, 2021c: Spreadsheet of safety statistics.

Imerys, 2021d: Extract from ISO system content structure.

Imerys, 2021e: List of employees.

Imerys, 2021f: Employment template contracts.

Imerys, 2021g: Minutes of Working Relations Committee.

Imerys, 2021h: Collective Labour Agreement between Timcal Canada and the Union of Workers of Timcal Canada Inc.

Imerys, 2021i: Organizational Chart.

Imerys, 2021j: Corporate Structure Diagram.

Imerys, 2020a: Annual Regulator Report.

Imerys, 2020b: Minutes of Working Relations Committee.

Imerys, 2019a: Annual Regulator Report.

Imerys, 2019b: NPRI Report.

Imerys, 2019c: Minutes of Working Relations Committee.

Imerys, 2018a: Annual Regulator Report.

Imerys, 2018b: NPRI Report.

InfoMine USA Inc., 2021: Mining Cost Service, Cost Indexes and Metal Prices, Mining and Milling Cost Indexes – United States, July 2021.

Jébrak, M., and Marcoux, É., 2008: Géologie des ressources minérales, Géologie Québec, pp.449.

Kwiecinska, B., and Petersen, H.I., 2004: Graphite, semi-graphite, natural coke, and natural char classification-ICCP system. Internat J Coal Geol 57:99–116

Letter of credit no 10011689 from the Royal Bank of Canada dated 20 January, 2021.

Luque, F.J., Huizenga, J-M., Crespo-Feo, E., Wada, H., Ortega, L., and Barrenechea, J.F., 2014: Vein graphite deposits: geological settings, origin, and economic significance. Mineralium Deposita, 49 (2). pp. 261-277.

MDDELCC, 2015: Avis - Révision no 4 du plan de restauration de la propriété minière de Imerys Graphite & Carbon Canada inc.

MDDELCC, 2015: Sanitation Certificate no 201315001

MERN, 1989: Localisation des conducteurs EMH, prepared for Stratmin, Ministère de l'Énergie et des Ressources, Service de la Géoinformation, No GM. 48045, pp.8.

MERN, 2017: Guidelines for Preparing Mine Closure Plans in Quebec, 78 pages.

MERN, 2021: Approbation du plan de restauration pour la propriété de Saint-Aimé-du-Lac-des-Iles,

MERN, 2021: Registre de gestion des titres miniers (GESTIM), https://mern.gouv.qc.ca/en/mines/mining-rights/extraction-rights/ (accessed November 2, 2021).

Mitchell, C.J., 1993: Industrial Minerals Laboratory Manual: Flake Graphite. British Geological Survey Technical Report WG/92/30. 31 pages.

Moreau, S., agronome Experte-Conseil : Suivi agronomique 2019 – Site minier Imerys – parc à résidus restauré par regénération maintenant Sanexan, 82 pages.

Norda Stelo, 2018: Mise à jour des coûts de restauration – Site minier de Saint-Aimé-du-Lac-des-Iles, Rapport final – V01, 133 pages.

Norda Stelo, 2019: Addenda au plan de restauration de la propriété minière de Saint-Aimé-du-Lac-des-Iles, Révision 04 – réponses aux questions du MERN, 33 pages.

Norda Stelo, 2018: Mine Closure Report.

Norda Stelo, 2020: Mine Closure Report.

NGC, 2021a: Benchmark Mineral Intelligence, Q2 2021 Forecast, November 2021.

NGC, 2021b: "Budget LDI only" spreadsheet provided by NGC, May 2021.

Okuyama-Kusunose, Y., and Itaya, T., 1987: Metamorphism of carbonaceous material in the Tono contact aureole, Kitakami Mountains, Japan. Journal of Metamorphic Geology 5, 121-139.

Papineau, D., De Gregorio, B.T., Cody, G.D., Fries, M.D., Mojzsis, S.J., Steele, A., Stroud, R. M., and Fogel, M.L., 2010: Ancient graphite in the Eoarchean quartz-pyroxene rocks from Akilia in southern West Greenland I: Petrographic and spectroscopic characterization. Geochimica et Cosmochimica Acta 74, 5862-588

Rivers, T., Martignole, J., Gower, C.F., and Davidson, A.L., 1989: New tectonic divisions of the Grenville Province, Southeast Canadian Shield. Tectonics, 8, 63-84.

Roche Ltée, 1999: Étude eshaustive du potentiel de génération d'acides des stériles - site Lac-des-Iles, Geochemical Report, 75 pages.

Roche Ltée, 2014: Mine Closure Report.

Roche Ltée, 1997: Plan de restauration Saint-aimé-du-Lac-des-Iles, 91 pages.

Roche Ltée, 2002: Plan de restauration de la propriété minière de Saint-Aimé-du-Lac-des-Iles, Révision 01, 236 pages.

Roche Ltée, 2007: Plan de restauration de la propriété minière de Saint-Aimé-du-Lac-des-Iles, Révision 02, 62 pages.

Roche Ltée, 2012: Plan de restauration de la propriété minière de Saint-Aimé-du-Lac-des-Iles, Révision 03, 55 pages.

Roche Ltée, 2014: Plan de restauration de la propriété minière de Saint-Aimé-du-Lac-des-Iles, Révision 04, 87 pages.

Timcal Canada inc., 2003: Contrat d'amendement, Timcal Canada inc. and confidential landowners.

Timcal Canada inc., 2012: Contrat d'amendement, Timcal Canada inc. and confidential landowners.

SIGEOM, 2021: Interactive website; Géologie Québec-Substances non métalliques, Feuillet SNRC 31J05, (https://sigeom.mines.gouv.qc.ca/signet/classes/l1103_afchDonnDescReqt)

SOLUMINES, 2020: Demande d'approbation d'un emplacement pour la disposition de stériles miniers.

Spence, H.S., 1920: Graphite, Department of Mines, Canada, Publication no 511, 250 pp.

Taylor, H.A., 1994: Graphite. In: Carr D.D. ed. Industrial minerals and rocks, 6th edition, pp. 561–570. Society for Mining, Metallurgy, and Exploration, Inc. Littleton, Colorado.

28.0 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Lac-des-Îles Graphite Quarry, Québec, Canada" with an effective date of December 22, 2021 was prepared and signed by the following authors:

(Signed and Sealed) ***Luke Evans***

Dated at Toronto, ON
February 2, 2022

Luke Evans, M.Sc., P.Eng.
Principal Geological Engineer

(Signed and Sealed) ***Marie-Christine Gosselin***

Dated at Toronto, ON
February 2, 2022

Marie-Christine Gosselin, P.Geo.
Geologist

(Signed and Sealed) ***Marc Lavigne***

Dated at Toronto, ON
February 2, 2022

Marc Lavigne, M.Sc., ing.
Principal Mining Engineer

(Signed and Sealed) ***Guy Comeau***

Dated at Québec City, QC
February 2, 2022

Guy Comeau, P.Eng.
Senior Metallurgist, Soutex

(Signed and Sealed) ***Jean Dionne***

Dated at Québec City, QC
February 2, 2022

Jean Dionne, P.Eng.
Consultant Mining Engineer, Soutex

29.0 CERTIFICATE OF QUALIFIED PERSON

29.1 Luke Evans

I, Luke Evans, M.Sc., P.Eng., as an author of this report entitled “Technical Report on the Lac-des-Îles Graphite Quarry, Québec, Canada” with an effective date of December 22, 2021 prepared for Northern Graphite Corporation, do hereby certify that:

1. I am Global Technical Director – Geology Group Leader, and Principal Geological Engineer with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of University of Toronto, Ontario, Canada, in 1983 with a Bachelor of Science (Applied) degree in Geological Engineering and Queen’s University, Kingston, Ontario, Canada, in 1986 with a Master of Science degree in Mineral Exploration.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90345885) and the Province of Québec (Reg. #105567). I have worked as a professional geologist for a total of 37 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Consulting Geological Engineer specializing in resource and reserve estimates, audits, technical assistance, and training since 1995.
    - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements.
    - Senior Project Geologist in charge of exploration programs at several gold and base metal mines in Quebec.
    - Project Geologist at a gold mine in Quebec in charge of exploration and definition drilling.
    - Project Geologist in charge of sampling and mapping programs at gold and base metal properties in Ontario, 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 have not visited the Lac-des-Îles Graphite Quarry.
6. I am responsible for Sections 2 to 6, 12, and 14 and related disclosure in 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, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of February, 2022.

(Signed and Sealed) *Luke Evans*

Luke Evans, M.Sc., P.Eng.

29.2 Marie-Christine Gosselin

I, Marie-Christine Gosselin, P.Geo., as an author of this report entitled ""Technical Report on the Lac-des-Îles Graphite Quarry, Québec, Canada" with an effective date of December 22, 2021 prepared for Northern Graphite Corporation, do hereby certify that:

1. I am a Geologist with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of Université Laval, Québec, QC in 2014 with a B.Sc. degree in geology.
3. I am registered as a Professional Geologist with l'Ordre des Géologues du Québec (Reg.#02060). I have worked as a geologist for a total of 7 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Lithology and mineralization modelling
    - Target generation and drill hole planning
    - Data analysis
    - Experience as Production Geologist, Exploration Geologist with porphyry copper, sediment hosted copper, Canadian Archaean gold, and VMS deposits in Canada
    - Experienced user of Leapfrog Geo, Vulcan, ArcGIS, and acQuire
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 Lac-des-Îles Graphite Quarry on May 30, 2021.
6. I am responsible for Sections 7 to 11 and 23, and related disclosure in 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 7 to 11 and 23 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 2nd day of February, 2022.

(Signed and Sealed) ***Marie-Christine Gosselin***

Marie-Christine Gosselin, P.Geo.

29.3 Marc Lavigne

I, Marc Lavigne, M.Sc., ing., as an author of this report entitled "Technical Report on the Lac-des-Îles Graphite Quarry, Québec, Canada" with an effective date of December 22, 2021 prepared for Northern Graphite Corporation, do hereby certify that:

1. I am Principal Mining Engineer with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7
2. I am a graduate of Université Laval, Québec, Québec, Canada, in 1987 with a B.A.Sc. in Mining Engineering, and in 1991 with a M.Sc. in Geostatistics.
3. I am registered as an Engineer in the Province of Québec, member of the Ordre des Ingénieurs du Québec (Reg. #99190). I have worked as a mining engineer for a total of 32 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Review and report as a consultant on open pit mining projects and operations in Canada and abroad for audits, due diligence, and regulatory requirements
    - Engineering study work (PEA, PFS, and FS) on many open pit mining projects around the world, including commodities such as precious metals, base metals, bulk commodities, industrial minerals, and rare earths
    - Open pit optimization and design, mine planning and cost estimation
    - Project cash flow modelling and economic analysis
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 Lac-des-Îles Graphite Quarry numerous times in the past between 1996 and 2010 inclusively.
6. I am responsible for Sections 15, 16, 21, and 22 and related disclosure in Sections 1, 24, 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. My previous involvement with the property that is the subject of the Technical Report was as a consultant on assignments prior to, and including, 2011.
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, 21, and 22 in 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 2nd day of February, 2022.

(Signed and Sealed) ***Marc Lavigne***

Marc Lavigne, M.Sc., ing.

1.1 Guy Comeau

I, Guy Comeau, P.Eng., as an author of this report entitled "Technical Report on the Lac-des-Îles Graphite Quarry, Québec, Canada" with an effective date of December 22, 2021, prepared for Northern Graphite Corporation, do hereby certify that:

1. I am a Senior Metallurgist consultant with Soutex, of Suite 204, 1990 rue Cyrille-Duquet, Québec City, QC G1N 4K8.
2. I am a graduate of the Technical University of Nova Scotia, in 1990 with a Bachelor of Engineering in the Metallurgical Engineering Co-operative program.
3. I am registered as a Professional Engineer in the Province of Quebec (Reg. #106546). I have worked as a metallurgical engineer for a total of 29 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Extensive experience in concentrator operations for various commodities including nickel, copper, zinc, lithium, and gold.
    - Chief Metallurgist at two nickel-copper operations in Quebec.
    - Metallurgist at a copper operation in Quebec.
    - Metallurgist at a copper, lead, zinc operation in New Brunswick.
    - Senior Metallurgist consultant on pre-feasibility, feasibility studies on commodities including iron ore, nickel, copper, gold.
    - Senior consultant providing on-site assistance for lithium, nickel-copper, gold and iron ore concentrators.
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 Imérys Lac-des-Îles Quarry mine site on October 4th 2021.
6. I am responsible for Sections 13 and 17 and related disclosure in subsections 1.1.1.4, 1.1.2.2, 1.3.9, 6.4, 21.2, 25.4, 25.8.2, and 26.2 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Sections 13 and 17 and related disclosure in subsections 1.1.1.4, 1.1.2.2, 1.3.9, 6.4, 21.2, 25.4, 25.8.2, and 26.2 in 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 2nd day of February 2022.

Signed (Guy Comeau)

Guy Comeau, P.Eng.

1.1 Jean Dionne

I, Jean Dionne, P.Eng., as an author of this report entitled "Technical Report on the Lac-des-Îles Quarry, Québec" with an effective date of December 22, 2021 prepared for Northern Graphite Corporation do hereby certify that:

1. I am a Consultant Mining Engineer with Soutex, 1990 rue Cyrille-Duquet, Suite 204, Québec, QC, G1N 4K8.
2. I am a graduate of the University Laval, in 1982 with a B.A.Sc. degree in Applied Sciences.
3. I am registered as a Professional Engineer in the Province of Québec (Reg. #036783). I have worked as a mining engineer for a total of 40 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Senior/Mining Engineer in a research centre and responsible for research and development projects in base and precious metal processing for the Centre de Recherches minérales, ministère de l'Énergie et des Ressources naturelles (MERN).
    - Senior/Mining Engineer responsible for coordinating and supervising the creation of a mine site restoration guide for MERN, Province of Québec.
    - Senior/Mining Engineer responsible for analyzing and approving the contents of rehabilitation and restoration plans submitted by Québec mine operators to MERN.
    - Senior/Mining Engineer and Supervisor responsible for coordinating several mine site rehabilitation and restoration projects in the Province of Québec for MERN.
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 Imerys Graphite Quarry on October 4, 2021. While employed by MERN, my site visits occurred in the late 1990s and concluded at the beginning of the 2000s.
6. I am responsible for Section 20 and subsections 1.1.1.7, 1.1.2.3, 1.3.12, 25.7, and 26.3 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. Prior to 2014, I worked for the ministère de l'Énergie et des Ressources naturelles du Québec (MERN). During this employment, my tasks included site visits to the Quarry as well as analyzing and approving the content of historical Quarry rehabilitation plans when the Quarry was owned and operated by Stratmin and Timcal Canada. Since this involvement, the Quarry's closure/rehabilitation plans have been revised several times. Other than the aforementioned involvement, I have had no other 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 and subsections 1.1.1.7, 1.1.2.3, 1.3.12, 25.7, and 26.3 in 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 2nd day of February, 2022.

Signed (Jean Dionne)

Jean Dionne, P.Eng.

30.0 APPENDIX 1

30.1 Northern Graphite Corporation Market Study – November 2021

MARKET STUDY

The Graphite Industry

Graphite is one of only two naturally occurring forms of pure carbon, the other being diamonds. Diamonds have a three dimensional crystal structure whereas graphite consists of a "two dimensional", planar molecular structure. For this reason graphite generally occurs as flakes, which are multiple layers of "graphene" held together by weak bonds. Graphene is a single, one atom thick layer of carbon atoms arranged in a "honeycomb" or "chicken wire" pattern. It has been estimated that there are three million layers of graphene in a one millimetre thickness of graphite. The delamination or exfoliation of graphite flakes is therefore one method of producing graphene.

Graphite is formed by the metamorphism of carbon rich materials which leads to the formation of either crystalline flake graphite, fine grained amorphous graphite, or crystalline vein or lump graphite. Graphite is a non-metal but has many properties of metals and is desirable as a strong, light weight, heat and corrosion resistant reinforcement material with a high aspect ratio. It also has high thermal and electrical conductivity, chemical inertness, and a natural lubricity.

Because of supply concerns relating to the fact that China is the world's dominant producer, and to potential demand growth from new applications such as lithium-ion batteries ("LiBs"), the European Union considers graphite to be one of 14 "critical mineral raw materials" with high supply risk. The United States has also included graphite on a list of mineral resources whose loss could critically impact the public health, economic security and/or national and homeland security of the United States.

There is very little recycling of, or substitution for, graphite.

Graphite Supply

Benchmark Mineral Intelligence ("Benchmark") estimates that worldwide production of natural flake graphite in 2021 will be just over 1,000,000 tonnes of which China will produce approximately 75 percent. Brazil (8%) and Mozambique (6%) make up most of the balance with the rest largely scattered among Madagascar, Tanzania and Europe.

Historically, most Chinese flake graphite production came from Shandong province. However, production has declined as mines get older and deeper, costs rise, resources are depleted and environmental regulations have become increasingly strict. The majority of Chinese production now comes from Heilongjiang province where deposits are generally higher grade but smaller flake and lower quality. As a result, Chinese production of the larger flake sizes is declining. Heilongjiang has substantial small flake resources and excess production capacity, most of which is targeting the LiB market.

At the 14th ICCSINO Anode Material and Feedstock Market Conference held in Qingdoa China in May, 2021 it was reported that production from the two main areas in China was 731,000t in 2020. Including output from other provinces that would put Chinese flake graphite production at 850,000t which indicates that it is being under-estimated by western commentators including Benchmark, Roskill and Fastmarkets who put it at about 750,000tpa.

Surplus Chinese supply had largely related to a large mine in Loubei which is owned by Minmetals, a state owned company that is one of the largest metals and minerals trading companies in the world. The mine had only been operating about four months per year and producing about 300,000tpy of flake graphite. Based on the ICCSINO figures it is likely the Loubei mine is now near full production. Minmetals, which is

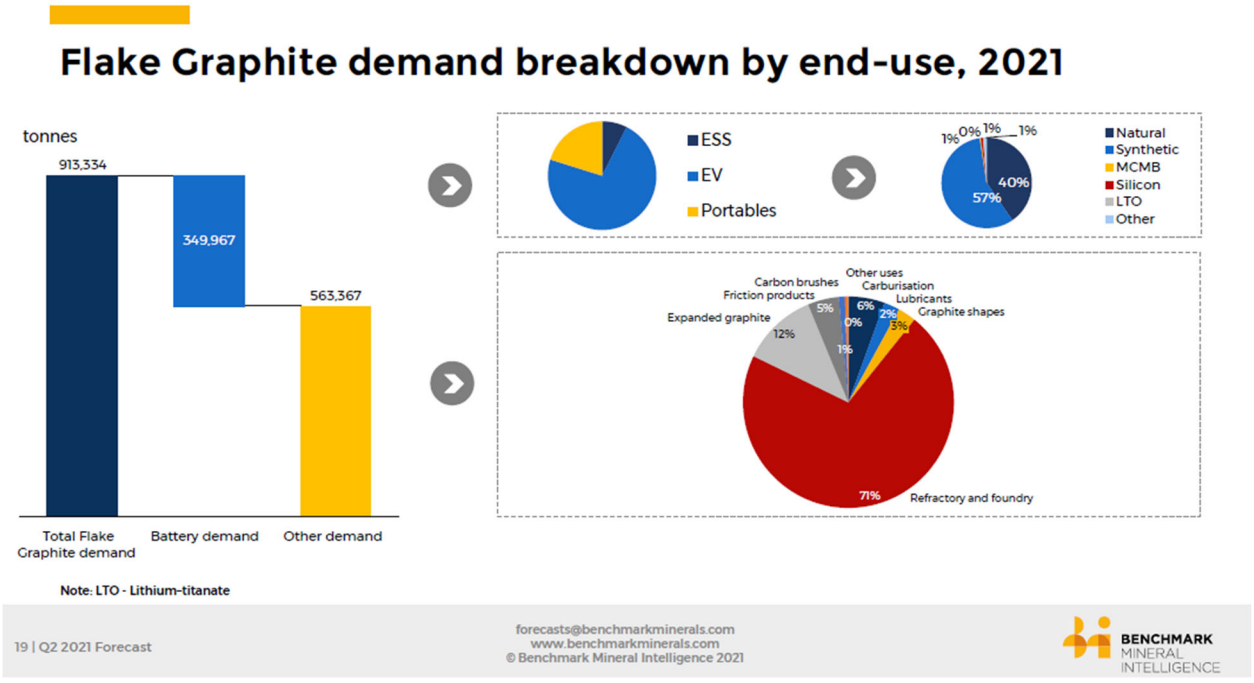
the largest Chinese natural graphite producer, had forecast a supply deficit in 2020, which did not happen due to Covid, and a very large supply deficit by 2025.

A large new graphite mine was built in Mozambique in 2018 and it substantially increased world natural flake graphite supply. The mine was significantly over budget, has only operated at about 50 per cent of nameplate capacity and has been cash flow negative since start up. Its future is uncertain as western buyers do not want to switch to a supplier that may not be able to continue operations. Most of its production as been sold into the Chinese steel market as the Chinese do not find its production suitable for the battery market.

Because of potential demand from the rapidly growing EV/LiB markets, there are over 20 advanced stage graphite projects outside of China that have completed feasibility studies. Almost all are looking for financing and almost none are under construction. Most are in Tanzania, Mozambique, Australia and Canada. They represent a significant source of future supply but each will take up to two years to bring into production after they obtain financing. Also, not all are battery grade and many come with substantial political risk.

Graphite Demand

Benchmark estimates that worldwide demand for natural flake graphite in 2021 will be 913,000 tonnes. Historically the single biggest use of graphite has been for the manufacture of refractories for the steel industry which accounts for over 40 percent of demand or 400,000 tonnes. These are essentially fire bricks which line and protect blast furnaces. They contain 10-25 percent graphite which acts as a light weight reinforcement that is resistant to heat and corrosion. Accordingly, graphite is a consumable in the steel making process, not an alloy, although graphite is sometimes added to steel to increase the carbon content.

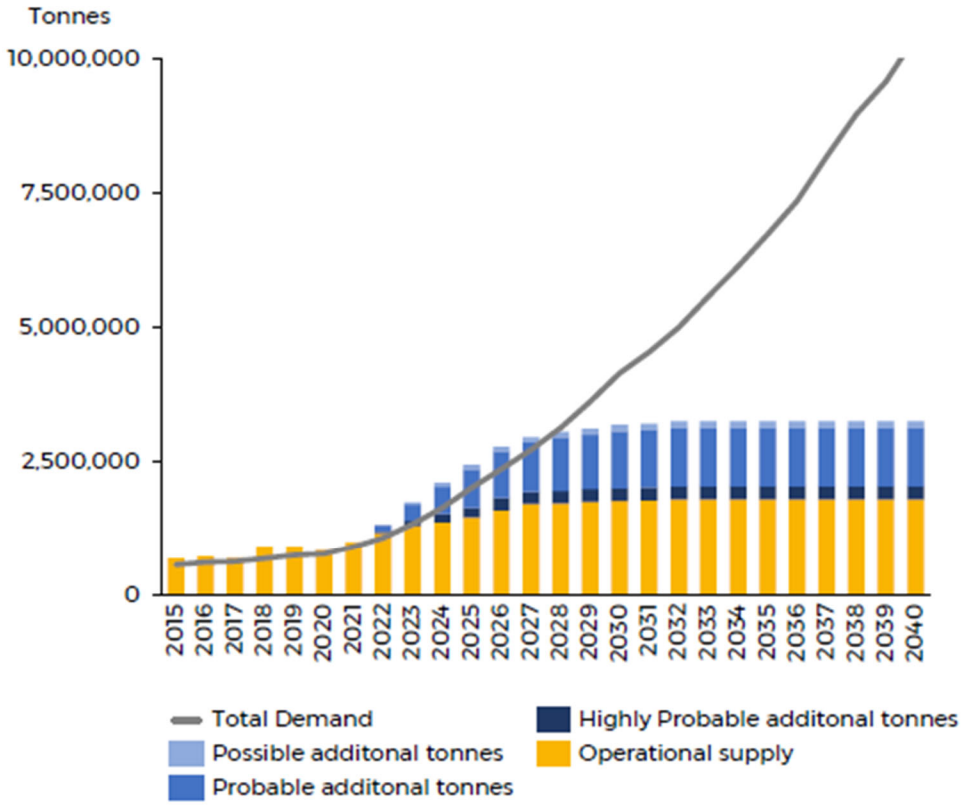


Graphite is the anode material in lithium-ion batteries and is their largest single component. There are no substitutes in this application although the anode material can be either synthetic or natural graphite.

Natural graphite is less expensive and has a higher capacity whereas synthetic graphite charges faster and has a longer cycle life. Natural graphite based anode material is called spherical graphite or "SPG" and is manufactured from graphite mine concentrate through a process that involves micronization, rounding, purification, high temperature heat treatment and coating. Micronizing and rounding flake graphite concentrate provides an SPG yield of 35-40%. The rejects have little value.

In order to be used in the manufacture of SPG, mine concentrates should have a purity of 94 per cent or higher, have a high bulk density, high crystallinity and have the ability to be economically rounded and purified. Not all mine concentrates, or even all concentrates from any one mine, will be "battery grade".

Benchmark estimates that demand for flake graphite from the anode material market will be approximately 350,000 tonnes in 2021. In a relatively short period of time, LiBs have gone from a very small market to the second largest. The initial growth was largely due to small devices such as cell phones, cameras, laptops, power tools, etc. Hybrid and electric vehicles and grid storage are potentially huge markets that are still in their infancy and provide ample opportunity for continued strong growth in LiB production and therefore the demand for raw materials, including flake graphite. Benchmark estimates that flake graphite production needs to more than double by 2025 to meet this demand.



At the ICCSINO conference it was also reported that the anode material market grew by 39% in 2019 and 30% in 2020 and that spherical graphite production in 2020 was just over 200,000 tonnes. The yield on converting mine concentrate to anode material is 35-40% meaning LiB demand is now over 500,000tpy or 50% of the flake market. Again, the Chinese numbers are far higher than those of western

commentators. Continued annual growth of 20% means a big new 100,000tpy mine is required every year and none are currently under construction.

Graphite also has a myriad of other uses including in the automobile industry (gaskets, brake linings and clutch parts), thermal management in consumer electronics, insulation products, electric motors (carbon brushes), heat and corrosion resistant gaskets, fuel cells, fire retardants, lubricants, pencils and many others. The "graphite" commonly used in golf clubs, hockey sticks, tennis rackets and composite materials is actually carbon fiber, a synthetic form of graphite made from petroleum coke.

These other uses make up about 160,000 tonnes of demand of which 100,000 tonnes are expandable graphite products. Expandable graphite is made by treating graphite concentrate, predominantly +50 mesh XL flake, with a dilute acid solution which intercalates between the many layers in each flake. When heated, the solution expands forcing the layers apart and increasing their volume by hundreds of times. The expanded graphite is then pressed into self binding sheets and foils which are used in many of the products listed above. Expandable graphite is one of the fastest growing graphite markets along with LiBs and the only one to experience price increases over the last couple years.

Graphite Prices

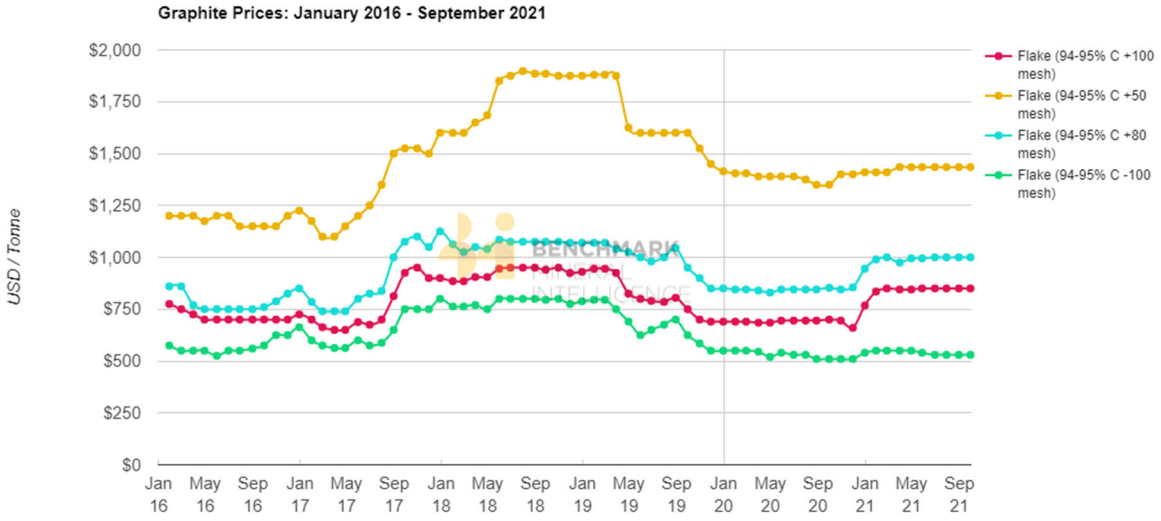
There is no posted spot price or futures market for graphite. Sales are negotiated between producers and consumers of which there are many. Some have long standing relationships and negotiate prices and volumes annually but there are no long term contracts or offtake agreements. A number of industry sources (including Industrial Minerals magazine and Benchmark) publish prices for the most popular grades and they provide a conservative indication of pricing for large, high volume buyers. Generally, concentrates have to be above 150 mesh in size (which is considered small flake), have a carbon content higher than 94 per cent, and not have any undesirable impurities in order to consistently attract buyers and achieve the best price.

Prices increase with flake size and carbon content. The premiums are relatively small going from +150 mesh (small) flake to +100 mesh (medium) and +80 mesh large flake. Prices are much higher for +50 mesh (XL) and +32 mesh (XXL) flake sizes as they are rarer and more valuable. Purity is also a factor but not a big one if the concentrates are above 94 percent carbon. Most mine concentrates, produced by flotation alone, range between 94 and 98 per cent carbon. The difference in pricing is about five per cent per for every one per cent increase in the absolute level of purity. Other more technical factors can affect pricing including bulk density, expansion ratio, ash composition, crystallinity, volatile content and oxidation resistance.

Most mines also produce a substantial amount of -150 mesh material, which is micro flake and fines, and it usually has a carbon content less than 94 per cent. This material presents a marketing challenge as it is not suitable for many of the major markets.

Graphite prices peaked in the $1,300/tonne range for the premium grade (large flake +80 mesh, 94-97%C) in the late 1980s and then declined sharply as Chinese producers entered the market. This caused western mines to close and development projects to be shelved. Prices did not begin to recover until 2005 and peaked in a range of US$2,500 to $3,000/tonne in 2012 when some shortages were reported. This was due to the growth in China and the commodity super cycle and the resultant demand from the steel market. The subsequent slowdown in the Chinese economy combined with a lack of growth in the US/Japan/Europe caused prices to fall back approximately 50% from 2012 levels. In the second half of 2017 prices rebounded 30 to 40 percent due to a recovering steel industry, continued strong growth in

LiB demand and environmentally related capacity shutdowns in China. Current CIF Europe prices are approximately US$1,650/t for 94-95%C +50 mesh flake, US$1,200/t for 94%C +80 mesh flake , US$1,050/t for 94%C +100 mesh medium flake and US$750/t for -100 mesh small flake. These prices consist of Benchmark's FOB China prices with approximately US$200/t added for freight and handling. Due to the current state of container markets, these prices are likely understated.



The Lac des Iles ("LDI") mine produces approximately 18% +50 mesh XL flake, 13% +80 mesh large flake, 8% +100 mesh medium flake, 18% +150 mesh small flake and 44% -150 mesh fines. LDI has been able to achieve an average price of approximately US$1,575/t for its concentrates over the 2019-2021 period which represents a premium to the above prices. This has been achieved because LDI has high quality flake concentrates and is selling smaller quantities to customers with whom it has long term relationships. Also, it gets a premium as its Northern American location provides customers with a secure, politically stable source of supply and just in time inventory management.

Both graphite prices and the premium earned by LDI are likely to increase as lithium ion battery demand is growing rapidly, supply from China is getting tighter, political and ESG concerns relating to China are increasing and freight markets are getting expensive and uncertain. Recent disruptions have been caused by the Suez Canal blockage, Covid related issues and a shortage of containers, container ships and unloading capacity at western ports. Local supply chains are very much desired. Accordingly, an average price of US$1,650 per tonne has been used in the economic analysis.

31.0 APPENDIX 2

31.1 Benchmark Mineral Intelligence – Flake Graphite Forecast | Q2 2021

Flake Graphite Forecast | Q2 2021

Benchmark Mineral Intelligence

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Disclaimer

All information, pricing and production data within this publication has been obtained directly by Benchmark Mineral Intelligence Ltd in accordance with our internal methodologies which can be viewed on our website.

Secondary data has been obtained from various sources which are believed to be reliable and have been referenced accordingly. Estimations and forecasts have been highlighted where appropriate.

The content provided is the independent opinion of Benchmark Mineral Intelligence Ltd and has been supplied solely for education and information purposes.

Benchmark Mineral Intelligence Ltd is not an investment advisor, financial advisor or securities broker and subsequently withholds any liability for losses or damages incurred either directly or indirectly.

All data reported in metric tonnes, all prices reported in US Dollars (USD) unless otherwise stated.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Introduction

Welcome to the Benchmark Minerals Flake Graphite Forecast quarterly update, providing a summary of our latest supply, demand, cost and pricing assumptions out to 2040.

Benchmark Minerals is the world's leading information and price provider for the lithium ion battery and electric vehicle supply chain.

Our Flake Graphite Forecast subscription provides a comprehensive market analysis tool, with in-depth data and commentary from our expert team.

This document provides detail on the key trends of the past quarter, and analysis of their impact on the long-term market outlook.

We encourage you to explore the accompanying data sets and if you have any questions please don't hesitate to contact us directly.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Graphite Forecast | Q2 2021

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Q2 Briefing

March 2021: Gratomic announce completion of a processing facility at the Aukam graphite mine in Namibia. The asset has a nameplate capacity of 20,000 tpa, with plans to reach full-scale open pit operations by Q4 2021

April 2021: Walkabout Resources secure a $20m finance facility, contributing to the $32m investment required for the construction of its Lindi project. Upon funding construction at the mine site is anticipated to take 9-12 months, with commissioning of a 40,000 tpa nameplate capacity targeted for H2 2022

May 2021: Volt Resources confirm acquisition of a 70% interest in the Zavalievsky Group operator of Ukraine's only flake graphite operation, the Zavalievsky mine

March 2021: Syrah announce completion of the furnace installation for its Vidalia plant in Louisiana. No final investment decision has been made regarding commercial production, expected to be between 10 ktpa and 40 ktpa

April 2021: Tirupati Graphite begin commercial operations at its Vatomina mine, with commissioning of a 9,000 tpa processing plant during Q2 2021. The new addition to Tirupati's operations will bring its flake concentrate capacity in Madagascar to 12,000 tpa by H2 2021.

May 2021: Global container shortage begins to affect freight prices from Africa. Benchmark anticipates growing delays at African ports could create supply tightness within the Chinese domestic large and jumbo flake markets in the medium term

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

African graphite prospects strengthen

Development:

Several African projects announced either expansions, joint ventures or significant funding milestones throughout Q2 2021, aimed at cementing the region as a new source of low-cost graphite mining.

Syrah reaffirmed plans to return to an eventual run rate of 350ktpa at Balama, with initial production of 15kt per month; at which the company expects to achieve cash cost reductions of up to 25%. The timing of the full run rate will be dictated by market conditions with the company ramping up at a more conservative pace, in tandem with new value-added capacity at Vidalia.

Elsewhere, Tirupati began commissioning at Vatomina where it is expecting to reach a full run rate within 24-36 months, while NextSource continued to accelerate plans for its Molo project in Tanzania. The company also announced a partnership to construct an anode facility, as well as an offtake agreement with Thyssenkrupp, following recdent financing from Vision Blue.

In Tanzania, Walkabout also received funding to begin construction at Lindi, while other projects faced an improved operating environment with the political situation in the country stabilizing.

Forecast Update:

Production from Tirupati in Madagascar has been increased and the certainty of other projects in the region is firming up. The ramp up from Syrah has been adjusted in response to expected market conditions over the next 3-4 years.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Backing for next-gen anode tech intensifies

Development:

Anode firms examining new technologies such as solid state batteries and silicon rich anode material were in the spotlight throughout Q2 2021. The US continued to make headway in this regard, with Solid Power, securing a $130m series B investment led by BMW, Ford and Volta Energy. The company went on to announce it would go public via an SPAC merger, aimed a providing significant capital to fully develop and commercialise its technology

Other firms such as QuantumScape which are also developing solid state anode have also announced significant breakthroughs and appointments of key people, plus a partnership with VW. Efforts to develop non graphite-based anode materials are being led by OEMs that continue to pursue energy density improvements; with Porsche the latest to announce plans for its own silicon battery developments. Commercialisation of these technologies will take time, however, and face significant cost, qualification, and supply chain barriers.

Forecast update:

Benchmark's anode forecast has been updated to reflect these developments, boosting the longer-term prospects for solid state and silicon rich technology towards the end of the forecast period.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

EV sales soar into H2; on track to top 4m

Development:

Global EV sales climbed by over 120% in Q1 2021, with further gains recorded throughout Q2, spurred by growth in ex-China markets where sales topped 800,000 units in the first 4 months of the year, up over 105% yoy.

Although global sales fell over 20% in May, they remained significantly higher than previous years, as H1 2021 appears set to mark an important milestone in EV battery demand diversification.

Indications suggest this uptick – led by gains in European markets – will continue to gather pace in H2 and the number of new models set to be launched in the coming years will add further momentum.

This is likely to see renewed emphasis on battery cell expansions in Europe where total battery production capacity is set to climb to 80 GWh by the end of 2021, with up to an additional 740 GWh under development.

Forecast update:

Anode demand forecasts have firmed in the European region. However, domestic supply remains limited. It is likely that this increase in auto production will assist in making the investment decision for key players such as Elkem (Vianode) and Showa Denko Europe.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Anode producers pursue vertical integration

Development:

China's anode incumbents stepped up their supply chain efforts in Q2 2021, confirming a number of raw material investments and partnerships that will further extend the cost competitiveness of industry leaders.

Shanshan led a wave of announcements in April, extending its partnership with China National Petroleum Corporation (CNPC) for the supply of needle coke into its synthetic anode supply chain. This was followed by announcements by Minguang New Material and Jinnan Steel for expanded carbonizer capacity, as well as BTR which signed a strategic agreement with Sinopec in April following the announcement of its new 80,000 tpa synthetic anode JV with Shandong Jinyang.

Notably the majority of expansion announcements in China were focused on partnerships to expand synthetic graphite capabilities, highlighting rising concerns over both feedstock availability and graphitization quality for ex-China anode markets. In addition, stricter controls on CO_2 emissions are increasing the domestic cost base, adding incentive to vertically integrate for those with available capital.

Cost considerations mean higher natural anode blends remain the focus for the majority of ex-China producers, however their supply chain efforts remain limited to deals with flake graphite developers.

Forecast Update:

Synthetic graphite demand has been revised upwards to reflect growing dependence on Chinese anode producers which are trending towards higher synthetic graphite blends. In the long term we still expect the proportion of natural anode to climb as efforts intensify to meet cost reduction targets

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Chinese supply growth extends surplus

Development:

China is continuing to increase domestic production from larger assets owned by key players such as MinMetals, on the back of increased anode demand. The most important example over the last quarter in terms of flake graphite is the expansion of the large MinMetals asset at Yunshan in Luobei, Heilongjiang. The asset produced 180ktpa of flake graphite in 2020 following initial investments from MinMetals, with output now expected to climb to 250kt in 2021. The company is targeting an eventual nameplate capacity of over 500ktpa over the coming years.

Other major producing regions have also seen expansions in H1, however new developments in emerging provinces have slowed in recent months.

While the country's anod econsumers still use a larger proportion of synthetic inputs, cost pressures and rising ESG concerns are expected to see the proportion of natural graphite in anode blends climb over the coming years.

Forecast Update:

Chinese supply from MinMetals has been adjusted upwards to reflect these developments, while output from new producers has been revised downwards following reports of limited progress at many proposed new sites.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Supply Forecast: 2020-2040

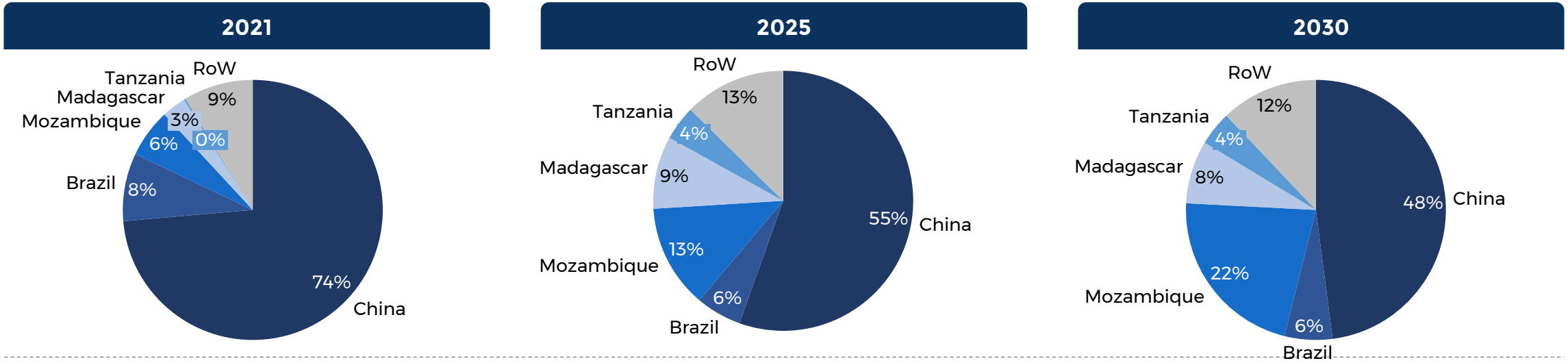
- **New and expanding producers:** Tirupati, Syrah, Gratomic, Walkabout and NextSource have all made significant strides in opening new production or expanding existing assets. This ramp up will contribute to maintaining a more balanced market in the short to medium term.

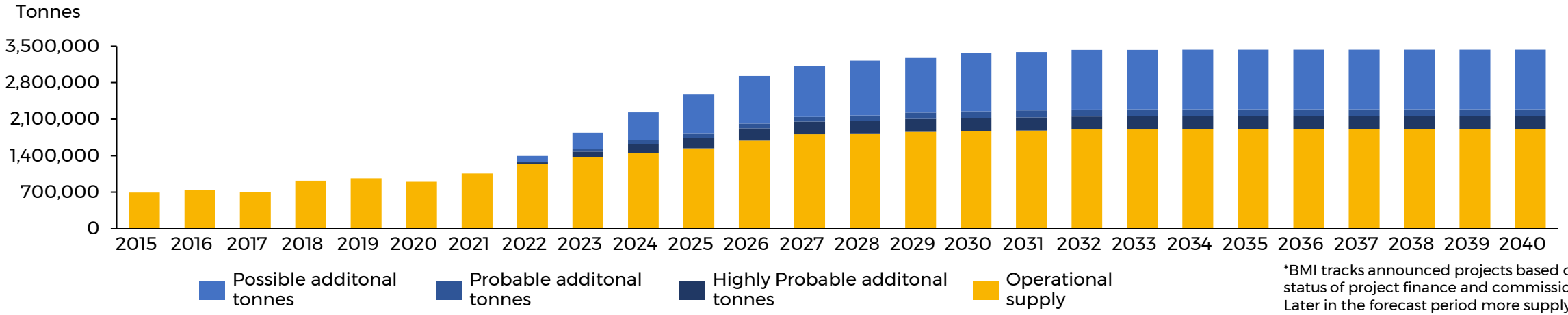
- **Move downstream for miners continues:** Syrah has commissioned its pilot furnace in Louisiana and other producers are putting great effort into downstream processing of their own flake graphite as a way to increase returns and reducing risk exposure.

- **China continues to expand:** Chinese flake graphite production continues to climb, with Minmetals expanding production targets at its Yunshan Longxing Graphite mine in Luobei, Heilongjiang. Having mined more than 4 million tonnes of ore in 2020, the company is contuining to add capacity. Benchmark Minerals believes realistic output for this asset is around 350,000 tonnes by 2023, although this may be reached sooner.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

Flake Graphite: Supply Forecast



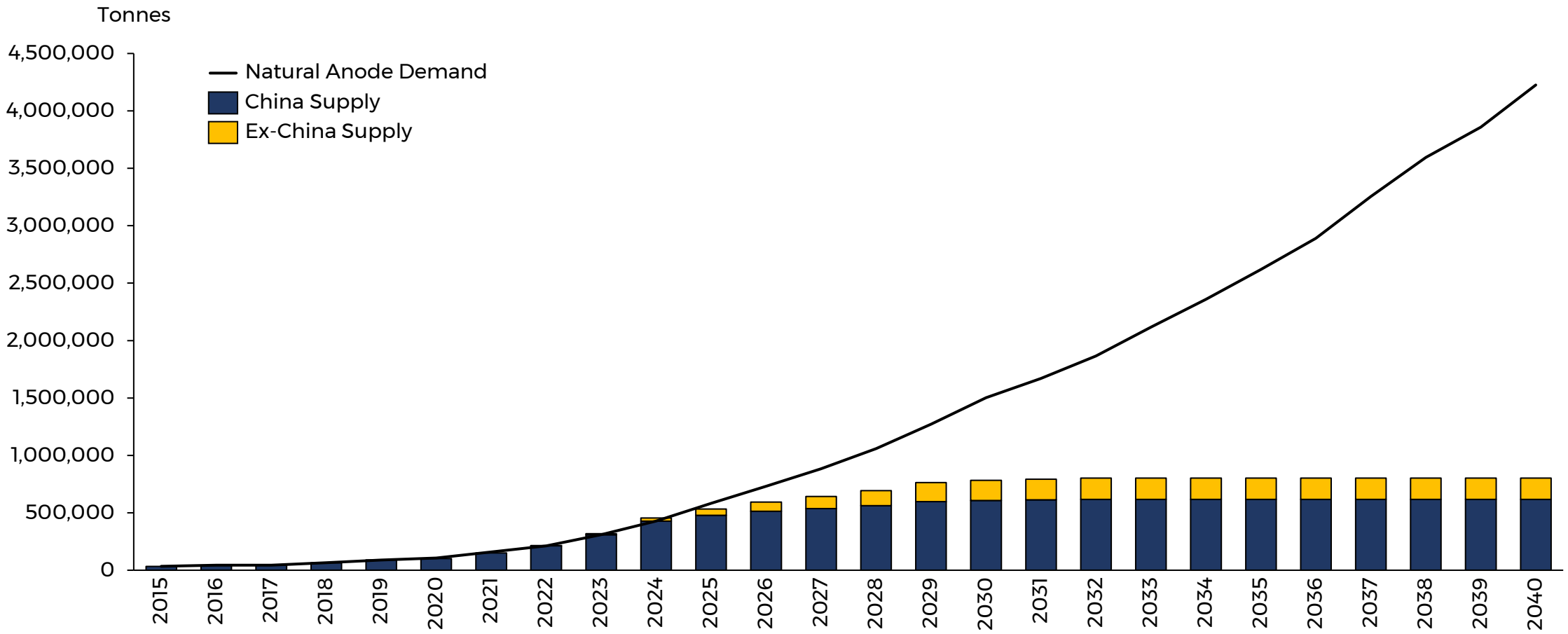


*BMI tracks announced projects based on the status of project finance and commissioning. Later in the forecast period more supply will be required from currently unknown sources.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Spherical Graphite Forecast



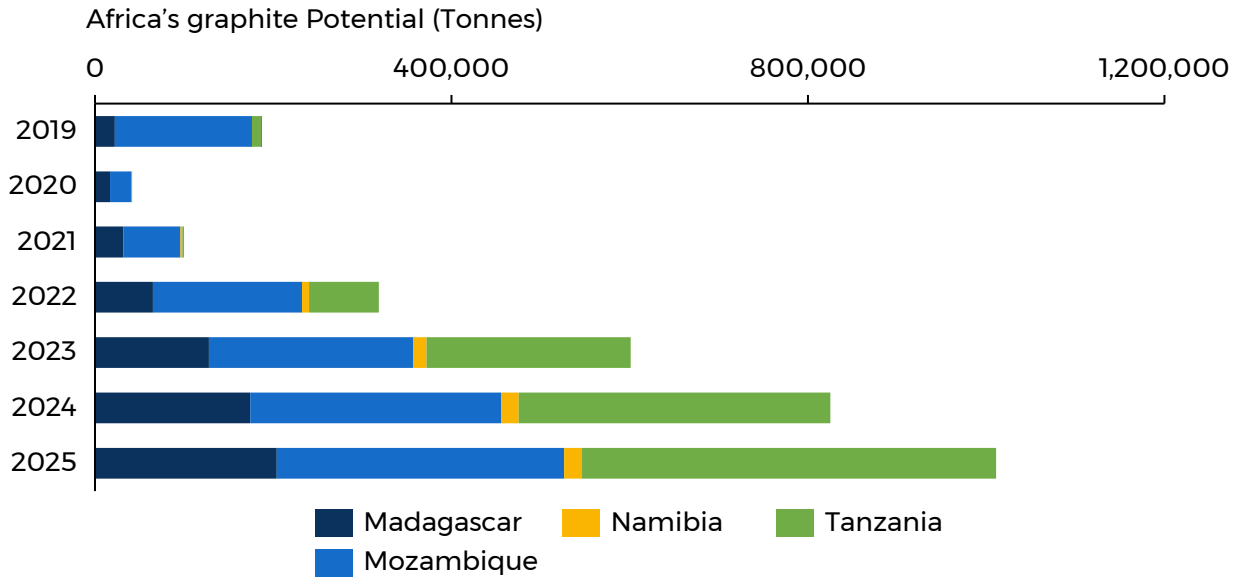
*BMI tracks announced projects based on the status of project finance and commissioning. Later in the forecast period more supply will be required from currently unknown sources.

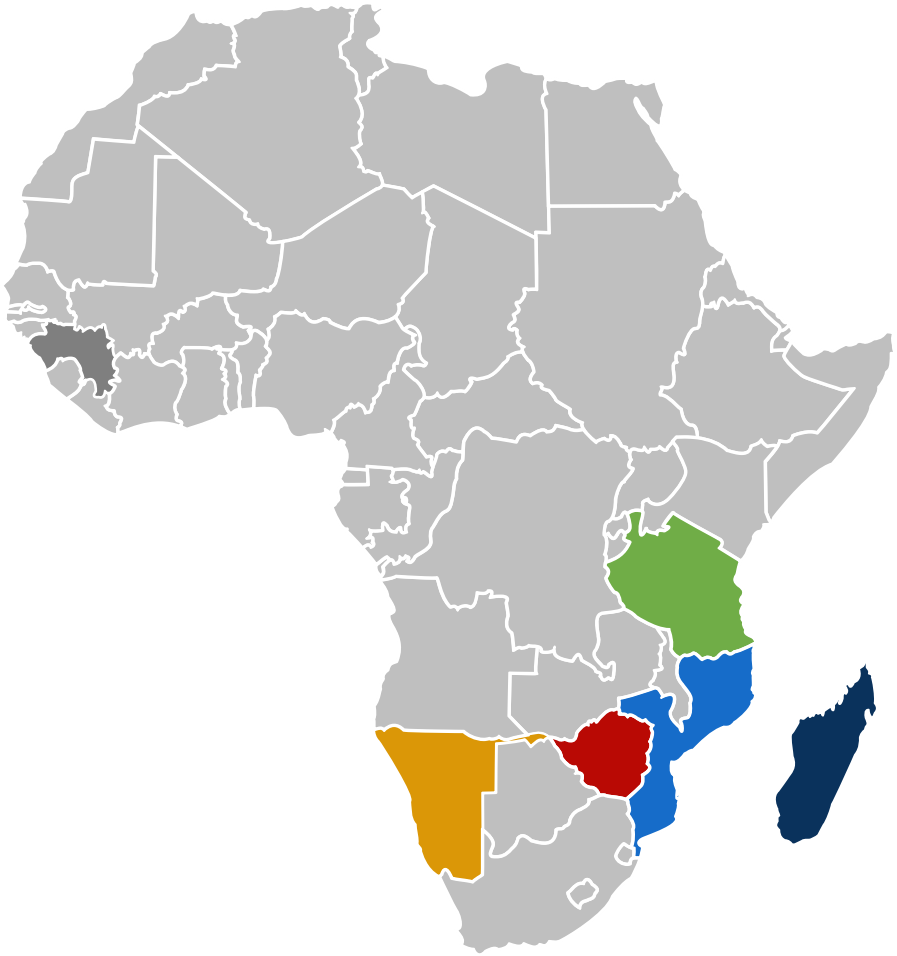
forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Africa

Africa has emerging as the new low-cost hub for natural flake graphite production, promising diversity of supply which has been controlled by China for a generation. Small scale flake graphite projects have historically operated in Zimbabwe and Madagascar. The latter has become an area of significant graphite development, particularly for companies targeting large-flake supply. Syrah Resources' Balama project in Mozambique began production in 2017 and following a shutdown due to the low pricing environment, is currently ramping capacity back up. The company is progressing towards a 15kt per month run rate, or 180ktpa, with a view to reaching its 350ktpa capacity in the coming years as market conditions dictate





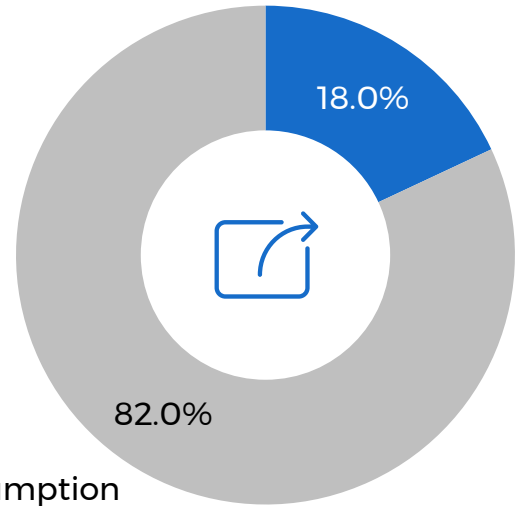
forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Brazil

Brazil has historically been a major producer of flake graphite, largely supplying into domestic steel-related markets, but also providing strategic high-quality inputs to refractory, foundry and specialist export markets. Nacional de Grafite is the leading producer outside of China. Nacional de Grafite operates 3 mines, with another smaller operation managed by Extrativa, supplying small flake material exclusively to domestic markets.

Trade Balance (2021)



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

China

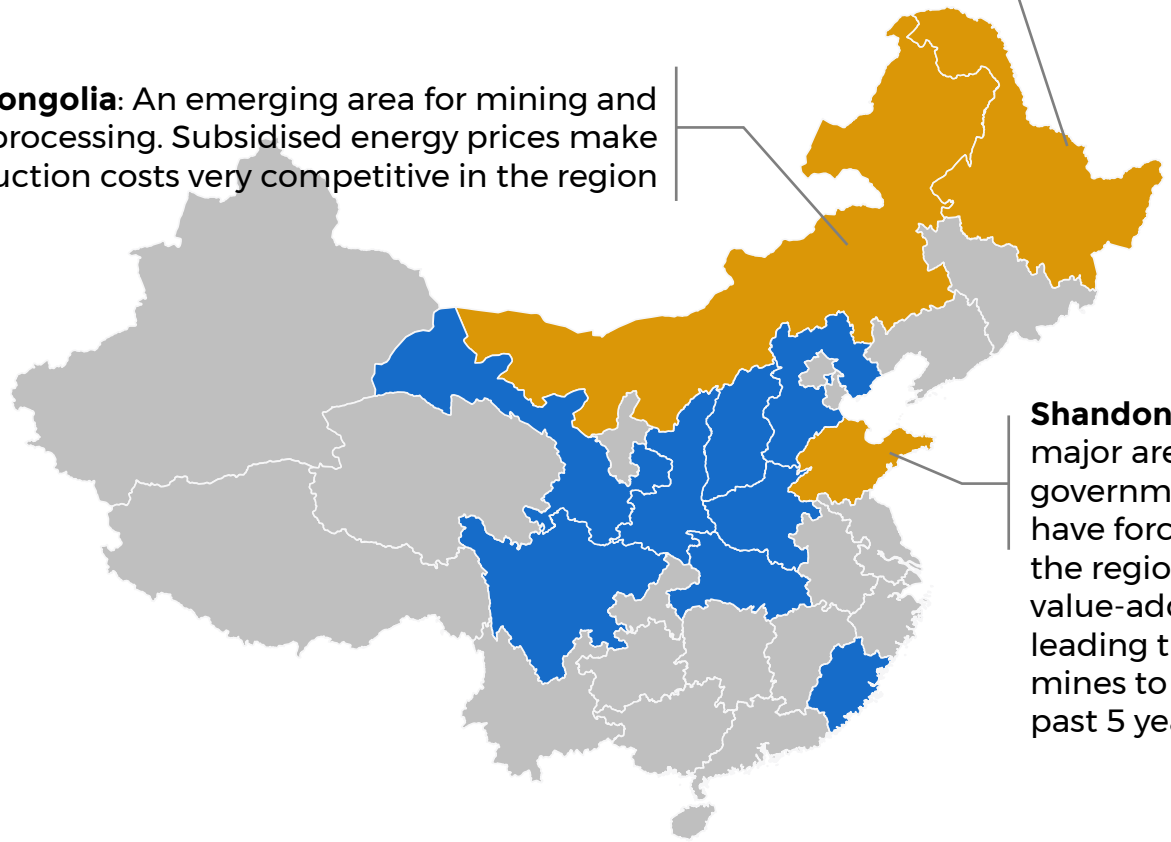
China has been the leading global supplier of flake graphite for a generation, and was the leading exporter prior to the emergence of a number of projects in Africa, which have begun to supply into China and in 2019 saw the country become a net importer of flake graphite for the first time.

China's flake graphite suppliers undercut ROW producers when they began to expand operations in the 1990s but more recently the country's strategy has evolved to focus on developing greater domestic value-added processing capacity, in particular spherical and expandable graphite operations.

The government moderates supply through centralized resources and environmental regulations which have forced a shift of production away from more urbanized areas such as Shandong, towards more rural parts of the country, namely Heilongjiang and Inner Mongolia.

Heilongjiang: China's hub for flake graphite mining, with production centred around two key areas: Jixi and Luobei

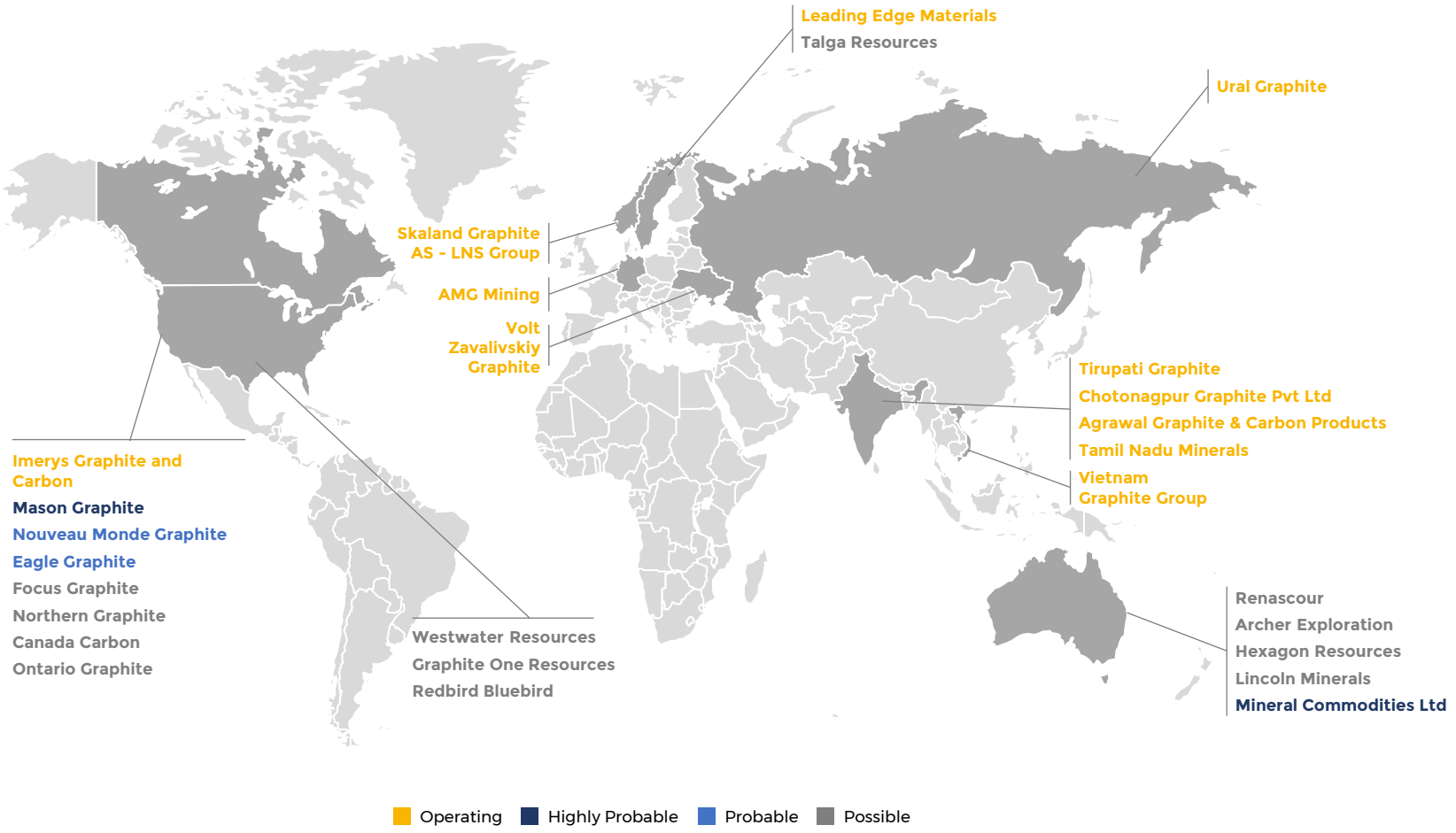
Inner Mongolia: An emerging area for mining and processing. Subsidised energy prices make production costs very competitive in the region

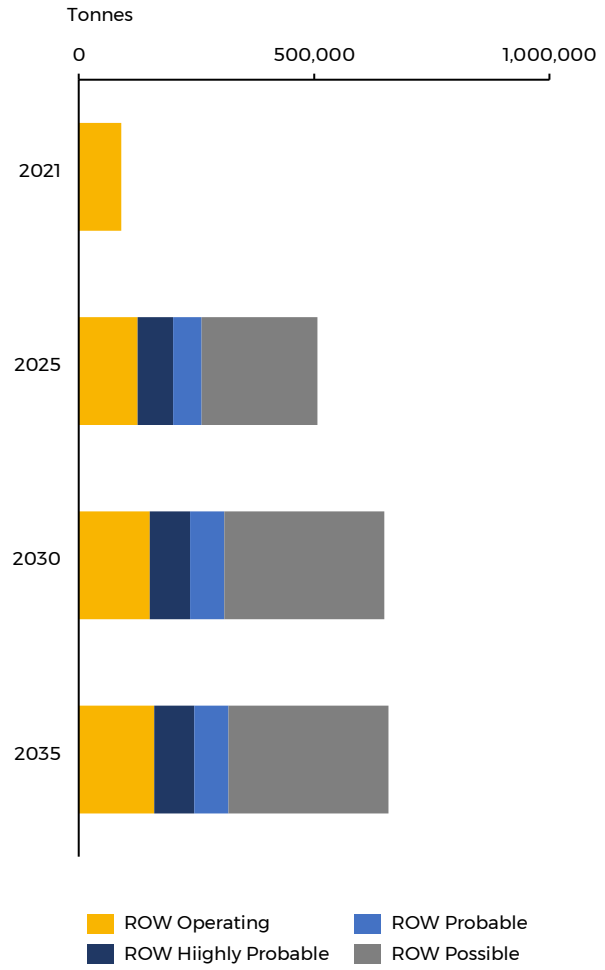


Shandong: traditionally a major area for mining, government restrictions have forced suppliers in the region to focus on value-added processing, leading the majority of mines to close over the past 5 years

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

ROW Supply





forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Demand Forecast: 2020-2040

- **2021 update:** Global battery demand is set to climb to 328 GWh in 2021, spurred by growth in EV consumption which is due to reach 237 GWh by the end of the year (an amount greater than the entire global market in 2020). Rho Motion forecast total EV sales to exceed 4.8m units this year

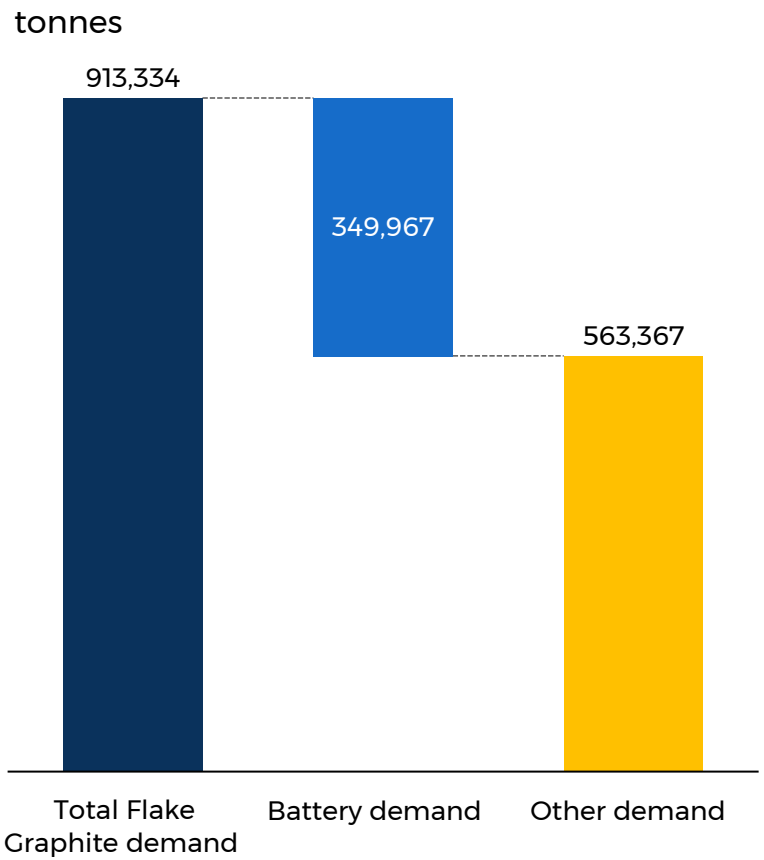
- **Anode Mix**: Synthetic anode will continue to dominate in the short to medium term, but natural flake will increase market share across the forecast. It should also be noted that in absolute tonnage terms both markets will grow significantly despite the short-term focus of Chinese producers on synthetic-dominant materials; with natural inputs still required for many leading producers' anode blends

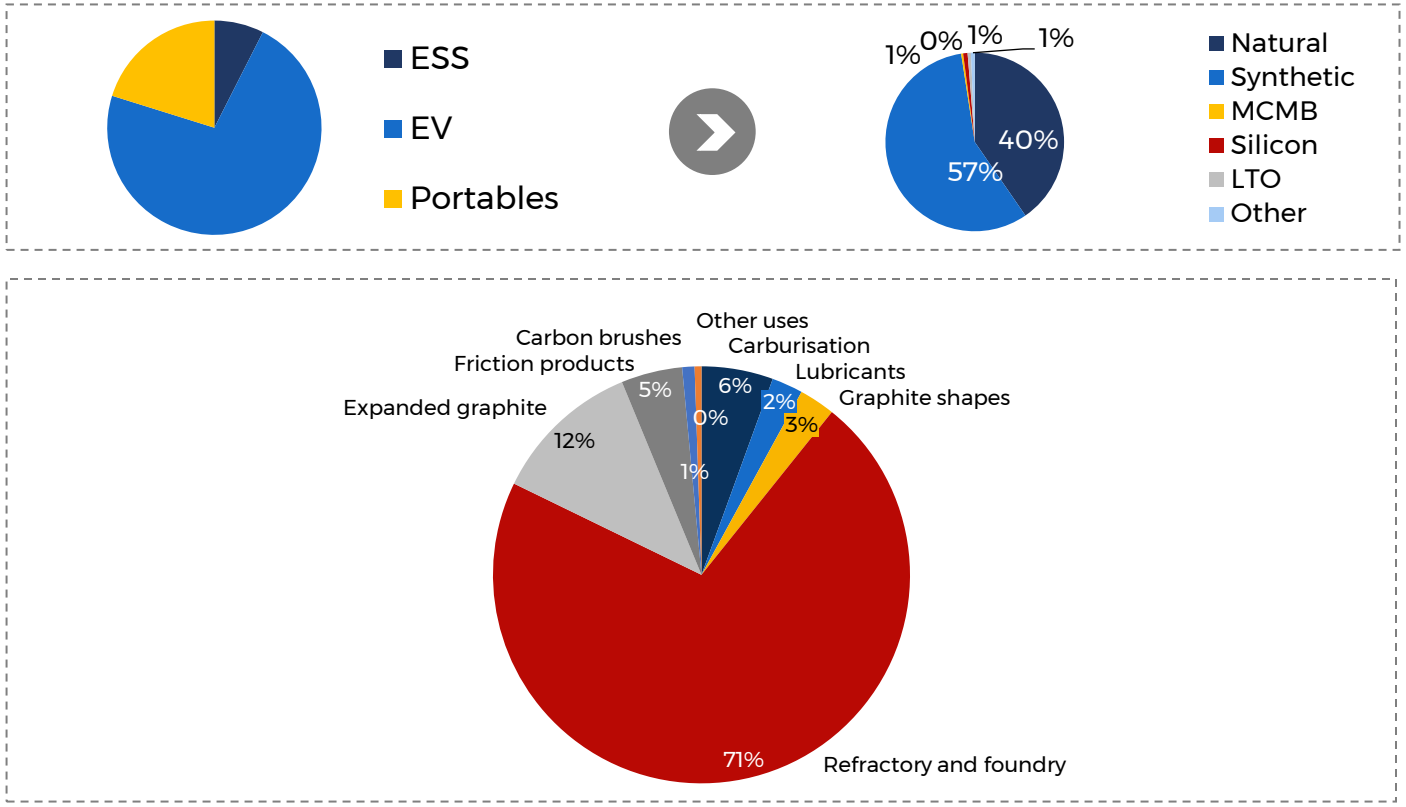
- **10-year demand growth:** Benchmark Minerals' base case forecasts a 25% CAGR in flake graphite demand over the coming 10 years

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Flake Graphite demand breakdown by end-use, 2021





Note: LTO - Lithium-titanate

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

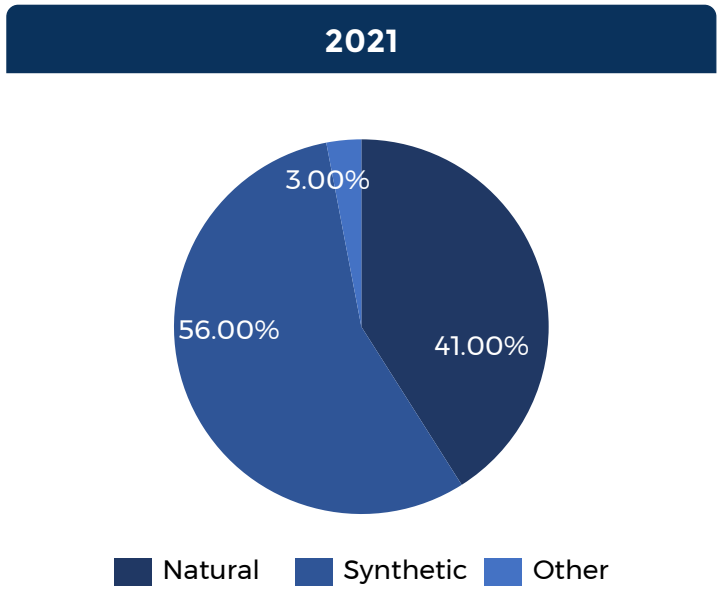
Portable electronics

Demand growth rates from portable electronics have gradually slowed since the mid-2000s. While growth will continue from these markets the rate will be limited due to the maturity of key application markets. The life cycle benefits of synthetic-dominant anode blends have seen synthetic inputs form a larger part of the market in recent years, however cost pressures and sustainability concerns are expected to force an increased proportion of natural graphite usage over the coming years.
Benchmark Minerals forecasts a 4.2% CAGR in this market over the next 10 years.

28%
Mobile phones

13%
Power tools

59%
Other portable

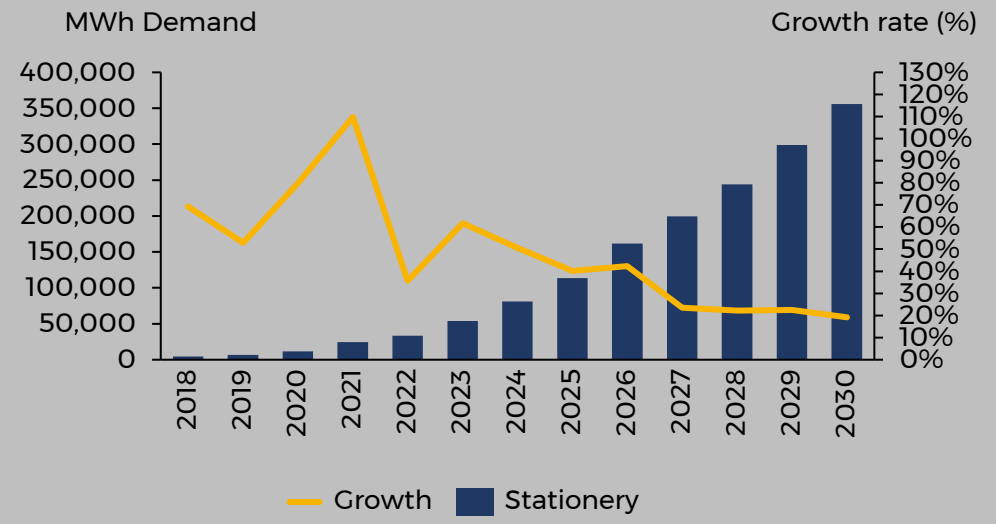


forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Stationary storage

Growth of lithium ion battery demand from stationary storage applications is expected to accelerate through to the mid-2020s when growth rates will slow as markets become more mature. The cost and quality improvements in battery chemistry for EV applications will facilitate high penetration levels in a range of residential and commercial markets, despite lithium ion not necessarily being the most efficient technology to use in these areas. Benchmark Minerals forecasts stationary storage demand to grow at a CAGR of 31%, over the next 10 years, overtaking portable electronic demand by 2024.



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Electric vehicles

Electric Vehicle adoption rates will have the biggest impact on lithium ion battery demand over the forecast period. According to Rho Motion, EV sales are expected to reach 14.6m units by 2025, which would equate to a 14.2% penetration rate. Our demand model includes upside/downside cases to this base assumption.
Benchmark Minerals' base case forecasts EV demand to increase by 52% in 2021 and a CAGR of 26% over the coming 10 years.

Passenger/Light Duty EVs

A total of over 87m passenger and light duty vehicles are expected to be sold in 2021 according to Rho Motion, around 4.9m of which will be electric, rising to over 14.6m by 2025.

Medium & Heavy Duty

The use of lithium ion batteries for heavy duty vehicles has been a major growth driver in EV demand and e-bus and e-trucks continue to experience healthy growth rates, with unit sales set to climb 25% in 2021.

Battery Packs

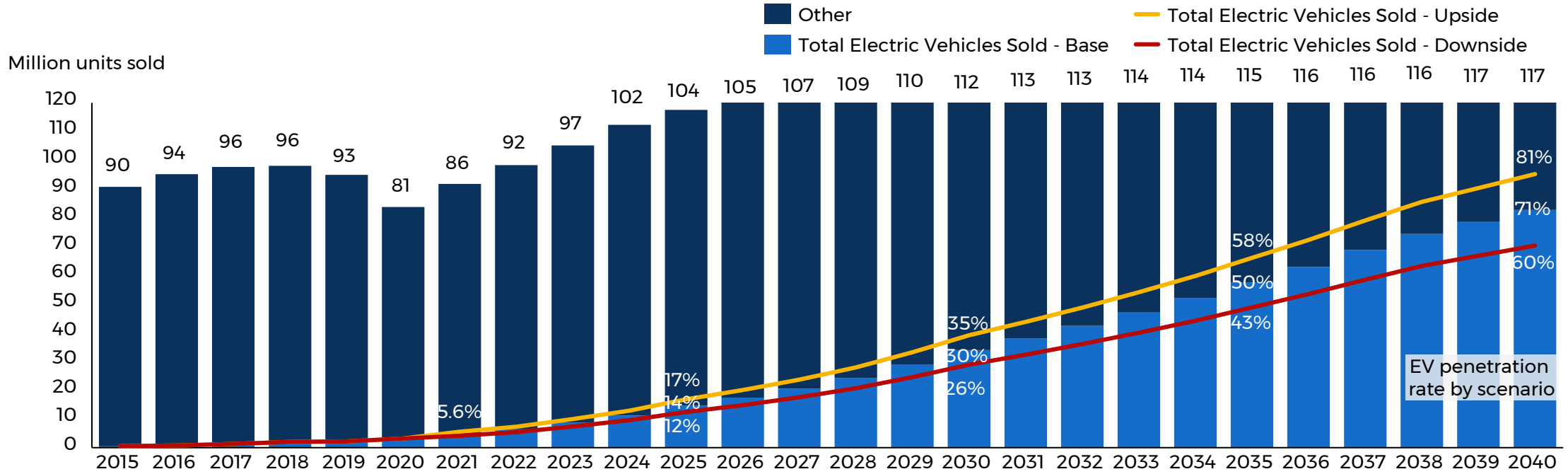
The size of battery packs continues to increase with improvements in pack technology. The average pack size for passenger and light duty vehicles is expected to reach an average of 39.6 kwh in 2021, rising to 51.6 kwh by 2025.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

EV sales as share of total cars

The rapid rebound in EV sales following the coronavirus slowdown has boosted medium-term market projections, with government responses adding to industry momentum.
Global EV penetration is set to climb to 5.6%, up from 4.0% in 2020 as global EV Sales continue to accelerate, particularly from Europe and China. This figure is expected to climb to 14.2% by 2025. We examine this in more detail in the accompanying demand model and provide alternate EV penetration scenarios to examine how this will impact on overall battery demand.



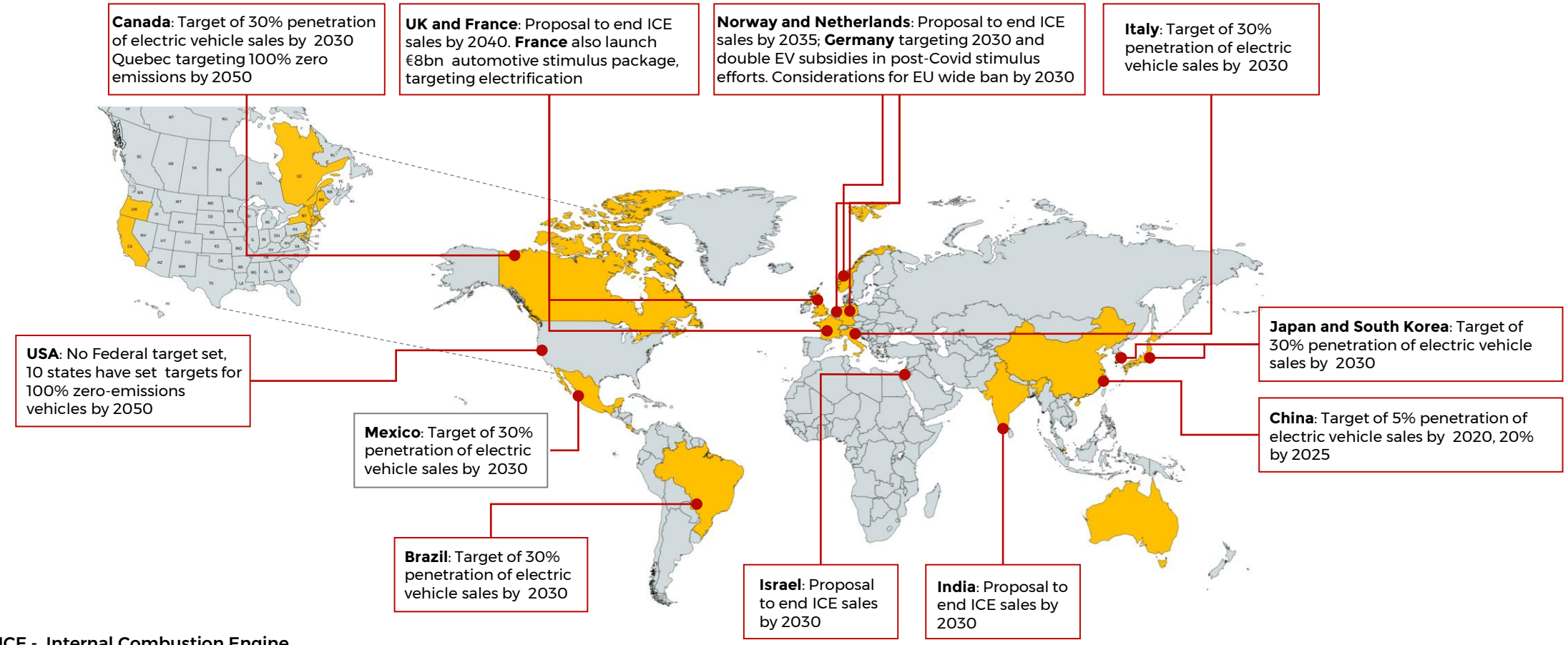
Source: rho motion

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

EV sales forecast to reach 5.6% of global sales in 2021

Global policy statements supporting EV adoption:



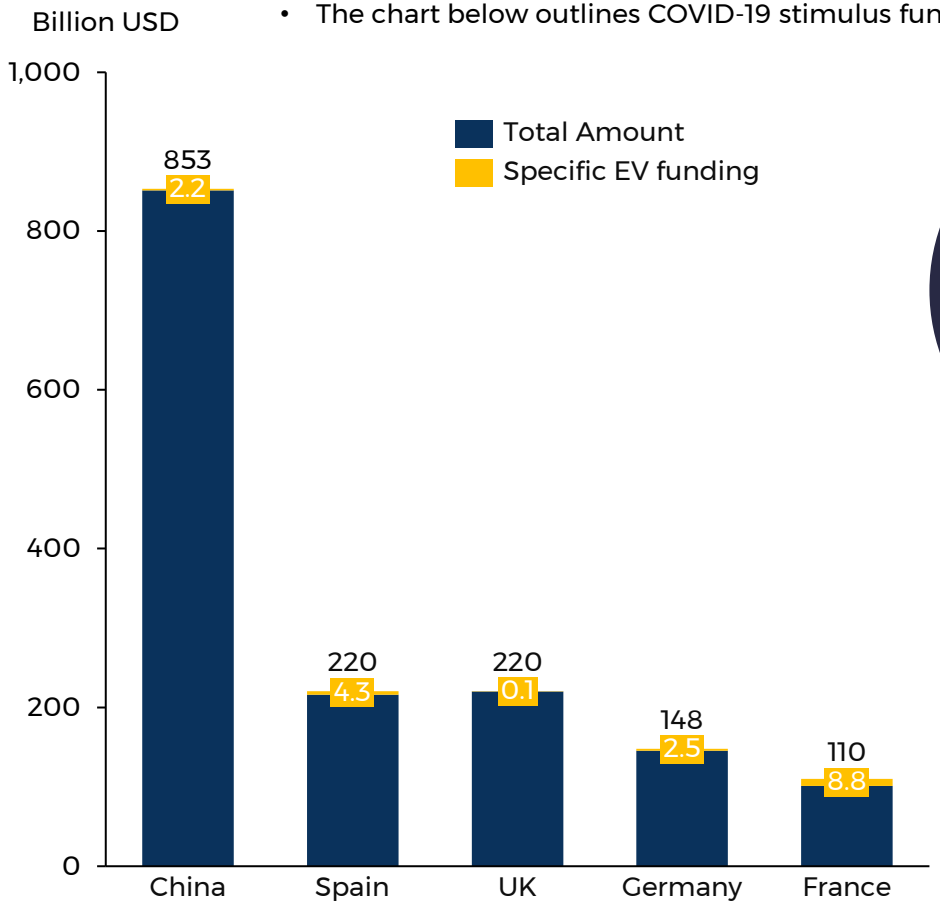
Note: ICE - Internal Combustion Engine

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Governments have reaffirmed EV support in post-COVID stimulus efforts

- The chart below outlines COVID-19 stimulus funds, highlighting specific EV measures as share of the fund.



China: State Subsidies extended to 2022. Plan to expand total charging network by 50%. 10 cities also released new subsidy schemes.

Spain: Rescue package focusing on renewing the fleet through electric adoption. Tax incentives and aids for research and innovation.

UK: Industrial Strategy Challenge Fund driving the electric revolution challenge – support for business research.

Germany: Subsidy increased by €3,000. VAT cut by 16-19%. Tax system to be realigned from 2021 to increase ICE vehicles tax.

France: Subsidy increased by €1,000 for first 200,000 vehicles. Extension of ADVENIR program providing financing for EV charging infrastructure.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Chinese subsidies

Chinese EV subsidies were extended in the wake of the global coronavirus pandemic, and a series of regional initiatives were announced which will see increase electric vehicle deployment in the country's public transportation network. The country has maintained some incentives for higher energy density models but also extended regional incentives for lower price vehicles to stimulate greater EV penetration.

Units: CNY

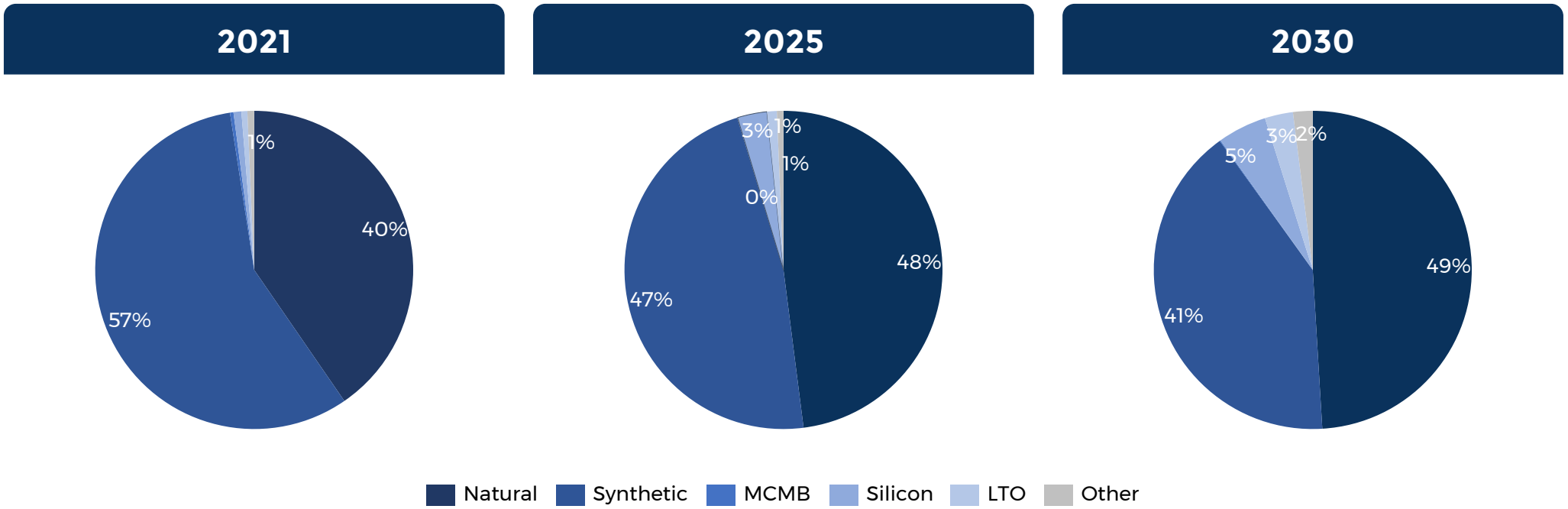
BEV	Range (km)						
	100≤ R <150	150≤ R <200	200≤ R <250	250≤ R <300	300≤ R<400	R≥400	R≥500
2021	0	0	0	0	13000	18000	18000
2020	0	0	0	0	16,200	22,500	22,500
2019	0	0	0	18,000	18,000	25,000	25,000
2019 transition	0	2,000	2,000	20,000	27,000	30,000	30,000
2018	0	15,000	24,000	34,000	45,000	50,000	50,000
2018 transition	14,000	25,000	25,000	31,000	31,000	31,000	31,000
2017	20,000	36,000	36,000	44,000	44,000	44,000	44,000
Y-o-y change							
2021					-20%	-20%	-20%
2020				-100%	-10%	-10%	-10%
2019		-100%	-100%	-47%	-60%	-50%	-50%
2019 transition		-90%	-90%	-40%	-40%	-40%	-40%
2018		-58%	-33%	-23%	2%	14%	14%
2018 transition	-30%	-31%	-30%	-30%	-30%	-30%	-30%
2017	-20%	-20%	-20%	-20%	-20%	-20%	-20%

Critical point of 160 Wh/kg → Local and national subsidies being extended → Subsidy will be gone by end-2022; lowered gradually → LIB producers forced to reduce the price → Impact will be mitigated by lower VAT rates

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Anode Evolution

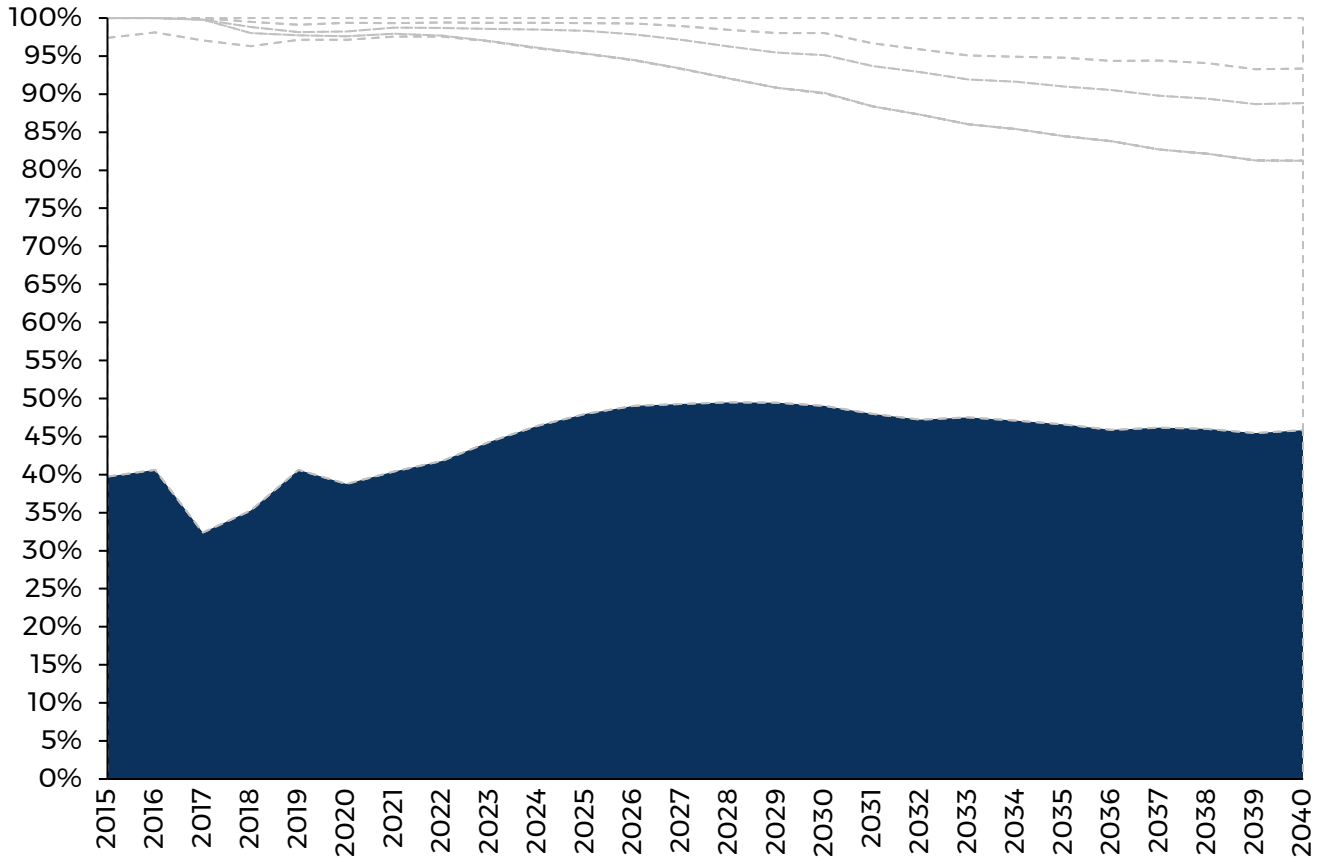


Flake Graphite Demand for LIB (tonnes)	349,967	1,238,248	3,303,613

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Natural Anode



Anode market share

39.6% 48.2% 46.9%

Anode profile

Some natural blends being used in EVs

Graphite Intensity

1.2 kg/kwh

Pros

Capacity, cost

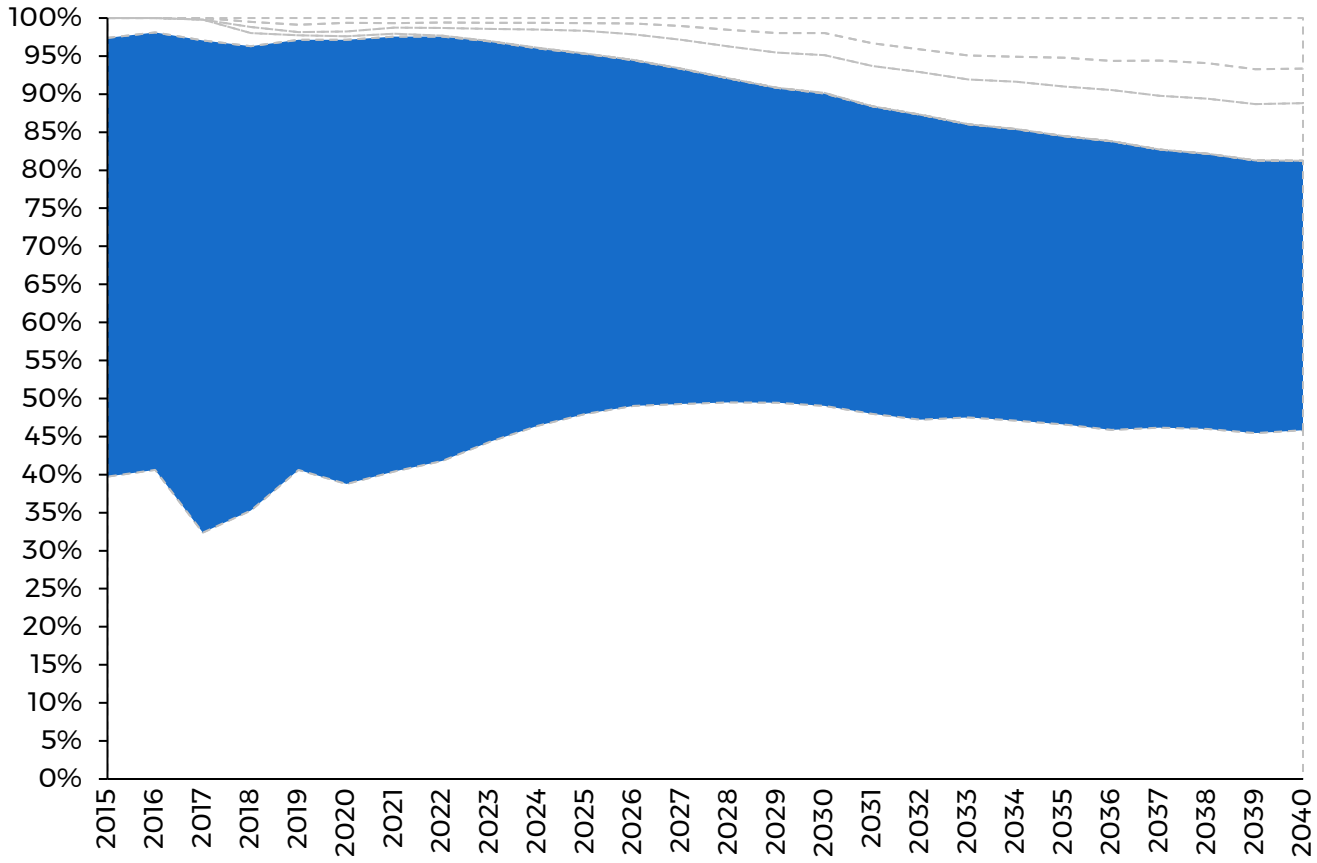
Cons

Consistency issues can impact life cycle

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Synthetic Anode



Anode market share

57.4% 47.5% 38.2%

Anode profile

The dominant anode technology in China today, typically blended with other carbon

Anode Intensity

1.2 kg/kwh

Pros

Life cycle, particle size

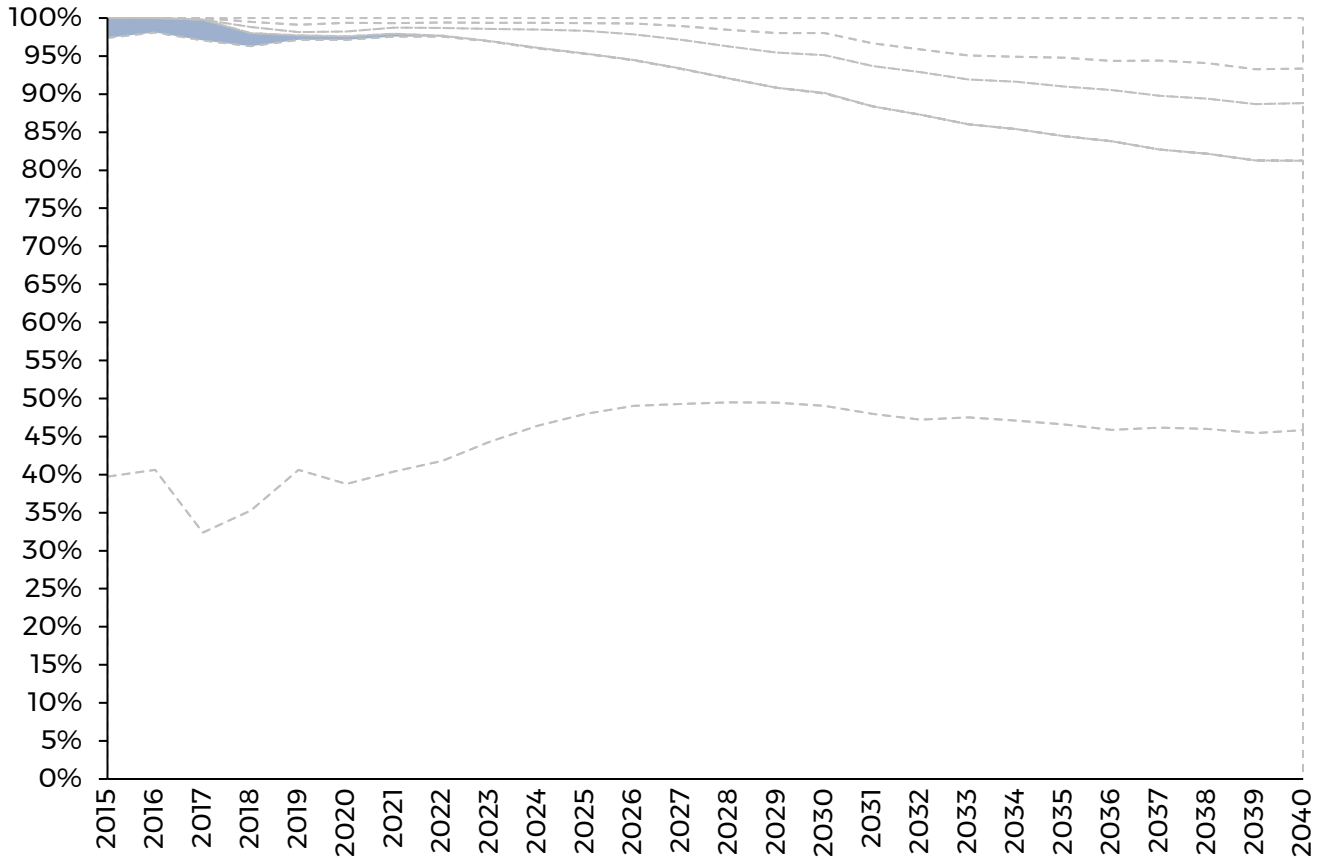
Cons

High cost, supply chain uncertainty, capital intensive

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

MCMB



Anode market share

3.0% 0.0% 0.0%

Anode profile

Near perfectly spherical particles made from mesophase pitch; synthetic anode predecessor

Anode Intensity

1.37 kg/kwh

Pros

Performance, capacity

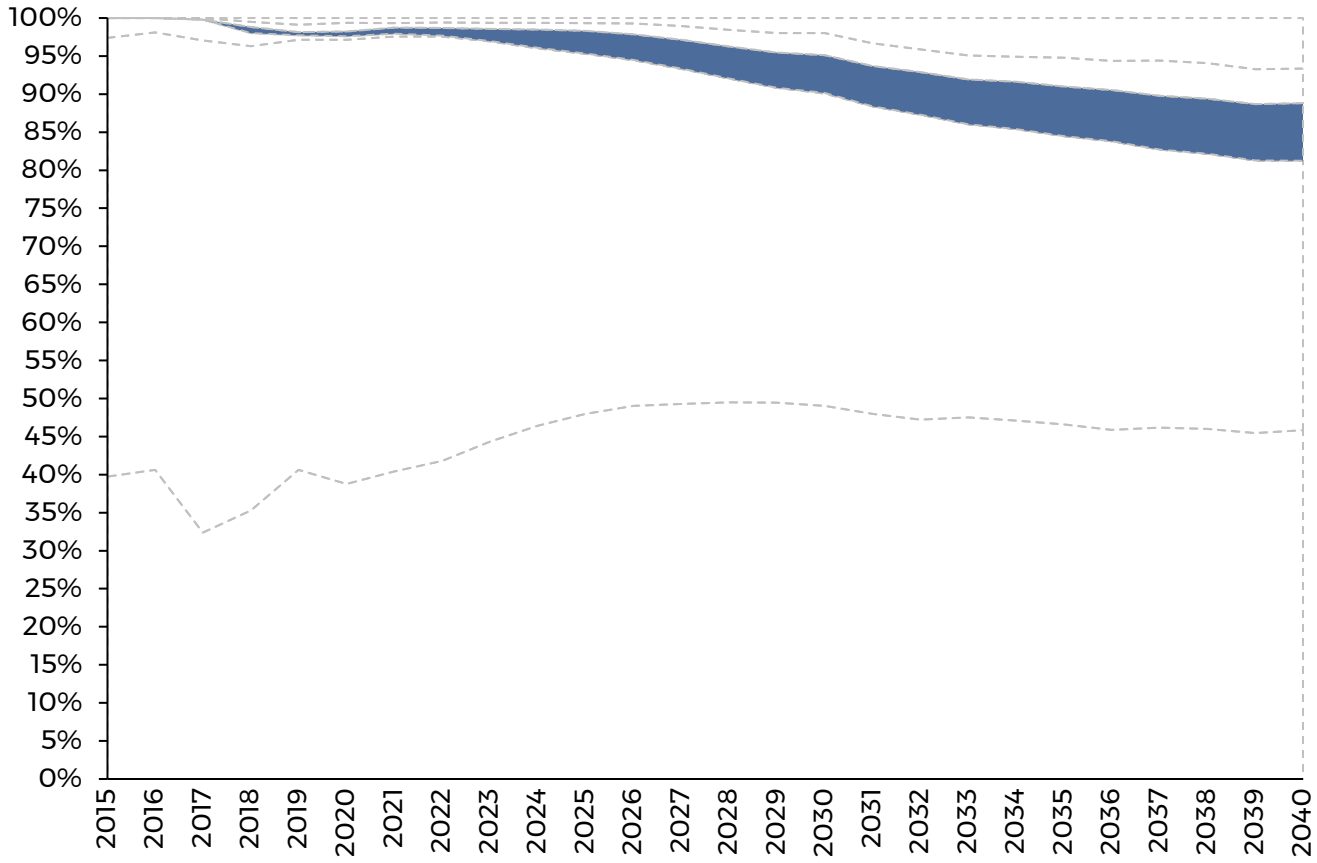
Cons

Very high cost

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Silicon



Anode market share

0% | 2.5% | 5.5%

Anode profile

silicon dominant anodes are still some way away from commercialization but shows good potential as an additive

Anode Intensity

1.02 kg/kwh

Pros

Energy density

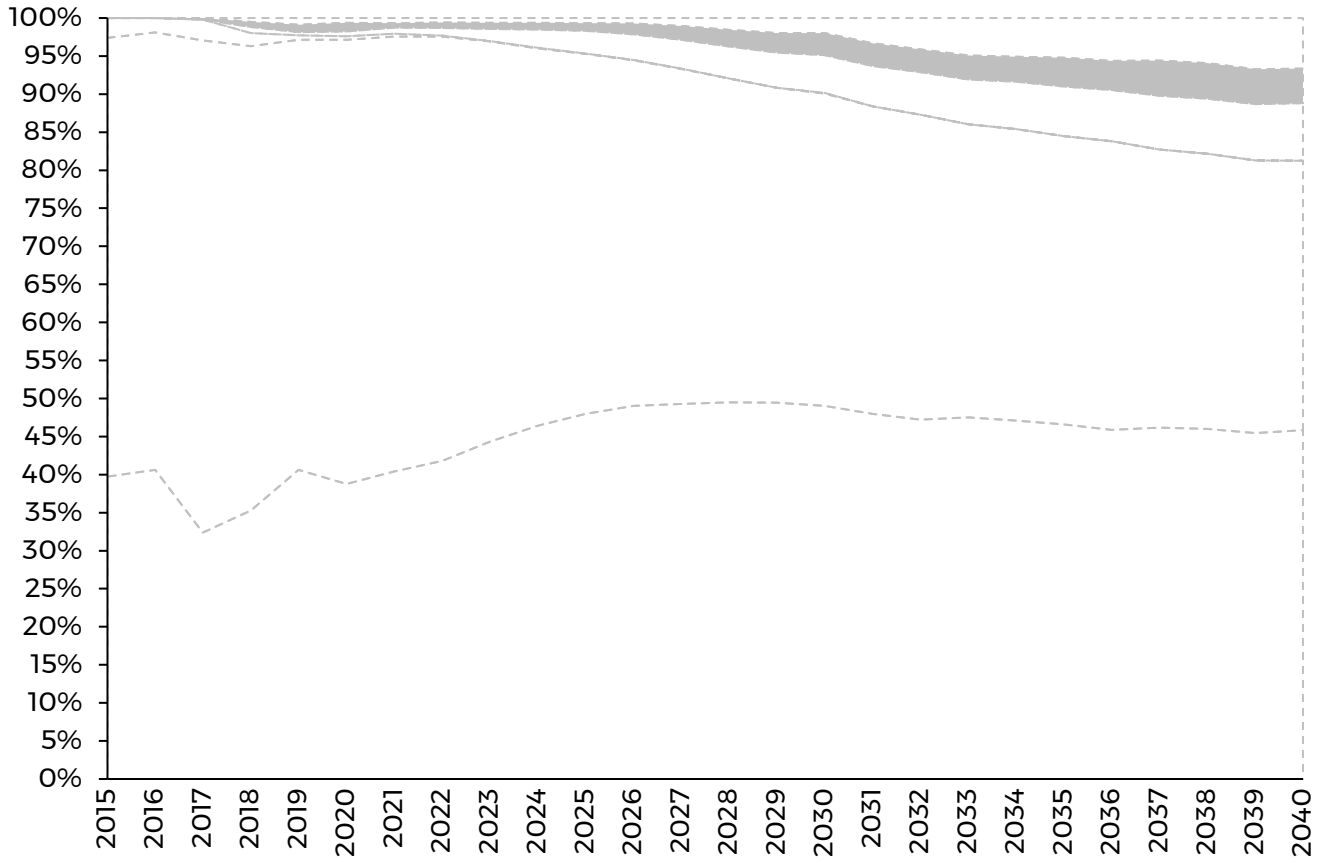
Cons

Cycle life, cost

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

LTO



Anode market share

0% 1% 3.5%

Anode profile

Being introduced to EV models that are focused on fast-charging

Anode Intensity

1.1 kg/kwh

Pros

Electrochemical stability, fast charging

Cons

High-cost

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Market Balance Conclusions

- **Short-term market dynamics:** industrial recovery continues, causing robust pricing for all flake sizes. +80 and +100 mesh in particular have seen firming dynamics

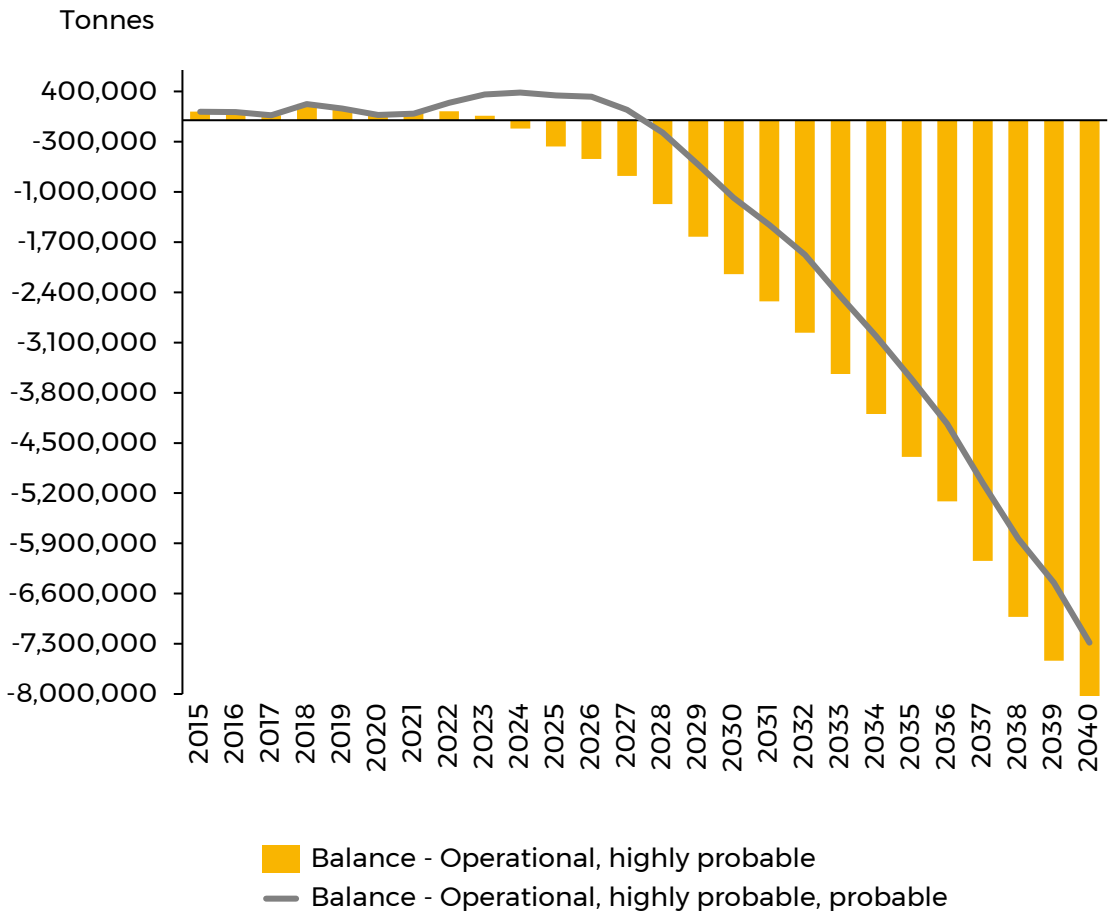
- **Large flake deliveries not representative of global production**: despite some short-term concerns over large flake availability as a result of shipping constraints, global supply is expected to remain in surplus for 2021, with future output expanding with the introduction of new projects.

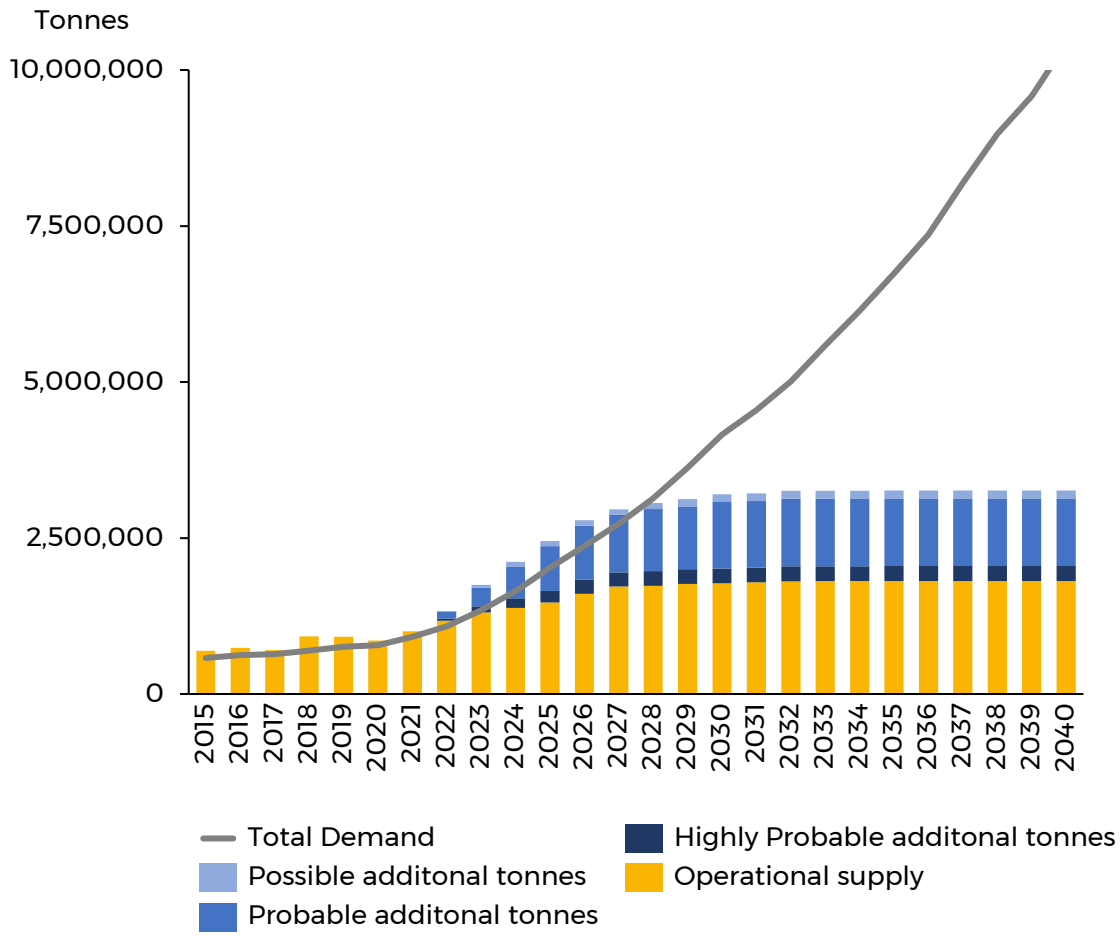
- **Medium-term market dynamics:** we expect smaller flake sizes to move into deficit driven by growth in spherical graphite demand. The quantum of this deficit will depend on the projects brought into production – if a full ramp up of all known projects occurs, which is unlikely, the deficit will occur in 2028. The most likely scenario is that a significant deficit occurs by 2023, due to project delays and cancellations.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Graphite market balance





forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

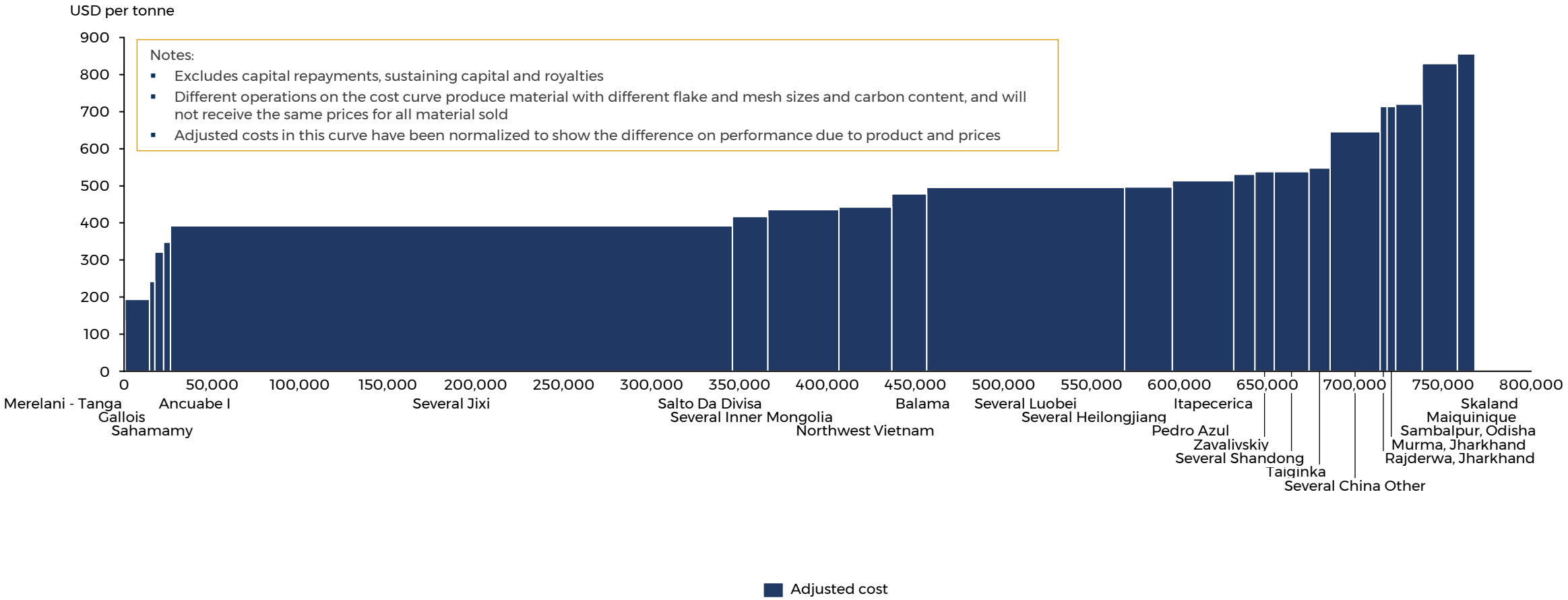
Cost Curve Analysis

- **Supply:** production updates have been added to the model to reflect changes in the supply outlook
- **Q3 2021 Update:** a new cost model will be issued based upon a discounted cashflow model mine by mine approach

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

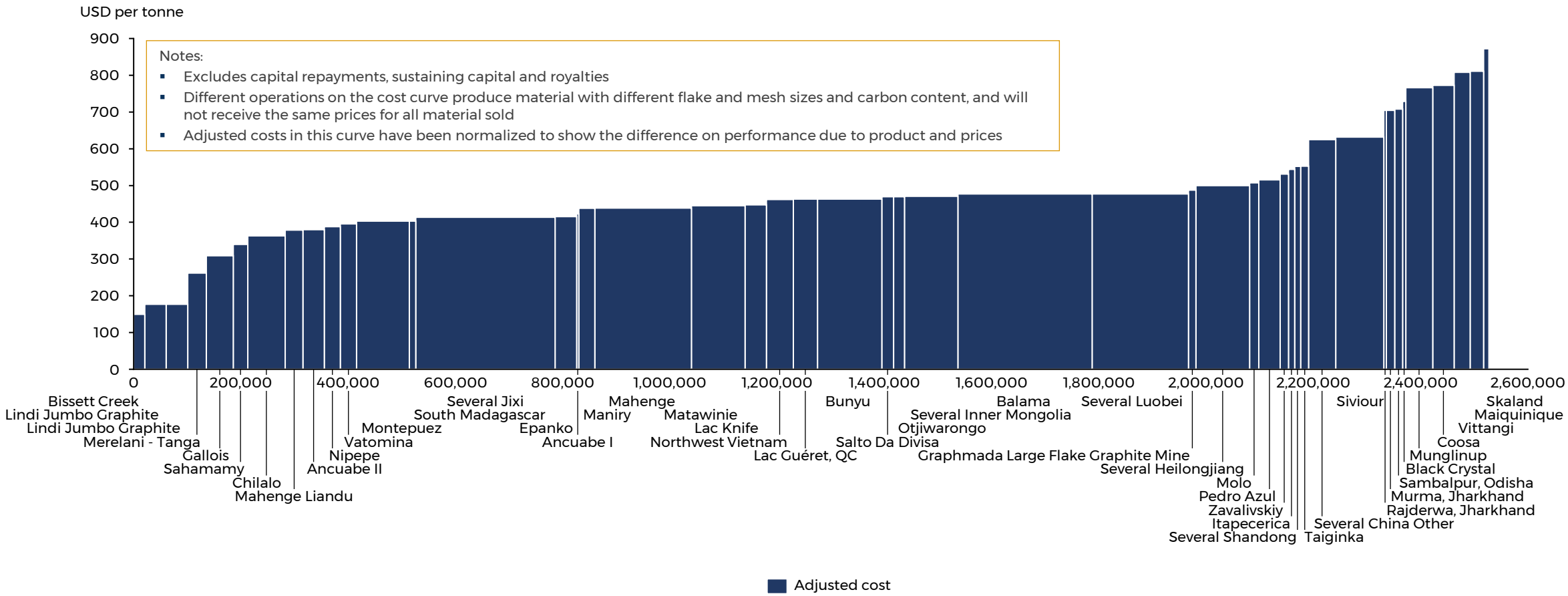
Graphite industry cash cost curve: 2020 (adjusted)



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

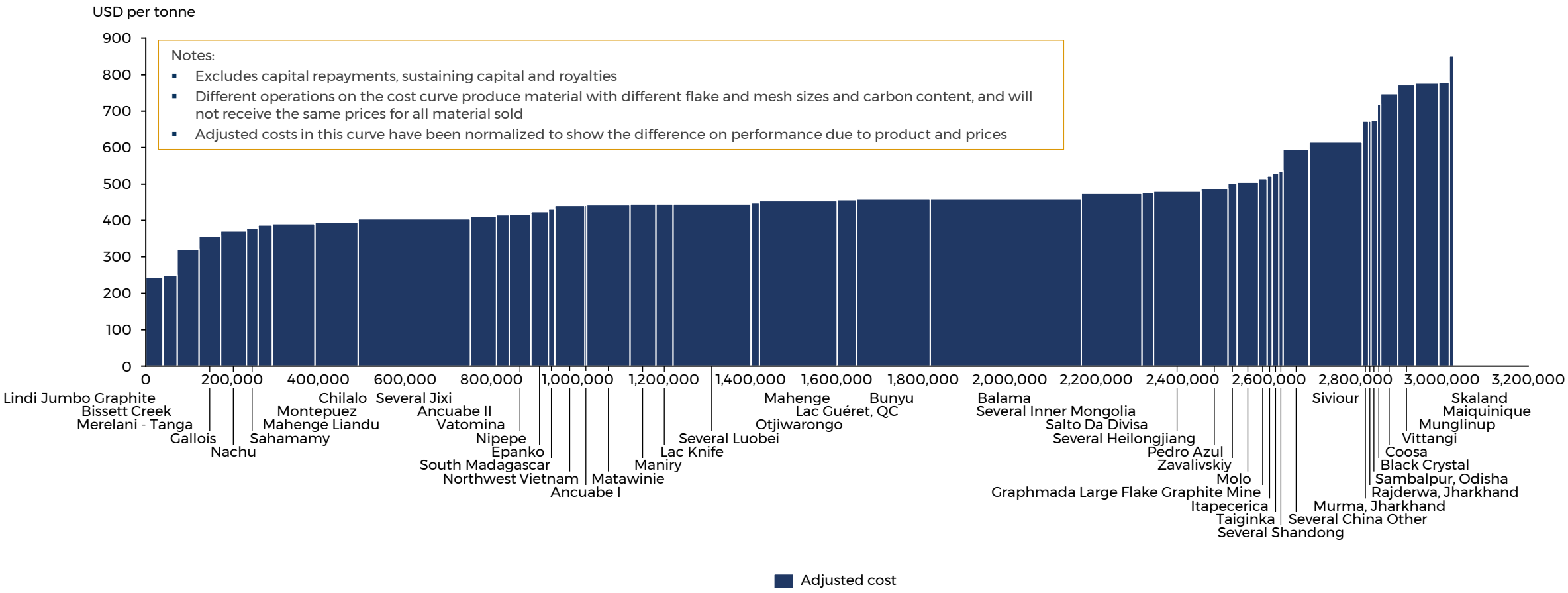
Graphite industry cash cost curve: 2025 (adjusted)



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

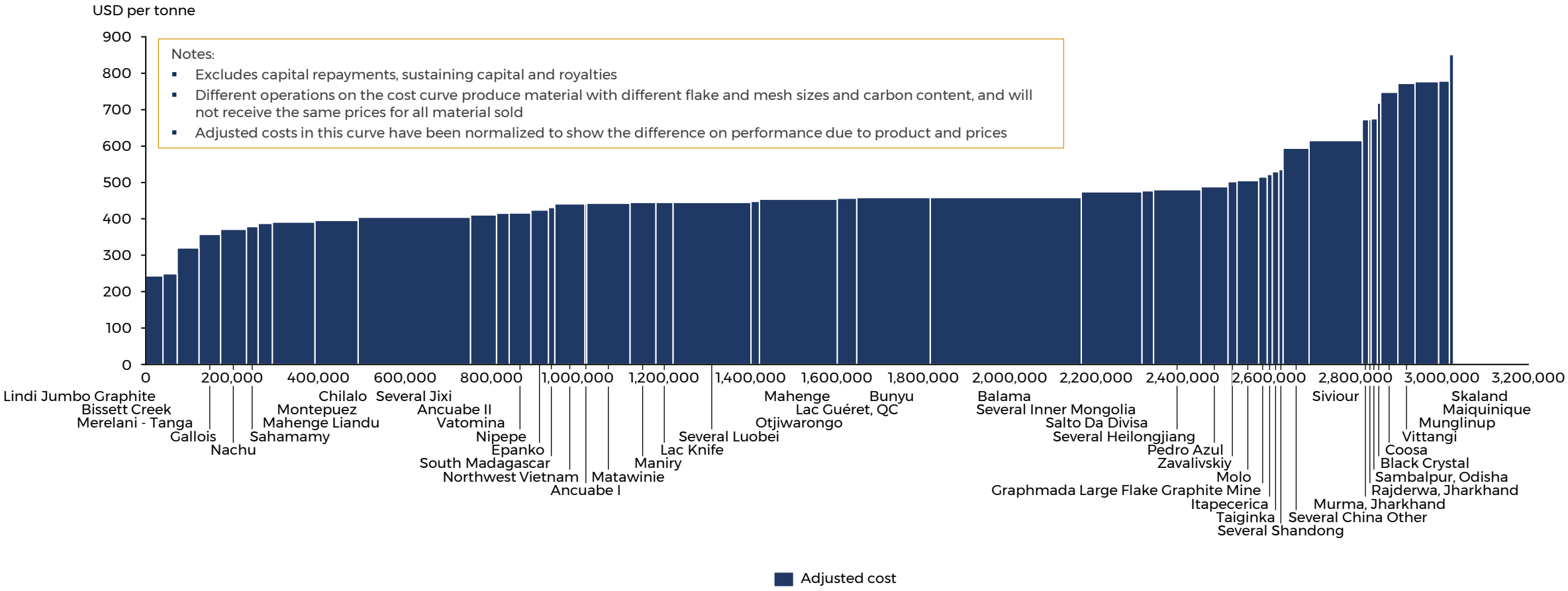
Graphite industry cash cost curve: 2030 (adjusted)



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Graphite industry cash cost curve: 2035 (adjusted)



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Price Forecast: 2020-2040

- **Q2 2021 update:** Flake prices have remained within Q1 2021 ranges on average across Q2, with some upward movement in both the +80 and + 100 mesh sizes. Interestingly across this period, uncoated spherical graphite has seen prices soften.
- **Medium-term Market dynamics:** market dynamics remain largely unchanged in the medium term, with a slight upward revision to +80 and + 100 mesh sizes
- **Long-term price incentives:** it is our view that the long-run incentive price will be in the range of US$ 860/MT for -100 mesh.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Price forecast methodology

Benchmark Minerals' price forecast methodology considers the following factors:

Short-Term

Based on our analysis of the development of demand over time, and our understanding of the pipeline of new greenfield and brownfield capacity, we are able to make an assessment of the extent of over and under supply in the market over time, and how this is likely to impact prices

Medium-Term

Long run pricing in commodity markets is often determined by the level at which the highest cost producer needed to supply the market can continue to operate. For the forecast we expect this will be less of a factor, and due to the ongoing need to incentivise new projects the price will be well above this level

Long-Term

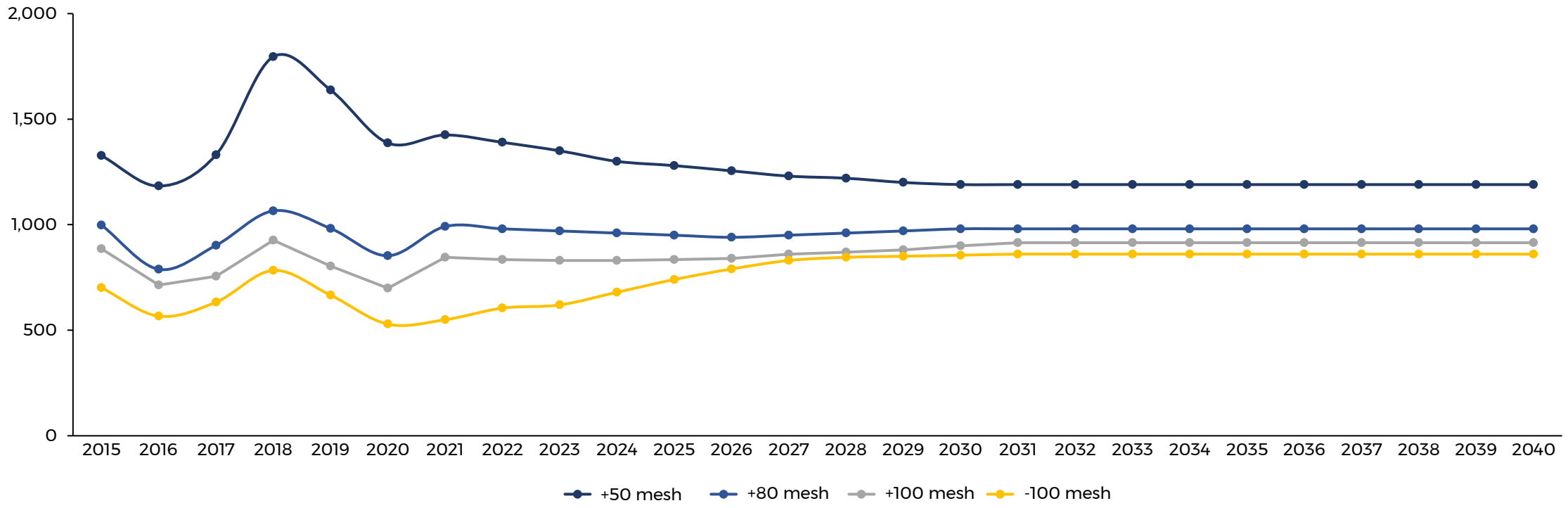
There will be an ongoing requirement for new greenfield capacity over the course of the forecast period. An Internal Rate of Return (IRR) analysis for a 'Typical' greenfield project suggests that at a basket price of $986/tonne the IRR would be 35%. This is approximately the level that junior miners are using for their assessment of project economics, and reflects the fact that as the lower cost new supply comes online there will be a need for the development of higher capex projects over time.

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Flake Graphite Price Forecast

94-95% High Carbon Price Forecast, Real 2021 (US$/MT)



forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE

Glossary: Supply Model

Projects are categorised in our supply model by their current operational status. For projects that are non-operational, we assign a category based upon the completion of certain development milestones:

- **Operating:** a project that is actively producing material today
- **Highly probable**: a project that has completed necessary public market requirements and government approvals, is fully funded and expected to place their product in the market in the next 24 months
- **Probable**: a project that has secured a significant proportion of its funding, and completed certain feasibility milestones that would support production within the next 5 years
- **Possible**: a project in the earlier stages of development with only a small portion of financing secured

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

Contact us:

Andrew Miller
Product Director
amiller@benchmarkminerals.com

James Clark
Principal Consultant
jclark@benchmarkminerals.com

info@benchmarkminerals.com

forecasts@benchmarkminerals.com
www.benchmarkminerals.com

BENCHMARK MINERAL INTELLIGENCE