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NI 43-101 TECHNICAL REPORT AND MINERAL RESOURCE ESTIMATE – OSBORNE-BELL DEPOSIT, QUÉVILLON PROPERTY

Prepared for

Osisko Mining Inc.
155 University Avenue
Suite 1440
Toronto, Ontario M5H 3B7

Project Location

Latitude: 49° 02' 55"N Longitude: 76° 06' 05"W

Townships: Bartouille, Benoist, Carqueville, Celoron, Chaste, Comtois, Cuvillier, Dalet, Despinassy, Duplessis, Fonteneau, Franquet, Fraser, Glandelet, Grevet, Holmes, Hurault, Josselin, Laas, Labrie, Mazarin, Mountain, Quévillon, Ruette, Themines, Tonnancour, Verneuil and Wilson

Province of Quebec, Canada

Prepared by:

Stéphane Faure, P.Geo., Ph.D.
Pierre-Luc Richard, P.Geo., M.Sc.

Effective Date: March 2, 2018
Signature Date: April 23, 2018

SIGNATURE PAGE – INNOVEXPLO

NI 43-101 Technical Report and Mineral Resource Estimate – Osborne-Bell Deposit, Quévillon Property

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Prepared for
Osisko Mining Inc.
155 University Avenue, Suite 1440
Toronto, Ontario, Canada M5H 3B7

(Original signed and sealed)
Stéphane Faure, P.Geo., Ph.D.
InnovExplo Inc.
Longueuil (Québec)

Signed at Longueuil on April 23, 2018

(Original signed and sealed)
Pierre-Luc Richard, P.Geo., M.Sc.
InnovExplo Inc.
Longueuil (Québec)

Signed at Longueuil on April 23, 2018`

CERTIFICATE OF AUTHOR – STÉPHANE FAURE

I, Stéphane Faure, P.Geo., PhD (OGQ No. 306, APGO No. 2662, NAPEG No. L3536), do hereby certify that:

1. I am employed as a geologist by and carried out this assignment for InnovExplo Inc. – Consulting Firm in Mines and Exploration, located at 859 Boul. Jean-Paul-Vincent, Suite 201, Longueuil, Québec, Canada, J4G 1R3.
2. I graduated with a Bachelor of Geology degree from Université du Québec à Montréal (Montréal, Québec) in 1987. In addition, I obtained a Master degree in Earth Sciences from Université du Québec à Montréal in 1990 and a Ph.D. degree in Geology from the Institut National de la Recherche Scientifique (city of Québec, Québec) in 1995.
3. I am a member in good standing of the Ordre des Géologues du Québec (OGQ licence No. 306), the Association of Professional Geoscientists of Ontario (APGO licence No. 2662), and the Professional Engineers and Professional Geoscientists, Northwest Territories and Nunavut (NAPEG licence No. L3536). I am a member of the Society of Economic Geologists.
4. I have worked as a geologist for a total of twenty-three (23) years since graduating in 1995. I acquired my expertise in precious and base metals mineral exploration with Inmet Mining in Central America and South America, Cambior Inc. in Canada and numerous exploration companies through the Research Consortium in Mineral Exploration (CONSOREM). I have been a geological consultant for InnovExplo Inc. since January 2016 and I currently hold the Geoscience Expert position.
5. I have read the definition of "qualified person" set out in National Instrument 43-101/Regulation 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.
6. I am the author of items 4, 5, 6, 7, 8, 9, 10, 11, 13, 20, 23 and 27 and co-author of items 1, 2, 12, 25, and 26 of the report titled "NI 43-101 TECHNICAL REPORT AND MINERAL RESOURCE ESTIMATE – OSBORNE-BELL DEPOSIT, QUÉVILLON PROPERTY", with an effective date of March 2, 2018 and a signature date of April 23, 2018, prepared for Osisko Mining Inc.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading
9. I am independent of the issuer applying all the tests in section 1.5 of NI 43-101.
10. I have read NI 43-101 and Form 43-101F1, and the items of the Technical Report for which I am responsible have been prepared in accordance with that instrument and form.

Signed this 23rd day of April 2018.

(Original signed and sealed)

Stéphane Faure, P.Geo., PhD
InnovExplo Inc.
Stephane.faure@innovexplo.com

CERTIFICATE OF AUTHOR – PIERRE-LUC RICHARD

I, Pierre-Luc Richard, M.Sc., P.Geo. (OGQ licence No. 1119, APGO licence No. 1714), do hereby certify that:

1. I carried out this assignment as a geologist for InnovExplo located at 560, 3e Avenue, Val-d'Or, Québec, Canada, J9P 1S4.
2. I graduated with a Bachelor's degree in geology from the Université du Québec à Montreal (Montreal, Québec) in 2004. In addition, I obtained an M.Sc. from the Université du Québec à Chicoutimi (Chicoutimi, Québec) in 2012.
3. I am a member in good standing of the Ordre des Géologues du Québec (OGQ licence No. 1119), and the Association of Professional Geoscientists of Ontario (APGO licence No. 1714).
4. I have worked in the mining industry for more than 10 years. My exploration expertise has been acquired with Richmont Mines Inc., the Ministry of Natural Resources of Québec (Geology Branch), and numerous exploration companies through InnovExplo. My mining expertise was acquired at the Beaufor mine and several other producers through InnovExplo. I managed numerous technical reports, resource estimates and audits. I was a geological consultant for InnovExplo from February 2007 to March 2017, and at the time of writing I held the position of Director of Geology.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 / Regulation 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.
6. I am co-author of items 1, 2, 12, 25 and 26 and author of items 3 and 14 to 19, 21,22 and 24 of the report titled "NI 43-101 TECHNICAL REPORT AND MINERAL RESOURCE ESTIMATE – OSBORNE-BELL DEPOSIT, QUEVILLON PROPERTY", with an effective date of March 2, 2018 and a signature date of April 23, 2018, prepared for Osisko Mining Inc.
7. I did not visit the property during the course of this mandate but have visited it on multiple occasions in the past. I have co-authored previous reports on the property.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
10. I have read NI 43-101 and Form 43-101F1, and the items for which I am a qualified person in this Technical Report have been prepared in accordance with that instrument and form.

Signed this 23rd day of April 2018.

(Original signed and sealed)
Pierre-Luc Richard, P.Geo.
InnovExplo Inc

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1. SUMMARY

1.1 Introduction

In November 2017, InnovExplo Inc. ("InnovExplo") was contracted by Mathieu Savard, Vice President Exploration Québec of Osisko Mining Inc. ("Osisko" or the "issuer"), to prepare a new mineral resource estimate for the Osborne-Bell deposit (the "2018 MRE") and a supporting Technical Report on the Quévillon Property (the "Property") in compliance with National Instrument 43-101 ("NI 43-101") and Form 43-101F1. The Quévillon Property is situated in the province of Québec, Canada. Osisko is a mineral exploration company focused on the acquisition, exploration, and development of precious metal resource properties in Canada. The TSX symbol is OSK and the headquarters are located in Toronto, Ontario. InnovExplo is an independent mining and exploration consulting firm based in Val-d'Or, Québec.

This Technical Report provides a relevant update on the Quévillon Property and an updated resource estimate for the Osborne-Bell gold deposit. The previous technical report was completed in October 2012 (Carrier et al., 2012). The current Technical Report reviews the historical work on the Property and all data obtained since the completion of the 2012 report. InnovExplo also consulted other sources of information, primarily government databases, for assessment reports and the status of mining titles.

This Technical Report was prepared by Pierre-Luc Richard, P.Geo. and Stéphane Faure, P. Geo., both of InnovExplo.

The authors believe the information used to prepare the Technical Report and to formulate its conclusions and recommendations is valid and appropriate considering the status of the project and the purpose for which the report is prepared. The technical data are considered appropriate for producing a resource estimate on the Osborne-Bell gold deposit.

The authors, by virtue of their technical review of the project's exploration potential, affirm that the work program and recommendations presented in the report are in accordance with NI 43-101 and CIM Definition Standards for Mineral Resources and Mineral Reserves ("CIM Definition Standards").

1.2 Property Description, Location and Ownership

The Quévillon Property includes the former Comtois Property of Maudore Minerals Ltd ("Maudore"). The current Property comprises 4,211 non-contiguous mining titles registered to Osisko Mining Inc. The land package covers 224,370.78 hectares (2,244 km^2) near the town of Lebel-sur-Quévillon. In early 2017, Osisko acquired its first strategic positions in the Lebel-sur-Quévillon area by staking 2,942 claims. By the end of April 2017, Osisko had acquired an additional land package from Deloitte Restructuring Inc., acting as trustee in bankruptcy for the assets, undertakings and properties of Maudore. The claim package encloses the Osborne-Bell deposit area located 17 kilometres northwest of the town of Lebel-sur-Quévillon.

The claims are in good standing and there are no pending land claim issues or ownership disputes with the Property. There are also no known environmental issues, and exploration activities are being carried out according to regulations set out by the Government of Québec.

The Property is located at the boundary between the Eeyou Istchee James Bay territory and the Abitibi-Témiscamingue administrative region in northwestern Québec. It surrounds the town of Lebel-sur-Quévillon. Full infrastructure and an experienced mining workforce are available in Lebel-sur-Quévillon and a number of well-established nearby mining towns, such as Val-d'Or, Rouyn-Noranda, La Sarre, Matagami and Chibougamau. A power line already reaches the southeastern end of the Property. This power line supplies the Comtois sawmill facilities of Abitibi Bowater.

1.3 Geology, Mineralization and Exploration Model

The Property is located in the Northern Volcanic Zone of the Archean Abitibi Greenstone Belt. The geology of the Property is dominated by undifferentiated mafic and intermediate volcanic rocks of basaltic to andesitic compositions (Dupré, 2010). Felsic volcanic and volcaniclastic rocks of dacitic to rhyolitic compositions (Dupré, 2010), and local interlayers of various sedimentary rocks (argillites, graphitic shales and iron formations) have also been documented. The Lamarck-Wedding Fault passes through the Property. The rocks are mainly metamorphosed to greenschist facies, locally reaching amphibolite facies along the fringes or margins of late intrusive stocks. The Osborne-Bell deposit is a disseminated pyrite gold deposit. The host rocks (calc-alkaline rhyodacite and dacite), alteration (aluminosilicate, potassic, ie. biotite, and garnet-rich stratabound alteration associated to pyritic massive lenses), styles of mineralization (disseminated sulphides and veinlets) and metal content and association (Au, Cu, Zn, Ag, Pb) indicate similarities with some deposits of the World-class Doyon-Bousquet-LaRonde gold mining district in the southern Abitibi belt. The Osborne-Bell deposit is hosted in a synvolcanic felsic unit package and to a lesser extent in the enclosing sequence of mafic volcanic rocks, which extends far beyond the mineralized zone. Most of the mineralization occurs in the synvolcanic felsic units and along the interface with the mafic volcanic rocks. Felsic units may represent a syn-volcanic dyke swarm injected in the mafic volcanic pile, thus constituting the root or a part of the root of a synvolcanic faults system. The gold-bearing zones of the Osborne-Bell deposit contain sulphides in disseminated or veinlet form. The deposit is characterized by a lower-grade gold envelope (several hundred ppb) encompassing higher-grade subzones.

1.4 Status of Exploration and Drilling

The Property is at an early exploration stage except for the Osborne-Bell deposit area, which is at a resource stage. No engineering and economic studies have been conducted on the Property, and there have been no 43-101 technical reports since the October 2012 report (Carrier et al., 2012). At that time, the former owner (Maudore) was focusing its capital and efforts on finalizing the 2013 acquisition of the Vezza and Sleeping Giant mines. In the following years, as Maudore and its subsidiary, Mines Aurbec, faced economic difficulties and financial restructuring, the available capital to develop the Comtois Property dwindled to the point where no major exploration programs were conducted after October 2012. Eventually, Maudore was obliged to commence proceedings under the *Bankruptcy and Insolvency Act* during the second quarter of 2016.

Between October 2012 and May 2016, exploration work on Maudore's Comtois Property included three internal studies on the Osborne-Bell gold deposit (lithogeochemical and petrographic studies), grindability tests, airborne and ground magnetic surveys, and the logging and sampling of 11 kilometers of drill core following the 2012 drilling program.

Also, in March and August 2012, InnovExplo supervised the drilling of HQ-caliber diamond drill holes for metallurgical testwork, but the half-core samples were never sent. The split core remains in core boxes at Osisko's facilities in Lebel-sur-Quévillon.

Of the 144 DDH completed in 2012 by Maudore, the assay certificates for 63 holes were received after the database close-out date of August 13, 2012. Of these, 50 had been drilled in the Osborne-Bell area and could therefore be added to the database for the current resource estimate.

In late 2017 and early 2018, Osisko has completed a 27,739.1-kilometre high-definition aerial magnetic survey and an 8,007.43-kilometre VTEM airborne survey over the Property. The Osisko drilling program commenced at the Osborne-Bell deposit with two rigs in early December 2017. The surface drilling program was designed to infill the central high-grade zones of the deposit. As at January 31, 2018, 14 DDH had been drilled on the Osborne-Bell deposit for a total of 4,512.7 metres. The first four (OSK-OB-17-001 to OSK-OB-17-004) could be used in the present resource estimate because they have complete assays and were subject to QA/QC protocols. Added to the 50 holes from 2012, they bring the number of new holes for the current resource estimate to 54.

1.5 Data Verification

InnovExplo employees have visited the Property (including the former Comtois Property) on several occasions since 2006, as well as the core shack and core storage facilities. Pierre-Luc Richard has been involved in various exploration programs, drilling programs and geological modelling from 2008 to 2013. InnovExplo's co-president, Alain Carrier, was responsible for overseeing the exploration and drilling programs from 2006 to 2013 and has been involved in all related work, including technical reports.

On January 18, 2018, Stéphane Faure conducted a site visit. The one-day trip included a review core logging and sampling protocols, a visit of Osisko's core shack and long-term core storage facilities in Lebel-sur-Quévillon, and a field visit of the Osborne-Bell deposit drilling area and some drill hole collars.

Database verification in this Technical Report concerns the DDH database used for the 2018 MRE. The database contains the 877 DDH used for the 2012 MRE supplemented by 54 additional DDH, for a total of 931. The 54 additional holes were rigorously validated.

The authors are of the opinion that InnovExplo's data verification, from site visits to subsequent data validation, demonstrates the validity of the Osborne-Bell deposit database.

1.6 Mineral Processing and Metallurgical Testing

Most of the metallurgical testing and mineralogical characterization was conducted at the SGS Lakefield facilities in Ontario under the supervision of Roche Consulting Group Ltd of Montreal. Composite samples were selected by InnovExplo in 2012.

The various composite samples tested and characterized by SGS indicated non-optimized recoveries (gravity + cyanidation) from 86.2% to 97.0% depending on ore type, grind size and test conditions. Overall, it is estimated that an average gold recovery of 93% can be achieved depending on the relative proportions of the various ore types that will feed the beneficiation plant.

1.7 Mineral Resource Estimate

The 2018 Osborne-Bell Deposit Mineral Resource Estimate was prepared by Pierre-Luc Richard, P.Geo., using all available information. The estimate follows CIM Definition Standards.

The 2018 MRE uses additional diamond drilling data that was not available at the effective date of the 2012 MRE (Carrier et al., 2012). The 2018 resource database contains the 877 DDH used for the 2012 MRE supplemented by 54 additional holes, for a total of 931.

Compared to the 2012 MRE, many changes were made in the 2018 MRE to the approaches and assumptions, notably to the mineralized domain interpretation, the capping assumptions, the grade interpolation strategies, and the approach to creating a late barren dyke dilution model. In addition, the gold price, project costs and exchange rate assumptions were revised to reflect 2018 market conditions.

Based on data density, search ellipse criteria, drill hole density and interpolation parameters, the total Inferred mineral resource for the Osborne-Bell deposit is estimated at 2,587,000 tonnes with an average grade of 6.13 g/t Au for 510,000 ounces of gold, using a 3.00 g/t Au lower cut-off grade (Table 1.1).

Table 1.1 – 2018 Osborne-Bell Deposit Inferred Mineral Resource Estimate

Cut-off Grade	Tonnage	Au g/t	Ounces
> 3.00 g/t	2 587 000	6.13	510 000

Mineral Resource Estimate notes:

1. *The independent and qualified person for the mineral resource estimate, as defined by NI 43-101, is Pierre-Luc Richard, P.Geo. (InnovExplo), and the effective date of the estimate is March 2, 2018.*
2. *These mineral resources are not mineral reserves as they do not have demonstrated economic viability. The quantity and grade of reported Inferred resources in this Mineral Resource Estimate are uncertain in nature and there has been insufficient exploration to define these Inferred resources as Indicated or Measured, and it is uncertain if further exploration will result in upgrading them to these categories.*
3. *Resources are presented undiluted and in situ for an underground scenario and are considered to have reasonable prospects for economic extraction.*
4. *The estimate encompasses nine (9) gold-bearing zones each defined by individual wireframes with a minimum true thickness of 2 metres.*
5. *High-grade capping was done on composite data and established on a per zone basis for gold. It varies from 25 to 55 g/t.*
6. *Density values were applied on the following lithological basis (g/cm^3): volcanic rocks = 2.80; late barren dykes and Beehler stock = 2.78; Zebra felsic unit = 2.72.*

7. *Grade model resource estimation was evaluated from drill hole data using an Ordinary Kriging interpolation method on a block model using a block size of 2.5 metres x 2.5 metres x 2.5 m metres.*
8. *The estimate is reported at 3.00 g/t Au cut-off. The cut-off grade was calculated using the following parameters: mining cost = CAD80; processing cost = CAD40; G&A = CAD10; gold price = USD1,300/oz; CAD:USD exchange rate = 1.29 (1-year trailing average). The cut-off grade should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).*
9. *The mineral resource estimate presented herein is categorized as inferred mineral resource. The inferred mineral resource category is only defined within the areas where drill spacing is less than 100 metres and shows reasonable geological and grade continuity.*
10. *The mineral resource estimate was prepared using GEOVIA GEMS 6.8. The estimate is based on 931 surface diamond drill holes. A minimum true thickness of 2.0 metres was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.*
11. *Calculations used metric units (metres, tonnes, gram per tonne). Metal contents are presented in troy ounces (tonne x grade / 31.10348).*
12. *The number of metric tons was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding errors.*
13. *CIM definitions and guidelines for mineral resources have been followed.*
14. *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political or marketing issues, or any other relevant issue not reported in this Technical Report, that could materially affect the mineral resource estimate.*

1.8 Interpretation and Conclusions

InnovExplo's mandate was to produce a mineral resource estimate for the Osborne-Bell gold deposit and a supporting NI 43-101 Technical Report.

InnovExplo established the resource estimation parameters and the geological deposit for the Osborne-Bell Project. InnovExplo also reviewed previously published information on metallurgical testing.

Mineral Resource Estimate

InnovExplo considers the 2018 MRE to be reliable and based on quality data, reasonable hypotheses and parameters that follow CIM Definition Standards.

After completing the MRE and a detailed review of all pertinent information, InnovExplo concluded the following:

- Geological and grade continuity have been demonstrated for nine (9) gold-bearing zones on the Osborne-Bell deposit.
- Using a cut-off grade of 3.00 g/t Au, the Inferred Resources are estimated at 2,587,000 tonnes with an average grade of 6.13 g/t Au for 510,000 ounces of gold.
- No Indicated Resources have been defined in the 2018 MRE.
- It is likely that additional diamond drilling would upgrade some of the Inferred Resources to the Indicated category.
- It is likely that additional diamond drilling would identify more resources down-plunge or in the vicinity of known ore shoots.

The Osborne-Bell deposit appears to be very sensitive to modelling methodology, capping strategy, the approach to constrain high-grade gold values, and drill spacing.

The revised modelling strategy and parameters for the 2018 MRE resulted in significantly lower tonnage, grade and ounces compared to the 2012 MRE.

Exploration Potential

Following a detailed review of all pertinent information, including the MRE, InnovExplo concluded the following:

- The highest potential for adding additional resources to the Osborne-Bell deposit is by drilling the depth extension of the currently identified shoots that originate in the resource area;
- The potential is high for adding additional resources to the Osborne-Bell deposit by drilling the depth extension of subparallel mineralized zones in the vicinity of the currently identified zones;
- In light of recent and historical drilling data, the areas between the Osborne-Bell deposit and the Greer and Hudson showings should be reinterpreted in terms of stratigraphy and their potential for new mineralized zones; and
- The exploration potential remains high at the property scale, justifying compilation and target generation programs. The Quévillon Property hosts several other mineral occurrences: Greer, Cooper, Hudson and Comtois NW for gold; KC-86-2 for base metals; and numerous semi-massive to massive lenses of barren sulphides (potential for new discoveries). The winter 2012 drilling program at Comtois NW demonstrated the area's potential by confirming a new gold discovery 12 km northwest of the known Osborne-Bell resource area.

1.9 Recommendations

Based on the results of the 2018 MRE, InnovExplo recommends additional exploration/delineation drilling and further geological interpretation to gain a better understanding of the deposit before updating the mineral resource estimate.

Phase 1

In Phase 1, InnovExplo recommends addressing the following technical aspects of the project:

Delineation drilling on the Osborne-Bell deposit

The objective of the delineation drilling would be to continue investigating untested gold targets along the entire Osborne-Bell trend and any potential lateral and depth extensions. InnovExplo recommends prioritizing deep delineation drilling to detect higher-grade subzones. Positive results would potentially add Inferred resources. Approximately 10,000 metres should be dedicated to this purpose.

Exploration drilling

Several targets (structures, geochemical anomalies, IP anomalies and EM conductors) remain untested in the immediate area of the Osborne-Bell deposit and over the entire Quévillon Property. Exploration drilling on identified targets can potentially add new resources. Approximately 32,000 metres should be dedicated as follows: 10,000 metres on Comtois NW, 9,000 metres on Hudson, 4,000 metres on Mafic North, 1,500 metres on the Comtois-Hudson Trend, 1,750 metres on Greer, 500 metres on Cooper, and 5,250 metres on additional isolated targets.

Phase 2

In Phase 2, InnovExplo recommends addressing the following technical aspects of the Project (contingent upon the success of Phase 1).

Update of litho-structural/mineralization models on Osborne-Bell deposit

Depending on the conclusions of the geological study in the test area proposed in Phase 1, InnovExplo recommends updating the litho-structural and mineralization models at the scale of the Osborne-Bell deposit.

Metallurgical tests

The tests should include a mineralogical evaluation of gold mineralization, standard characterization tests (head analysis, comminution and basic environmental testing), gold recovery by gravity separation, flotation and cyanidation of gold mineralization, and an evaluation of the gravity tailings and flotation concentrate. InnovExplo recommends conducting these additional tests in selected areas deriving from the update of the litho-structural/mineralization models.

Engineering studies

InnovExplo recommends engineering studies, such as rock mechanics, on currently available drill core and new geotechnical drill core (approximately 5 holes). Such studies should provide sufficient information to address open pit slope angles (if applicable) as well as stope and pillar dimensions.

Additional exploration drilling

Assuming a positive outcome for the Phase 1 Exploration drilling program, a provision of approximately 40,000 metres of delineation drilling should be considered. The objective would be to continue investigating any potential lateral and depth extensions of identified ore zones.

NI 43-101 MRE update on the Osborne-Bell deposit and PEA

InnovExplo recommends updating the MRE after completing the drilling program, the update to the litho-structural/mineralization models, and the engineering studies. This update should be used in the preparation of a PEA.

Maiden NI 43-101 MRE on the Hudson Zone

InnovExplo recommends initiating a mineral resource estimate on the Hudson Zone, and on any other deposit on the Property that reaches a stage warranting resource estimation.

Cost estimate for recommended programs

InnovExplo has prepared a cost estimate for the recommended exploration program. Items from Phase 2 of the proposed work plan are contingent upon the success of Phase 1. The estimated cost for Phase 1, which would include the consideration of the technical abovementioned recommendations, is approximately $5,796,000 (including 15% for contingencies). The estimated cost for Phase 2 is approximately $6,411,250 (including 15% for contingencies). The grand total is $12,207,250 (including 15% for contingencies).

InnovExplo is of the opinion that the recommended work program and proposed expenditures are appropriate and well thought out. InnovExplo believes that the proposed budget reasonably reflects the type and scope of the contemplated activities.

2. INTRODUCTION

In November 2017, InnovExplo Inc. ("InnovExplo") was contracted by Mathieu Savard, Vice President Exploration Québec of Osisko Mining Inc. ("Osisko" or the "issuer"), to prepare a new mineral resource estimate for the Osborne-Bell deposit (the "2018 MRE") and a supporting Technical Report on the Quévillon Property (the "Property") in compliance with National Instrument 43-101 ("NI 43-101") and Form 43-101F1. In April 2017, Osisko Mining Inc. acquired ownership of the property package from Deloitte Restructuring Inc., acting as trustee in bankruptcy for the assets, undertakings and properties of Maudore Minerals Ltd ("Maudore").

This report is addressed to Osisko Mining Inc. Osisko trades on the Toronto Stock Exchange (TSX) under symbol OSK. It is a mineral exploration company based in Toronto and focused on the acquisition, exploration, and development of precious metal resource properties in Canada. InnovExplo is an independent mining and exploration consulting firm based in Val-d'Or, Québec. This Technical Report provides a relevant update on the Quévillon Property and an updated resource estimate for the Osborne-Bell gold deposit. The previous technical report was completed in October 2012 (Carrier et al., 2012).

This Technical Report reviews the property's historical work and all data obtained since the completion of the 2012 report. InnovExplo was not actively involved on the property between 2013 and 2017. InnovExplo also consulted other sources of information, primarily government databases, for assessment reports and the status of mining titles.

2.1 Qualified Persons

The following qualified and independent persons ("QPs"), as defined by NI 43-101, are responsible for the Technical Report:

- Pierre-Luc Richard, P.Geo. (OGQ No. 1119), Director of Geology (InnovExplo);
- Stéphane Faure, P.Geo. (OGQ No. 306), Geoscience Expert (InnovExplo).

In addition to the QPs, the other people involved in preparing the Technical Report are:

- Alain Carrier, P.Geo. (OGQ 281);
- François Kerr-Gillespie, P.Geo. (OGQ No. 2021), Geologist (InnovExplo);
- Harold Brisson, P.Eng. (OIQ No. 41433), Engineer (InnovExplo);
- Martin Barrette, Mining Technician (InnovExplo);
- Katy Lafontaine, Mining Technician (InnovExplo);
- Daniel Turgeon, Mining Technician (InnovExplo).

The list below presents the sections of the Technical Report for which each QP was responsible:

- Pierre-Luc Richard is author of items 3, 14 to 19, 21, 22, and 24 and co-author of items 1, 2, 12, 25 and 26.

- Stéphane Faure supervised the assembly of the report. He is author of items 4, 5, 6, 7, 8, 9, 10, 11, 13, 20, 23 and 27 and co-author of items 1, 2, 12, 25 and 26.

"The 2018 Technical Report was prepared by Stéphane Faure and Pierre-Luc Richard, both of whom are professional geologists in good standing with the OGQ. "

2.2 Site Visit

InnovExplo employees have visited the Property on several occasions since 2006. Pierre-Luc Richard has visited the property several times during the course of previous mandates between 2008 and 2013. As part of the current mandate, Stéphane Faure visited drill sites and the core logging and storage facilities on January 18, 2018, accompanied by Antoine Fecteau and Edouard Côté-Lavoie, project geologists for Osisko.

2.3 Effective Date

The effective date of the mineral resource estimate is March 2, 2018.

2.4 Abbreviations, Units and Currencies

A list of abbreviations used in this report is provided in Table 2.1. All currency amounts are stated in Canadian Dollars ($, C$, CAD) or US dollars (US$, USD). Quantities are stated in metric units, as per standard Canadian and international practice, including metric tons (tonnes, t) and kilograms (kg) for weight, kilometres (km) or metres (m) for distance, hectares (ha) for area, percentage (%) for copper and nickel grades, and gram per metric ton (g/t) for gold and other precious metals. Wherever applicable, imperial units have been converted to the International System of Units (SI units) for consistency (Table 2.1).

Table 2.1 – List of abbreviations

Abbreviation or Symbol	Unit or Term
%	Percent
$	Canadian dollar
°C	Degree Celsius
μm	Micron (micrometre)
43-101	National Instrument 43-101 – Standards of Disclosure for Mineral Projects (Regulation 43-101 in Québec)
AA	Atomic absorption
AAAI	Advanced argillic alteration index
Ag	Silver
As	Arsenic
Au	Gold
Ba	Barium
BWi	Bond work index
Ca	Calcium
CAD, C$	Canadian dollar
CAD: USD	Canadian-American exchange rate
CAPEX	Capital expenditure
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIM Definition Standards	CIM Definition Standards for Mineral Resources and Mineral Reserves
cm	Centimetre
cm^3	Cubic centimetre
Co	Cobalt

Abbreviation or Symbol	Unit or Term
CRM	Certified reference material
Cu	Copper
DDH	Diamond drill hole
EBS	Environmental baseline study
EM	Electromagnetics
ESIA	Environmental and social impact assessment
g	Gram
g/cm^3	Gram per cubic centimetre
g/t	Gram per metric ton (tonne)
GESTIM	Gestion des titres miniers (the MERN's online claim management system)
GRG	Gravity recoverable gold
ha	Hectare
HLEM	Horizontal loop electromagnetic
IALT	Alteration index
ICP-AES	Inductively coupled plasma atomic emission spectroscopy
ICP-MS	Inductively coupled plasma mass spectroscopy
ID6	Inverse distance power six
in^2	Square inches
IP	Induced polarization
kg	Kilogram
km	Kilometre
km^2	Square kilometre
kWh/t	Kilowatt-hour per metric ton
LOI	Loss on ignition
m	Metre
m^2	Square metre
m^3	Cubic metre
Ma	Million years
MAG	Magnetometer, magnetometric
masl	Metres above mean sea level
MERN	Ministère de l'Énergie et des Ressources Naturelles du Québec (Québec's Ministry of Energy and Natural Resources)
mesh	US mesh
Moz	Million (troy) ounces
MRE	Mineral resource estimate
Mt	Million metric tons (tonnes)
NAD 83	North American Datum of 1983
Nb	Niobium
NI 43-101	National Instrument 43-101 – Standards of Disclosure for Mineral Projects (Regulation 43-101 in Québec)
Ni	Nickel
NTS	National Topographic System
OGQ	Ordre des géologues du Québec (Québec order of geologists)
OIQ	Ordre des ingénieurs du Québec (Québec order of engineer)
OK	Ordinary kriging
OPEX	Operational expenditure
oz	Troy ounce
PGE	Platinum group elements
PGM	Platinum group metals
ppb	Parts per billion
ppm	Parts per million
QA/QC	Quality assurance/quality control
QFP	Quartz-feldspar porphyry
QP	Qualified person (as defined in National Instrument 43-101)
qz, QZ	Quartz
Rb	Rubidium
REE	Rare earth elements
Regulation 43-101	Québec name for National Instrument 43-101
RES	Resistivity
RQD	Rock quality designation
RWi	Rod work index

Abbreviation or Symbol	Unit or Term
Sb	Antimony
SD	Standard deviation
SIGEOM	Système d'information géominière (the MERN's online spatial reference geomining information system)
Sr	Strontium
t	Metric ton ("tonne") (1,000 kg)
Ti	Titanium
ton	Short ton (2,000 lbs)
UCoG	Underground cut-off grade
USD, US$	American dollar
UTM	Universal Transverse Mercator (coordinate system)
VLF	Very low frequency
VMS	Volcanogenic massive sulphide
VTEM	Versatile time-domain electromagnetic
wt%	Weight percent
XRF	X-ray fluorescence
Y	Yttrium
Zn	Zinc
Zr	Zirconium

Table 2.2 – Conversion factors for measurements

Imperial Unit	Multiplied by	Metric Unit
1 inch	25.4	mm
1 foot	0.305	m
1 acre	0.405	ha
1 ounce (troy)	31.103	g
1 pound (avdp)	0.454	kg
1 ton (short)	0.907	t
1 ounce (troy) / t (short)	34.286	g/t

3. RELIANCE ON OTHER EXPERTS

The QPs relied on the following sources for information outside their fields of expertise:

- The issuer supplied information about mining titles, option agreements, royalty agreements, environmental liabilities and permits. Neither the QPs nor InnovExplo are qualified to express any legal opinion with respect to property titles or current ownership and possible litigation. InnovExplo consulted the Government of Québec's GESTIM database for the latest status regarding ownership and mining titles. Although InnovExplo reviewed all option agreements and available claim status documents, the firm is not qualified to express any legal opinion with respect to the property titles or current ownership and possible litigation.
- Josiane Caron, P.Eng. and Patrick Frenette, P.Eng., both of InnovExplo, supplied the mineral resource cut-off grade parameters.
- Venetia Bodycomb, M.Sc., of Vee Geoservices provided the critical and linguistic editing for a draft of this report.

In addition, Guilhem Servelle, P.Geo., worked for many years on the Quévillon mandates as an InnovExplo employee (drill programs, modelling, technical reports), and the authors took into consideration his contributions and input when writing this Technical Report. Finally, Martin Barette, Senior Technician for InnovExplo, contributed significantly to the block modelling aspects of the mineral resource estimate.

4. PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Quévillon Property surrounds the town of Lebel-sur-Quévillon approximately 160 kilometres of the city of Val-d'Or in the province of Québec (Fig. 4.1). The Property lies mostly on NTS map sheets 32C14, 32C15, 32F02 and 32F03, with satellite claim blocks on sheets 32C16, 32E01, 32E02, 32E08, 32F01, 32F07 and 32F08. The approximate coordinates for the geographic centre of the Quévillon Property is latitude 49°02'55"N and longitude 76°06'05"W (UTM NAD 83 Zone 18: 346420mE and 5435040mN).

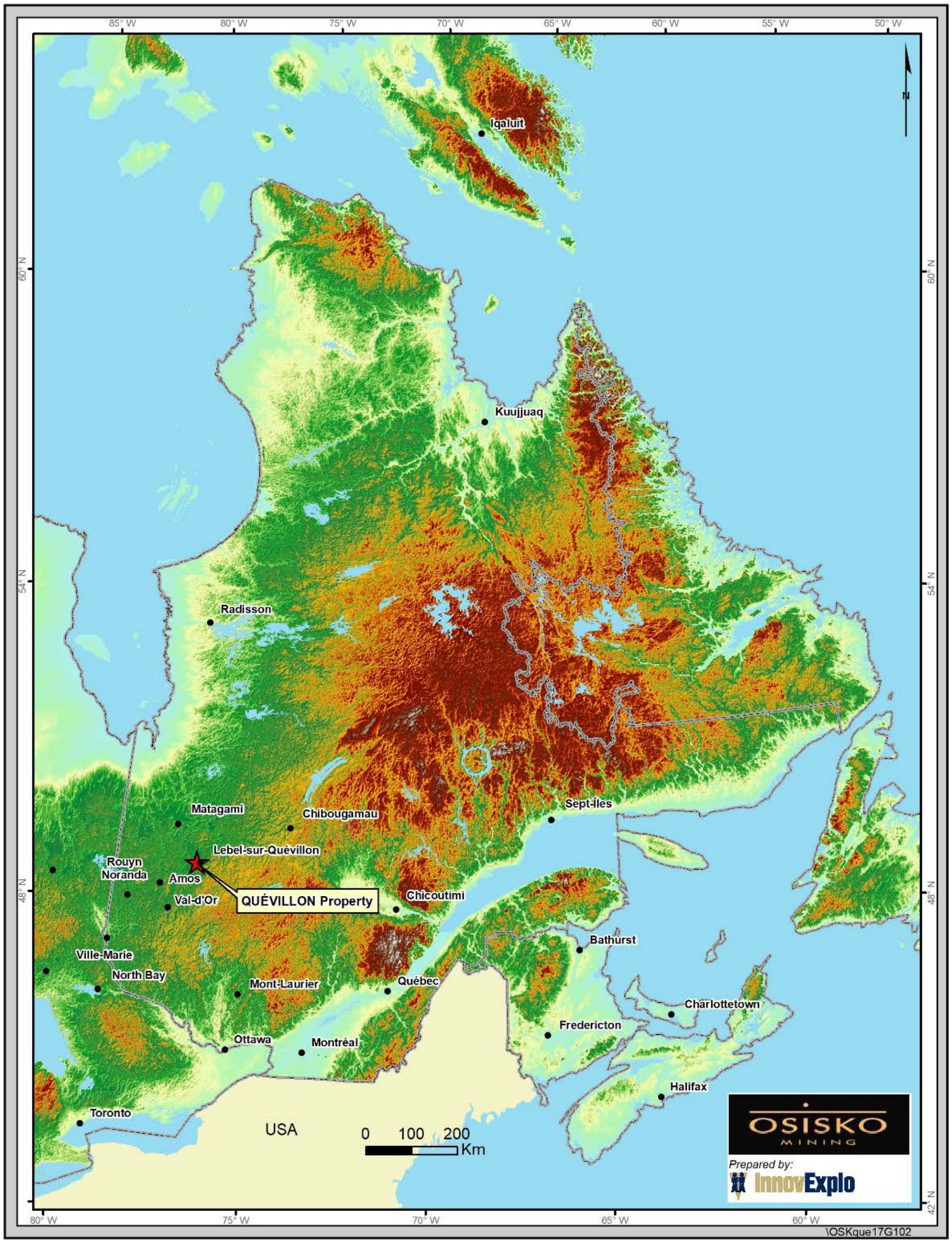

Figure 4.1 – Location of the Quévillon Property in the Province of Québec.

4.2 Mining Title Status

On February 20, 2018, the Quévillon Property consisted of 4,211 non-contiguous mining titles registered under “Osisko Mining Inc.”. The land package covers 224,370.78 hectares (2,244 km^2; Figure 4.2). The Property can be subdivided into three blocks of claims. The Central Block surrounds the town of Lebel-sur-Quévillon and consists of 3,675 claims for a total of 1,966.8 km^2. Most claims are contiguous except for a few satellite claims. The Western Block comprises 282 claims covering 134.4 km^2. The Northeastern Block surrounds the settlement of Miquelon and comprises 254 claims divided in two smaller blocks with surface areas of 120.7 and 21.8 km^2.

Osisko acquired their first strategic position in the Lebel-sur-Quévillon area in early 2017 by staking 2,942 claims by electronic map designation (“map-designated cells”) (Osisko press release of March 6, 2017). In April, Osisko acquired an additional land package in the area of Lebel-sur-Quévillon from Deloitte Restructuring Inc. for a cash payment of $1,000,000 and the issuance of 1,000,000 shares. Deloitte Restructuring was acting as trustee in bankruptcy for the assets, undertakings and properties of the former owner, Maudore Minerals Ltd. The 1,205-claim package, known at the time as the Comtois Property, enclosed the Osborne-Bell deposit area located 17 kilometres northwest of the town of Lebel-sur-Quévillon. This acquisition consolidates the strategic position of Osisko with their nearby flagship Windfall gold project.

In accordance with the *Bankruptcy and Insolvency Act* and the Approval and Vesting Order of the Québec Superior Court dated April 10, 2017 (file No. 615-11-001496-167) in the matter of the bankruptcy of Maudore Minerals Ltd, all rights, title and interest in the Property have vested absolutely and exclusively in and with the purchaser, Osisko Mining Inc. and the Property is free and clear of and from any and all claims, liabilities, charges, hypothecs, contractual rights, royalties and encumbrances (collectively, the “Encumbrances”), and all Encumbrances affecting or relating to the Property were cancelled and discharged on April 10, 2017.

The claims have regular shapes and sizes (30" by 30" cells) except on the edges of the northwestern part of the central block of claims and adjacent to restrictive constraints (Figure 4.1). The claims are distributed in 28 townships; Bartouille, Benoist, Carqueville, Celoron, Chaste, Comtois, Cuvillier, Dalet, Despinassy, Duplessis, Fonteneau, Franquet, Fraser, Glandelet, Grevet, Holmes, Hurault, Josselin, Laas, Labrie, Mazarin, Mountain, Quévillon, Ruette, Themines, Tonnancour, Verneuil and Wilson. A detailed list of the claims and related information is provided in Appendix I. On February 20, 2018, InnovExplo verified the status for all claims using GESTIM, the Government of Québec’s claim management system available online via the website of the Ministère de l’Énergie et des Ressources Naturelles (“MERN”) at the address: gestim.mines.gouv.qc.ca. At that time, 73 claims of the 4,211 claims were in the process of being renewed with the Government of Québec. Osisko provided proof of renewal for those claims.

4.3 Constraints and Restrictions

The northern half of the Central Block and all of the Western and Northeastern blocks are in the Eeyou Istchee James Bay territory (Fig. 4.2). Since 2013, this area corresponds to Category III lands where exploration is allowed under specific conditions. A claim titleholder is invited to communicate directly with the Cree Nation Government and the Eeyou Istchee James Bay Regional Government.

In the Central Block, 12 areas where exploration is prohibited under the *Mining Act* are adjacent to the Property (Fig. 4.2). Eight areas are designated as a “Biological Refuge” and two are classified as an “Exceptional Forest Ecosystem” under the *Sustainable Forest Development Act*. Both statuses trigger a temporary suspension of issuance of mineral titles. One area is a proposed protected area and is reserved to the State. Finally, the former Domtar industrial facility south of Lebel-sur-Quévillon is withdrawn from mining activities.

In addition to being on Category III lands, the Western Block of the Property is also a territory referred by an agreement with the Council of the First Nation of Abitibiwinni. The objective of the consultation with the Council of the First Nation of Abitibiwinni is to express its concerns regarding natural resource development projects, including mining activities, on the Territory covered, and if applicable, have the parties determine accommodations to take these concerns into account. Two seed orchards where exploration is prohibited are adjacent to the westernmost block of claims.

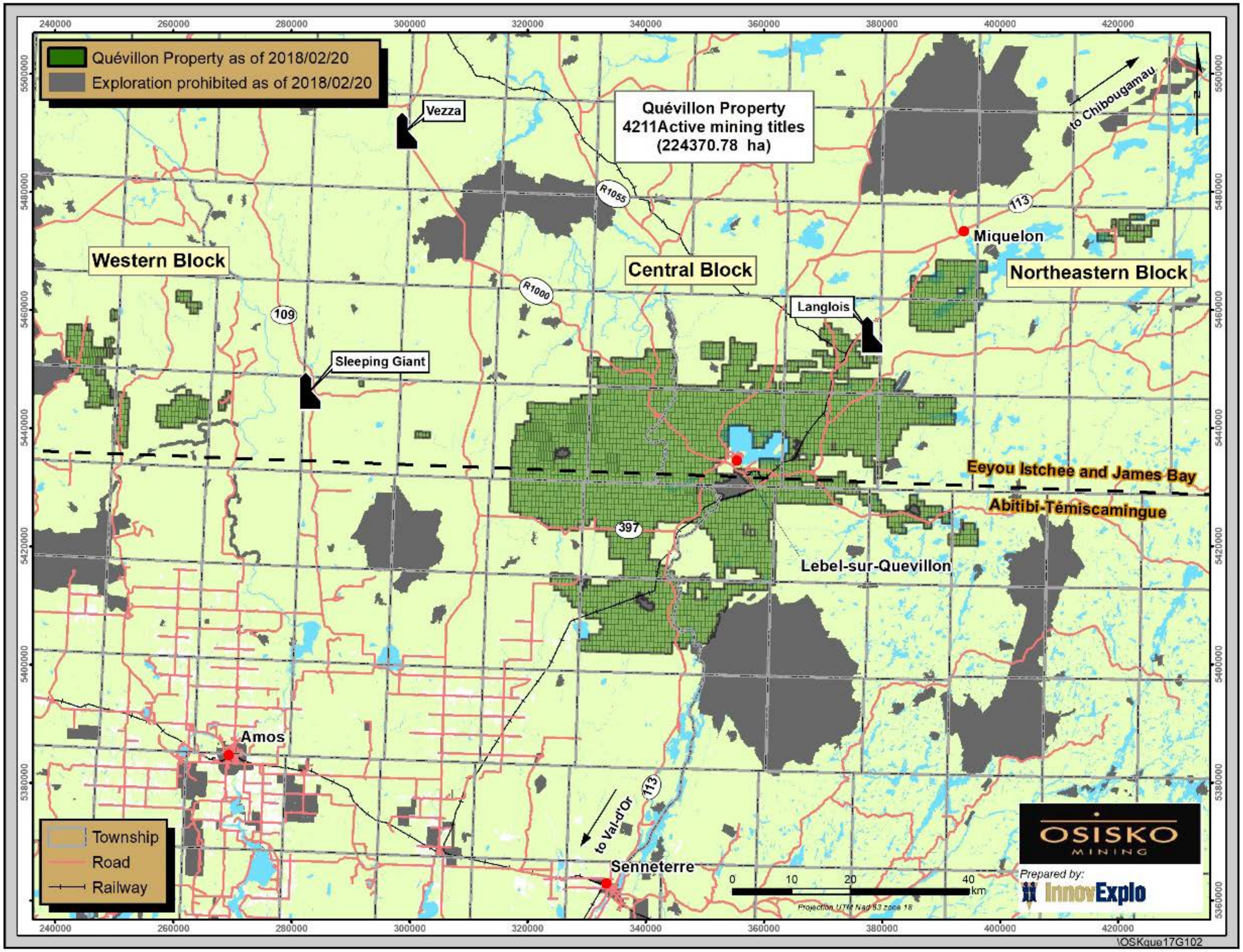

Figure 4.2 – Claim map of the Quévillon Property showing the main blocks of claims discussed in the text.

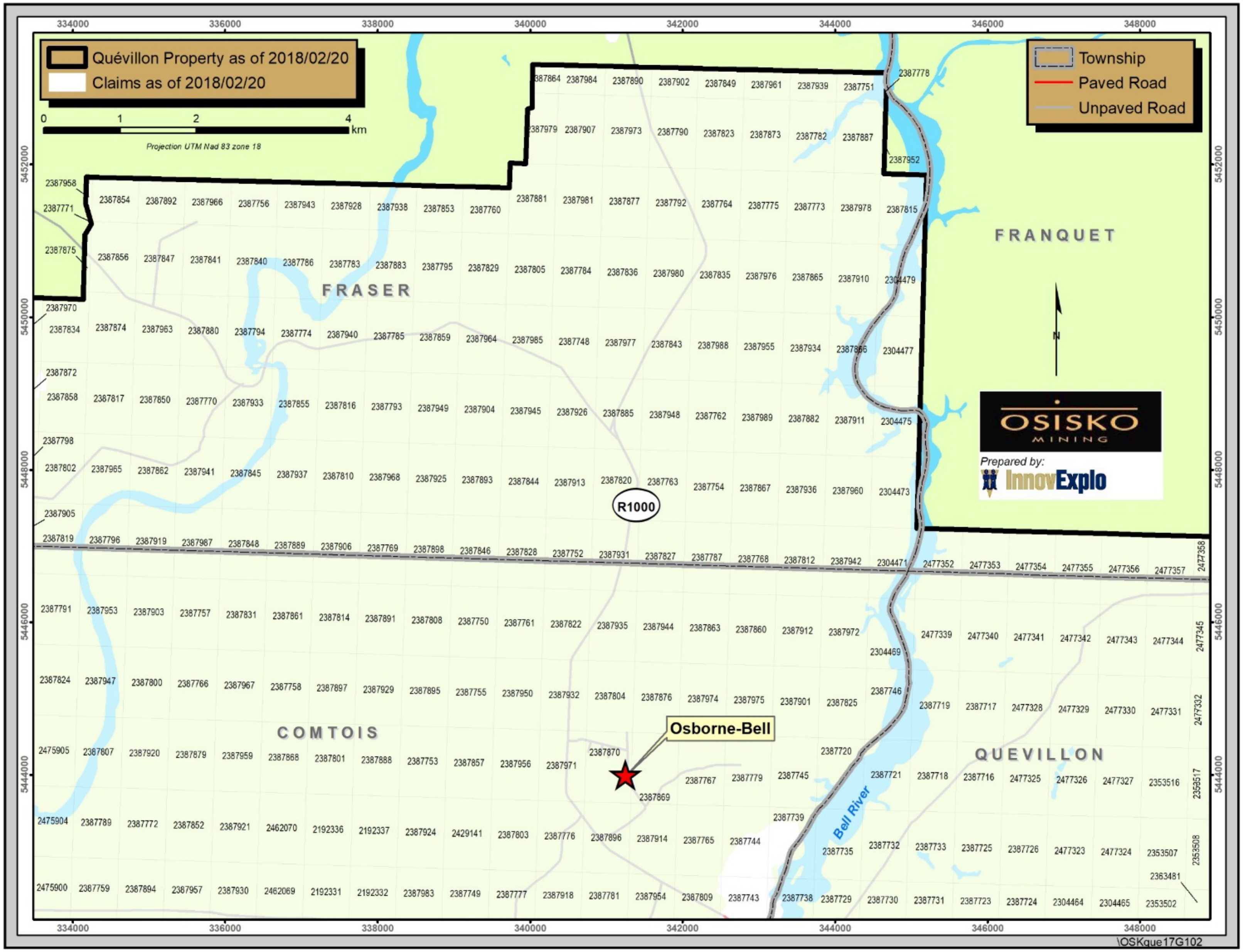

Figure 4.3 – Detailed claim map in the vicinity of the Osborne-Bell deposit

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Quévillon Property is located at the boundary between the Eeyou Istchee James Bay territory and the Abitibi-Témiscamingue administrative region, overlapping the 49th parallel (Figure 5.1). The property lies within NTS map sheets 32C14, 32C15, 32C16, 32E01, 32E02, 32E08, 32F01, 32F02, 32F03, 32F07 and 32F08. The approximate coordinates for the geographic centre of the Property are latitude 49°02'55"N and longitude 76°06'05"W at a mean elevation of 290 masl (UTM NAD 83 Zone 18: 346420mE and 5435040mN). The claims in the central part of the Property form a block around the town of Lebel-sur-Quévillon at the southern end of Quévillon Lake.

The Property is easy to access by driving 170 kilometres from Val-d'Or along roads that remain open year-round. At 30 kilometres east of Val-d'Or on Highway 117, a secondary paved road (Highway 113) heads north toward Lebel-sur-Quévillon for 120 kilometres until the junction between Highway 113 and road R1000. From there, the Osborne-Bell deposit is another 18 kilometres along a paved portion of R1000 until the Comtois sawmill, and then another 2 kilometres along a gravel road heading north. R1000 links the towns of Lebel-sur-Quévillon and Matagami and is open year-round. Lebel-sur-Quévillon is 138 kilometres from the town of Amos and 88 kilometres from the town of Senneterre.

The Central Block of claims is crossed by several roads radiating from Lebel-sur-Quévillon (Figure 5.1). The Western Block is accessible from Amos via paved road 109 and then forestry roads R0809 and R0804. The Northeastern Block is reachable from Highway 113 and secondary roads around the small settlement of Miquelon.

5.2 Climate

The region is under the influence of a continental climate marked by cold, dry winters and mild, humid summers. According to Environment and Climate Change Canada, the average temperature at Lebel-sur-Quévillon for July is 17.1°C, whereas January temperatures hover around -17,7°C. The historical recorded low was -43.0°C, and the high 34.4°C. Freeze-up usually occurs in late December and break-up in March. Historical records of annual precipitation rates indicate a mean rainfall of 929 mm. Snow accumulates from October to May, with a peak from December to March.

5.3 Local Resources

Lebel-sur-Quévillon is a small town with a population of 2,015 (Statistics Canada, 2016). The mining and forestry industries are the historical cornerstones of Lebel-sur-Quévillon's local economy. The main businesses are the Comtois sawmill (Resolute Forest Products) with approximately 70 employees (end of 2017) and the Langlois mine owned by Nyrstar located 50 kilometres northeast of Lebel-sur-Quévillon (approximately 240 employees; July 2017). The town of Lebel-sur-Quévillon has a small hospital, motels, restaurants, a gas station and a grocery store. Full infrastructure and an experienced mining workforce are also available in a number of well-established mining towns nearby, such as Val-d'Or, Rouyn-Noranda, Amos, La Sarre, Matagami and Chibougamau. A power line stops just inside the southern property limit and supplies electricity to the Comtois sawmill facilities belonging to Resolute Forest Products. Water can be sourced from the Bell River. Although Lebel-sur-Quévillon has its own small airport, Val-d'Or has the closest commercial airport with regularly scheduled direct flights to Montreal.

Several exploration and mining contractors are located within a few hours' drive from the Property. The town of Senneterre (population 2,239 in 2016; Statistics Canada) is located 88 kilometres south of Lebel-sur-Quévillon at the intersection of highway 113 and the Transcontinental Railway. The main businesses are forestry, commerce and tourism.

5.4 Physiography

The Property is part of the James Bay hydrographic basin. The Bell River runs across the central part of the property, whereas the Harricana River flows through the western part (Fig. 5.1). The Property is covered by extensive, thick Pleistocene glacial and glaciolacustrine sediments producing a generally flat topography. Scattered small areas of bedrock exposure form butte a few tens of metres high. Part of the area is covered by swamps and flat expanses of mixed forests comprised mainly of spruce, balsam fir, poplar, cedar and birch. Higher elevations are present in the eastern part of the Property.

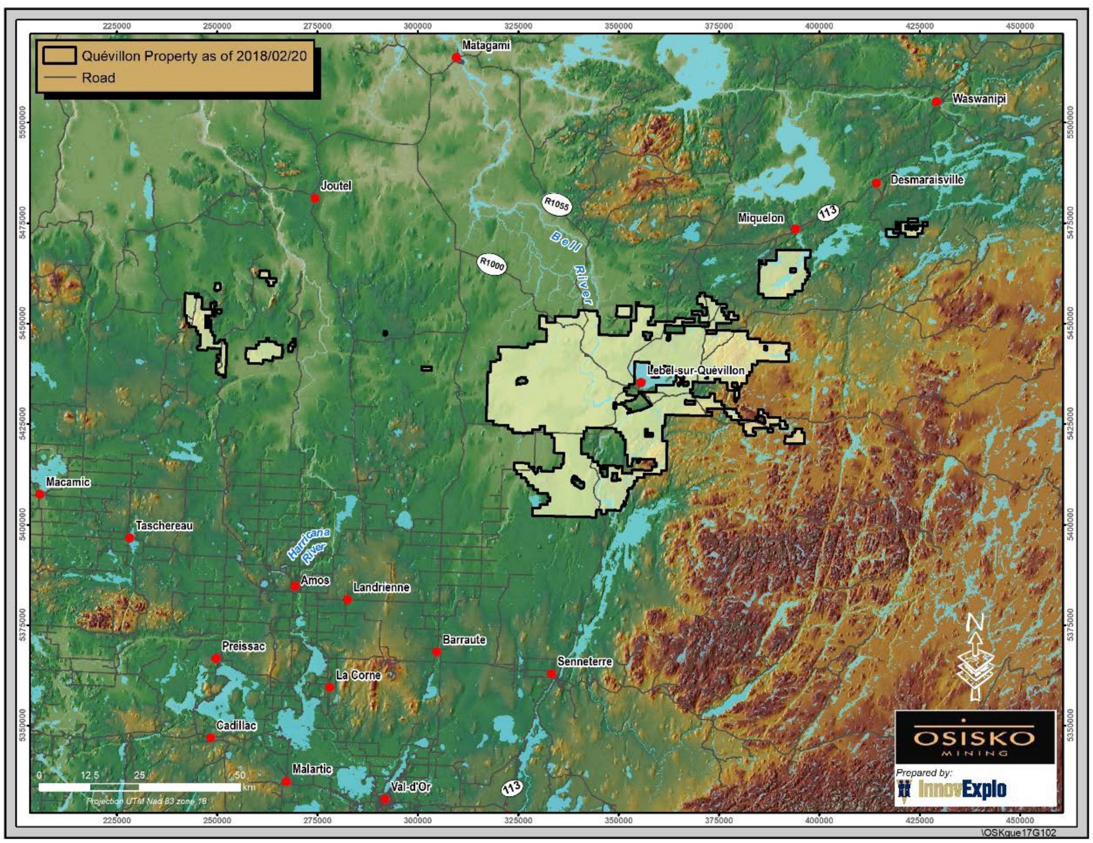

Figure 5.1 – Topography and accessibility of the Quévillon Property.

6. HISTORY

Due to the large size of the Quévillon Property, the history of previous work is presented at two different scales:

- The Scale Of The Osborne-Bell Deposit And Its Vicinity (The Former Comtois Property Of Maudore) In The Northwestern Part Of The Central Block (Section 6.1), And
- The Rest Of The Central Block And The Remainder Of The Property (Section 6.2).

This review summarizes all work completed prior to the acquisition of the Property by Osisko in 2017.

6.1 Osborne-Bell Deposit Area

Historical data from before 2006 is mainly based on information from the SIGEOM database of the MERN (http://sigeom.mines.gouv.qc.ca/), whereas information for the period from 2006 to May 2016 was obtained from Maudore.

The following sections summarize historical drilling for each area of interest around the Osborne-Bell deposit (Figure 6.1**;** Tables 6.1 and 6.2), which collectively correspond to the limits of the former Comtois Property in 2016. The former names of property areas and showings have been changed in the text, figures and tables to reflect current nomenclature and facilitate comprehension.

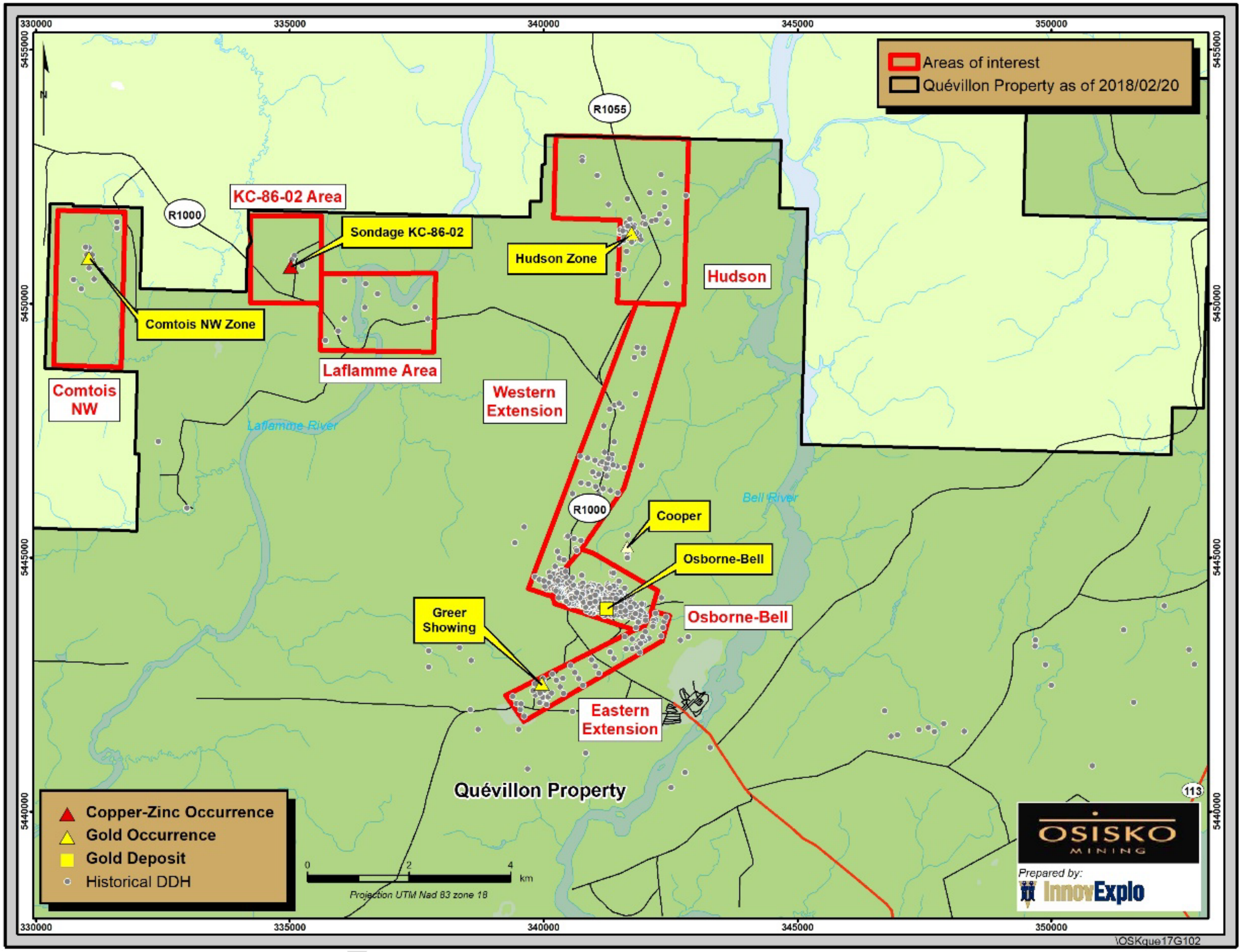

Figure 6.1 – Map of the main areas of interest (red) around the Osborne-Bell deposit (yellow square) showing locations of mineral occurrences (triangles) and historical drill hole collars. Names reflect current nomenclature

Table 6.1 – Historical holes drilled on the Osborne-Bell deposit area from 1966 to 2012 by area of interest
(shaded cells from 1967 and 1986 indicate missing information on final hole depths)

Year	Company	Areas of interest	Number of DDH	Total Length
1967	Beehler Syndicate & Kerr Addison	Osborne-Bell	4	293.2
		Western Extension	3	294.7
		Hudson	6	102.2
1968	Sullico Mines	Exploration	2	181.4
1970	North Shore Uranium	Exploration	3	383.1
1976	Newmont	Exploration	2	271.3
1977	Hudbay Mining	Exploration	1	144.4
1978	US-CA-MEX Explorations	Exploration	6	719.9
1979	Mattagami Lake	Hudson	4	495.9
1980	Selco Mining & SEREM	Exploration	2	192.9
		Western Extension	1	140.6
1981	Mattagami Lake & Selco Mining	Hudson	2	252.4
		Exploration	1	87.5
1982	SEREM	Exploration	2	430.8
1984	Noranda & Teck Explorations	Western Extension	1	121.9
		Hudson	2	243.2
		Exploration	3	304.8
1985	Noranda	Hudson	2	441.7
1986	Société Exploration Kery Noranda	KC-86-02 Area	1	228.0
		Western Extension	3	3.0
		Exploration	1	196.9
		Hudson	7	1,435.7
1994	Cameco	Osborne-Bell	5	1,069.5
1995	Cameco	Osborne-Bell	10	3,078.5
		Eastern Extension	1	190.0
		Western Extension	1	196.9
1996	Cameco	Eastern Extension	1	84.0
		Osborne-Bell	3	1,074.0
		Exploration	3	454.0
1997	Cameco	Eastern Extension	4	781.8
		Western Extension	4	704.9
		Exploration	2	302.4
1998	Maude Lake	Osborne-Bell	1	361.0
1999	Maude Lake	Osborne-Bell	18	4,881.1
		Eastern Extension	1	144.0
		Exploration	2	399.6
2000	Maude Lake & Phelps-Dodge	Osborne-Bell	5	681.0
		Exploration	5	494.0

Year	Company	Areas of interest	Number of DDH	Total Length
2001	Maude Lake & Noranda	Osborne-Bell	25	6,803.1
		Hudson	13	2,727.0
		Western Extension	4	841.4
		Exploration	1	175.0
2002	Maude Lake	Osborne-Bell	7	1,499.2
2003	Maude Lake	Osborne-Bell	6	1,942.6
		Western Extension	2	239.9
2006	Maudore Minerals	Osborne-Bell	32	9,190.7
		Western Extension	1	562.5
2007	Maudore Minerals	Osborne-Bell	36	14,616.0
		Western Extension	2	495.0
		Eastern Extension	3	931.0
2008	Maudore Minerals	Cooper	8	1,506.5
		Eastern Extension	4	1,224.5
		Hudson	3	729.0
		KC-86-02 Area	3	882.0
		Osborne-Bell	69	28,660.5
2009	Maudore Minerals	Comtois NW	1	111.0
		Hudson	6	1,798.1
		Western Extension	5	1,075.0
		Osborne-Bell	83	31,818.3
2010	Maudore Minerals	Comtois NW	1	222.0
		Osborne-Bell	287	77,172.2
		Exploration	2	255.0
		Western Extension	8	2,091.0
		Eastern Extension	2	471.0
2011	Maudore Minerals	Comtois NW	4	619.5
		Eastern Extension	44	11,008.8
		Osborne-Bell	198	45,430.7
		Exploration	2	231.0
		Western Extension	44	11,082.2
2012	Maudore Minerals	Exploration	2	361.0
		Eastern Extension	22	8,294.4
		Osborne-Bell	69	31,202.0
		Western Extension	21	6,755.4
		Hudson	11	4,709.0
		Laflamme	9	2,005.0
		Comtois NW	10	2,190.0
TOTAL			**1,175**	**333,790.6**

Table 6.2 – Historical holes drilled on the Osborne-Bell deposit area from 1966 to 2012 by area of interest

Areas of interest	Number of DDH	Total Length
Osborne-Bell	858	259,773.6
Western extension	100	24,604.4
Eastern Extension	82	23,129.5
Hudson	56	12,934.1
Exploration	42	5,584.9
Comtois NW	16	3,142.5
Cooper	8	1,506.5
KC-86-02 Area & Laflamme	13	3,115.0
Total	**1175**	**333,790.6**

6.1.1 Period: 1962 to 1967

In 1962, Rio Tinto Canadian Exploration Ltd completed ground geophysics on the Western Extension and identified a north-south-trending EM anomaly. The anomaly was explained by a trench exposing a 9-metre-wide band of semi-massive to massive sulphides, but no significant gold or base metal values were obtained.

During a prospecting program in 1966, F. Beehler discovered the Beehler showing (within the current Osborne-Bell resource limit). The showing was an east-west-trending sulphide-rich zone, from which a grab sample returned 68.6 g/t Au. The following year, Beehler Syndicate explored the property using geophysical surveys and carried out a 6-hole diamond drilling program totalling 523.0 metres, with 4 DDH on Osborne-Bell and 2 DDH on the Western Extension. The best result came from Osborne-Bell with 3.1 g/t Au over 0.76 m.

In 1967, Kerr Addison Mines Ltd (“Kerr Addison”) followed up on the regional airborne EM survey with ground geophysics, 6 DDH on the Hudson Zone and 1 DDH on the Western Extension. The first gold intercepts on the Hudson Zone reached up to 13.0 g/t Au over 6 cm (KAJ-67-01A).

6.1.2 Period: 1975 to 1986

During the period of 1975 to 1986, the following exploration companies flew regional EM surveys over part or all of the northwest portion of the current Central Block: Shell Canada Ltd (“Shell Canada”; 1975), Mattagami Lake Mine Ltd (“Mattagami Lake”; 1976), SEREM Ltée (“SEREM”; 1978) and Kerr Addison (1985).

The targets generated by these surveys were followed up by mapping, geophysics and soil geochemistry in specific areas, including the Hudson Zone (Mattagami Lake in 1978; Noranda from 1982 to 1986), the Eastern Extension (Shell Canada in 1976; Noranda Exploration Ltd (“Noranda”) in 1982; Teck Exploration Ltd (“Teck”) in 1984), and the Western Extension (SEREM in 1978 and 1979; Noranda in 1984).

Hudson Zone

In 1979 and 1981, Mattagami Lake drilled 6 DDH totalling 748.3 metres. Hole TN-79-11 yielded a significant gold intercept of 5.3 g/t Au over 1.5 m. From 1984 to 1986, Noranda drilled 10 DDH totalling 2,119.6 metres. Hole TN-85-02 yielded several significant gold intercepts, the best being 10.4 g/t Au over 2.6 m.

Western Extension

SEREM drilled 1 DDH of 140.6 metres in 1980 without significant values. In 1984, Teck drilled 3 DDH totalling 304.8 metres, but no significant values were obtained. That same year, Noranda drilled 1 DDH of 121.9 metres, also without significant results.

KC-86-02 Area

Société en Commandite Exploration Kery drilled 1 DDH in 1986 that returned anomalous zinc and silver values explained by narrow sphalerite stringers: 0.6% Zn and 4.1 g/t Ag over 0.6 m in KC-86-02 (228.0 m).

Also during the period of 1975 to 1986, other companies explored for commodities such as uranium, copper and zinc (e.g., North Shore Uranium, US-CA-MEX Exploration, Selco and SEREM).

6.1.3 Period: 1990 to 1992 (Osborne)

In 1990, Bryan S. Osborne carried out basal till sampling surveys over areas of favourable geology for gold between Casa Berardi and Lebel-sur-Quévillon. Three samples over 1,000 ppb Au prompted Osborne to stake 12 claims in the Comtois Township and carry out a B-horizon soil survey east of the old Beehler showing (Osborne, 1992). The survey identified an east-west-trending gold anomaly in the B-horizon, some 250 metres long by 100 metres wide with a maximum gold value of 1,500 ppb. Subsequent prospecting in the area exposed areas of weakly auriferous volcanic rocks with minor sulphides, mainly fine-grained pyrite.

In 1992, an 85-metre-long north-south trench was excavated to expose the mineralized zone. Anomalous gold values were encountered over almost the entire trench length except where cut by late dykes. The sample with the highest grade ran 8.6 g/t Au over 1.1 m. This original trench is located within the current Osborne-Bell resource area.

6.1.4 Period: 1993 to 1997 (Cameco Corporation)

In 1993, Cameco Corporation (“Cameco”) optioned Osborne’s property and completed geophysical surveys over the Osborne-Bell deposit. The company progressively acquired more claims to extend the coverage of this sector.

Since 1994, Cameco undertook a major exploration program surrounding the deposit that included geological mapping, prospecting, stripping, sampling and two geochemical surveys. Based on these results, Cameco drilled 34 DDH from 1994 to 1997, for a total of 7,936 metres, with the majority in the immediate vicinity of the deposit.

In 1997, Maude Lake Exploration Ltd ("Maude Lake") optioned a claim block from Cameco. The agreement allowed Maude Lake to acquire a 50% interest by incurring $1.3 million in exploration expenditures and paying $175,000. A joint venture was to be formed between the two companies according to the conditions in the option agreement.

6.1.5 Period: 1998 to 2004 (Maude Lake Exploration Ltd)

In 1998, Phelps Dodge Corporation of Canada Ltd ("Phelps Dodge") carried out geophysical surveys, geological mapping and a humus survey to the west of the Eastern Extension (Fig. 6.1). A number of geophysical anomalies were detected and two years later, in 2000, Phelps Dodge drilled 5 DDH for 494 metres but did not obtain any significant values.

From 1998 to 2003, Maude Lake's exploration activities consisted mainly of stripping, geophysical surveys, geochemical surveys and diamond drilling. The latter comprised 84 DDH totalling 20,519.9 metres.

Encouraging results led Maude Lake to prepare two internal resource estimates for the Osborne-Bell deposit. Both estimates predate NI 43-101 and are therefore unlikely to comply with current standards. The first, in 2000, yielded an Indicated Resource of 609,000 tonnes at 8.96 g/t Au and an Inferred Resource of 132,000 tonnes at 5.16 g/t Au. The second, in 2001, updated the 2000 estimate and used a revised geological interpretation based on additional drilling data (57 new DDH). The 2001 historical estimate yielded a global Inferred Resource of 695,000 tonnes at 9.05 g/t Au for 203,000 ounces of gold.

These "resources" are historical in nature and should not be relied upon. It is unlikely they comply with NI 43-101 requirements or follow CIM Definition Standards, and they have not been verified to determine their relevance or reliability. They are included in this section for illustrative purposes only and should not be disclosed out of context. InnovExplo did not review the databases, key assumptions, parameters or methods used for these estimates.

In 2001, Maude Lake entered into an option agreement with Newmont Mining Corporation ("Newmont") who had acquired Noranda's interests in the property. Under the terms of the agreement, Maude Lake could acquire Newmont's 95% interest in a 15-claim block contiguous to the Comtois Property. During the fall of 2001, Maude Lake conducted ground geophysics and drilling on the claim block and uncovered the gold-bearing trend of the Hudson Zone.

In 2002, Roscoe Postle Associates Inc. ("RPA") provided the initial 43-101 mineral resource estimate for the Osborne-Bell deposit (Table 6.3; RPA, 2002). The result was an Inferred Resource of 249,000 ounces of gold at a capping value of 30 g/t and a minimum cut-off grade of 6 g/t. Uncut, the 2002 results yielded 524,000 ounces of gold.

These "resources" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 requirements or follow CIM Definition Standards, and they have not been verified to determine their relevance or reliability. They are included in this section for illustrative purposes

only and should not be disclosed out of context. InnovExplo did not review the databases, key assumptions, parameters or methods used for these estimates.

In 2004, Maude Lake changed its name to Maudore Minerals Ltd.

Table 6.3 – May 2002 Mineral Resource Estimate (RPA)

Zone	6.0 g/t Au Cut-Off Grade Average Horizontal Thickness (m)	Inferred Tonnes	Cut Au* g/t	Au g/t	5.0 g/t Au Cut-Off Grade Average Horizontal Thickness (m)	Inferred Tonnes	Cut Au* g/t	Au g/t
NH	2.2	269,000	9.6	9.7	2.2	295,000	9.2	9.3
SH	6.1	343,000	8.8	31.5	6.1	343,000	8.8	31.5
SSH	1.5	57,000	11.8	12.3	4.1	185,000	7.3	10.3
B1H	1.7	63,000	7.0	7.0	1.7	63,000	7.0	7.0
B3H	1.5	5,000	8.0	8.0	1.5	5,000	8.0	8.0
B4H	1.5	44,000	15.5	29.1	1.5	44,000	15.5	29.1
Singles	1.5	25,000	10.9	15.2	1.5	25,000	10.9	15.2
Totals	**3.7**	**808,000**	**9.6**	**20.2**	**3.9**	**962,000**	**8.9**	**18.3**
Contained Au (ozs)			**249,000**	**524,000**			**276,000**	**567,000**

Mineral Resource Estimate notes (as published in RPA MRE, 2002):

** High values cut to 30 g/t Au.*
The 4 g/t Au contour was used to define lenses comprising at least two intersections.
Isolated intersections in Zones NH, SH, SSH, and B3H and "singles" were defined using 25 m radii polygons.
"Singles" are more isolated solitary intersections or clusters of less well defined intersections that do not correlate with the NH, SH, or SSH Zones.
A minimum horizontal thickness of 1.5 m was applied.
Mineralization intersections defined at approximately a 1.0 g/t Au cut-off grade locally to preserve continuity.
Gemcom software was used to generate polygons clipped at bedrock surface.
Horizontal thicknesses were estimated using Gemcom and assuming Osborne lenses have an average strike of 290 and an average dip of -75 to north and Bell lenses have an overall strike and dip of 270/-90.
A 2.90 tonnes/m³ tonnage factor applied to all zones.

6.1.6 Period: 2005 to October 2012 (Maudore Minerals Ltd)

In 2005, exploration activities were put on hold while Cameco and Maudore Minerals Ltd ("Maudore"; formerly Maude Lake) reached a Purchase and Sale agreement. Cameco agreed to sell, assign and transfer to Maudore the assigned interest (including any royalty) in the Comtois Property, resulting in Cameco no longer holding any liens on the property.

Following the acquisition, Maudore resumed exploration activities, specifically airborne geophysics (2006, 2008 and 2012), ground geophysics (2007 and 2009), borehole geophysics (2006 and 2007), mapping (2007, 2008, 2009 and 2012), stripping (2007), soil geochemistry (2007, 2011 and 2012) and core diamond drilling (2006 to 2012). This period was marked by major exploration programs and two mineral resource estimates, as described below.

The period between 2006 and October 2012 was highlighted by extensive diamond drilling programs resulting in 992 DDH for a total of 297,700.26 metres. Throughout this period, the programs were guided by the following objectives:

- Follow up on the significant gold grades obtained from earlier Osborne-Bell drill holes and the expansion of the Osborne-Bell resource base. This was a main focus in 2010 and 2011 when the definition drilling program aimed to upgrade the confidence level and add near-surface resources with the perspective of developing an open-pit scenario for the first 150-200 metres below surface.
- Develop and delineate lateral extensions of known mineralized trends (particularly in the Western Extension and Eastern Extension areas between 2010 and 2012) and investigate the area immediately north of the Osborne-

Bell deposit (the Mafic North area) where mineralized intersects run parallel to the main resource body. The bulk of drilling in the Osborne-Bell area in 2012 was concentrated in this area.

- Target exploration areas for potential new discoveries and investigate historical areas of activity. As the drilling grid on the deposit tightened, it became possible, particularly in 2012, to investigate the Comtois NW and Laflamme areas, as well as the Greer showing in the Eastern Extension area. In addition, drilling returned to the Hudson area in 2008 after a hiatus of 7 years. A total of 12,475.6 meters was drilled in 46 holes to investigate exploration targets and define historical values.

Other exploration activities during that period consisted of a Novatem high-resolution magnetic survey over the Comtois Property with a line spacing of 100 meters (50 m locally), for a total flight path of 2,267 kilometres. More details about this survey are available in the 2012 technical report (Carrier et al., 2012).

Mineral resource estimates

From 2006 to October 2012, Maudore mandated two NI 43-101 mineral resource estimates from InnovExplo, one in 2010 and the other in 2012 (Tables 6.4 and 6.5). The supporting technical reports are available on SEDAR (sedar.com).

The 2010 estimate (Carrier et al., 2010; Table 6.4) yielded an Inferred Resource of 1.2 million ounces of gold using high-grade capping of 65 g/t and cut-off grades of 1 g/t (first 150 m) and 3 g/t (below 150 m).

The 2012 estimate (Carrier et al., 2012; Table 6.5) yielded an Inferred Resource of 1.3 million ounces of gold and an Indicated Resource of 546,000 ounces of gold using uncapped assays. It included all assays received by the resource database close-out date of August 13, 2012. The remaining assays received after that date are included in the current resource estimate (see Item 14).

Table 6.4 – August 2010 Mineral Resource Estimate (InnovExplo)

Inferred Mineral Resources - Summary
Comtois Property - Osbell Mineralized Trend

Inferred Resources - First 150m 1 g/t Au cut-off *(open pit potential)*			Inferred Resources - Below 150m 3 g/t Au cut-off *(underground potential)*			Inferred Resources - TOTAL COMBINED		
Tonnes	Grade (g/t Au)	Gold Ounces	Tonnes	Grade (g/t Au)	Gold Ounces	Tonnes	Grade (g/t Au)	Gold Ounces
4,876,000	3.2	504,384	3,250,000	6.8	708,409	8,126,000	4.6	1,212,793

Mineral Resource Estimate notes (as published in Carrier et al., 2010):

1) *The Mineral Resource Estimate has been completed using the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards for Mineral Resources and Mineral Reserves in accordance with Regulation 43-101 – Standards of Disclosure for Mineral Projects.*
2) *The Qualified and Independent Person for the Mineral Resource Estimate, as defined by Regulation 43-101, is Alain Carrier, MSc., PGeo. (OGQ #281) from the consulting firm InnovExplo Inc. The effective date of the estimate is August 6, 2010.*
3) *These Mineral Resources are not Mineral Reserves as their economic viability has not yet been demonstrated.*
4) *Results are presented undiluted and in situ; some resource blocks may be locked in pillars.*
5) *A minimum true width of 2 metres was applied when interpreting the mineralization using the grade of the adjacent material when assayed or a value of zero when not assayed. The interpretation was performed by Alain Carrier, MSc., PGeo. (OGQ #281) and Tafadzwa Gomwe, PhD, PGeo. (OGQ #1229), both from InnovExplo, and includes eighteen (18) different gold-bearing zones covering the entire Osborne-Bell mineralized trend.*
6) *Mineral resources were compiled using a minimum cut-off grade of 3 g/t Au for underground potential and 1 g/t Au for the portion from surface to -150 metres for open pit potential. The results for other cut-off grades were also compiled but for comparative purposes only. The cut-off grade must be re-evaluated in light of prevailing market conditions and other factors: gold price, exchange rate, mining method, related costs, etc.*
7) *High grade capping was done on the raw data and established at 65 g/t Au. Other capping grade results were also compiled but for comparative purposes only. Drill hole compositing was done on 1-metre intervals within the mineralized wireframes (tails <0.25 m were removed). A minimum of 2 and a maximum of 12 composites were used for the block interpolation. A fixed density of 2.82 g/cm3 was used to estimate the tonnage.*
8) *Only Inferred resources were considered for the 2010 Mineral Resource Estimate (no Measured or Indicated resources). Inferred resources were estimated from drill hole results using a block model approach in GEMS version 6.2.3 and interpolated using the ordinary kriging process. Kriging parameters were obtained using correlograms and were established by Christian D'Amours, PGeo. (OGQ #226), an independent geologist from GeoPointCom.*
9) *Calculations used metric units (metres, tonnes, g/t Au). Results at cut-off grades of 3 g/t and 1 g/t, capped at 65 g/t Au, were rounded to reflect their estimated nature. Tonnes are rounded to the nearest thousand and grades to one decimal point. Ounces were calculated from rounded-off results.*
10) *The company is not aware of any known environmental, permitting, legal, title, taxation, socio-political or marketing issues, or any other relevant issues that could materially affect the Mineral Resource Estimate.*

Table 6.5 – October 2012 Mineral Resource Estimate (InnovExplo)

Open Pit Potential - Mineral Resources > 0.5 g/t Au (within Pit Shell)						
Zone	Indicated Resources			Inferred Resources		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
Osborne	8,447,900	2.0	544,251	1,977,500	3.5	222,960
Bell				1,633,600	1.9	97,212
Envelope				1,385,900	2.4	107,858
Sub-Total	8,447,900	2.0	544,251	4,997,000	2.7	428,030
Underground Potential - Mineral Resources > 2.5 g/t Au (outside Pit Shell)						
Zone	Indicated Resources			Inferred Resources		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
Osborne	16,000	4.0	2,048	2,534,600	8.3	679,476
Bell				112,500	3.8	13,696
Envelope				471,700	9.1	137,787
Sub-Total	16,000	4.0	2,048	3,118,800	8.3	830,959
Mineral Resources Total (Open Pit and Underground Potential combined)						
Zone	Indicated Resources			Inferred Resources		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
Osborne	8,463,800	2.0	546,299	4,512,100	6.2	902,436
Bell				1,746,100	2.0	110,908
Envelope				1,857,600	4.1	245,645
TOTAL	**8,463,800**	**2.0**	**546,299**	**8,115,800**	**4.8**	**1,258,990**

Mineral Resource Estimate notes (as published in Carrier et al., 2012):

1) *The Independent and Qualified Persons for the Mineral Resource Estimate, as defined by Regulation 43-101, are Alain Carrier, MSc., PGeo. (InnovExplo), Pierre-Luc Richard, MSc., PGeo. (InnovExplo), and Christian D'Amours, BSc., PGeo. (GeoPointCom), and the effective date of the estimate is October 26, 2012.*
2) *These Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.*
3) *Mineral Resources are presented undiluted and in situ. A Whittle-optimized pit shell separates Open Pit Potential Resources (within Pit Shell) from Underground Potential Resources (outside Pit Shell). The estimate includes two (2) gold-bearing zones (Osborne and Bell) and an external envelope containing isolated gold intercepts.*
4) *In-Pit resources were compiled at a minimum cut-off grade of 0.5 g/t Au.*
5) *In-Pit cut-off and Whittle parameters were based on Mining cost = C$2.47; Pit slope angle = 50.0 degrees; Processing cost = C$15.00; G&A cost = C$4.63; Processing recovery = 93%; Mining dilution = 5%; Mining recovery + 95%; Gold price = C$1,450.*
6) *Underground resources were compiled at a minimum cut-off grade of 2.5 g/t Au.*
7) *Underground cut-off is based on Mining cost = C$90.00; Processing cost = C$22.00; Processing recovery = 93%; Mining dilution = 20%; Gold price = C$1,450.*
8) *Cut-off grades must be re-evaluated in light of prevailing market conditions (gold price, exchange rate and mining cost).*
9) *The estimate is based on 877 diamond drill holes (251,005 metres) drilled from 1994 to July 2012. All drill holes having passed through the final QA/QC process on August 13, 2012, were included.*
10) *A fixed density of 2.8 g/cm³ was used in the mineralized zones and in the envelope zone.*
11) *A minimum true thickness of 3.0m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed, except for late barren dyke intervals that were excluded from gold compositing. Those were composited in a parallel dyke percentage block model and later used to dilute the interpolated gold values. Compositing for gold values was completed on drill hole intervals falling within the mineralized zone solids (composite = 1 m). Compositing for late barren dyke percentages was completed on drill hole intervals from top to bottom (composite = 1m).*
12) *Uncapped raw assays were used, supported by statistical analyses and the high-grade distribution through the deposit.*
13) *Resources were evaluated from drill hole samples using ordinary kriging interpolation method in a multi-folder percent block model for gold values using GEMS version 6.4. Based on geostatistics, the ellipse range for interpolation was 150m X 150m X 40m for the Osborne Zone, and 80m X 65m X 55m for the Bell Zone. The ellipse range for the envelope was determined at half the range of the closest zone. Dyke percentage was evaluated from drill hole lithological description using ID6 interpolation method using a first pass of 50m X 50m X 3m and a second pass of 250m X 250m X 3m.*
14) *The Indicated category is defined by the combination of blocks within the mineralized zones and a slope of the regression of the actual gold value higher than 0.2.*
15) *Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes and g/t).*
16) *The number of metric tons was rounded to the nearest hundred. Any discrepancies in the totals are due to rounding effects. Rounding followed the recommendations in Regulation 43-101.*
17) *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political or marketing issues or any other relevant issues that could materially affect the Mineral Resource Estimate*

6.1.7 Period: October 2012 to May 2016 (Maudore Minerals Ltd)

Since the publication of the October 2012 technical report (Carrier et al., 2012), no other technical report has been produced for the Property. InnovExplo's involvement in the former property ceased once Maudore focused its capital and efforts on finalizing the 2013 acquisition of the Vezza and Sleeping Giant mines. In the following years, as Maudore and its subsidiary, Mines Aurbec, faced economic difficulties and financial restructuring, the available capital to develop the former Comtois Property dwindled to the point where no major exploration programs were conducted after October 2012. Eventually, Maudore was obliged to commence proceedings under the *Bankruptcy and Insolvency Act* during the second quarter of 2016.

Because InnovExplo has not been actively involved in the Maudore's Comtois Property since 2012, a former agent of Maudore was contacted to provide any new or relevant information on project activities that may have occurred during that period. Below is a summary of the exploration work conducted by Maudore from October 2012 to May 2016. The information was provided by former agents that were involved in the exploration programs.

- Maudore completed three internal reports on the Osborne-Bell gold deposit. The reports touched on various subjects, such as host rock lithogeochemistry (March 12, 2013), a petrography and electron microprobe study on selected samples (November 25, 2012), and an investigation into the controls on mineralization at the deposit.
- SGS Lakefield Research Ltd finalized their report entitled "*A scoping-level gold recovery test program on the Osbell deposit samples*" with the addition of grindability tests (Dymov and Hendry, 2012).
- The 2012 Novatem airborne magnetic survey of 2012 was consolidated with a previously completed property-wide survey. In addition, a ground magnetic survey was also completed on the Osborne-Bell, Comtois NW and Hudson areas.
- Eleven (11) kilometres of core were logged and imported into the Geotic database. The core was from the end of the 2012 drilling program. The best mineralized intervals are presented in Table 6.6.

Other work was planned but did not materialize. After the discovery of Comtois NW in 2009, only 16 more holes were drilled from 2009 to 2012, even though more had been planned. Drilling permits were obtained following an environmental study, but Maudore never carried out the work after budget cuts limited all exploration activities.

Also, in March and August 2012, InnovExplo supervised the drilling of HQ-calibre diamond drill holes for metallurgical testwork, but the half-core samples were never sent. The split core remains in core boxes at the Osisko core storage facilities in Lebel-sur-Quévillon.

Only 1 DDH was completed after October 26, 2012, the effective date of the 2012 technical report (Carrier et al., 2012). Hole COM-12-952 was drilled in the Mafic North area, just north of the Osborne-Bell deposit, and completed on November 2, 2012. The hole was mentioned in the 2012 technical report.

Of the 144 DDH completed in 2012, the assay certificates for 63 holes were received after the database close-out date of August 13, 2012. Of these, 50 were drilled in the Osborne-Bell area and could therefore be added to the database for the current resource estimate (see Item 14). Figure 6.3 shows the location of the 63 holes and Tables 6.6 and 6.7 summarize the significant mineralized intercepts contained in the certificates.

The reader should refer to Carrier et al. (2012) for detailed information on past drilling campaigns.

Table 6.6 – Summary of Maudore 2012 drill holes from which assay certificates were received after the database close-out date for the 2012 MRE (August 13, 2012)

Area	Number of drill holes	Total meters drilled (m)
Osborne-Bell	18	13,120.5
Osborne-Bell (Mafic North)	27	11,704.5
Eastern Extension	11	3,780.0
Western Extension	7	3,044.0
Total	**63**	**31,649.0**

Table 6.7 – Significant mineralized intercepts in the Osborne-Bell area from assay certificates received after the database close-out date for the 2012 MRE (Maudore period).

Zone	HOLE-ID	FROM	TO	Au g/t	LENGTH
Eastern Extension	COM-12-883	45.00	50.00	**0.84**	**5.00**
	COM-12-886	170.70	174.40	**3.59**	**3.70**
	COM-12-893	347.00	352.00	**0.94**	**5.00**
	COM-12-894	331.00	334.00	**0.79**	**2.80**
	COM-12-894	338.50	341.50	**0.90**	**3.00**
Osborne-Bell (Mafic North)	COM-12-903	136.00	139.00	**2.90**	**3.00**
	COM-12-909	279.00	283.00	**1.39**	**4.00**
	COM-12-909	456.10	460.00	**14.34**	**3.90**
	COM-12-910	653.50	668.50	**7.31**	**15.00**
	COM-12-910	683.50	686.50	**2.06**	**3.00**
	COM-12-910	819.30	827.50	**1.48**	**8.20**
	COM-12-913	259.00	262.00	**3.43**	**3.00**
	COM-12-913	604.70	610.60	**1.25**	**5.90**
	COM-12-954	335.50	340.00	**0.93**	**4.50**
	COM-12-954	454.00	460.50	**1.89**	**6.50**
Osborne-Bell	COM-12-882A	129.20	133.50	**0.85**	**4.30**
	COM-12-882A	137.50	147.90	**3.79**	**10.40**
	COM-12-890B	1204.90	1207.90	**1.43**	**3.00**
	COM-12-896C	735.00	743.50	**2.20**	**8.50**
	COM-12-896C	853.00	856.50	**0.82**	**3.50**
	COM-12-896C	1059.40	1066.10	**0.81**	**5.60**
	COM-12-896D	542.00	546.30	**1.73**	**4.30**
	COM-12-896D	560.50	564.00	**1.14**	**3.50**
	COM-12-896D	644.50	653.30	**1.33**	**8.80**
	COM-12-904B	25.50	36.60	**0.61**	**11.10**
	COM-12-904B	322.00	329.00	**0.99**	**7.00**
	COM-12-906A	899.50	902.50	**1.41**	**3.00**
	COM-12-924	140.50	147.10	**1.01**	**6.60**
	COM-12-924	170.00	174.00	**0.97**	**4.00**
	COM-12-925A	81.00	103.00	**3.06**	**22.00**
	COM-12-929	12.00	33.00	**1.22**	**21.00**
	COM-12-929	40.00	50.10	**0.76**	**10.10**
	COM-12-929	59.00	63.60	**0.81**	**4.60**
	COM-12-929	71.00	78.00	**0.82**	**7.00**

Notes about Table 6.7: Mineralized composites (uncapped) were calculated using a cut-off grade of 0.5 g/t on a continuous minimum length of 3 metres as measured along the core axis. True thickness has not been determined.

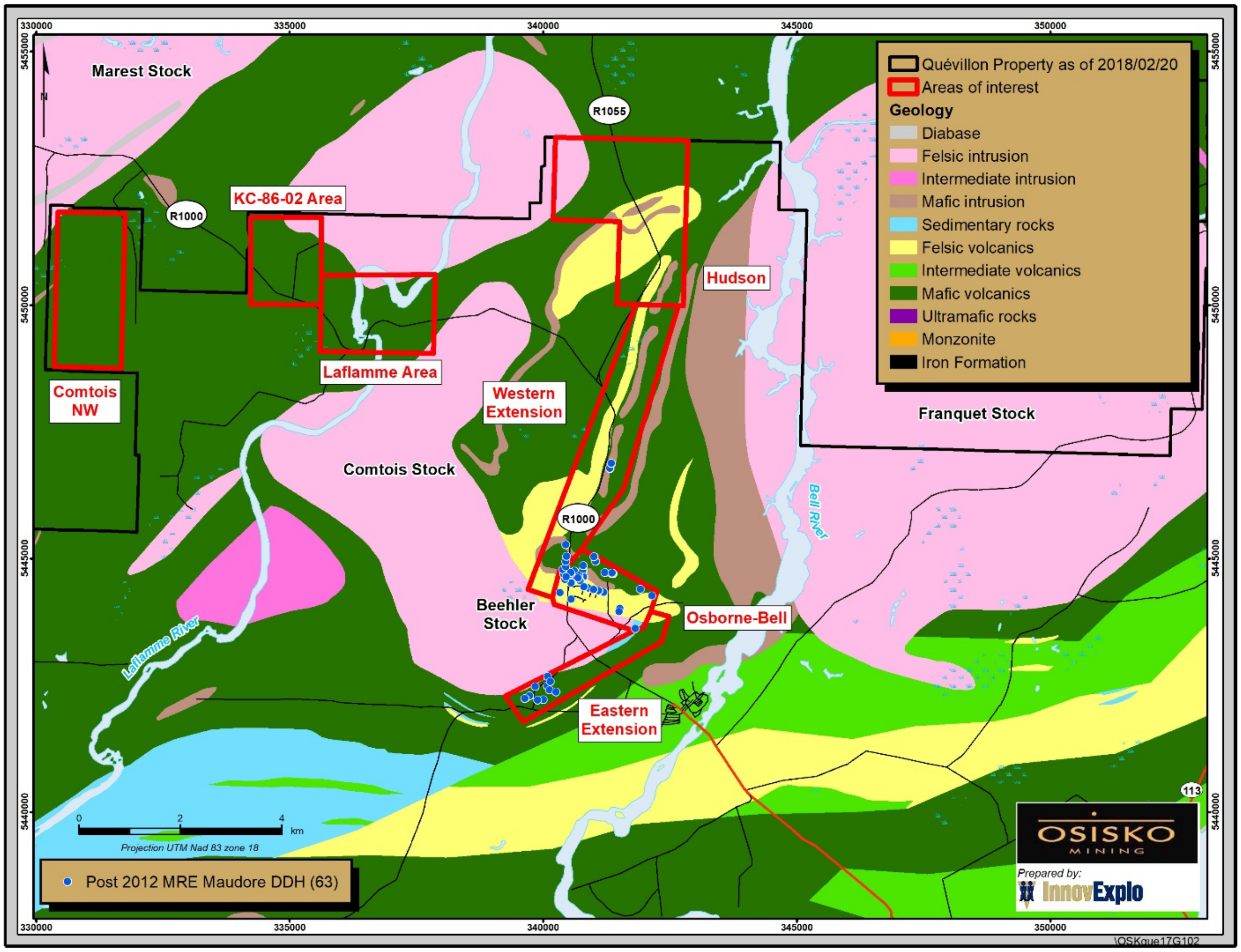

Figure 6.2 – Location of the 63 diamond drill holes drilled by Maudore for which assay certificates were received after the 2012 MRE database close-out date.

6.2 Québillon Property (Western, Central and Northeastern blocks)

The exploration history of the Québillon Property outside the Osborne-Bell deposit area (i.e., the former Comtois Property; see section 6.1) is presented below in three parts, one for each claim block (Fig. 6.3). The information was compiled from the MERN's SIGEOM database (http://sigeom.mines.gouv.qc.ca/). The list of consulted government documents and assessment reports are presented at the end of Item 27, after the list of references. Assessment reports have the prefix "GM".

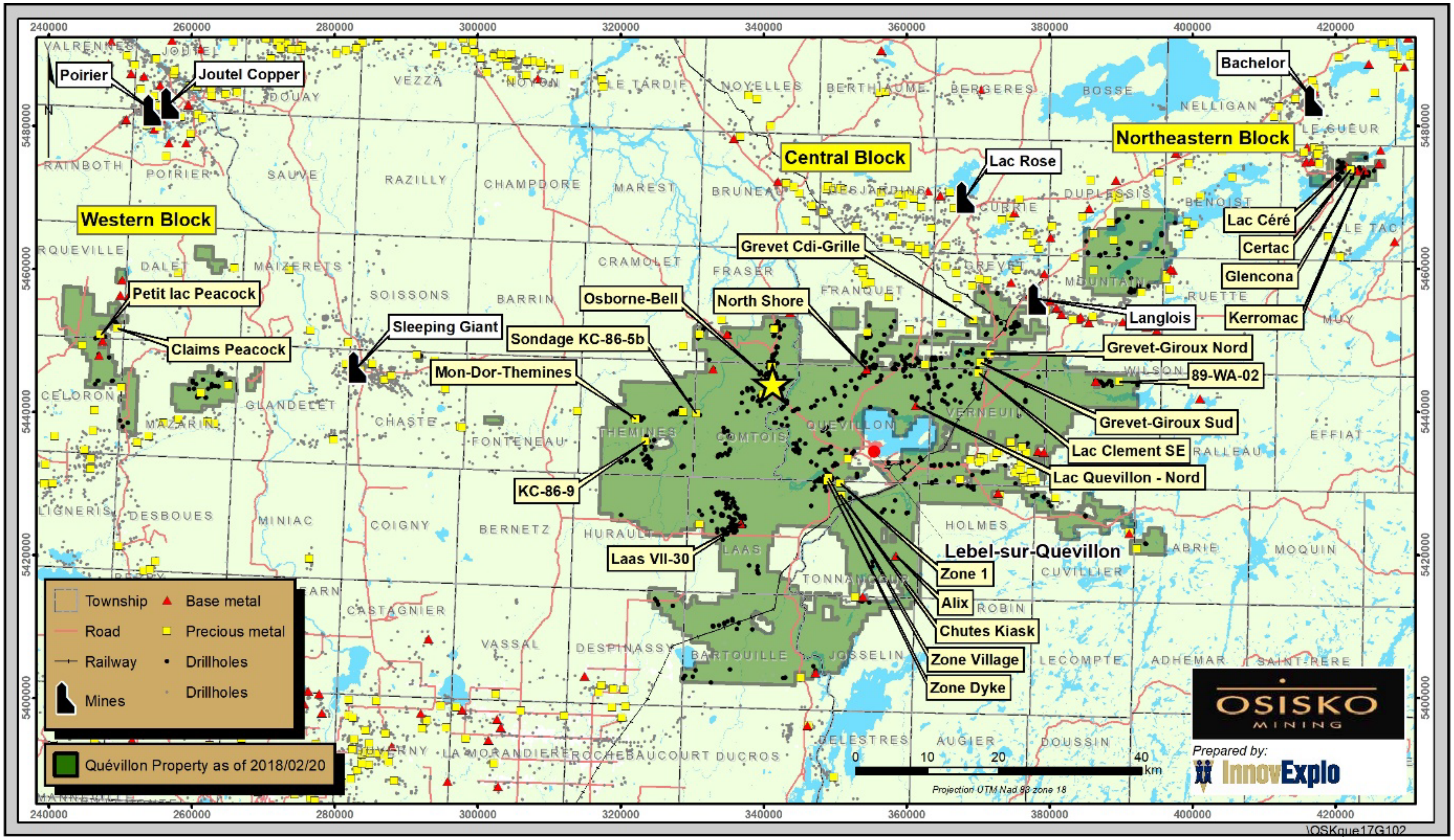

Figure 6.3 – Map of principal mines, prospects, occurrences and showings on and around the Quévillon Property, as well as historical diamond drill holes (black= on the property, grey= outside). Sources: SIGEOM.

6.2.1 Central Block

A total of 625 assessment reports concern the Central Block of the Quévillon Property. Of this total, 452 reports are on aerial and ground geophysical surveys, and the remainder relate to geological work such as drilling, mapping, trenching, sampling, geochemistry and geological interpretation. The reader is reminded that all work conducted in the Osborne-Bell deposit area (i.e., Maudore's former Comtois Property) is excluded from this discussion on the Central Block.

Most of the mapping by the Government took place in the northern portion of the Central Block in 1935 (RP 108), 1937 (RP 114), 1938 (RP 122), 1939 (RG 002), 1946 (RG 024) and 1958 (MAP 1257). The northeast corner of the Central Block was mapped in the 1990s (MB 91-14, RG 96-07, RG 97-09, and RG 97-10). Compilation maps were published in 1984 (CG 032F/02) and 2010 (CG SIGEOM32F). The southern portion of the Central Block is poorly covered by recent mapping. Most information in this area comes from regional reconnaissance maps dating from 1934 (RASM 1934-C3), 1935 (RASM 1935-C1), 1939 (RG 002) and 1946 (RG 024).

Areas covered by geophysical surveys range in size from 1 to 500 square kilometres. Most surveys exceeding 100 square kilometres are concentrated in the central and northern parts of the Central Block. The distribution of geophysical assessment reports over time reveals a major period of data acquisition from 1975 to 1998. This period of exploration corresponds to the 1982 discovery of the Langlois base metal mine (VMS deposit). This mine lies just outside the Quévillon Property, near its northeastern boundary, approximately 30 kilometres from the town of Lebel-sur-Quévillon. The peak of geophysical data acquisition corresponds to ground surveys (EM and IP/Res surveys) between 1986 and 1988. This period coincides with the 1985 discovery of a few other massive sulphide deposits in the Matagami camp.

A Mark IV INPUT survey in 1974 covered all of the southern portion of the Central Block (DP 237), whereas three other Mark IV INPUT surveys covered the northern portion in 1981 (DP 819), 1984 (DP-83-32) and 1985 (DP-85-19). From 2001 to 2003, Noranda and Virginia Gold Mines Inc. ("Virginia") jointly carried out a MEGATEM®II survey, which was publicly released in 2009 (DP 2008-41).

Two major periods of drilling took place on the Central Block (Table 6.8): 1956 to 1961 and 1986 to 1990. The total meterage drilled from 1956 to 2016 on the claim block but outside the Osborne-Bell deposit area (former Comtois Property) is 91,172 metres in 674 holes (Fig. 6.3; Table 6.8), but when the deposit area is included, the total is 456,611.6 metres (Tables 6.2, 6.6 and 6.8).

During the period 1956 to 1961, drilling programs covered the Central Block from the town of Lebel-sur-Quévillon to the western limit of the Property and in the area north of the town. This period of activity coincides with the discovery of several base metal massive sulphide deposits in Matagami (Mattagami Lake Mine in 1957) and Joutel (Joutel Copper Mine in 1958), roughly 100 kilometres northwest of Lebel-sur-Quévillon (Fig. 6.3). In 1958, Quebelle Mines Ltd concentrated their drilling on the Cedar Rapids prospect, discovered in 1939, at 7 kilometres southwest of Lebel-sur-Quévillon. The Village Zone of the Cedar prospect occurs on the Quévillon Property, whereas Zone 1 is a few hundred metres outside its limits. This period of exploration also led to the discovery of five prospects all located in the Quévillon Property: Grevet-Giroux South and North, Alix, North Shore and Laas VII-30. Between 1959 and 1961, Hudson Bay

Exploration & Development Co. Ltd ("Hudson Bay Exploration") drilled 86 DDH in the eastern part of the Central Block, with 59 of them around the Laas VII-30 prospect in Laas Township.

The period from 1962 to 1984 was relatively quiet in terms of exploration, with small drilling programs sparsely distributed in the northern portion of the Central Block and south of the Osborne-Bell deposit (Table 6.8). The principal interest was the INPUT conductors located in the felsic and intermediate volcanic units of the Quévillon Group. SEREM was particularly active between 1980 and 1982 in the northeastern part of Grevet, Verneuil and Quévillon townships (Fig. 6.3).

During the period from 1986 to 1990, drilling concentrated on the northeastern part of the Central Block following the discovery of the Langlois mine. During this period, more intense drilling and follow-up work led to the discovery of six occurences: Mon-Dor-Thémines, Sondage KC-86-5b and KC-86-9 in the western portion of the Central Block, and Grevet Cdi-Grille and 189-WA-02 in the northeastern corner (Fig. 6.3).

Drilling after 1990 was sporadic. Between 1997 and 2000, SDBJ drilled 31 DDH on the Property, most of them concentrated around the Cedar Rapids prospect. The SDBJ campaign led to the discovery of a third zone at Cedar named the Dyke Zone. Between 2008 and 2012, Maudore drilled 71 DDH north of the town of Lebel-sur-Quévillon, and between the town and the western limit of the Central Block (Table 6.8). Only a few significant gold, silver, copper and zinc intervals were encountered. In 2015 and 2016, SOQUEM drilled 9 DDH on EM conductors in the Verneuil and Quévillon townships for a total of 1,709 metres (GM 69675). No significant values were reported. Three occurences were also discovered during this period; Lac Quévillon North in 1993 and Lac Clément SE in 1996, both by prospecting, and Chutes Kiask in 2012 by drilling.

The best mineralized intervals in drill holes on the Central Block (outside the deposit area) are listed in Table 6.9. The most significant area for gold mineralization in Central Block (aside from the deposit and surrounding prospects) is the Cedar Rapids area.

Table 6.8 – Summary of historical drill holes on the Central Block (excluding the Osborne-Bell deposit area; i.e., Tables 6.2 and 6.6).

Period	Companies	Number of DDH	Total Length (m)
1956-1961	New Jersey Zinc Expl Co Ltd, Canadian Shield Mining Corp, East Sullivan Mines Ltd, Hudson Bay Expl & Dev Co Ltd, and 6 others	155	15054.2
1962-1968	Cambridge Mining Corp Ltd, Coniagas Mines Ltd, Noranda Expl Co Ltd, Sullico Mines Ltd, and 5 others	33	4783.0
1969-1973	Groupe Minier Sullivan Ltee, Naganta Mining & Dev Co Ltd, North Shore Uranium Corp, SOQUEM, Sullico Mines Ltd, and 1 other	34	2686.0
1974-1977	Amax Potash Ltd, Naganta Mining & Dev Co Ltd, and 2 others	11	1233.0
1978-1984	Hudbay Mining Ltd, Mattagami Lake Expl Ltd, Selco Mining Corp Ltd, SEREM Ltee, Shell Canada Ltee, SOQUEM, Teck Expls Ltd, and 4 others	86	8642.0
1986-1990	Caliente Resources Ltd, Exploration Kerr Addison Inc, Midnapore Resources Inc, Mines D'or Perron Ltee, Ressources Beaufield Inc, SOQUEM, and 13 others	176	26419.8
1993-2004	BHP Minerals Canada Ltd, Cambior Inc, Minerais Lac Ltee, Mines D'or Virginia Inc, Noranda Inc, Phelps Dodge Corp of Can Ltd, Societe De Developpement De La Baie James, and 6 others	85	17115.0
2008-2016	Mineraux Maudore Ltee, SOQUEM, and 1 other	94	15238.8
TOTAL		**674**	**91171.8**

Table 6.9 – Significant historical gold and base metals intercepts in the Central Block (excluding the Osborne-Bell deposit area). Data from SIGEOM.

Report	Area	HOLE-ID	Year	Township	Easting_UTMZ18	Northing_UTMZ18	LENGTH (m)	Au (g/t)	Zn (%)	Cu (%)	Company
GM 10518-B	Cedar Rapids	10	1959	Quévillon	349003	5430869	4.6	4.30			Quebelle Mines Ltd
GM 10518-A	Cedar Rapids	12	1960	Tonnancour	350689	5430188	1.1	3.20			Claims Boucher
GM 56136	Cedar Rapids	CDR97-2	1997	Quévillon	349147	5430872	1.0	6.05			SDBJ
GM 56136	Cedar Rapids	CDR97-6	1997	Quévillon	349170	5430944	12.7	0.70			SDBJ
GM 56136	Cedar Rapids	CDR9807	1998	Laas	348932	5430401	1.0	21.35		0.86	SDBJ
GM 56136	Cedar Rapids	CDR9818	1998	Laas	348986	5430451	1.1	4.44		0.50	SDBJ
GM 56641	Cedar Rapids	CDR9830	1998	Quévillon	349260	5430579	1.0	1.41		0.29	SDBJ
GM 57567	Cedar Rapids	CDR9934	1999	Quévillon	349057	5430511	1.0	6.40			SDBJ
GM 58308	Cedar Rapids	CDR9933	1999	Quévillon	349357	5431249	2.0	2.60	0.54		SDBJ
GM 57567	Cedar Rapids	CDR9936	1999	Quévillon	349104	5430286	4.2	0.60			SDBJ
GM 57567	Cedar Rapids	CDR9937	1999	Quévillon	348783	5430706	31.4	2.00			SDBJ
GM 58308	Cedar Rapids	CDR00-39	2000	Quévillon	349398	5430843	1.9	1.69			SDBJ
GM 66564	CSW-09-01	CSW-10-06	2010	Thémines	328750	5439940	1.0	8.33			Mineraux Maudore Ltee
GM 15106	Franquet-Coin SE	G-1	1961	Grevet	363499	5447325	1.5			0.42	East Sullivan Mines Ltd
GM 15111	North Shore	Q11	1961	Quévillon	354542	5445694	2.3		3.70	1.30	East Sullivan Mines Ltd
GM 21553	North Shore	S-Q-2	1966	Quévillon	354427	5445892	4.4		0.80	0.60	Sullico Mines Ltd
GM 22443	0.6 km South of Josselin-Tonnancourt	T-22	1968	Josselin	353870	5413561	2.0	1.04			Noranda Expl Co Ltd
GM 15111	1.4 km East-North-East of North Shore	F-4	1961	Franquet	355749	5446555	11.3			0.20	East Sullivan Mines Ltd
GM 39316	5 km southeast of Osborne-Bell	78-3	1969	Quévillon	344749	5440471	1.5		0.67		Naganta Mining & Dev Co Ltd
GM 39361	5 km southeast of Osborne-Bell	82-QV-C-1	1982	Quévillon	356492	5445066	1.6		0.20		Serem Ltee
GM 15114	*Regional Exploration*	Q-20	1962	Quévillon	358204	5446168	1.5	1.09			East Sullivan Mines Ltd
GM 13302	*Regional Exploration*	D.H.3	1963	Tonnancour	358096	5426110	15.0			0.10	Cambridge Mining Corp Ltd
GM 45986	*Regional Exploration*	H-1416-05	1986	Franquet	359454	5447345	1.7	1.30			Expl Min Golden Triangle Inc
GM 48238	*Regional Exploration*	88-9	1988	Cuvillier	377940	5428430	1.4	1.76			Soquem
GM 64381	*Regional Exploration*	08-BART-03	2008	Bartouille	346994	5404486	1.2		0.32		Claims Lacasse
GM 64381	*Regional Exploration*	08-BART-02	2008	Bartouille	347302	5403869	1.5		0.70		Claims Lacasse

6.2.2 Western Block

A wide range of exploration work has been conducted on the Western Block since 1957. The main activities were geophysical surveys (83 assessment reports), compilation studies (31 assessment reports) and 49 DDH between 1960 and 2012 (Table 6.10). A regional government mapping program covering the entire Western Block was carried out in 1937 by the Geological Survey of Canada (Wilson, 1940). The Western Block was covered later by other regional mapping programs in 1949 (RP 236), 1959 (RG 088 and RG 089), 1981 (DP 851) and 1983 (DP 83-25), and by a geological compilation map in 1984 (CG 032E/01). No mapping has been done since then by the government.

Most of the historical exploration work on the Western Block took place during four periods.

During the period 1959 to 1961, following the discovery of the Lac Mattagami Zn-Cu deposit in 1957 about 75 kilometres northeast of the Western Block, base metal exploration work started in the area covered by the Quévillon Property. As for the Mattagami deposit, geophysics played a major role in the discovery of the Joutel copper (1958) and Poirier (1959) zinc and copper deposits located 30 kilometres north of the Western Block (Fig. 6.3). In 1958, American Metal Climax Inc. flew a MAG and EM survey over the eastern portion of the Western Block (GM 07238). The central part of the westernmost block of claims (Celoron and Carqueville townships) was investigated in 1959 and 1960 by Mining Corp. of Canada and Turgeon Syndicate with ground EM, MAG and gravimetric surveys. Turgeon Syndicate drilled two short DDH.

Period from 1963 to 1984, SOQUEM, SDBJ, Eagle Gold Mines Ltd, Adcura Ltd, and Deeprobe Syndicate covered much of the Western Quévillon Block with aerial magnetic surveys as well as several square kilometres of ground electric and EM surveys. In 1971, Colleen Copper Mines Ltd flew a MAG survey over much of the western portion of the Western Block (GM 27412). In 1973, a regional airborne MAG survey was conducted by the Geological Survey of Canada and the MERN over the entire Western Block (DPV 164). In 1974, Deeprobe Syndicate surveyed most area of the Western Block using airborne Turair EM and MAG techniques (GM 30872). A total of 4 DDH were drilled by SOQUEM (GM 28565) and Falconbridge (GM 32984) on ground EM anomalies (Table 6.10). This period corresponds to the discovery of the Sleeping Giant mine in 1976, about 13 kilometres to the east of the Western Block limit (Fig. 6.3).

The period from 1985 to 1992 was characterized by surface work (prospecting, mapping, trenching, sampling), ground and aerial geophysics, and drilling programs (33 DDH for 4,334 m of core). In 1987, Golden Trend Energy Ltd and Eastern Mines Ltd drilled 21 holes in Mazarin Township, following east-west-trending EM anomalies in the eastern part of the Western Block. No significant mineralization was obtained in drill core. All other holes in the Western Block during this period were concentrated in the westernmost part of the Quévillon Property, especially around the Mont Hébert and Claims Peacock showings (both outside of the property) discovered by prospecting in 1972 and 1986, respectively (Fig. 6.3).

Since 1989, little exploration work has been conducted on the Western Block. In 2007, Exploration Lounor Inc. drilled 5 DDH in Carqueville Township. The drilling program led to the discovery of the Lac Fumerton base metal showing. In 2012, Maudore discovered two silver showings (MAZ-12-04 and MAZ-12-03) in Mazarin Township. All three showings are on the Property. Noranda and Virginia carried out a MEGATEM®II survey between 2001 and 2003 in the southern portion of the Western Block. The survey was publicly released in 2009 (DP 2008-17).

The best mineralized intervals in drill holes on the Western Block are listed in Table 6.11. The most significant gold values occur in Craqueville Township, near the Claims Peacock and Petit Lac Peacock showings outside the Property.

Table 6.10 – Summary of historical drill holes on the Western Block (data from SIGEOM).

Period	Companies	Number of DDH	Total Length (m)
1960	Turgeon Synd	2	25.0
1968	Claims Arcand & Carriere	1	61.0
1972	SOQUEM	1	107.0
1977	Falconbridge Nickel Mines Ltd	3	341.0
1985-1992	Cogema Canada Ltd, Eastern Mines Ltd, Exploration Omega Inc, Golden Trend Energy Ltd, Mines Sigma, Ressources Orient Inc, Exploration Rio Algom Inc, and 3 others	33	4334.0
2007	Exploration Lounor Inc.	4	341.0
2012	Mineraux Maudore Ltee	5	992.4
Total		**49**	**6201.4**

Table 6.11 – Significant historical gold and base metal intercepts on the Western Block (data from SIGEOM).

Report	Area	HOLE-ID	Year	Township	Easting_UTMZ17	Northing_UTMZ17	LENGTH (m)	Au (g/t)	Zn (%)	Cu (%)	Company
GM 50313	**Claims Peacock**	443-90-5	1990	Carqueville	686627	5450067	**0.9**		**0.6**		Ressources Orient Inc
GM 43552	**Claims Peacock**	CAR-86-3	1986	Carqueville	686833	5449835	**1.0**	**1.4**			Exploration Omega Inc
GM 43552	**Petit Lac Peacock**	CAR-86-7	1986	Carqueville	684237	5447690	**1.1**	**1.4**			Exploration Omega Inc
GM 32984	***Regional Exploration***	768-7	1977	Céloron	684453	5441137	**0.9**		**0.4**		Falconbridge Nickel Mines Ltd
GM 32984	***Regional Exploration***	768-8	1977	Céloron	686131	5445072	**0.2**		**0.2**		Falconbridge Nickel Mines Ltd
GM 32984	**Bieber**	768-9	1977	Céloron	684659	5445408	**0.3**		**0.2**		Falconbridge Nickel Mines Ltd
GM 28565	**MAZ-12-03**	429-30-01	1972	Mazarin	703214	5442995	**3.0**		**0.2**		SOQUEM
GM 62992	**Lac Fumerton**	CA-07-06	2007	Carqueville	687101	5455971	**0.2**		**1.89**	**0.3**	Exploration Lounor Inc

6.2.3 Northeastern Block

The Northeastern Block consists of two groups of claims (Fig. 6.3). The larger group of claims is located close to the Central Block, mainly in Mountain and Duplessis townships, roughly 7 and 17 kilometres, respectively, from the active Langlois base metal mine (discovered in 1982) and the Lac Rose historical gold mine (discovered in 1934). Most of the historical work was concentrated on this larger group of claims. The other block of claims is in Le Tac Township 10 kilometres southeast of the active Bachelor gold mine (discovered in 1946).

The first reconnaissance mapping covering the whole area was carried out by the MERN in 1934 (RASM 1934-C4). The western portion was mapped by the MERN in 1989 (MB 89-34). The most recent map is a compilation produced by the MERN in 2010 (CG SIGEOM32F).

Four major periods of exploration work are distinguished on the Northeastern Block.

The period from 1949 to 1961 began when Hollinger Mining Company carried out trenching, stripping, sampling (around 800 assays) in 1949 and discovered four showings in Le Tac Township: Certac, Glenconna, Kerromac and Lac Céré (GM 34949). The Certac deposit and the Lac Céré prospect are located on the Quévillon Property (Fig. 6.3). In 1950, American Metal Co. Ltd ("American Metal") produced a regional geological map between the Bell River and Lake Opawica (GM 05845). In 1951, Louvicourt Goldfield Corp. Exploration executed trenching, stripping and sampling at Certac, followed by geophysics. In 1952, Lichen Lake Mining Co. Ltd ("Lichen Lake") acquired the Certac Property and conducted prospecting, trenching, exploration and assessment work until 1956. In 1953, Glenconna Mining Co. Ltd and South Bachelor Mining Co. drilled 7 DDH (Tables 6.12 and 6.13). In 1961, Lichen Lake Mining Co Ltd drilled 930 metres of core in 11 DDH in the vicinity of the Certac deposit (Table 6.13). The first aerial magnetic survey covering the Duplessis and Mountain townships was done by American Metal in 1957 (GM 05515).

At the beginning of the period from 1962 to 1978, small areas were surveyed by electromagnetic methods from 1962 to 1966. In 1965, after completing a regional airborne MAG and EM survey (GM 16313), Hudson Bay Exploration carried out a 10-hole drilling program for a total of 1,130 metres in the southern portion of the Northeastern Block (Mountain Township) and intercepted several metre-thick semi-massive sulphide horizons without significant economic base metal values (GM 17652). SOQUEM, who was active on the Northeastern Block from 1969 to 1974 carried out six MAG, EM and gravimetric ground surveys in 1969 (GM 25045, GM 25047, GM 25690, GM 25049, GM 25685, and GM 25692). Selected geophysical targets were later tested in 1972 and 1974 by 6 DDH for a total length of 400 metres. In 1977 and 1978, Certac Mining Corp. drilled 30 DDH on the Certac deposit for a total of 2,536 metres and delineated a north-south-trending zone of gold and copper mineralization (GM 33807, GM 33809 and GM 34949).

During the period from 1980 to 1996, SEREM was particularly active in the larger block of claims, especially in the beginning of the 1980s and 1990s. The company completed several mapping, prospecting and stripping programs, and numerous ground VLF, MAG, electric and EM surveys. SEREM drilled a total of 10 DDH in 1981, 1982, 1990 and 1991, principally on previously identified geophysics conductors. The only anomalous values were for zinc and gold, mainly associated with graphitic and pyrrhotite horizons. In 1981, 1984 and 1985, the MERN covered the Northeastern Block with INPUT MK VI surveys (DP-83-32, DP-84-4, and DP-85-19). From 1989 to 1994, Ressources Minières RPM Inc. also conducted several geological surveys (mapping, sampling) as well as ground VLF and MAG surveys in the southernmost portion of the Northeastern Block. Geological mapping by Freewest Resources Inc. generated a new map in 1991 (GM 51611).

Exploration resumed in 2001 on the centre of the larger block (southeast corner of Duplessis Township) with Hudson Bay Exploration carrying out line cutting, rock sample analyses, ground HLEM and MAG surveys, geological mapping, and 2 DDH. The exploration program focused on VMS base metals. One of the geophysical conductors was explained by a 12-metre-wide intersection of massive and semi-massive pyrite, slightly anomalous in base metals. All the Northeastern Block claims were covered by the Noranda and Virginia MEGATEM®II regional airborne survey in 2003 (DP 2008-41). In 2004, Noranda conducted heliborne EM surveys on several previously identified MEGATEM anomalies over small tracts of land in the Grevet area, one of which falls within the larger large block of claims. A single DDH was drilled on a geophysical anomaly without significant result.

Table 6.12 – Summary of historical drill holes on the Northeastern Block (data from SIGEOM).

Period	Companies	Number of DDH	Total Length (m)
1952-1953	Glencona Mining Co Ltd, South Bachelor Mining Co Ltd, and 1 other	8	1084.0
1958-1965	Hudson Bay Expl & Dev Co Ltd, Lichen Lake Mining Co Ltd and 6 others	32	3297.0
1969-1974	Dome Expl Ltd, SOQUEM, and 3 others	14	1507.0
1977-1994	Certac Mining Corp, SEREM Ltee, and 5 others	115	19286.0
2001-2004	Hudson Bay Expl and Dev Co Ltd, Exploration Orbite VSPA Inc, Falconbridge Ltee	9	1213.0
Total		**178**	**26387.0**

Table 6.13 – Significant historical gold and base metal intercepts in the Northeastern Block (data from SIGEOM).

Report	Area	HOLE-ID	Year	Township	Easting_UTMZ18	Northing_UTMZ18	LENGTH (m)	Au (g/t)	Cu (%)	Company
GM 02427	**Certac**	SB-2	1953	Le Tac	422297	5473897	**0.6**	**8.00**	**3.80**	Glencona Expls Mining Ltd
GM 02427	**Certac**	SB-3	1953	Le Tac	422243	5473877	**1.0**	**1.30**	**1.40**	Glencona Expls Mining Ltd
GM 02427	**Certac**	SB-4	1953	Le Tac	422127	5473827	**1.7**	**1.70**	**1.85**	Glencona Expls Mining Ltd
GM 12080	**Certac**	2	1961	Le Tac	422095	5473867	**3.0**		**0.90**	Lichen Lake Mining Co Ltd
GM 12080	**Certac**	3	1961	Le Tac	422107	5473853	**2.8**		**0.80**	Lichen Lake Mining Co Ltd
GM 12080	**Certac**	4	1961	Le Tac	422107	5473853	**2.3**		**4.70**	Lichen Lake Mining Co Ltd
GM 12080	**Certac**	5	1961	Le Tac	422106	5473827	**1.0**		**2.15**	Lichen Lake Mining Co Ltd
GM 33807	**Certac**	C-2	1977	Le Tac	422194	5473980	**4.6**		**0.75**	Certac Mining Corp
GM 33807	**Certac**	C-4	1977	Le Tac	422191	5473989	**12.8**		**0.28**	Certac Mining Corp
GM 33809	**Certac**	C-77-12	1977	Le Tac	422038	5473965	**1.1**	**23.00**	**0.63**	Certac Mining Corp
GM 33809	**Certac**	C-77-7	1977	Le Tac	422068	5473976	**2.1**	**2.67**	**1.52**	Certac Mining Corp
GM 33809	**Certac**	C-77-8	1977	Le Tac	422066	5473973	**3.3**		**0.74**	Certac Mining Corp
GM 34949	**Certac**	C-78-13	1978	Le Tac	422205	5473936	**6.1**	**2.58**	**3.40**	Certac Mining Corp
GM 34949	**Certac**	C-78-15	1978	Le Tac	422167	5473932	**1.8**	**29.33**	**2.63**	Certac Mining Corp
GM 34949	**Certac**	C-78-16	1978	Le Tac	422167	5473883	**4.3**		**0.55**	Certac Mining Corp
GM 34949	**Certac**	C-78-17	1978	Le Tac	422239	5473935	**3.9**		**0.55**	Certac Mining Corp
GM 34949	**Certac**	C-78-18	1978	Le Tac	422276	5473994	**9.7**	**2.97**	**0.96**	Certac Mining Corp
GM 34949	**Certac**	C-78-19	1978	Le Tac	422274	5473994	**1.3**	**12.67**	**0.49**	Certac Mining Corp
GM 34949	**Certac**	C-78-20	1978	Le Tac	422255	5473958	**12.7**	**2.53**	**0.63**	Certac Mining Corp
GM 34949	**Certac**	C-78-21	1978	Le Tac	422279	5473939	**12.7**	**2.87**	**0.57**	Certac Mining Corp
GM 34949	**Certac**	C-78-22	1978	Le Tac	422278	5473938	**4.8**	**2.87**	**0.22**	Certac Mining Corp
GM 34949	**Certac**	C-78-23	1978	Le Tac	422277	5473906	**1.8**	**1.03**	**1.25**	Certac Mining Corp
GM 34949	**Certac**	C-78-27	1978	Le Tac	422277	5473906	**1.4**	**22.73**	**0.70**	Certac Mining Corp
GM 34949	**Certac**	C-78-28	1978	Le Tac	422271	5473973	**7.6**		**0.90**	Certac Mining Corp
GM 41893	**Certac**	OR-84-5	1984	Le Tac	422120	5473803	**1.8**		**1.10**	Exploration Orbite V.S.P.A. Inc
GM 41893	**Certac**	OR-84-6	1984	Le Tac	422132	5473829	**2.0**		**2.47**	Exploration Orbite V.S.P.A. Inc
GM 41893	**Certac**	OR-84-8	1984	Le Tac	422061	5473847	**1.0**	**4.00**		Exploration Orbite V.S.P.A. Inc
GM 42903	**Certac**	OR-85-32	1985	Le Tac	422612	5473825	**2.7**		**1.12**	Exploration Orbite V.S.P.A. Inc
GM 47528	**Certac**	OR-57	1987	Le Tac	422312	5474089	**1.2**		**0.93**	Exploration Orbite V.S.P.A. Inc
GM 52065	**Certac**	LT-93-4	1993	LeTac	422351	5473626	**1.2**	**2.00**	**1.60**	Exploration Orbite V.S.P.A. Inc
GM 25932	**Glencona**	H-1	1970	Le Tac	423339	5473868	**2.3**		**1.27**	Glencona Expls Mining Ltd
GM 42266	**Regional**	OR-84-15	1985	Le Tac	420343	5473986	**1.2**	**1.33**		Exploration Orbite V.S.P.A. Inc

7. GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geological Setting

7.1.1 Archean Superior Province

The Archean Superior Province (Fig. 7.1) forms the core of the North American continent and is surrounded by provinces of Paleoproterozoic age to the west, north and east, and Mesoproterozoic age (Grenville Province) to the southeast (Percival, 2007). Tectonic stability has prevailed since ca. 2.6 Ga in large parts of the Superior Province. Proterozoic and younger activity is limited to rifting of the margins, emplacement of numerous mafic dyke swarms (Buchan and Ernst, 2004), compressional reactivation, and large-scale rotation at ca. 1.9 Ga and failed rifting at ca. 1.1 Ga. With the exception of the northwestern and northeastern Superior margins that were pervasively deformed and metamorphosed at 1.9 to 1.8 Ga, the craton has otherwise escaped ductile deformation.

A first-order feature of the Superior Province is its linear subprovinces of distinctive lithological and structural character, accentuated by subparallel boundary faults (e.g., Card and Ciesielski, 1986). Trends are generally E-W in the south, WNW in the northwest, and NW in the northeast (Fig. 7.1). In Figure 7.1, the term “terrane” is used in the sense of a geological domain with a distinct geological history prior to its amalgamation into the Superior Province during the 2.72 Ga to 2.68 Ga assembly events. A “superterrane” shows evidence for internal amalgamation of terranes prior to the Neoarchean assembly. “Domains” are defined as distinct regions within a terrane or superterrane.

The Quévillon Property is located within the Abitibi terrane (Fig. 7.1). The Abitibi terrane hosts some of the richest mineral deposits of the Superior Province (Fig. 7.1), including the giant Kidd Creek massive sulphide deposit (Hannington et al., 1999) and the large gold camps of Ontario and Québec (Robert and Poulsen, 1997; Poulsen et al., 2000).

7.1.2 Abitibi Terrane (Abitibi Subprovince)

The Abitibi Subprovince (Abitibi Greenstone Belt) is located in the southern portion of the Superior Province (Fig. 7.1). The Abitibi Subprovince is divided into the Southern and Northern volcanic zones (SVZ and NVZ; Chown et al., 1992) representing a collage of two arcs delineated by the Destor-Porcupine-Manneville Fault Zone (DPMFZ; Mueller et al., 1996). The SVZ is separated from the Pontiac Terrane sedimentary rocks, an accretionary prism (Calvert and Ludden, 1999) to the south, by the Cadillac−Larder Lake Fault Zone (CLLFZ). The fault zones are terrane “zippers” that display the change from thrusting to transcurrent motion as documented in the turbiditic flysch basins unconformably overlain by, or in structural contact with, coarse clastic deposits in strike-slip basins also known as Timiskaming sediments (Mueller et al., 1991, 1994, 1996; Daigneault et al., 2002). A further subdivision of the NVZ into external and internal segments is warranted, based on distinct structural patterns with the intra-arc Chicobi sedimentary sequence representing the line of demarcation.

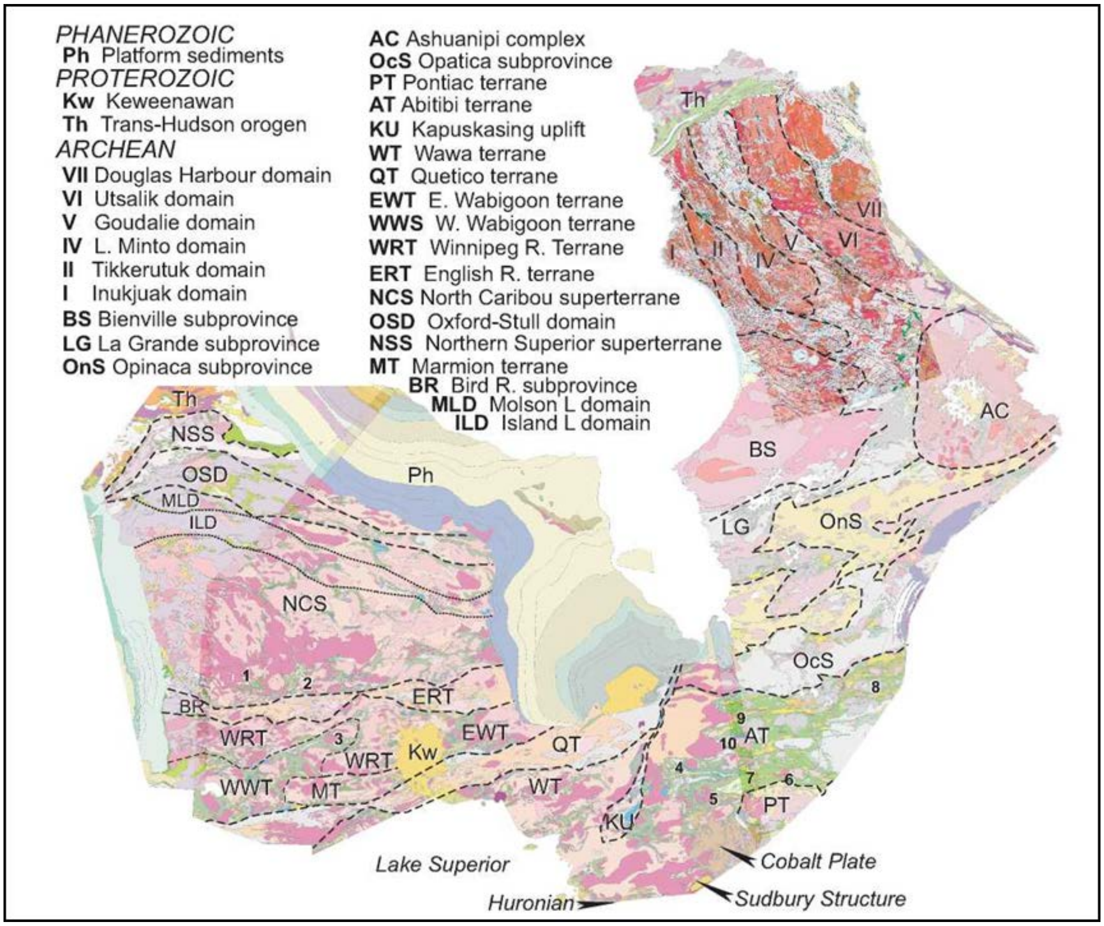

Figure 7.1 – Mosaic map of the Superior Province showing major tectonic elements and organization of Archean Greenstone Belts (from Percival, 2007). Data sources: Manitoba (1965), Ontario (1992), Thériault (2002), Leclair (2005). Major mineral districts: 1 = Red Lake; 2 = Confederation Lake; 3 = Sturgeon Lake; 4 = Timmins; 5 = Kirkland Lake; 6 = Cadillac; 7 = Noranda; 8 = Chibougamau; 9 = Casa Berardi; 10 = Normétal.

Dimroth et al. (1982, 1983a) recognized this difference and used it to define internal and external zones (Fig. 7.2) of the Abitibi greenstone belt. Subsequently, numerous alternative Abitibi divisions were proposed (Chown et al., 1992), but all models revolved around a plate-tectonic theme. The identification of a remnant Archean north-dipping subduction zone by Calvert et al. (1999) corroborated these early studies.

The 2735-2705 Ma NVZ is ten (10) times larger than the 2715-2697 Ma SVZ, and both granitoid bodies and layered complexes are abundant in the former. In contrast, plume-generated komatiites, a distinct feature of the SVZ, are only a minor component of the NVZ, observed only in the Cartwright Hills and Lake Abitibi area (Daigneault et al., 2004). Komatiites rarely constitute more than 5% of greenstone sequences and the Abitibi is no exception (Sproule et al., 2002).

The linear sedimentary basins are significant in the history because they link arcs and best chronicle the structural evolution and tempo of Archean accretionary processes. The NVZ is composed of volcanics cycles 1 and 2, which are synchronous with sedimentary cycles 1 and 2, whereas the SVZ exhibits volcanic cycles 2 and 3, with sedimentary cycles 3 and 4 (Mueller et al., 1989; Chown et al., 1992; Mueller and Donalson, 1992; Mueller et al., 1996).

The Abitibi Subprovince displays a prominent E-W structural trend resulting from regional E-trending folds with an axial-planar schistosity that is characteristic of the Abitibi belt (Daigneault et al., 2002). The schistosity displays local variations in strike and dip, which are attributed to either oblique faults cross-cutting the regional trend, or deformation aureoles around resistant plutonic suites. Although dominant steeply-dipping fabrics are prevalent in Abitibi Subprovince, shallow-dipping fabrics are recorded in the Pontiac Subprovince and at the SVZ-NVZ interface in the Preissac-Lacorne area.

Plutonism that accompanied and outlasted volcanism in the Abitibi Subprovince ranges from about 2750 to 2650 Ma (Card and Poulsen, 1998). The intrusions have been subdivided into several synvolcanic and pre- to post-tectonic suites based on their structural relationships and geochemical attributes (Rive et al., 1990; Feng and Kerrich, 1992). In general, plutonic rocks of the Abitibi Subprovince comprise early (partly synvolcanic), pre- to syn-tectonic, generally sodic suites, including tonalitic gneiss, quartz diorite, trondhjemite, tonalite and granodiorite, and younger, syn- to post-tectonic, generally potassic suites including monzogranite, monzonite and syenite (Card and Poulsen, 1998). The sodic suites are mainly older than 2700 Ma, but geological and geochronological data indicate that none represent basement to the supracrustal sequences; contacts are either intrusive or tectonic (Card and Poulsen, 1998).

The metamorphism grade in the Abitibi Subprovince displays greenschist to sub-greenschist facies (Joly, 1978; Powell et al., 1993; Dimroth et al., 1983b; Benn et al., 1994) except around plutons where amphibolite grade prevails (Joly, 1978). In contrast, two extensive high-grade zones coincide with areas of shallow-dipping fabrics. They are: (1) turbiditic sandstone and mudstone of the Pontiac Subprovince at the SVZ contact, which exhibit a staurolite-garnet-hornblende-biotite assemblage (Joly, 1978; Benn et al., 1994); and (2) the Lac Caste Formation turbidites at the SVZ-NVZ interface (Malartic segment) with sandstone and mudstone metamorphosed to biotite schist with garnet and staurolite. Feng and Kerrich (1992) suggested that juxtaposition of greenschist and amphibolite grade domains indicated uplift during the compressional stage of collisional tectonics.

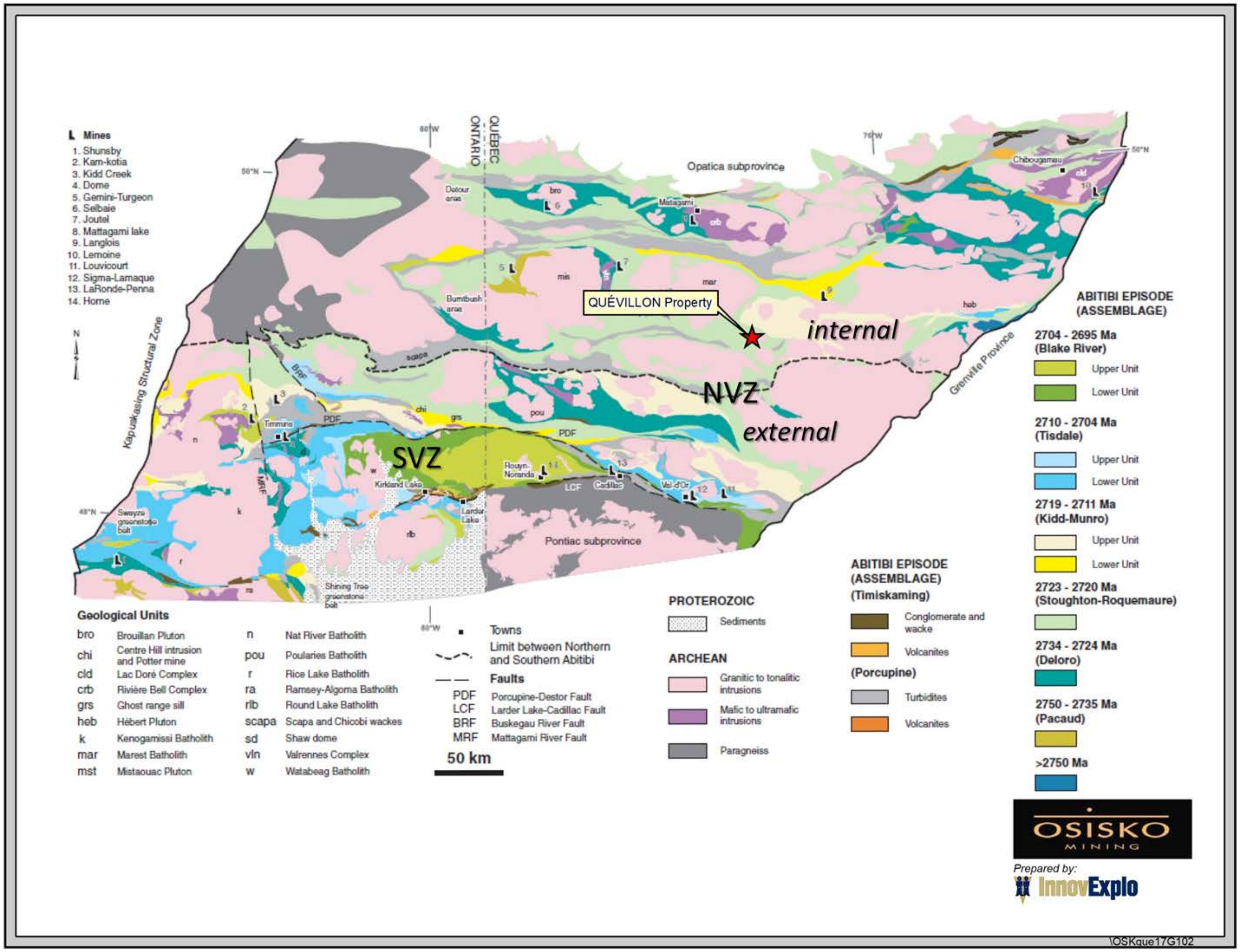

Figure 7.2 – Divisions of the Abitibi greenstone belt into southern (SVZ) and northern volcanic zones (NVZ) according to Daigneault et al. (2002), showing external and internal segments in the NVZ. Source: Mueller et al. (2004), modified from Chown et al. (1992) and Daigneault et al. (2002).

7.2 Property Geology

Bedrock exposures are generally scarce on the Quévillon Property. Most are found on the Western and Northeastern blocks and eastern portion of the Central Block.

The Property is in the NVZ of the Abitibi Greenstone Belt. Most parts of the Property are underlain by thick, effusive, generally non-explosive sequences of pillowed, massive, or brecciated basalts characterizing a submarine basalt plain environment (Fig. 7.3). Synvolcanic and cogenetic mafic to ultramafic sills and dykes intruded the mafic volcanic sequences. Locally, felsic to intermediate volcanic edifices occurs within mafic sequences. Geochronological data indicates that the volcanic rocks range between 2721 and 2722 Ma in the western part of the Property (Deschênes et al., 2014) and between 2714 and 2718 Ma in the eastern part (David et al., 2007; Davis et al., 2005; Bandyayera et al. 2003). Many layer-parallel faults and shear zones transect the Property with northwest-southeast, east-west, and northeast-southwest dominant orientations. These faults exhibit a subvertical mylonitic foliation with a dominant dip-parallel stretching lineation (Daigneault et al. 2004). They delimit volcanic rocks of different lithologic groups and late Archean sedimentary basins such as Glandelet and Taibi (Fig. 3). Sedimentary basins result from uplift and erosion of the felsic edifices (Mueller et al. 1988). Principal intrusions surrounding the Property are the felsic composition Marest, Bernetz and Mistaouac synvolcanic plutons (Davis et al. 2000). In the Central Block, smaller and sub-circular felsic plutons are interpreted as syn- to post-tectonic in ages (Chown et al., 2002).

North of the Glandelet sedimentary basin and the E-W-trending Laflamme and Maizerest shear zones lie the mafic volcanics belong to the Vanier-Dalet Group (Fig. 7.3). The past-producing Sleeping Giant gold mine as well as the Osborne-Bell deposit are located in this group at more or least the same distance from the fault-bounded basin. South of the Glandelet basin, the property straddles the volcanic package of the Quévillon Group. This group is mainly composed of andesitic flows and tuffs and minor felsic volcanic and graphitic horizons. North of the Cameron Shear (where all claims of the Northeastern Block are located), glomeroporphyric basalts and minor andesitic rocks constitute the southern end of the Obatogamau Formation.

The major ductile deformation zones cutting through the Property are the Maizerest, Laflamme, Rivière Kiask and Cameron shears. The WNW-ESE trending Cameron Shear is a steeply dipping ductile structure, 80 kilometres long by up to 5 kilometres thick. This fault has an unusual dextral sense of movement compared to other major faults in the Abitibi (Roy, 2000). The Langlois mine is hosted within the Cameron Shear and its VMS lenses are strongly stretched parallel to the foliation. The Lamarck-Wedding Fault cuts across the northeastern part of the Central Block. It is also an unusual NE-SW orientation for the Abitibi and displays brittle-ductile rheologic behavior (Roy, 2000). The Lamarck-Wedding Fault cuts across the Cameron Shear and E-W faults.

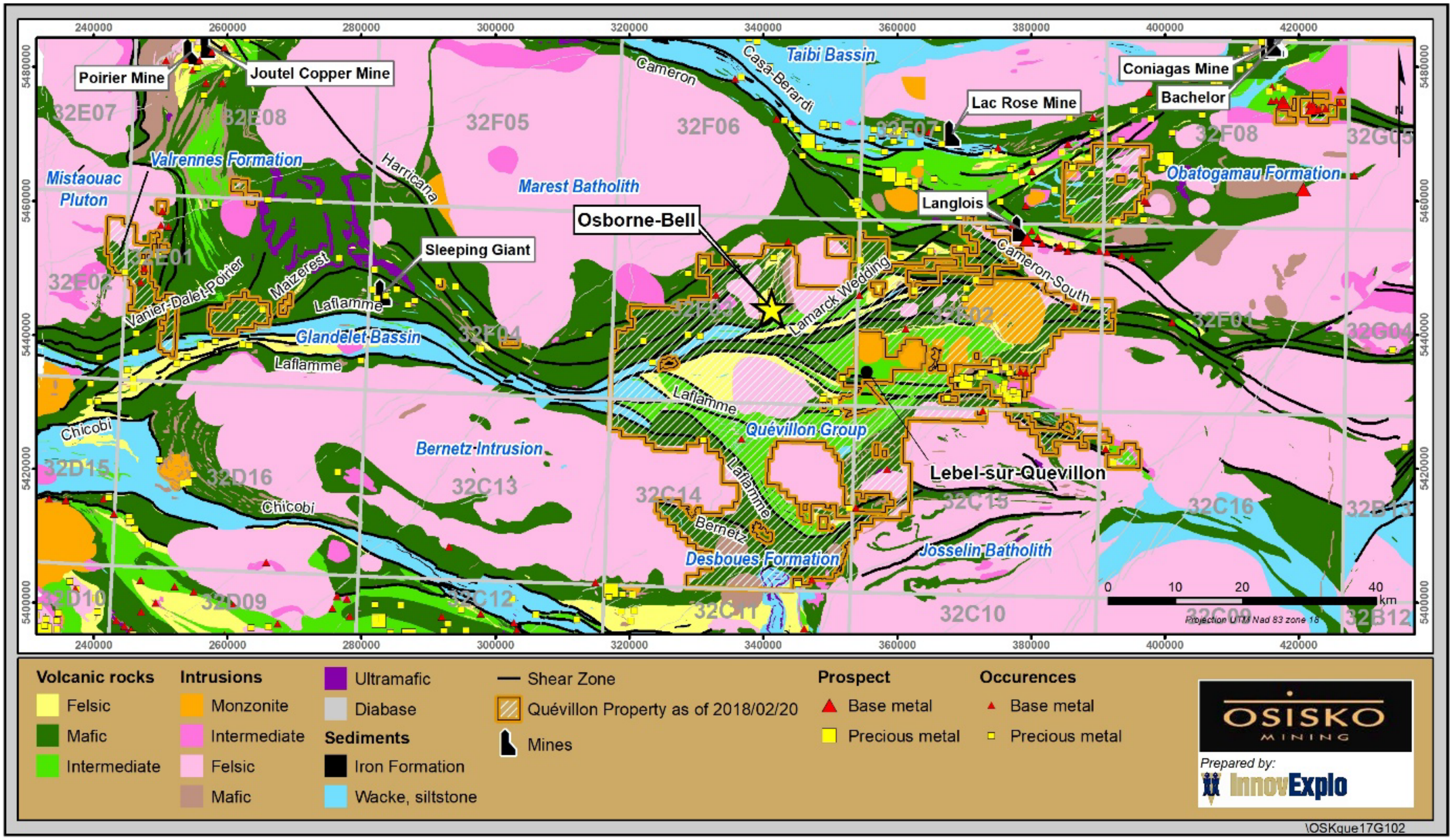

Figure 7.3 – Regional geology of the Quévillon Property (SIGEOM database).

7.3 Geology of the Osborne-Bell Area

The geology of the Osborne-Bell area (Fig. 7.4) is dominated by undifferentiated mafic and intermediate volcanic rocks of basaltic to andesitic compositions belonging to the Vanier-Dalet-Poirier Group (Dupré, 2010). Felsic volcanic and volcaniclastic rocks of dacitic to rhyolitic compositions (Dupré, 2010), and local interlayers of various sedimentary rocks (argillites, graphitic shales and iron formations) have also been documented. The rocks are mainly metamorphosed to greenschist facies, locally reaching amphibolite facies along the fringes or margins of late intrusive stocks.

The Osborne-Bell units mainly strike WNW-ESE, changing to NNE-SSW in the northeastern part of the property and to NE-SW in the western part of the property (Fig. 7.4). These changes in orientation may be related to the presence of numerous intrusions and regional deformation. The most important intrusions in the vicinity of the Osborne-Bell deposit are the Marest Stock and the Franquet Stock. Inside the property itself, notable multi-kilometre intrusions are the Comtois Stock, Beehler Stock and an as yet unnamed mass that straddles the northern boundary and is interpreted as a late stock based on geophysical data.

The current interpretation of Osborne-Bell area geology is described below. The geological interpretation is based primarily on drill hole and geophysical and data.

The geology of the Osborne-Bell area is characterized by a package of synvolcanic felsic units striking WNW and dipping steeply to the north (N290/80), enclosed within a broad package of mafic volcanic rocks (volcaniclastic units and lava flows) (Fig. 7.5). The structural data measured by Riopel and Waldie (2003) indicates an E-W schistosity with a subvertical dip to the north or south.

The south end of the post-tectonic Beehler Stock truncates the felsic and mafic Osborne-Bell rocks (Fig. 7.5). A swarm of feldspar-amphibole porphyry dykes related to the Beehler Stock also cuts through the pile of mafic and felsic rocks.

Pillowed mafic flows, felsic units and sedimentary rocks in the Bell-VMS area at the western extremity of Osborne-Bell deposit display a significantly different strike (N042°-N222°) compared to the felsic units further east (Fig. 7.5). This orientation carries through into the northeastern part of the property (Fig. 7.4). The structural data demonstrates that the change in lithological orientation is caused by the presence of a fold, not a fault, thereby confirming the stratigraphic continuity between Osborne-Bell and the Eastern Extension. Three distinct planar features are evident.

The current interpretation is that of a synvolcanic felsic dyke swarm injected in the mafic volcanic pile of the main part of the Osborne-Bell deposit, representing the root or part of the root of a bimodal volcanic centre at the west end of Osborne-Bell (Bell-VMS area), thus explaining the change in orientation of felsic units from one end of the deposit to the other (see section 8.2.2 and Fig. 8.2).

Foliation (N280/85) is documented in both felsic and mafic synvolcanic units and developed during regional deformation. The orientation is similar to that of the late feldspar-amphibole porphyry dyke swarm, suggesting that foliation planes served as preferential pathways for injection. Foliation at the western extremity trends NNE-SSW.

All holes drilled during the depth extension program passed through the typical Osborne-Bell lithological succession and mineralization settings. From north to south, drill holes intersected mafic volcaniclastic units containing trace to 3% sulphides (rarely 5%), with the percentage increasing to 5% near the contact with the main felsic units. The main felsic units generally contain 1% to 3% sulphides. Drill holes were then stopped in the barren Beehler Stock, which marked the end of the favourable sequence. Drill holes in the Midway area intersected another mafic volcaniclastic unit after the main felsic package, before ending in the Beehler Stock.

The felsic rocks intercepted at depth in the deep holes and wedges are identified as "Felsic" (Zr/TiO_2*10000>0.035) in Figure 7.6. Alteration is still present at great depth in the Osborne-Bell deposit but is stronger in the Camten and Osborne areas than the Midway and Bell areas, as is the case for the shallower parts of the system in those areas.

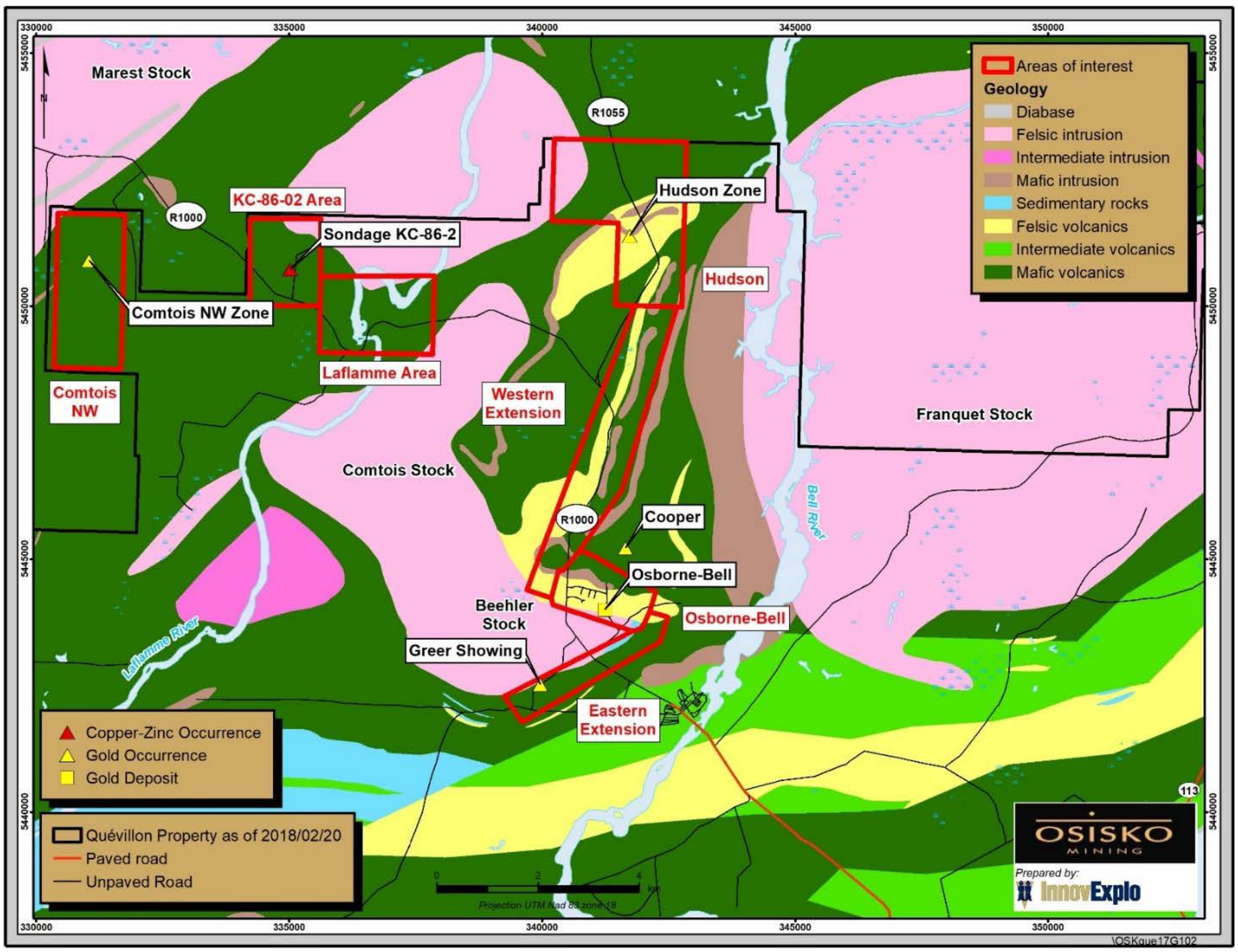

Figure 7.4 – Local geology and location of mineral occurrences and areas of interest on the Osborne-Bell deposit area.
Figures 7.5, 7.7 and 7.9 provide close-up views of Osborne-Bell deposit.

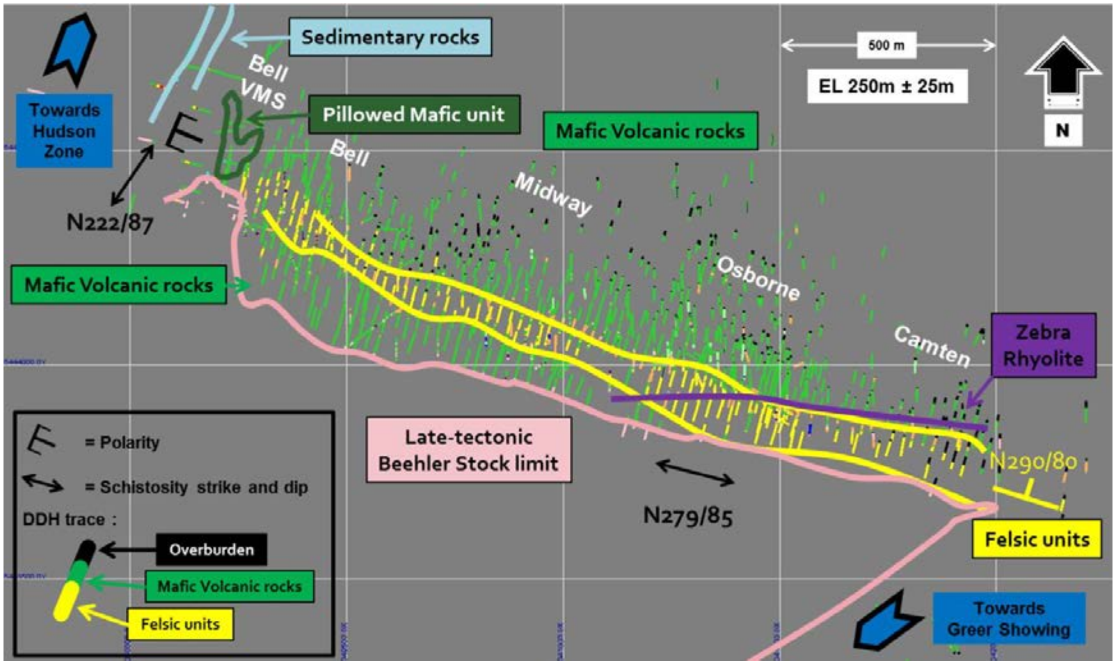

Figure 7.5 – Local Osborne-Bell deposit geology on a subsurface plan view (50 metres below surface) using the main lithologies encountered along diamond drill holes (colour-coded DDH traces). The Osborne-Bell deposit is subdivided into the Bell-VMS, Bell, Midway, Osborne and Camten areas along an E-W axis.

7.3.1 Mafic volcanic rocks

Mafic volcaniclastic (V2-V3 on Fig. 7.6) and massive to pillowed units (V3 on Fig. 7.6) represent the greatest volume of volcanic rocks (collectively "mafic volcanic rocks" on Fig. 7.5). Primary layering is generally evident due to textural contrasts (tuffaceous layers) and/or changes in mineralogy (original compositional differences emphasized by the effects of alteration and metamorphism).

Geochemically, the felsic and mafic rocks at Osborne-Bell are distinguished by a Zr/(TiO_2*10,000) threshold of 0.035 (Fig. 7.6). Mafic to intermediate rocks, which range from basalts to dacites, typically have lower ratios whereas felsic ratios are generally higher. Samples were plotted on a map in Figure 7.7.

In an attempt to determine whether distinct protoliths could be distinguished among the mafic units using Zr/Ti ratios, other thresholds were tested. It was found that samples with ratios <0.018 (corresponding to half the 0.035 threshold) tend to concentrate along broad corridors ("domains") trending approximately N050° in the Osborne-Bell area, roughly orthogonal to the felsic package trend (Fig. 7.7). More work is required to determine whether these domains represent distinct volcanic protoliths. Demonstrating an angular relationship between the mafic and felsic lithologies would corroborate the current interpretation of the felsic units as feeder dykes (see section 8.2.2 and Fig. 8.2).

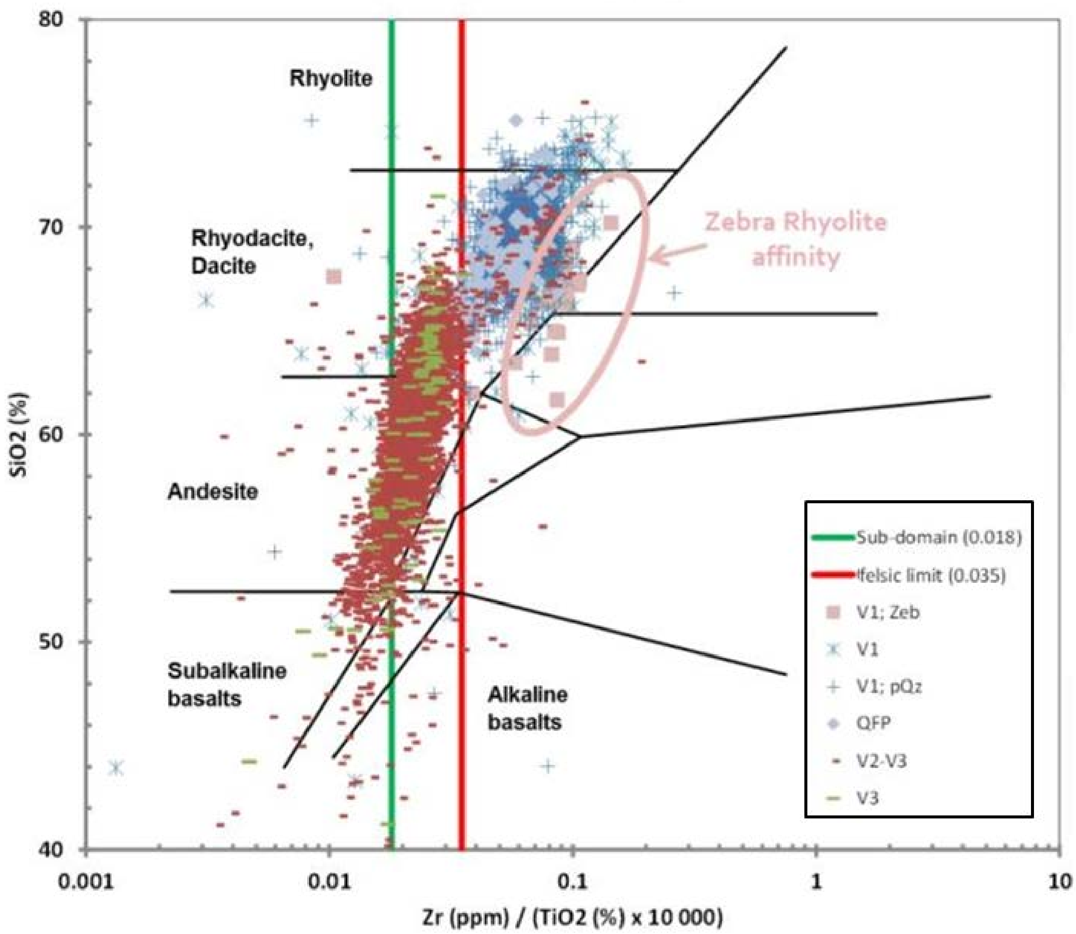

Figure 7.6 – Binary diagram of silica versus Zr/TiO2 (from Winchester and Floyd, 1977) for rocks of the Osborne-Bell deposit. The majority of intermediary to mafic volcanic rocks (V3 and V2-V3 in the legend) plot less than the 0.035 Zr/TiO2 threshold, whereas most synvolcanic felsic rocks (V1, V1; pQz and QFP) plot above this threshold. Note the relatively high Zr/TiO2 values of the Zebra Rhyolite.

7.3.2 Mafic volcaniclastic rocks

Mafic volcaniclastic rocks constitute the most voluminous mafic facies at Osborne-Bell and occur on both sides of the felsic package (Fig. 7.5). Their visual appearance is characterized by coloured bands ranging from dark grey to hues of green and plum. Chlorite-altered elongated clasts (lapilli to block sizes) are common features in the volcaniclastic units. In some cases, clasts margins are marked by an assemblage of amphibole, biotite and magnetite.

Weak and pervasive silicification accompanied by biotite is common. Felsic fragments or silica-altered clasts, when present, can constitute up to 15% of the rock and display strong silicification and sericitization. Layering is suggested by concentrations of subrounded to subangular fragments or/and by changes in mineralogy (primary compositional differences emphasized by the effects of alteration and metamorphism).

Massive and pillow lava flows

Mafic massive flows were mostly documented north of the felsic package and pillow lavas in the Bell-VMS area at the western extremity of Osborne-Bell (Fig. 7.5). In outcrop, the pillows are almost spherical and poorly defined, rendering tops determination ambiguous, although the general impression is that of stratigraphic tops to the W or NW (Fig. 7.5). The fine-grained and weakly deformed pillowed basalts display a medium greenish-grey colour and intervals of feldspar phenocrysts and centimetre-scale epidote nodules.

Synvolcanic mafic dykes

The youngest volcanic unit is represented by dark green, fine-grained to aphyric, synvolcanic mafic dykes. They commonly contain late quartz ladders (Riopel and Waldie 2003).

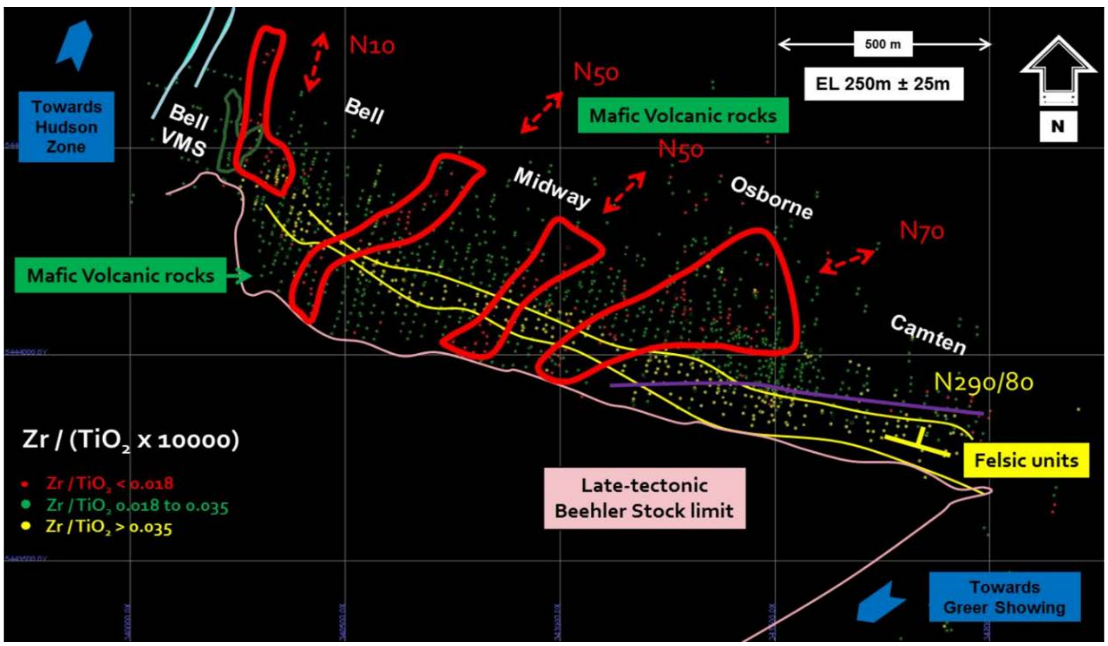

Figure 7.7 – Immobile element ratio segregation for Osborne-Bell units using whole-rock analyses (average of 1 sample per 30 m of drill core). Most synvolcanic felsic units have ratios above 0.035, whereas the majority of mafic volcanic rocks have ratios below 0.035. Note the <0.018 domains trending 050° (almost orthogonal to the felsic axis), possibly representing an as yet unrecognized protolith. See text for details.

7.3.3 Synvolcanic felsic units

Quartz-phyric felsic unit

This is the most abundant facies of the felsic package. Quartz-phyric felsic rock has been documented in drill core along the entire trend for 1.8 kilometres (Fig. 7.5) and constitutes the deepest felsic rock encountered to date at Osborne-Bell. The thickness of the quartz-phyric felsic (rhyodacite) pile can reach 100 metres. The unit contains millimetre-scale blue quartz eyes (2-10%). The texture is generally massive or weakly to moderately foliated. The unit is strongly altered (section 7.5).

Quartz-feldspar porphyry unit (QFP)

Mostly located in the Bell area at the western end of Osborne-Bell, the quartz-feldspar porphyry (QFP) unit (rhyodacite or rhyolite) is pale grey to apple green with medium grey intervals. This unit is also characterized by bluish quartz eyes (trace amounts to 5%; 1 to 3 mm, rarely 3 to 5 mm) and by 2% to 15% feldspar phenocrysts (<2 mm). Strong silicification, moderate sericitization, and a weak schistosity are also present.

Aphyric felsic unit

The aphyric felsic facies typically occurs adjacent to and/or intercalated with the quartz-phyric felsic unit. The facies E-W continuity is limited in extent, from tens of metres to 100 metres, and ranges from metres to tens of metres thick. The aphyric facies displays alteration patterns very similar to those of the quartz-phyric felsic unit.

Brecciated felsic unit

The brecciated felsic unit contains intermediate to felsic clasts and is strongly sericitized with some siliceous bands. Foliation is well developed and appears to be more visible in this unit than in the massive units. This facies has also been documented within mafic volcanic rocks as thin (decimetre-scale) isolated intervals.

Zebra felsic unit

Clearly distinguishable in drill core and found in the Camten and Osborne areas at the eastern end of Osborne-Bell, the zebra felsic unit cuts across both mafic volcanic rocks and felsic units ("Zebra Rhyolite" on Fig. 7.5). This uncommon, weakly magnetic, foliated, greyish-purple aphyric rock is characterized by a dense stockwork of pale micro-cracks displaying preferential orientation subparallel to the general foliation, imparting a thinly banded texture (hence the name). Geochemically, it has a higher Zr/TiO_2 ratio than other felsic units (Fig. 7.6) and displays Na_2O enrichment. These features suggest it could represent one of the last episodes of synvolcanic felsic magmatism.

7.3.4 Late intrusive rocks

Beehler Stock

The monzonitic to granodioritic Beehler Stock (Figs. 7.4 and 7.5) displays a characteristic unfoliated intergranular texture composed of 20% to 30% coarse feldspar phenocrysts (5 to 20 mm) and up to 8% ferromagnesian minerals (mostly amphibole and chlorite). Feldspar-amphibole porphyry dyke swarm intrude the surrounding volcanic mafic rocks and synvolcanic felsic units.

Feldspar-amphibole porphyry dykes

The feldspar-amphibole porphyry dykes strike almost east-west (280° N) and dip steeply (85°) to the north (Fig. 7.8). They become increasingly numerous and contiguous closer to the Beehler Stock. Their unfoliated texture indicates they were not affected by the various phases of penetrative deformation affecting other rocks in the area, indicating a late to post-tectonic age of emplacement. The dykes range from decimetres to several metres thick. They contain 3% to 20% feldspar phenocrysts (2 to 15 mm) and 3% to 8% ferromagnesian phenocrysts (millimetre scale; mostly amphibole and chlorite) in a fine-grained matrix. Their colour ranges from grey to shades of red, the intensity depending on the degree of hematization. They are typically moderately magnetic, but the degree of magnetism can change rapidly from weak to intense.

Aplite/pegmatite dykes

In addition to the dominant porphyritic phase of the Beehler Stock, lesser amounts of aplite and pegmatite dykes were also observed (Riopel and Waldie, 2003). These late-tectonic intrusions are oriented N030/30 and crosscut the volcanic units and feldspar-amphibole porphyry dykes. The aplite dykes are generally white to pale grey or pale pink, fine-grained, massive and homogenous, ranging in width from 1 to 30 centimetres. They contain 2% to 5% ferromagnesian minerals, are locally weakly magnetic, and are strongly hematized, displaying intense pink to red hues. The pegmatite dykes contain coarse quartz and white to reddish feldspar crystals, and traces of non-magnetic ferromagnesian minerals.

Figure 7.8 – Late-stage feldspar-amphibole porphyry dykes oriented along a N280° axis in the Midway area adjacent to the Beehler Stock.

Lamprophyre dykes

Rare grey to dark green lamprophyre dykes crosscut all other lithological units (Riopel and Waldie, 2003). They have a very calcitic fined-grained matrix composed of sub-millimetre amphibole phenocrysts. An absence of secondary tectonic fabric indicates a late stage of emplacement.

7.3.5 Sedimentary rocks

Graphitic black shale unit

Documented at surface and down several drill holes at the western extremity of Osborne-Bell (Fig. 7.5), the graphitic units are generally oriented N042°-N222°, range from centimetres to decimetres thick, and are interlayered with massive and/or pillowed lavas and/or volcaniclastic mafic units. They display a fine-grained texture and generally dark colour due to the presence of graphite. Barren sulphide stringers and/or barren massive sulphide (pyrite and pyrrhotite) layers occur in the vicinity or are directly associated with these meta-sedimentary rocks. Graphitic black shale units currently serve as “marker horizons” for volcanic massive sulphide (VMS) mineralization in the Bell-VMS area and continue northward to the Hudson Zone. These units are locally enriched in zinc and lead.

7.4 Osborne-Bell Structural Geology

The Osborne-Bell rocks experienced intense deformation characterized by intermediate to high strain, producing a weak to moderate schistosity and a pronounced dominant lineation. Structural measurements (Riopel and Waldie, 2003) revealed that the schistosity in the Osborne area is generally oriented N279/85, whereas the schistosity in the Bell area is generally oriented N222/87 (Fig. 7.5). The average attitude for the lineation is N027/81. Altered clasts are elongated parallel to schistosity, forming ribbons in the intermediate to mafic volcaniclastic units.

Dupré (2010) reports several NE-SW brittle faults displaying centimetre- to metre-scale dextral displacement. The total magnitude of the overall displacement produced by the brittle faults has not yet been determined. Chronologically, the brittle faults crosscut all geological units and represent the last deformational event at Osborne-Bell.

7.5 Osborne-Bell Zone Alteration

Alteration at Osborne-Bell is represented by an assemblage of variable amounts of quartz, white micas (mostly sericite), aluminosilicates, cordierite and biotite accompanied by sulphides and gold enrichment. In drill core, alteration imparts a speckled appearance to some intervals, with the spots representing medium-grey silicification surrounded by a fairly sericitic matrix. In thin section, aluminosilicates may be very abundant (up to 40%; Renou, 2010). This assemblage represents moderate to strong silicification and sericitization, along with argillic alteration. All felsic units were pervasively altered to varying degrees, and alteration crossed the northern contact of the felsic package to extend up to several tens of metres into the mafic volcanic sequence (Fig. 7.8). Altered mafic volcanic rocks range from pale to dark grey, making them easily distinguishable from fresh (unaltered) mafic volcanic rocks (darker green or darker grey tones). Primary compositional layering in all affected rocks is emphasized by alteration, which created layers with abundant white micas, aluminosilicate minerals and biotite.

The alteration is marked by Na_2O and CaO depletion and K_2O enrichment based on alteration indices generated from whole-rock data using NORMAT Software (Piché and Jébrak, 2006). Of the nine alteration indexes available for processing, four were used to determine VMS potential: IPARA, ISER, ICHLO, and IPYRO, as well as their summation, IALT (or 100 - IFRAIS). Strong IALT values are usually obtained proximal to VMS mineralization in greenschist facies rocks:

$$\mathrm{I}ALT = \frac{(P\mathrm{ara} + \mathrm{Ser} + \mathrm{Ch} + P\mathrm{yro})}{(A\mathrm{b} + \mathrm{Or} + A\mathrm{n} + \mathrm{Cpx}) + (P\mathrm{ara} + \mathrm{Ser} + \mathrm{Ch} + P\mathrm{yro})}$$

The majority of samples with moderate IALT values (yellow dots on Fig. 7.9) have the same distribution as the felsic unit package. Samples with the highest IALT values (red and purple dots on Fig. 7.9) form a general trend at a slight angle to the felsic package. This oblique relationship to the lithological boundary in the Osborne area suggests a post-volcanic event.

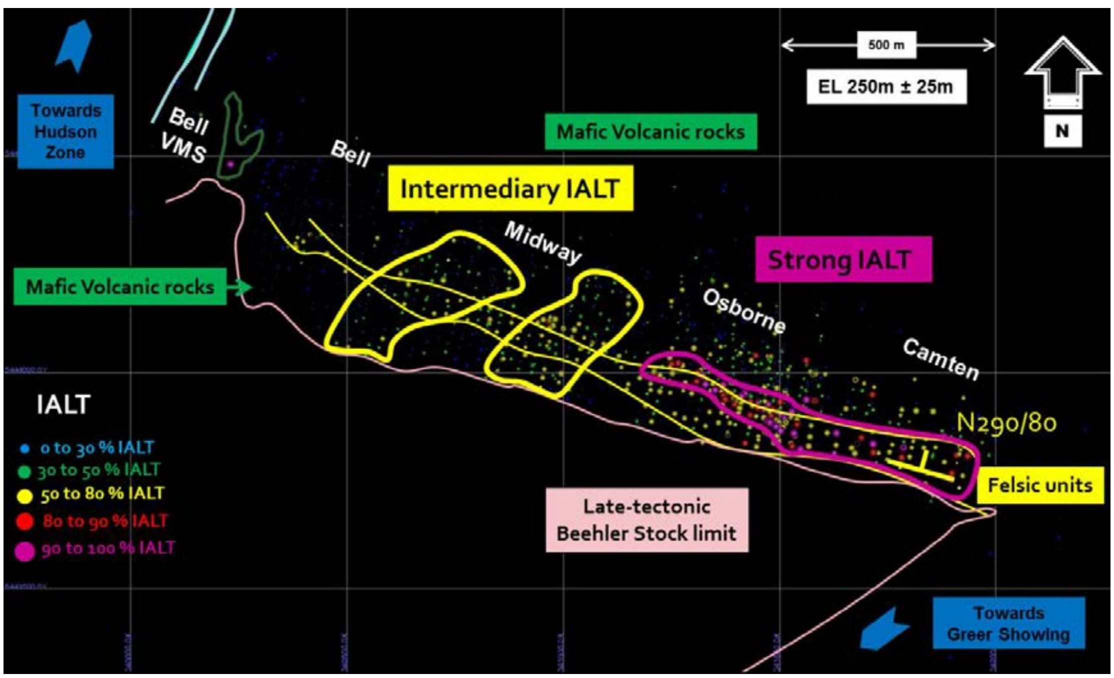

Figure 7.9 – Alteration indexes calculated for Osborne-Bell whole-rock data using NORMAT Software at the greenschist facies (Piché and Jébrak, 2004). Moderate alteration (IALT = 50-80%) largely matches the distribution of the felsic unit package and diminishes from east to west. In the Midway area, the pattern of moderate alteration forms two trends in the mafic volcanic rocks that are roughly orthogonal to the main moderate IALT trend. Samples showing the strongest alteration (IALT = 90-100%) form a trend in the Osborne area that obliquely crosses the main moderate IALT trend and thus the northern lithological boundary.

7.6 Osborne-Bell Mineralization and Other Nearby Occurrences

The Osborne-Bell area hosts the Osborne-Bell disseminated pyrite gold deposit (±Ag, ±Cu, ±Zn), volcanogenic massive sulphide mineralization (±Zn, ±Pb), and other occurrences of gold and zinc.

7.6.1 Osborne-Bell deposit – gold mineralization

The Osborne-Bell deposit is a disseminated pyrite gold deposit and therefore not a typical Archean lode gold deposit like those generally found in the Abitibi Belt. Although there has been some great improvement in the understanding of this deposit type in recent years, the origin of the Osborne-Bell gold and its geological controls are not yet fully understood.

The deposit can be subdivided from west to the east into five zones: Bell VMS, Bell, Midway, Osborne and Camten. These zones are historical names given at the time of there discovery. They are part of the same mineralized system. The sulphide-rich gold mineralization of the Osborne-Bell deposit extends over a 1,900-metre strike length in a N280° direction with a steep (85°) dip to the north. It is up to 430 metres wide and is known to a vertical depth of 1,300 metres below surface in the Osborne area. It includes a lower grade gold envelope averaging several hundred ppb Au. The Maudore drilling program, completed in 2012, was able to validate the continuation at depth of the gold-bearing mineralized system.

Gold-bearing mineralization is characterized by disseminated sulphides, concentration of sulphides in millimetre- to centimetre-scale lenses and by millimetre-scale stringers and veinlets of fine-grained sulphides. Higher-grade stringers and veinlets display two main orientations: one parallel or subparallel to schistosity (Fig. 7.5), and the other perpendicular to it. Sulphide minerals are typically pyrite with some pyrrhotite, chalcopyrite and sphalerite. Higher gold grades are generally associated with the presence of 5% to 10% sulphides mainly occurring as sulphide stringers and veinlets with minor chlorite.

Free gold is not commonly observed in the Osborne-Bell deposit but has been documented. Gold grains are spatially associated with pyrite, some coating pyrite grains and some occurring as inclusions in anhedral pyrite (Koziol and Faber, 1996). Koziol and Faber (1996) noted in thin sections that gold appears to predate fractures in pyrite and thus concluded it was emplaced prior to regional deformation.

In addition to gold, many intervals in the Osborne-Bell deposit returned significant results for copper (Cu), zinc (Zn), silver (Ag) or lead (Pb), or a combination thereof. In many cases, gold is present in intervals with base metal grades.

Figures 7.10 to 7.13 show the distribution of selected metals along the Osborne-Bell deposit. The colour scale is the same for all metals and corresponds to a 5-level percentile discrimination for each metal population.

This process highlights the presence metallic enrichment zones along the Osborne-Bell trend. These zones overlap the boundaries between different rocks domains and contain several metallic associations. The most significant zone is in the Osborne area, where gold, silver, copper and zinc are strongly associated (Figs. 7.10 to 7.13).

Furthermore, this same polymetallic zone corresponds to the strongest IALT signature (section 7.5 and Fig. 7.9).

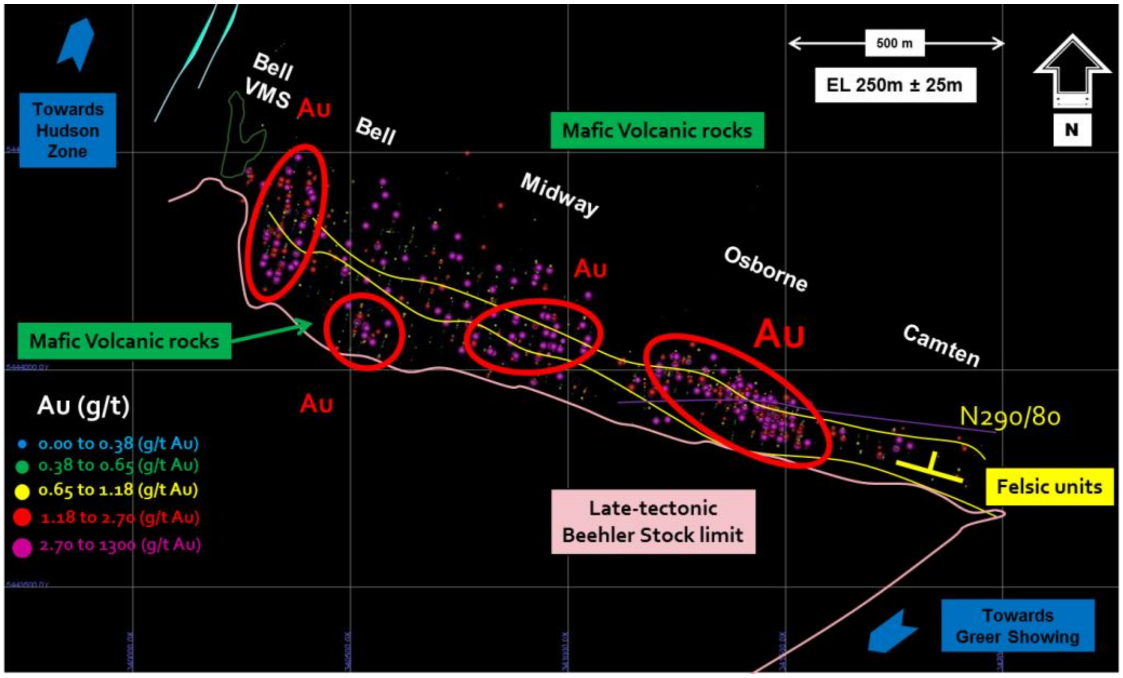

Figure 7.10 – Gold distribution in the Osborne-Bell area.

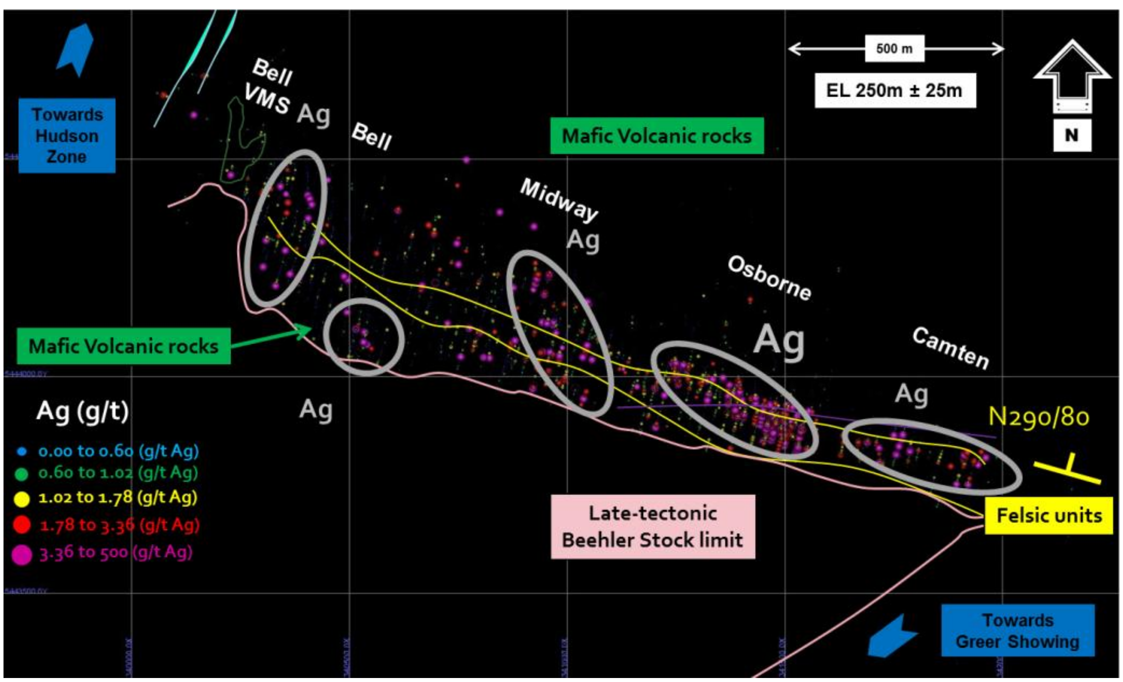

Figure 7.11 – Silver distribution in the Osborne-Bell area.

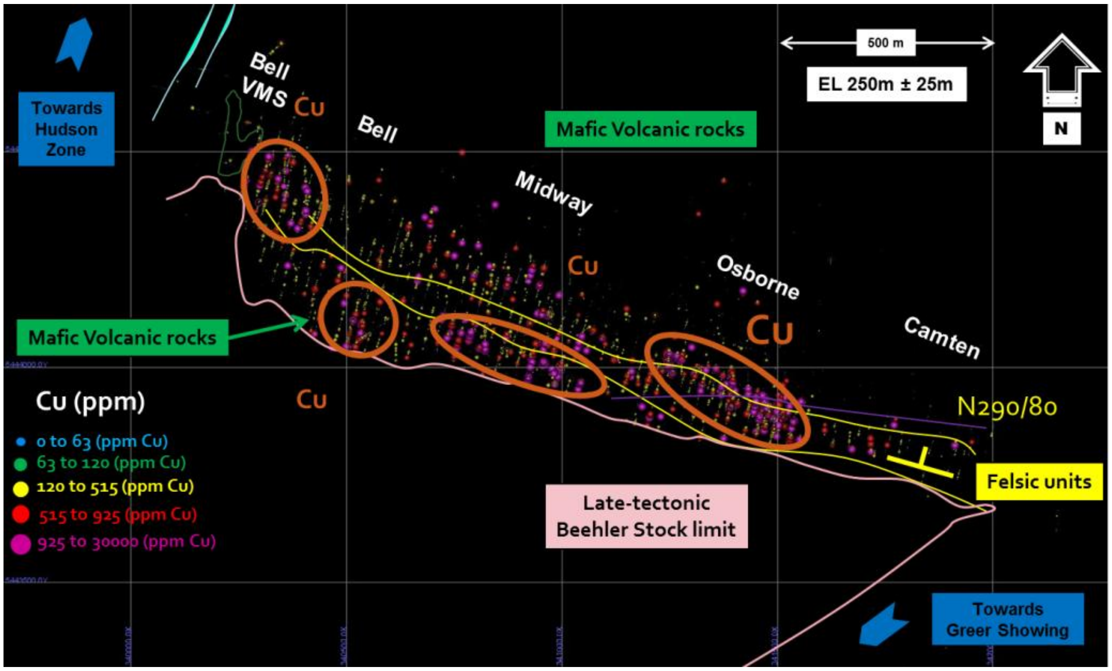

Figure 7.12 – Copper distribution in the Osborne-Bell area.

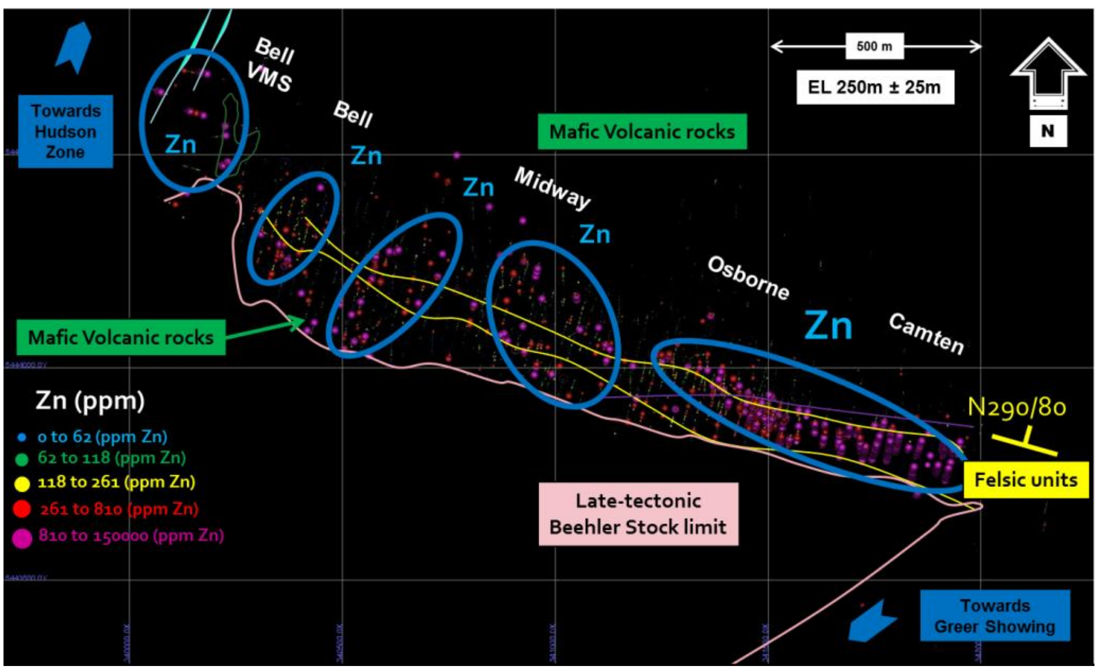

Figure 7.13 – Zinc distribution in the Osborne-Bell area.

7.6.2 Volcanogenic massive sulphide (VMS) mineralization

Volcanogenic massive sulphide (VMS) mineralization has been documented in the western extremity of Osborne-Bell (Bell-VMS area). Anomalous zinc and lead values have been documented in drill core from this area. Zinc contents exceed 1.0% in places (Fig. 7.13), and in these cases, narrow sphalerite stringers are observed in graphitic black shales. Lead, which is rarely present in concentrations greater than 0.5% Pb, is typically associated with anomalous zinc values.

7.6.3 Known occurrences near the Osborne-Bell deposit

Refer to Figure 7.4 for locations.

Hudson Zone

Located 8 kilometres north of the Osborne-Bell deposit, the Hudson Zone yielded several significant historical drill hole intervals in gold: 1.21 g/t Au over 10.5 m (hole TN-01-12); 4.21 g/t Au over 1.5 m (TN-01-10); 2.19 g/t Au over 3.0 m (TN-01-13); 6.07 g/t Au over 1.7 m and 3.43 g/t Au over 5.3 m (TN-86-3); 3.53 g/t Au over 2.1 m including 9.77 g/t Au over 0.6 m (TN-86-4); 1.65 g/t Au over 7.3 m (TN-86-6); 10.42 g/t Au over 2.6 m (TN-85-02); and 5.31 g/t Au over 1.5 m (TN-79-11). Work conducted by Maudore also identified significant intervals (e.g., 18.40 g/t Au over 1.5 m in COM-08-222; 3.86 g/t Au over 1.6 m at the end of hole COM-08-222). Mineralization is typically marked by 2% to 5% pyrite and pyrrhotite (as disseminations and stringers) generally subparallel to schistosity, although this is not always the case. It is hosted by dacitic flows occurring within the sedimentary and felsic pyroclastic units. Alteration minerals, such as sericite and biotite, are generally recognized, as well as a silicate-carbonate assemblage that is locally developed.

Western Extension

The Western Extension represents a corridor oriented N015°, linking the western extremity of the Osborne-Bell deposit with the Hudson Zone. Defined by geophysical anomalies and drill intercepts in volcanic/sedimentary rocks, this corridor shows exploration potential for Osborne-Bell-type gold and VMS (±Au) mineralization.

Previous drilling programs defined mineralized intercepts in what is interpreted as a felsic dome, and also intersected a band of graphitic sediments as well as lenses of semi-massive sulphides that can sometime carry good zinc values. The structural data indicates a NNE-SSW schistosity with a steep dip to the SE.

Past intercept values in hole COM-12-862A, which targeted the area below the 0.5-metre interval of 14.2% Zn encountered in hole COM-11-751 (section 3700N), included two significant gold grades: 1.1 g/t over 1.2 m in the mafic unit to the east, as well as 6.0 g/t over 1.0 m in a felsic volcanic band. Traces of disseminated pyrite in both units explain these values. Hole COM-12-860 intercepted a gold value of 1.2 g/t over 1.0 m. Pyrite and chalcopyrite were observed (2%).

Eastern Extension and Greer Showing

The Eastern Extension constitutes the area between Osborne-Bell (Camten area) and the Greer showing. It has a 2.5-kilometre strike length oriented N240° and corresponds to the underexplored southern margin of the Beehler Stock.

Historical gold intercepts showed 6.3 g/t over 1.0 m within an interval of 1.9 g/t over 5.1 m as well as a 6.7 g/t over 0.6 m within a 1.8 g/t over 7.7 m intercept. Both holes were drilled on section G1500E on an emerging gold-bearing zone dipping 70° associated with mafic volcanics, the dominant rock type in the area. Mineralization often, but not always, consists of disseminated pyrite (trace to 4%) or presents itself as fine veinlets or millimetre-scale stringers locally associated with chalcopyrite (trace to 1%).

The Greer showing yielded 4.3 g/t Au over 2.0 m in historical hole COM-97-26. Mineralization is very similar to the Osborne-Bell type. A felsic to intermediate volcaniclastic sequence hosts the mineralization, which is present as 0.5% to 2% disseminated pyrite with minor pyrrhotite and chalcopyrite. Each gold-bearing interval is accompanied by disseminated sulphides or fine sulphide veinlets (pyrite and chalcopyrite), exclusively in mafic volcanics.

Maudore's work also identified several mineralized intervals; for example: 3.17 g/t Au over 0.5 m and 2.26 g/t Au over 1.0 m in hole COM-08-188 and, from the data received after the close-out date for the 2012 MRE database, 3.59 g/t over 3.7 m in COM-12-886 and 3.57 g/t over 7.6 m, including 7.9 g/t over 2.8 m, corresponding to a pyrite veinlet carrying several gold grains in COM-12-895. Refer to Table 6.7 for other significant results received after August 13, 2012.

The structural data measured indicates a NE-SW schistosity with a steep dip to the NW.

Sondage KC-86-02

The Sondage KC-86-02 occurrence in the northern part of the Central Block historically yielded 0.8% Zn over 0.12 m, and 0.6% Zn and 4.1 g/t Ag over 0.61 m in hole KC-86-02. Mineralization was observed as narrow stringers sphalerite in locally brecciated and carbonatized basalt. Quartz-carbonate veins were also observed.

Cooper

At 500 metres north of the Osborne-Bell deposit, several mineralized quartz-tourmaline veins were identified in mafic rocks in drill core. Tiny specks of visible gold were noted, but no significant assay results were obtained.

Comtois NW gold occurrence

In 2009, Maudore conducted field Beep Mat and VLF surveys over known airborne geophysical anomalies (mostly INPUT and some MEGATEM). Field follow-up led to the first hole ever drilled in that area, which yielded anomalous gold values from altered and mineralized felsic volcanic rocks (in the range of 0.1 to 0.4 g/t Au over 2.0 m). In 2010, 1 DDH was planned as a follow-up to the 2009 results. The best result was 3.7 g/t Au over 0.5 m. In 2011, 3 DDH were completed in the same area, two of which yielded significant results of 2.6 g/t Au over 0.5 m and 7.2 g/t Au over 0.7 m. These encouraging results led Maudore to complete an IP survey over the potential area in 2011. Also, in 2011, whole-rock geochemistry analysis led to the identification of a recognizable felsic geochemical signature and strong IALT alteration index (NORMAT software) in the felsic volcanic rocks of the Comtois NW Zone. With the help of another ground magnetic survey and a drilling campaign in 2012, Maudore confirmed a new gold discovery had been made (Maudore press release of June 6, 2012).

Comtois NW is also characterized by broad mineralized intervals (>10m) of gold-bearing altered felsic and mafic volcanic rocks, such as 0.8 g/t Au over 40.8 m (COM-12-874), 0.8 g/t Au over 11.0 m (COM-11-699) and 0.6 g/t Au over 12.4 m (COM-12-872). Other drilling results exceeding 3 g/t Au were also obtained in 2012: 10.1 g/t Au over 0.5 m and 4.3 g/t Au over 1.5 m (COM-12-874), 5.7 g/t Au over 1.0 m and 3.8 g/t Au over 0.7 m (COM-12-872), 4.8 g/t Au over 1.4 m (COM-12-865) and 3.7 g/t Au over 1.0 m (COM-12-864).

7.7 Other Occurences on the Quévillon Property

No mine or past producer is present in the Property (Fig. 7.3). Apart the Osborne-Bell deposit, no other deposit is present. Table 7.1 summarizes all prospects and occurences inside the Property according to the SIGEOM database, including those previously discussed in section 7.6. Most are in the Central Block.

Gold mineralization occurs as vein systems or disseminations in alteration zones. Quartz-carbonate veins and veinlets occur in faults and shear zones crosscutting basalts and are structurally controlled. Pyrite and chalcopyrite (± pyrrhotite) are the dominant sulphides. Examples of this type of mineralization in the Property are the following prospects and occurrences: Cedar Rapids (Dyke and Village zones), NOR-09-01, Chutes Kiask, Lac Quévillon–Nord, Mon-Dor-Thémines, Le Tac-Sud, Mountain B, Grille 1 and Gaby.

Gold ± zinc or copper disseminated mineralization is composed of <15% blebs or fine-grained pyrite±pyrrhotite, sphalerite or chalcopyrite associated with silica-sericite±chlorite envelopes in felsic volcanic rocks. Prospects and occurences in the area of the Osborne-Bell deposit exemplify this type of mineralization.

Exhalative base metal (Cu, Zn) mineralization with or without precious metals (Au, Ag) is characterized by <5% disseminated sulphides (occasionally semi-massive) in laminated layers that may or may not be associated with graphitic sediments. According to SIGEOM, this type of mineralization is present in the Grevet-Giroux and North Shore prospects and the Lac Céré, 89-WA-02, Grevet Cdi-Grille 1, Laas VII-30 and 81-DUP-L-1 occurences.

Table 7.1 – List of prospects and occurrences on the Quévillon Property

Name	Category	Property block	E_UTMZ18	N_UTMZ18	NTS	Township	Commodity	Year Discovery	Host lithology	Mineralization type
Cedar Rapids (Dyke Zone)	Prospect	Central	348932	5430401	32F03	Laas	Au Cu Ag	1998	Basalt, ultramafic sills	Vein hosted
Cedar Rapids (Zone Village)			349078	5430827	32F03	Quévillon	Au Cu Ag	1939	Basalt, ultramafic sills	Vein hosted
Comtois NW Zone			331048	5450906	32F03	Fraser	Au Ag	2010	Felsic and intermediate volcanics	Disseminated gold
CSW-09-01			328751	5440027	32F03	Thémines	Au	2009	Iron formation	Iron Formation
Grevet-Giroux Nord			371773	5448170	32F02	Grevet	Ag (Cu)	1959	Siltstones and felsic dykes	Exhalative VMS
Grevet-Giroux Sud			370351	5446958	32F02	Grevet	Ag (Cu Zn)	1959	Siltstones, mafic volcanics and felsic dykes	Exhalative VMS
Hudson Zone			341524	5451563	32F03	Fraser	Au Zn Ag	1985	Felsic volcanics and dykes	Disseminated gold
NOR-09-01			354528	5451133	32F02		Au	2009	Basalts, andesites, and sediments	Vein hosted
North Shore			354429	5445953	32F02	Quévillon	Cu Zn (Au Ag)	1961	Graphitic sediments, volcanics and porphyries	Exhalative VMS
Osbell - Sud-Est			341817	5443268	32F03		Au Zn	2011	Rhyodacite porphyry and tuffs	Disseminated gold
Lac Céré		Northeastern	421605	5474378	32F08	Le Tac	Cu Ag (Zn Au)	1949	Volcanics	Exhalative VMS
89-WA-02	Occurrence	Central	389776	5444270	32F02	Wilson	Ag	1989	Dacite	Exhalative VMS
Alix			358518	5419928	32C15	Tonnancour	Mo	1961	Monzonite	Porphyry
Chutes Kiask			350946	5428381	32C14	Laas	Au Ag	2012	Andesites and basalts	Vein hosted
COM-10-378			332975	5445979	32F03		Mo	2010	Felsic porphyry	Porphyry
Greer			339970	5442527	32F03	Comtois	Au	1997	Felsic to intermediate tuffs	Disseminated gold
Grevet Cdi-Grille 1			369403	5452928	32F02	Grevet	Ag	1990	Graphitic sediments	Exhalative VMS
Laas VII-30			336828	5424428	32C14	Laas	Cu Zn (Mo)	1958	Siltstone and wackes	Exhalative VMS
Lac Clément SE			370129	5445454	32F02	Verneuil	Cu Zn Ag	1996	Andesites	*Undetermined*
Lac Labrie-SE			392259	5420946	32C16	Labrie	Au (Ag)	1965	Mafic volcanics	*Undetermined*
Lac Quévillon - Nord			361322	5440896	32F02	Quévillon	Cu (Au)	1993	Basalts, tuffs and felsic dykes	Vein hosted
Mon-Dor-Thémines			322117	5439087	32F03	Thémines	Au	1985	Andesites	Vein hosted
Cooper			341169	5446363	32F03		Au Zn	2011	Felsic porphyry volcanics	Disseminated gold
Sondage KC-86-2			334936	5450879	32F03	Fraser	Zn (Ag)	1986	Basalts	*Undetermined*
Sondage KC-86-5b			330594	5439821	32F03	Comtois	Au (Zn)	1986	Graphitic sediments and intermediate tuffs	Disseminated gold
Sondage KC-86-9			323466	5435940	32F03	Thémines	Au (Zn)	1986	Graphitic sediments and intermediate tuffs	*Undetermined*
81-DUP-L-1		Northeastern	389028	5464027	32F07	Du Plessis	Ag (Zn)	1981	Felsic tuffs	Exhalative VMS
Le Tac-Sud			426180	5474728	32F08	Le Tac	Cu	1990	Basalts	Vein hosted
Mountain B, Grille 1			386203	5459803	32F07	Mountain	Ag	1990	Basalts	Vein hosted
Bieber		Western	247028	5447900	32E01		Cu	2012	Basalts	*Undetermined*
Gaby			244696	5449371	32E01		Au Cu Mo Ag	2012	Basalts	Vein hosted
Lac Fumerton			250283	5458456	32E01	Carqueville	Zn (Cu)	2007	Gabbro	*Undetermined*
MAZ-12-03			265168	5443756	32E01	Mazarin	Ag	2012	Andesites	*Undetermined*
MAZ-12-04			261248	5442723	32E01	Mazarin	Ag W	2012	Felsic to intermediate volcanics	*Undetermined*

8. DEPOSIT TYPES

The Quévillon Property hosts different styles of mineralization and deposit types. Base metal and sulphide lens occurrences seem to be related to VMS models but the origin of gold in many cases could be related to either a synvolcanic event or/and late-tectonic overprint (or remobilization). This section describes the settings of gold-rich volcanogenic massive sulphide deposits ("Au-VMS") and the Osborne-Bell deposit. The Osborne-Bell deposit itself is not a classic VMS setting but its sulphide dissemination probably originated during a synvolcanic hydrothermal event.

8.1 Gold-rich Volcanogenic Massive Sulphide (Au-rich VMS) Deposits

The following summary on gold-rich VMS deposits was slightly modified from Dubé et al., 2007.

Definition

Gold-rich volcanogenic massive sulphide (Au-rich VMS) deposits form a subtype of both VMS and lode gold deposits. Like most VMS deposits, they consist of semi-massive to massive, stratabound to locally discordant sulphide lenses underlain by discordant stockwork feeder zones. The main difference between Au-rich VMS and other VMS deposits is their average Au content (in g/t), which exceeds the associated combined Cu, Pb, and Zn grades (in wt%). Gold is thus the main commodity; however, the polymetallic nature of this deposit subtype makes it more resistant to fluctuating metal prices, resulting in a very attractive exploration target.

Gold-rich VMS deposits occur in both recent seafloor and in deformed and metamorphosed submarine volcanic settings within greenstone belts of various ages. In the latter, they may contain local syntectonic quartz-sulphide or, more rarely, quartz-tourmaline veins, which add to their complexity. They occur in a variety of submarine volcanic terranes, from mafic bimodal through felsic bimodal to bimodal siliciclastic. Their host strata are commonly underlain by coeval subvolcanic intrusions and sill-dyke complexes and are typically metamorphosed to greenschist and lower amphibolite facies. The gold has most commonly an uneven distribution within the deposit due to both primary depositional controls and subsequent tectonic modification and remobilization. Some Au-rich VMS deposits are characterized by metamorphosed advanced argillic and massive silicic alteration indicative of an oxidized low-pH hydrothermal fluid that differs significantly from the mainly reduced, near neutral to weakly acidic fluids (of low-sulphidation conditions) typical of most ancient and modern VMS deposits. Where present, the metamorphosed advanced argillic and massive silicic alteration assemblages are thought to indicate high-sulphidation conditions similar to those encountered in some epithermal environments. In such cases, the Au-rich VMS deposits are commonly interpreted as shallow-water submarine equivalents to subaerial epithermal deposits

Three types of Au-rich VMS deposits have been proposed based on common metallic associations: 1) an Au-Zn-Pb-Ag association in which gold is concentrated towards the top or along the margins of the massive sulphide lens; 2) an Au-Cu association where gold is concentrated at the base of the massive sulphide lens or within the underlying stringer zone; and 3) a pyritic Au group where gold is concentrated within massive pyrite zones with low base metals content.

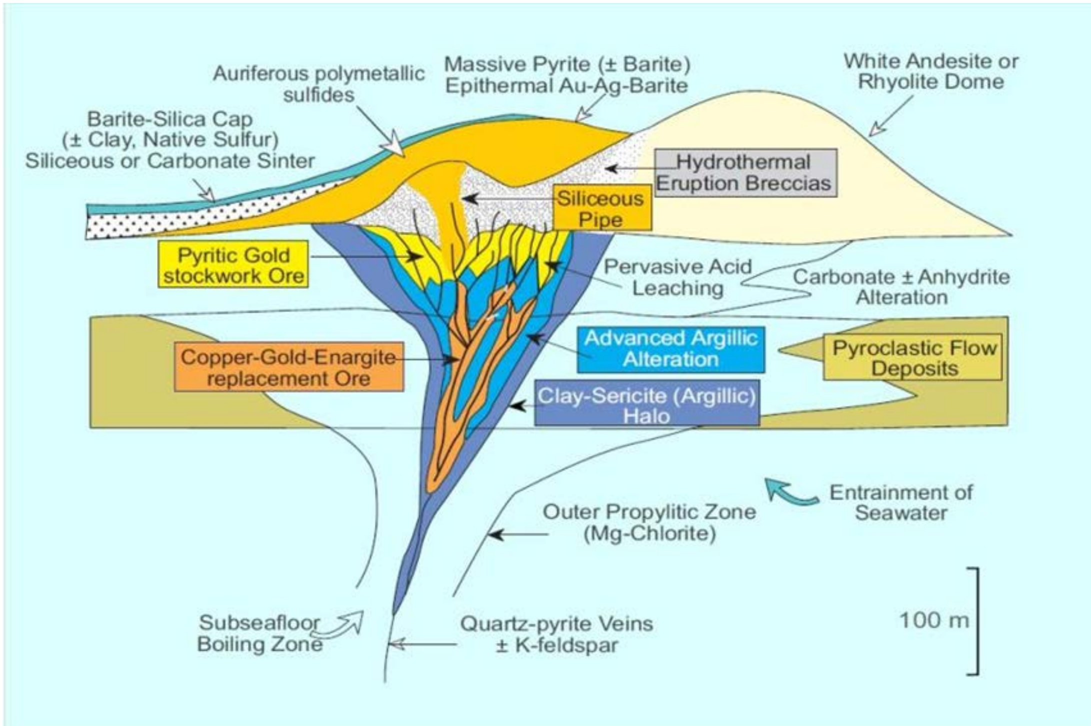

Figure 8.1 – Schematic geological settings and hydrothermal alteration associated with a gold-rich volcanogenic hydrothermal system (after Hannington et al., 1999)

Morphology

The typical morphology of Au-rich VMS deposits consists of a lenticular massive sulphide body with associated underlying discordant stockwork-stringer feeders and replacement zones (Fig. 8.1). Some deposits, such as LaRonde Penna, contain stacked massive sulphide lenses. The orebodies are commonly tabular and stratabound to discordant (e.g. LaRonde Penna 20 South lens). In most cases they have been deformed and tilted and have a foliation-parallel pipe-like geometry due to their strong transposition along the main foliation and stretching lineation. In these cases, the stockwork-stringer zones may have been transformed to foliation-parallel sulphide veinlets in schistose, altered rocks with quartz, white mica, and sometimes aluminous silicates. At Horne, zones of auriferous sulphide veinlets with Fe-chlorite selvages account for some of the Au-rich ore, however, the deposit lacks a well-defined stringer zone. Early VMS mineralization at the Doyon deposit (Québec) is overprinted by a large, telescoped epithermal or intrusion-related gold deposit associated with high-level emplacement of subvolcanic intrusions.

Dimensions

The vertical extent of the stockwork is typically larger than its lateral extension. In some cases where the deposits are overturned, the orebody has more than 2 kilometres of known vertical extension (Horne and LaRonde Penna deposits). The lateral extension of the deposit is typically a few hundred metres. The thickness of the massive sulphide lenses is highly variable, especially when submitted to deformation (shortening), but commonly in the order of a few tens of metres.

Host Rocks

The mineralization is typically hosted by felsic volcanic flows and volcaniclastic rocks (or their metamorphosed equivalents) near or at the interface with basaltic andesite, andesite or clastic sedimentary strata (e.g. LaRonde Penna, Eskay Creek, and Boliden). The Horne deposit is contained within a fault-bounded block of tholeiitic rhyolite flows and pyroclastic breccias and tuffs in contact with andesite flows to the east. It is juxtaposed against andesite flows and a diorite intrusion to the south, and rhyolites to the north that contain the Quemont deposit, another auriferous massive sulphide deposit potentially related to the same giant hydrothermal system responsible for the formation of the Horne deposit.

Textures

Banded and stratiform massive sulphide lenses and adjacent stockworks are commonly transposed by the main foliation in deformed deposits. In such cases, syntectonic sulphide veins may have developed, adding to the complexity and controversy of the deposits. Well preserved primary sulphide layering is rare to absent.

Mineralogy

The sulphide mineralogy of the Au-bearing ores is commonly more complex than in traditional Au-poor VMS deposits. Sulphide minerals are mainly pyrite, chalcopyrite, sphalerite, pyrrhotite, and galena with a complex assemblage of minor phases including locally significant amounts of bornite (Bousquet 2-Dumagami; tennantite, sulphosalts, arsenopyrite, mawsonite, and tellurides. The strong association of tellurides with Au suggests a possible magmatic input in the hydrothermal fluid. The Boliden deposit contains nearly 50 different ore minerals, whereas more than twenty-five major and trace minerals have been identified in the ores at LaRonde Penna including arsenopyrite, tetrahedrite, tennantite, bornite, Pb-Sb and Ag-Sb sulphosalts, Cu-Sn-sulphides, native Bi, Bi-tellurides, Ag (-Au) tellurides, electrum and rare selenides.

The Eskay Creek deposit is a low-temperature Au-rich VMS deposit characterized by a mineralogical assemblage of stibnite, realgar, cinnabar, and arsenopyrite with variable proportions of barite. The 21A zone consists of stratabound to stratiform lenses of semi-massive to massive stibnite and realgar, whereas the 21B zone is a stratiform sulphide-sulphosalt Zn-Pb-Au-Ag zone. The sedimentary textures of the stratiform 21B zone are consistent with its detrital origin; it is thus clearly distinct from other Au-rich VMS deposits.

As indicated by Hannington et al. (1999), gold occurs mainly as native metal and Au-tellurides in Cu-Au VMS deposits, whereas auriferous, polymetallic (Au-Zn-Pb-Ag) VMS typically contain electrum, which is often Ag- or Hg-rich. In some deposits, the gold is mainly hosted in commonly refractory arsenic-rich pyrite and arsenopyrite and present as submicroscopic inclusions or structurally bound to the crystal lattice. In metamorphosed deposits such as LaRonde Penna, metamorphic remobilization and segregation has had an impact on the local distribution of gold in the ores and has played an important role in generating non-refractory gold minerals. At LaRonde Penna, free gold (as electrum) accounts for the majority (>90%) of the gold in the ore. The gold grains are typically very fine (1 to 5 µm) and occur mainly as inclusions in recrystallized pyrite and chalcopyrite, and within microfractures in recrystallized pyrite. The electrum typically occurs intimately intergrown with other remobilized trace minerals.

Ore chemistry

The chemical signature of the ore is dominated by Au, Ag, and Cu or Zn with locally high concentrations of As, Sb, Bi, Pb, Se, Te, and Hg. At Eskay Creek, elevated Sb, As, Hg, and Ba are characteristic of the high-grade ore. Where associated with copper, gold is commonly concentrated within the stockwork-stringer zone in the immediate footwall of the massive sulphide lens (e.g., LaRonde Penna, 20 North Au lens below the 20 North Zn massive sulphide lens). Where associated with zinc, gold is located toward the upper part (Huston, 2000) or throughout the massive sulphide lens (e.g. 20 South lenses at LaRonde Penna). Silver is commonly more abundant than gold and the Ag/Au ratios typically vary from 1:2 to 10:1.

Alteration mineralogy

In the Doyon-Bousquet-LaRonde district, the alteration assemblages proximal to or hosting the ore are commonly characterized by semi-conformable to discordant zones of metamorphosed advanced argillic (aluminous) alteration with quartz, sericite, andalusite and/or kyanite, pyrophyllite and by local Zn-rich staurolite and massive silicic alteration with strong to complete leaching of Na_2O, CaO, MgO, and K_2O (Fig. 8.1). SiO_2, Al_2O_3, and TiO_2 have commonly been affected by residual enrichment due to the removal of the other oxides, although SiO_2 could have also been added through silicification. The advanced argillic alteration Index (“AAAI”) has been proposed recently to quantify such intense acid leaching with SiO_2 enrichment and to help in mapping the various alteration zones (Williams and Davidson, 2004):

$$AAAI = 100 \times \frac{SiO_2}{(SiO_2 + 10\ MgO + 10\ CaO + 10\ Na_2O)}$$

Andalusite and/or kyanite are commonly retrograded into pyrophyllite (e.g., LaRonde Penna, Bousquet 2-Dumagami). A proximal quartz-biotite-manganiferous garnet assemblage or an outer quartz-manganiferous zincian garnet-staurolite-chloritoid-biotite-muscovite-chlorite assemblage may be present, especially in the footwall of the mineralization. Green chromium mica may also be locally present, as illustrated by the presence of chromium-rich phengite in both the immediate footwall and hanging wall of the 20 South lens at LaRonde Penna and in the footwall of the Rambler deposit in Newfoundland. The North and South ore zones at Montauban are associated with disseminated pyrite, sphalerite, and chalcopyrite, with cordierite-anthophyllite and quartz-biotite garnet assemblages within quartz-biotite and quartz-sillimanite gneisses. Potassic alteration, characterized by K-feldspar, occurs at Eskay Creek, especially in the footwall alteration zone. Huston (2000) proposed that the advanced argillic alteration is more typical of the Au-Cu subclass of Au-rich VMS deposits, whereas potassic feldspar is more common of those characterized by the Au-Zn-Pb-Ag association. Tourmaline is present at Boliden as lens-shaped auriferous tourmaline ore located beneath the massive sulphide zone within the sericitic alteration, as well as minor high-grade quartz-tourmaline veins. Traces to minor amounts of tourmaline are also present at LaRonde Penna.

At the Horne deposit, most rhyolitic rocks within the fault-bounded block have been affected by weak sericitization and silicification that become more intense near the orebodies, where alteration is characterized by a quartz-sericite±pyrite assemblage. Chlorite alteration, which locally contains elevated Cu and Au values, is largely restricted to the immediate footwall and sidewall of the deposit, except for local discordant zones in the footwall.

Grade and tonnage characteristics

Gold-rich VMS deposits range in size from small sulphide lenses with less than 3 t of gold, to giant-sized lenses and stockwork-stringer zones of more than 50 Mt of ore containing over 300 t of gold. The gold grade is typically greater than 4 g/t, with one deposit (Eskay Creek) reaching as high as 38 g/t. The average gold grade for Canadian Au-rich VMS deposits is 5.9 g/t, however it ranges from 2.9 to 38 g/t. There are presently only 11 Au-rich VMS deposits in the world containing at least 30 t Au (approx. 1 Moz) in production, reserves, and resources. World-class deposits (≥100 t Au) form a select group of six deposits that includes the Paleoproterozoic Boliden deposit in Sweden (125 t Au produced), one of the best known international examples, and Mount Morgan (Australia, 321 t Au in production, reserves, and resources). Some of the largest Au-rich VMS deposits are Canadian: Horne in the Noranda district (Cu-Au, 331 t of Au produced from 54.3 Mt of ore at 6.1 g/t Au), LaRonde Penna (Au-Zn-Ag-Cu) and Bousquet 2-Dumagami (Au-Ag-Cu-Zn, 112 t of Au produced) in the Doyon-Bousquet-LaRonde district, and Eskay Creek in British Columbia (Au-Ag-Cu-Zn-As-Sb-Hg, 81 t of Au produced and 37 t in reserves and resources). LaRonde Penna is the second largest Au-rich VMS deposit in Canada; it is also the largest Au deposit presently being mined in Canada. About 12.3 Mt of ore and 43.4 t of Au (1.4 Moz) have been extracted from the Penna shaft since the beginning of its production to the end of 2005. Reserves and resources at December 31, 2005 were evaluated at 6.74 Moz Au from 46.5 Mt at an average grade of 4.51 g/t Au, 2.04% Zn, 0.34% Cu, and 42.67 g/t Ag (Agnico Eagle Mines, 2005 annual report).

8.2 Osborne-Bell Deposit Setting

8.2.1 Physical properties

The Osborne-Bell deposit is hosted in a synvolcanic felsic unit package and to a lesser extent in the enclosing sequence of mafic volcanic rocks, which extends far beyond the mineralized zone. The majority of the mineralization occurs in the synvolcanic felsic units and along the interface with the mafic volcanic rocks (Fig. 7.10). Felsic units may represent a synvolcanic dyke swarm injected in the mafic volcanic pile, thus constituting the root or a part of the root of a volcanic system (Fig. 8.2).

The gold-bearing zones of the Osborne-Bell deposit contain sulphides in disseminated or veinlet form and include a lower-grade gold envelope (several hundred ppb). This style of mineralization is also seen in the Bousquet district where detailed studies show that pyrite occurs as vein fillings and disseminations in the pyrite-rich zones of the district's gold deposits, although vein-type pyrite is dominant (Marquis et al, 1990).

The most important sulphide mineral at Osborne-Bell is pyrite; lesser phases are pyrrhotite, chalcopyrite and sphalerite, and galena occurs in trace amounts. Native gold is commonly spatially associated with Bi-telluride grains (documented in thin sections, Renou, 2010).
Gold is also spatially associated with pyrite and may be found coating pyrite grains or as inclusions in anhedral pyrite. A few gold grains reach several tens of microns across (Renou, 2010).

Koziol and Faber (1996) suggest that gold predates fractures in mineral grains and was therefore emplaced prior to regional deformation.

8.2.2 Chemical properties

Mineralization chemistry at Osborne-Bell is characterized by Au, Ag, Cu and Zn with local trace amounts of Pb, Bi-Te and As. Silver is commonly associated with gold and Ag/Au ratios range from 2 to 5 for samples grading ≥1 g/t Au. Ratios ranging from 0.5 to 10, associated with Au-Ag-Cu-Zn associations, are typical of VMS mineralization (Dubé et al., 2007).

Alteration at Osborne-Bell is characterized by an assemblage of white micas (mostly sericite), quartz, aluminosilicate minerals, cordierite and biotite. Advanced argillic (aluminous) alteration is marked by Na_2O and CaO depletion and K_2O enrichment, represented by high IALT and AAAI values. Advanced argillic alteration is typical of deposits with a Au-Cu association, as documented at LaRonde Penna and Bousquet 2-Dumagami (Dubé et al., 2007).

The timing of gold emplacement is still a controversial subject for the Osborne-Bell deposit and Au-rich VMS deposits in general. Two genetic models are proposed:

- Syntectonic gold (late): conventional epigenetic, volcanic-hosted, Au-poor base metal mineralization overprinted during regional-scale deformation and metamorphism by syn-deformational gold mineralization.
- Synvolcanic gold (primary): syngenetic gold forms in the VMS environment distinguished from conventional massive sulphide deposits by their anomalous fluid chemistry (acidic) and/or deposition within a shallow-water to subaerial volcanic setting.

In the current proposed model for the Osborne-Bell deposit (Fig. 8.2), the felsic units in the main part of the deposit represent a synvolcanic dyke swarm injecting a mafic volcanic pile and feeding felsic units in a volcanic centre in the Bell-VMS area at the west end of the deposit. The feeder zone is host to gold-rich disseminated sulphide mineralization (±Ag±Cu±Zn) whereas the volcanic centre and its vicinity host VMS-style Cu-Zn mineralization (with gold potential). According to this scenario, the Beehler Stock, a late intrusive, does not play a role in primary mineralization, although it may have caused local remobilization and it does have a major impact on the deposit by truncating the southern margin the hydrothermal system and diluting mineralization through the injection of genetically related feldspar porphyry dykes.

In this model, the argillic alteration (aluminous facies) and higher IALT values (magenta in Fig. 8.2) found along the felsic feeder dyke system in the eastern part of the Osborne-Bell deposit (the Osborne area) would be the result of syngenetic hydrothermal activity. In this area, the advanced argillic front is accompanied by pyrite (disseminated-veinlets type) and is particularly enriched in Au-Ag-Cu-Zn. Synvolcanic structures (usually normal faults and feeder dykes) are key features in this type of mineralized setting.

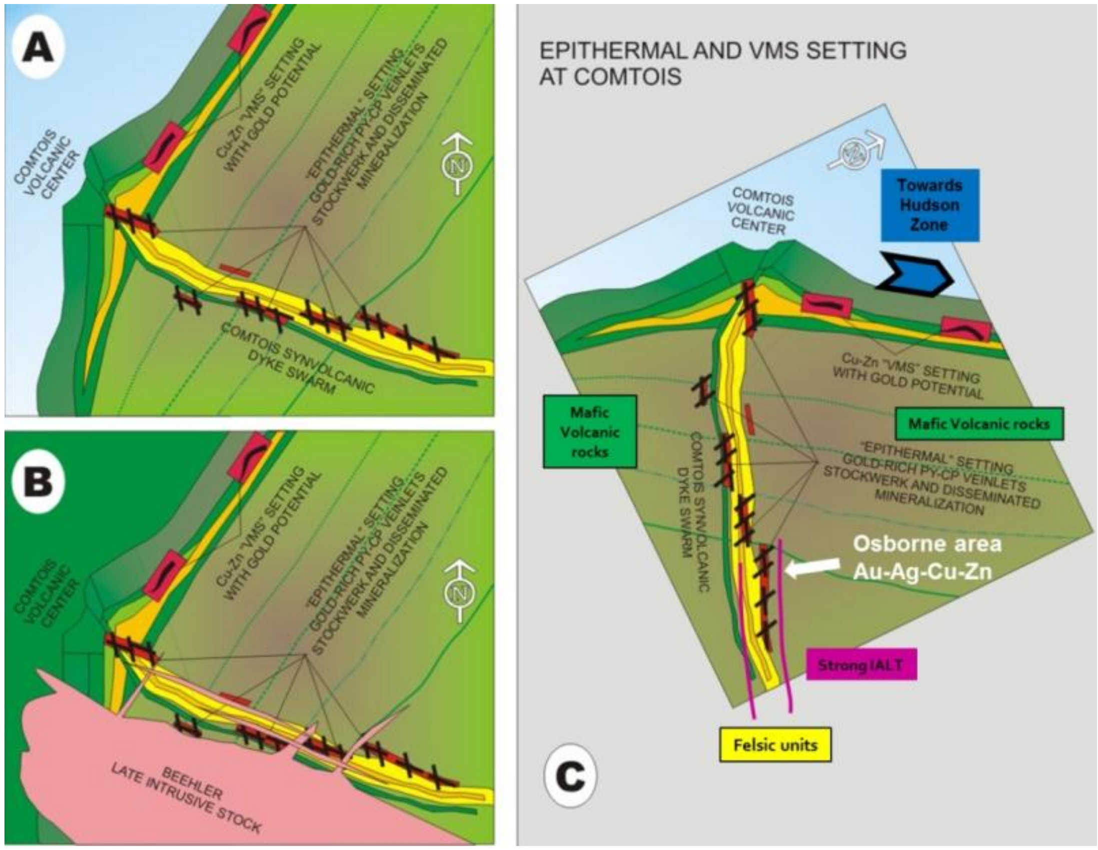

Figure 8.2 – Schematic model for the Osborne-Bell gold mineralization showing proposed relationships between felsic units (synvolcanic dyke swarm), stratigraphic horizons and gold-rich mineralization, as well as the position of massive sulphide lenses near an interpreted volcanic center. A and B are rotated to represent present-day positions in plan view. (Modified from Carrier, 2004)

8.2.3 Exploration model

The exploration model at the scale of the Quévillon Property is based on the possibility of finding Osborne-Bell-type settings elsewhere on the property as well as Au-bearing VMS mineralization. The strong relationship and geographic proximity between VMS deposits with different mineralized expressions has been well documented and can serve as a guide here.

According to the proposed genetic model, the corridor linking the western extremity of Osborne-Bell deposit and the Hudson Zone (Figs. 6.3 and 7.4) represents a favourable area for VMS and Osborne-Bell-type mineralization.

Regional structures may help understand the spacing between mineral occurrences at the property and regional scales. Structures can be the host of late-tectonic gold deposits and can produce late enrichment and/or remobilization in primary deposits. At the local scale, the ductility of strongly altered zones may transform rocks into schist and transpose the mineralization (sub)parallel to the main schistosity. The impact of regional structures as a primary synvolcanic control on the distribution of mineralization should be considered. Detailed mineralogical and lithogeochemical studies should be carried out to identify favourable rocks with distinctive alteration assemblages (including white micas and aluminosilicates).

9. EXPLORATION

9.1 Exploration Work

This section of the report briefly summarizes the exploration work carried out by the issuer on the Quévillon Property from April 28, 2017 (the day after Osisko acquired the land package from Deloitte Restructuring Inc.) to January 31, 2018. The drilling program during that period is covered under Item 10.

Osisko commissioned a 27,739.1-kilometre high-definition airborne magnetic survey and an 8,007.43-kilometre VTEM airborne survey over the Quévillon Property. Geo Data Solutions Inc. flew the magnetic survey between October 12 and December 20, 2017. Geotech Ltd conducted the VTEM survey between October 27, 2017 and January 29, 2018. The geophysical report for the magnetic survey has been finished but the VTEM report is pending. Osisko hired Michel Allard of Inter Geophysics Inc. to interpret the surveys.

In 2017, Osisko also began amassing baseline exploration data, including geological mapping, geological sampling and basal till sampling. In early February, this ongoing work was approximately one-third complete (Osisko press release of February 8, 2018). Osisko intends to include exploration drilling on the priority targets developed by these programs in its 2018 work program.

10. DRILLING

This section of the report briefly summarizes Osisko's drilling program from December 8, 2017 (the day the issuer commenced drilling the Osborne-Bell deposit) to January 31, 2018. Information reported in this section was obtained from the issuer's exploration team during the site visit and further exchanges. Drilling programs performed by Maudore before 2016 are summarized in Item 6.

The drilling program started with two rigs on the deposit in early December 2017 (Osisko press release of December 14, 2017). Drilling was carried out by Forages Rouillier, a contractor based in Val-d'Or. Drilling used conventional drill rigs producing NQ-diameter core (Fig. 10.1). Collar locations were determined with a REFLEX APS Northfinder, a GPS-based instrument mounted on top of the drill rig's rotation unit and capable of real-time communication with a mobile device. All casings were left in place.

The drill is lined up using the REFLEX TN14 GYROCOMPASS™. The downhole dip and drill hole orientations were surveyed with a REFLEX EZ-TRAC shot unit. Reflex surveys were started 10 metres below the casing, and single-shot readings were taken every 30 metres down the hole during drilling, and multi-shot readings were taken every 3 metres while pulling out the rods. A Reflex reading was also taken at the bottom of the hole. The digital core orientation REFLEX ACT III™ system records the orientation of the core at every 3-metre run. The orientation device is attached to the drill rod, and the core bottom is marked by the drill operator based on the instrument reading. The mark corresponds to the intersection of the geographic vertical plane with the oriented core. Blocks are used at the drill site to separate the core in the box at the beginning and end of each drill run.

At the core storage and logging facilities, before logging commences, the core is pieced together end-to-end to ensure it was correctly aligned in the core boxes. Once aligned, a reference line is drawn to trace the bottom of the hole by following the marks made by the driller's assistant to identify the up-hole direction. This reference line is used by the geologists to accurately measure the Alpha and Beta angles (dip and strike, respectively) of any planar features. RQD and core recovery are measured and calculated by the technician at 3-metre intervals. Logging and detailed descriptions of the drill core are made by qualified professionals under the employ of Osisko who are members in good standing of the OGQ or OIQ. All recorded data are stored in the DH Logger core logging software from Datamine. Photos are taken once the geologist has laid out the samples and inserted the tags. The core is sawn perpendicular to the core-orienter reference line and the top half is placed in a bag by the core cutter. The bottom half is retained for reference and returned to the core box. When sampling is completed, the bag is sealed with a zip tie. All samples are assigned a unique sample number. The sample number does not include any reference to drill hole number or meterage for security reasons. One submittal form is prepared per each hole and sent by email to the laboratory. The core box is then brought to Osisko's core storage facility in Lebel-sur-Quévillon where all historical diamond drill core since 2003 has been stored.

10.1 Osborne-Bell Drilling Program

Osisko's surface drilling program is designed to infill the central high-grade zones of the Osborne-Bell deposit (Fig. 10.2). As of January 31, 2018, 14 DDH had been drilled on the deposit for a total of 4,512.7 metres (Table 10.1). Only the first four holes (OSK-OB-17-001 to OSK-OB-17-004) were used in the current mineral resource estimation (see Item 14) because assays and QA/QC were pending for the other holes at the database close-out date. The best mineralized intervals are summarized in Table 10.2.

Figure 10.1 – Drill rig setup over the Osborne-Bell deposit. Photo taken during the site visit on January 18, 2018.

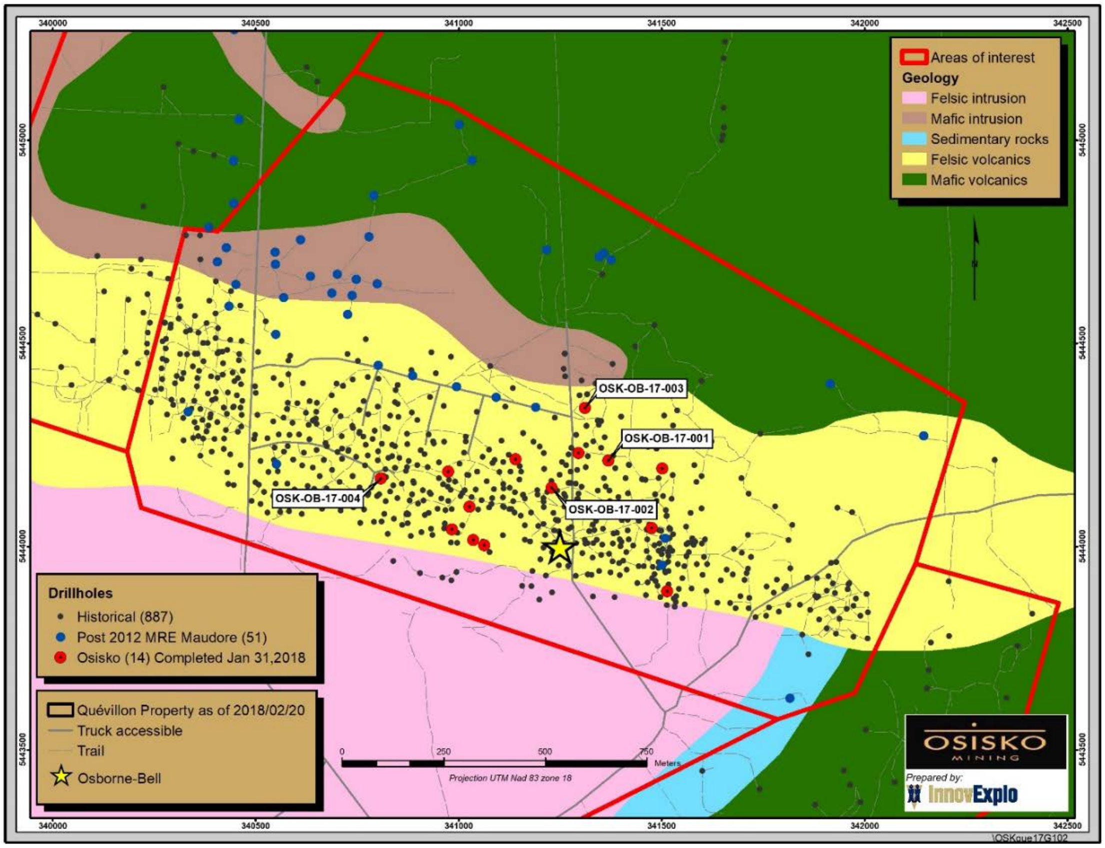

Figure 10.2 – Map showing holes drilled by Osisko on the Osborne-Bell deposit (January 31, 2018) and locations of the 4 DDH used in the 2018 MRE.

Table 10.1 – Summary of diamond drilling completed by Osisko on the Osborne-Bell deposit (January 31, 2018).

Hole ID	Date started	X_UTM83Z18	Y_UTM83Z18	Elevation (m)	Azimuth	Dip	Length (m)
OSK-OB-17-001	12/5/2017	341369.5	5444212	287.9	190.06	-57.95	535
OSK-OB-17-002	12/6/2017	341230	5444145	288	175.92	-44.15	358
OSK-OB-17-003	12/12/2017	341312	5444341	287.5	186.82	-59.5	622
OSK-OB-17-004	12/14/2017	340809	5444168	289	201.6	-69.3	377.7
OSK-OB-18-005	1/8/2018	341514.28	5443889.97	291.6	183.1	-48.1	112
OSK-OB-18-006	1/10/2018	341476	5444046	289	194.1	-63.1	91
OSK-OB-18-007	1/12/2018	341063.5	5444003.2	322.7	188.2	-68.1	259
OSK-OB-18-008	1/13/2018	341296	5444230	288	184.5	-52	376
OSK-OB-18-009	1/17/2018	341037	5444016	322.3	190	-60.8	193
OSK-OB-18-010	1/19/2018	340984	5444042	316	203.5	-63	232
OSK-OB-18-011	1/19/2018	341027.3	5444098.4	298.52	196	-52.7	274
OSK-OB-18-012	1/21/2018	340975	5444185	290	195.7	-52	349
OSK-OB-18-013	1/25/2018	341502	5444192	294	206.7	-61.2	52
OSK-OB-18-015	1/27/2018	341141	5444215	288	194.53	-61.8	40
Total							**3870.7**

Table 10.2 – Best gold intervals from Osisko's drilling program on the Osborne-Bell deposit (holes OSK-OB-17-001 to OSK-OB-17-04).

Hole ID	Zone	From (m)	To (m)	Length (m)	Au(g/t) uncut
OSK-OB-17-001		307.00	309.00	2	1.27
OSK-OB-17-001		313.00	315.00	2	0.99
OSK-OB-17-001		332.00	333.00	1	1.85
OSK-OB-17-001		382.80	384.30	1.5	1.50
OSK-OB-17-001		512.60	513.80	1.2	2.22
OSK-OB-17-001		518.00	521.00	3	1.10
OSK-OB-17-001		528.00	529.00	1	1.50
OSK-OB-17-002		201.00	202.00	1	1.45
OSK-OB-17-002		205.00	206.00	1	1.42
OSK-OB-17-002		211.00	212.00	1	1.27
OSK-OB-17-002		319.00	320.50	1.5	2.07
OSK-OB-17-003		480.20	481.20	1	19.85
OSK-OB-17-003		499.90	501.00	1.1	1.96
OSK-OB-17-003		583.50	584.00	0.5	12.35
OSK-OB-17-003		595.30	595.70	0.4	7.86
OSK-OB-17-003		614.00	615.00	1	1.86
OSK-OB-17-003		616.70	618.00	1.3	1.32
OSK-OB-17-004		55.00	57.00	2	28.91
OSK-OB-17-004	*Including*	*56.00*	*57.00*	*1*	*56.90*
OSK-OB-17-004		93.00	94.00	1	1.43
OSK-OB-17-004		135.00	136.00	1	1.19
OSK-OB-17-004		154.00	155.00	1	1.01
OSK-OB-17-004		155.00	157.00	2	7.28
OSK-OB-17-004	*Including*	*155.00*	*156.00*	*1*	*11.55*
OSK-OB-17-004		161.60	170.00	8.4	0.48
OSK-OB-17-004	*Including*	*164.50*	*165.80*	*1.3*	*1.06*
OSK-OB-17-004		255.50	256.50	1	1.10
OSK-OB-17-004		262.50	263.50	1	1.00
OSK-OB-17-004		294.20	297.70	3.5	2.35
OSK-OB-17-004		315.70	317.70	2	7.70
OSK-OB-17-004	*Including*	*315.70*	*316.70*	*1*	*14.80*
OSK-OB-17-004		331.00	332.00	1	1.26

11. SAMPLE PREPARATION, ANALYSES, AND SECURITY

This item presents the sample preparation methods and QA/QC measures for the Maudore period (former Comtois Property, sections 11.1 to 11.5) and the Osisko period (current Quévillon Property, section 11.6).

11.1 Sampling Method and Approach (Maudore period)

After the Comtois Property drilling program ended on November 2, 2012, InnovExplo employees logged and sampled roughly 11 kilometres of the remaining drill core according to the existing sampling protocol previously established by InnovExplo for Maudore. InnovExplo employees were present on the property during the sampling process and concluded that the procedure was followed properly and meets industry standards.

The sampling protocol established by InnovExplo is described below.

The drill core was boxed, covered and sealed at the drill rig then moved by drilling staff to the InnovExplo logging and sample preparation facilities in Lebel-sur-Quévillon (Figs. 11.1 to 11.3). Core was immediately checked by geologists to validate drilling progress and lithologies. Drill core measurements were validated by InnovExplo employees and any significant offsets in the measurements between the wooden blocks placed every 3 metres along the core were corrected if necessary. The employees also calculated core recovery and drew reference lines along the core through the marks made by drillers using a core-orienter.

Figure 11.1 – Logging facility in Lebel-sur-Quévillon where the core was received, logged and sampled by geologists in 2012.

Logging and detailed descriptions of the drill core were made by qualified professionals under the employ of InnovExplo who were members in good standing of the OGQ or OIQ. Core logging and data entry was done at the Lebel-sur-Quévillon core facility (Fig. 11.1) using a laptop and Geotic Log® software. Core logging protocols required the following to be documented and described:

- Principal lithologies with rock colour, texture and contacts.
- Secondary lithologies (such as repetitive dykes), describing the same parameters.
- Alteration style and intensity.
- Mineralization, generally determined by sulphide type and sulphide concentration in total core volume.
- Vein type, density and orientation.
- Structural parameters, such as fractures, fault angles, hydrothermal breccias, folds, kink bands, etc. After March 2012, measurements from the core-orienter were added to the list: alpha and beta angles for each pertinent structure, contacts and mineralization (minimum of 2 measurements per 4.5 m of drill core).
- Rock quality designation (RQD) using a reference spacing of 3 metres and discounting core pieces less than 10 centimetres long. Core recovery was very good with results above 99%.

After being examined and described (logged), the core was sampled according to a protocol established by InnovExplo. The protocol specifies that samples consist of half-split core 0.5 to 1.5 metres long, with the length determined by geological criteria: Every zone carrying sulphide mineralization was considered potentially mineralized and sampled. Alteration and/or structural features also guided sampling. Sample intervals were never taken across lithological contacts. The core was generally intact with little possibility of loss due to wash out and was of good quality. The core was rarely ground, and where this occurred, it was only over short distances (less than 0.5 m). Overall, the drill core recovery from the mineralized zones is considered representative.

The drill core was tagged by inserting two sample tags at the end of each interval. The third part of the tag remained in the book to keep a reference of the interval's footage; in the case of whole-rock samples, the rock type, the alteration type and the amount of mineralization were also noted. The same type of tags was used for economic and whole-rock samples, as well as for QA/QC samples: blanks, standards and field duplicates (section 11.2). Blanks and standards were generally placed immediately after sulphide-rich sequences and whenever possible, field duplicates were taken inside a sulphide-rich sequence.

The core of each selected interval was first cut in half using a typical table-feed circular rock saw (Fig. 11.2), with one half put aside for shipment to the laboratory with its sample tags. Half of all sampled core was retained for future reference. The second part of the sample tag bearing the same number was securely attached in the core box at the end of each sampled interval.

InnovExplo employees inserted each sample into a plastic bag, and then placed each batch of 25 bagged samples into a rice bag along with the laboratory work order prepared by a geologist, indicating the sample preparation and assay procedures to be followed by the laboratory. The rice bags were closed hermetically by tape or tie-wrap (Fig. 11.3) and delivered weekly to the assay laboratory by either Transport Manitoulin Inc., Autobus Maheux Ltée, Transport Rayso Inc. or InnovExplo's staff. The laboratory would alert the project geologist about any potentially tampered or damaged rice bag, and the project geologist would decide whether to continue with the preparation or send the laboratory a quarter-split of the core in question.

All drill core since 2003 is stored and categorized for future reference at Lebel-sur-Quévillon. The core is kept in good condition in roofed outdoor core racks at the Osisko storage facilities (Figs. 11.4 and 11.5). All core boxes are labeled and properly stored.

Figure 11.2 – One of the two core saws used during the Maudore's 2012 drilling program.

Figure 11.3 – Sampling facility (adjacent to the logging facility) in Lebel-sur-Quévillon where technicians sampled and prepared the core for shipping to the laboratory in 2012.

During the Maudore period, there was no indication of anything in the drilling, core handling and sampling procedures or in the sampling methods and approach that could have had a negative impact on the reliability of the reported assay results. From 2008 to 2013, Pierre-Luc Richard supervised this aspect of the project (among others) and visited the property, core shack and core storage facility on several occasions.

Figure 11.4 – Core storage facility at Lebel-sur-Quévillon where all historical drill core since 2003 are stored (January 14, 2018).

Figure 11.5 – Closer view of the racks where the core is stored after being logged and sampled by Maudore and Osisko (January 14, 2018).

11.2 Sample Preparation

ALS Chemex Laboratories ("ALS"), an ISO 9001:2000 accredited facility in Val-d'Or, was used for assaying during the Maudore drilling programs. InnovExplo is of the opinion that the assaying procedures and QA/QC protocols followed industry standards and are of good quality.

Economic samples were grouped and sent in batches of 25 samples. Each batch comprised:

- 22 regular samples;
- 1 field duplicate sample selected at random;
- 1 field blank; and
- 1 certified reference material ("CRM", standard).

At the request of InnovExplo, the laboratory added a 26th sample to every batch received in the form of a coarse duplicate of the last regular sample. For the fusion process, three batches were combined to create one large batch of 78 samples. To these large batches, the laboratory randomly added six additional quality control samples (1 analytical blank, 2 standards and 3 pulp duplicates), bringing the total to 84 samples.

This section describes the sample preparation protocol for the Québec division of ALS during the Maudore period.

11.2.1 Economic samples

The entire sample was crushed with either an oscillating jaw crusher or a roll crusher, with the specification that more than 90% of crushed material sample must pass a 2 mm (10 mesh) screen. For the fire assay, a 1,000 g fraction derived from the crushing process was then pulverized using a ring mill to 90% passing 75 µm (200 mesh). For the metallic sieve, the entire sample was pulverized.

11.2.2 Lithogeochemical samples

The entire sample was crushed with either an oscillating jaw crusher or a roll crusher, with the specification that more than 70% of crushed material sample must pass a 2 mm (10 mesh) screen. A 250 g fraction derived from the crushing process was then pulverized using a ring mill to 85% passing 75 µm (200 mesh).

11.3 Analysis

11.3.1 Economic samples

Gold was analyzed by fire assay with atomic absorption spectroscopy ("AA") finish (ALS Global code Au-AA26) using a 50 g sample weight. The method offered detection limits from 0.01 to 100 ppm. A prepared sample was fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required, inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead. The bead was digested in 0.5 mL dilute nitric acid in the microwave oven. Concentrated hydrochloric acid (0.5 mL) was then added and the bead was further digested in the microwave at a lower power setting. The digested solution was cooled, diluted to a total volume of 10 mL with de-mineralized water and analyzed by atomic absorption spectroscopy against matrix-matched standards. For grades over 3.0 g/t Au, samples were re-assayed using a gravimetric finish on the digested solution (Au-GRA22) where the detection limits are from 0.05 to 1000 ppm.

Samples were also assayed by an inductively-coupled plasma ("ICP") method for 35 elements (ME-ICP41). A prepared sample was digested with aqua regia on a graphite heating block. After cooling, the resulting solution was diluted to 12.5 mL with deionized water, mixed and analyzed by ICP-AES. Selected samples were also assayed for platinum group elements (platinum, palladium) and gold using a 30 g nominal sample weight (PGM-ICP23). A 30 to 50 g sample was combined with a flux (lead oxide, sodium carbonate, borax and silica) and 8 mg of inquarted Au-free silver. The mixture was heated between 850° and 1060°C in increasing increments, over a 60-minute period. Upon cooling, the Ag + Pt, Pd and Au bead was recovered and heated in a microwave oven on high power for 2 minutes with 0.5 mL of dilute nitric acid. The solution was cooled and 0.5 mL of concentrated HCl was added and the solution was returned to the microwave oven for a further 2 minutes at a lower power. The solution produced was diluted to 4 mL with 2% HCl and measured for Pt, Pd and Au by ICP-AES. The method offers a detection limit from 0.001 to 10 ppm.

For gold analysis by metallic sieve, the entire sample was screened at 100 µm (150 mesh). Material remaining on the screen (>100 µm) was analyzed in its entirety with gravimetric finish (ALS Chemex code Au-GRA22) and constitutes the gold coarse fraction ("Au (+)"). Material passing through the screen (<100 µm) was homogenized and two sub-samples (50 g) analyzed by fire assay with AA finish. The average of both assays constitutes the gold fine fraction ("Au(-)"). The gold values for the Au(+) 100 µm and Au(-) 100 µm fractions were reported together with the weight of each fraction as well as the calculated total gold content of the sample.

$$\textit{Au Total (ppm)} = \frac{((\text{Au}(–)\text{ av ppm}) \text{ x Wt. Min(g)}) + (\text{Au}(+)\text{ppm x Wt. Plus (g)})}{(\text{Wt. Min(g)} + \text{Wt. Plus (g)})}$$

11.3.2 Lithogeochemical samples

Gold was analyzed by fire assay with AA finish (Au-AA23) using a 30 g sample weight. Selected samples were also assayed for Pt, Pd and Au using the PGM-ICP23 method.

Before August 2012, samples were assayed by an ICP method for 35 elements (ME-ICP41) and the whole-rock geochemistry comprised a standard suite of major elements analyzed by the ME-XRF06 method. With this method, a calcinated or ignited sample (0.9 g) was added to a lithium borate flux, mixed well and fused in an auto fluxer between 1050° and 1100ºC. A flat molten glass disc was prepared from the resulting melt. This disc was then analyzed by XRF spectrometry. Detection limits were at 0.01%. A suite of 6 trace elements (Nb, Ba, Rb, Zr, Y and Sr) was added to this package by the method ME-XRF05. A finely ground sample powder (10 g minimum) was mixed with a few drops of liquid binder (polyvinyl alcohol) and then transferred into an aluminium cap. The sample was subsequently compressed under approximately 30 t/in^2 in a pellet press. After pressing, the pellet was dried to remove the solvent and analyzed by WDXRF spectrometry.

In August 2012, the method was changed in order to analyze for a suite of REE using the CCP PKG 01 package provided by ALS Global. These elements were not included in the previous package. Major elements were analyzed by ICP-AES (ME-ICP06) and 31 additional elements (ME-MS81). The prepared sample (0.2 g) was added to lithium metaborate flux (0.9 g), mixed well and fused in a furnace at 1000ºC. The resulting melt was then cooled and dissolved in 100 mL of 4% HNO_3 / 2% HCl_3 solution. This solution was then analyzed by ICP-MS. The oxide concentrations were calculated from the determined elemental concentrations and the result reported in that format. The total oxide content was determined from the ICP analyte concentrations and LOI values. LOI is determined by the OA-GRA05 method, where a prepared sample (1.0 g) is placed in an oven at 1000ºC for one hour, cooled and then weighed. The percentage LOI is calculated from the difference in weight.

The lithium metaborate fusion is not the preferred method for the determination of base metals. Many sulphides and some metal oxides are only partially decomposed by the borate fusion and some elements such as cadmium and zinc can be volatized. Base metals were reported with ME-MS81 for a four-acid digestion (ME-4ACD81). The four-acid digestion was preferred in this case as the samples include more resistive mineralization such as that associated with Ni and Co. In this case 10 elements were reported with detection limits from 0.5 to 5 ppm.

Carbon and sulphur were analyzed by combusting a part of the sample in an LECO induction furnace. The generated CO_2 is quantitatively detected by infrared spectrometry and reported as percent carbon. Sulphur dioxide released from the sample is measured by an IR detection system and the total sulphur result if provided.

Table 11.1 – Summary description of the CCP PKG01 method

ANALYTES	DESCRIPTION	Total
Major elements: Au, Si, Al, Fe, Ca, Mg, Na, K, Cr, Ti, Mn, P, Sr, Ba, TOTAL	Lithium metaborate fusion, ICP-AES (ME-ICP06)	14
C, S	Combustion furnace (C-IR07 and S-IR08)	2
Base Metals: Ag, Cu, Co, Cd, Mo, Ni, Pb, Sc, Zn	Four Acid, ICP-AES (ME-4ACD81)	9
Trace Elements and REE's: Ba, Ce, Cs, Cr, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Lu, Nb, Nd, Pr, Rb, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, V, W, Y, Yb, Zr	Lithium metaborate fusion, ICP-AES (ME-MS81)	31
Volatiles: As, Bi, Hg, Sb, Se, Te	Aqua regia, ICP-MS (ME-MS42)	6
LOI	Thermal decomposition furnace (OA-GRA05)	1

11.4 Quality Control (ALS Chemex)

As reported on their website, standard operating procedures at ALS include the analysis of quality control samples (reference materials, duplicates and blanks) along with all sample batches. As part of the assessment of every dataset, results from the control samples are examined to ensure they meet set standards determined by the precision and accuracy requirements of the method. In the event that any reference material or duplicate result falls outside the established control limits, an error report is automatically generated. This ensures that the person evaluating the sample set for data release is made aware that a problem may exist with the data set, and an investigation can be initiated.

As part of routine procedures at ALS, barren wash material was used between batches during sample preparation and, when necessary, between highly mineralized samples as well. This cleaning material is tested before use to ensure that no contaminants are present, and the results are retained for reference. In addition, logs are maintained for all sample preparation activities. In the event that a problem with a prep batch is identified, these logs can be used to trace the sample batch preparation procedure and initiate appropriate action.

11.5 QA/QC Results (InnovExplo)

The following sections discuss the QA/QC results for sample batches for which the assay certificates were received after the 2012 MRE database close-out date of August 13, 2012 (referred to on figures and tables as “Post-MRE 2012”) but before Osisko’s acquisition of the Property in 2017. The samples are from different areas on the property, such as the Western Extension, Eastern Extension, Osborne-Bell deposit and Mafic North area.

The QA/QC information for individual areas of interests, such as Comtois NW, Hudson, KC-82-02, Laflamme and other exploration areas, can be found in Jalbert and Jourdain (2012). Historical cumulative graphics encompassing all of the QA/QC data to date for CRMs, blanks and any field and analytical duplicates can be provided by InnovExplo upon request.

In order to reduce discrepancies and minimize the effect of a significant bias due to the expected low reproducibility of samples grading <0.1 g/t Au, InnovExplo decided to remove such grades from the QA/QC tables for the duplicates and focus on samples that fall farther from the Au-AA26 lower detection limit.

11.5.1 Blanks

The field blank used for the Maudore drilling program was from a gold-barren sample (calcareous rocks tested by different laboratories). The field blank was usually selectively placed after potential high-grade samples to detect contamination during the preparation process. One was inserted for every batch of 25 samples.

InnovExplo's QA/QC protocol stipulates that blanks must yield gold values below 0.1 g/t Au, which represents 10x the detection limit. A total of 180 blanks were submitted to ALS. All the blank values recorded a grade lower than InnovExplo's threshold of 0.1 g/t Au. This batch of blanks appears to be reliable according to InnovExplo's quality control, with no contamination issues.

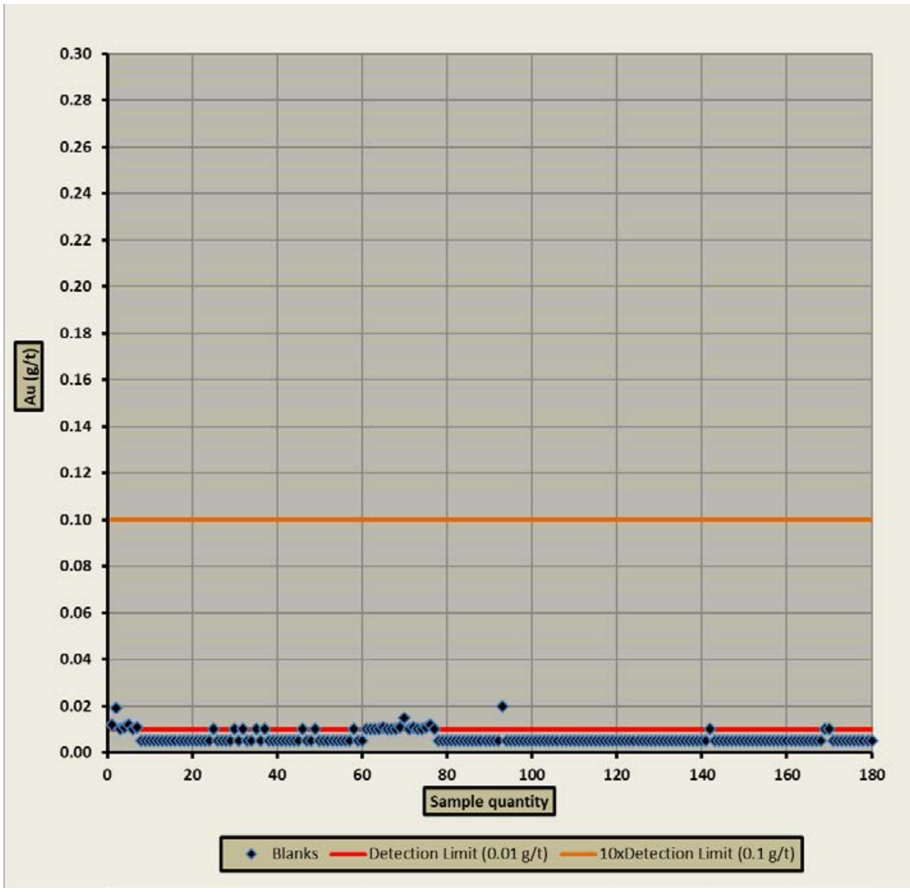

Figure 11.6 – Post-MRE 2012 gold grade results for blanks (Maudore period). All blanks returning values of "-0.01 ppm" (below the detection limit), were plotted at half the detection limit (0.005 ppm).

11.5.2 Certified reference material (standards)

One CRM sample was randomly inserted in every batch of 25 samples.

Due to the wide range of gold grades encountered in the Maudore samples (up to 1,195.00 g/t Au), up to 25 certified RockLabs standards were used during the Maudore period, ranging from 0.597 to 30.250 g/t Au. The following CRMs were used in sample batches for which the assay certificates were received after the 2012 MRE database close-out date of August 13, 2012 and before Osisko's acquisition in 2017:

- SH65 with a theoretical value of 1.348 g/t Au;
- SK62 with a theoretical value of 4.075 g/t Au;
- SQ48 with a theoretical value of 30.250 g/t Au.

Any sample, including standards, that yielded a gold grade above 3.0 g/t Au was re-assayed using a gravimetric finish.

Standard SG66 (1.086 g/t Au) was used only once and returned a value of 0.902 g/t Au, which is within the expected range. No statistics were generated for this single value.

InnovExplo charts

If a standard has less than 25 assay results, the standard cannot be represented on a RockLabs chart; instead, InnovExplo generates the chart in Excel using the following parameters:

- Number of samples;
- Standard grade provided by RockLabs;
- ±10.0% of standard grade used as upper/lower process limit;
- Outliers (results outside process limit).

InnovExplo's quality control protocol stipulates that if any standard yields a gold value above or below 10% of the RockLabs grade (i.e., an outlier), then the entire batch should be re-analyzed.

RockLabs charts

For a credible statistical review, a minimum of 25 assay results per standard is necessary to use the RockLabs charts. A typical RockLabs chart indicates the following parameters:

- Number of samples;
- Average grade in ppm;
- Accuracy (difference of average from assigned value) in percentage;
- Precision (relative standard deviation) in percentage;
- Outliers (results outside process limit).

RockLabs' process charts use a process limit of ±3SD (SD= standard deviation). Results outside these limits are considered outliers, shown on the graph by yellow circles, or gross outliers, shown by red circles. InnovExplo's quality control protocol stipulates that if any standard yields a gold value above or below 3SD on the RockLabs chart (i.e., an outlier), then the entire batch should be re-analyzed.

Accuracy versus precision

The accuracy of the result (as a percentage) is measured as the difference between the average of the standard's samples and the value assigned for the standard; gross outliers (±40% of the RockLabs grade) are excluded from this operation. For a laboratory, a good accuracy constitutes the ability to give results as near as possible to the expected value.

The precision of the result (as a percentage) is represented by the dispersion of the standard's samples versus their average. Good precision for a laboratory constitutes the ability to repeat results with the smallest standard deviation possible. The difference between accuracy and precision is illustrated by Figure 11.7.

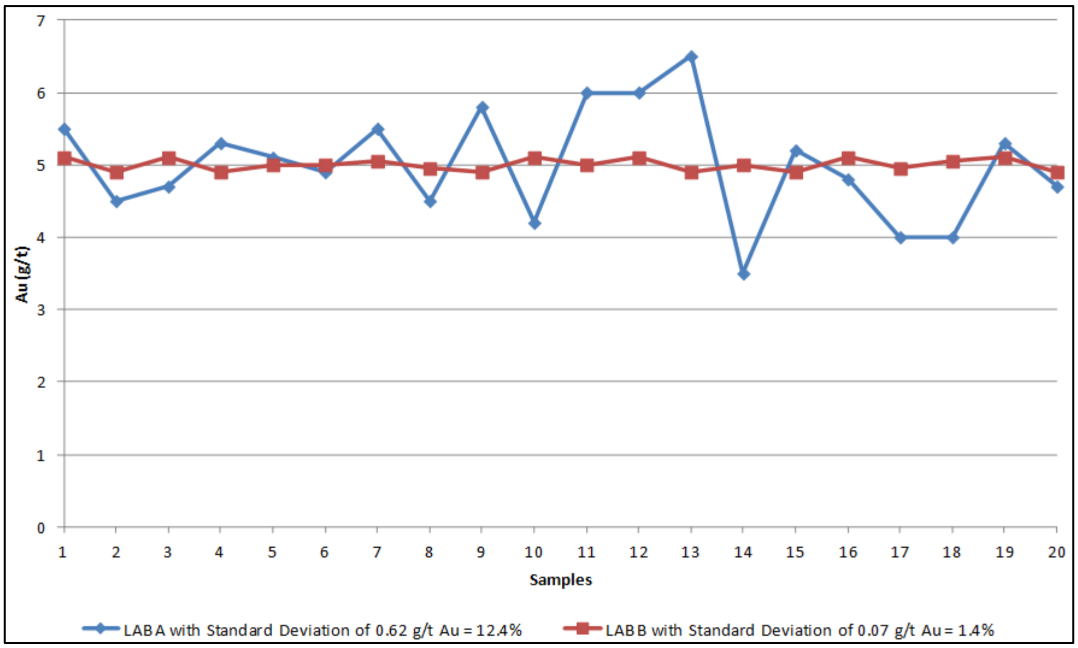

Figure 11.7 – Two laboratories (LAB A and LAB B) analyzed the same 5.0 g/t Au standard using the same number of samples (20) to produce the same final average (5.0 g/t Au). Accuracy is perfect (0%) for both, but the precision of LAB B is better (1.4%) than the precision of LAB A (12.4%).

Conclusions on the CRM results (Maudore period)

Standards SH65, SQ48 and SK62 have enough values to be represented on RockLabs charts. SK62 and SQ48 have two graphs (one for AA and the other for gravimetric finish), whereas SH65 was only analyzed by AA. All charts are provided in Appendix II. Assay results returning "NSS" (not sufficient sample) are not taken into account on the diagrams.

Overall, the results exhibit a slight negative bias in terms of accuracy (-0.4 to -2.5%) except for the more accurate standard SK 62 (AA finish) with 0.06%. The results for the standards range from precise (<3%) to typical, according to standard industry precision criteria (3–5%).

Table 11.2 shows that 100% of the assays passed the ±3SD criterion (RockLabs). InnovExplo considers this accuracy to be good.

Table 11.2 – Summary of results for standards received post-MRE 2012 (Maudore period)

Standard ID	Finish	Amount	Expected Value (ppm)	Accuracy (%)	Precision (%)	% Passing	Gross outlier removed
SH65	AAS	56	1.348	-0.8	0.2	100.0	0
SK62	AAS	56	4.075	-0.4	2.2	100.0	0
	GRA	46		0.6	0.4	100.0	0
SQ48	AAS	61	30.250	-2.1	1.9	100.0	0
	GRA	45		-2.5	0.6	100.0	0

11.5.3 Duplicates

A series of duplicate samples taken at each stage of the sampling and sample preparation process enables the precision to be monitored incrementally through the stages. The number of duplicate types depends on the number of process steps, but typically includes three: the field duplicate, a coarse crush duplicate, and a pulp duplicate.

Field duplicates

A field duplicate is prepared for one sample selected at random from each field batch (with some bias to ensure results are included from all grade ranges) and included as a regular sample, blind to the laboratory. The samples to be analyzed are provided from half of the half-split core; that is, from a quarter-split of the original whole core.

The results for field duplicates can be used to determine random error (i.e., reproducibility) of the sample analysis process, from sampling through to sample preparation. When used in conjunction with other sample preparation duplicates, the incremental loss of precision can be determined for each of the various stages of the sampling, preparation and assaying process. For the field duplicate increment, this can indicate whether loss of precision can be attributed to initial sample size.

A total of 27 field duplicates grading above 0.1 g/t Au (AA finish) were identified in the assay certificates received during the Maudore period after the 2012 MRE database close-out date of August 13, 2012. Of these, one pair was identified as a gross outlier and omitted from the comparison. Figure 11.8 is a plot of the 26 pairs, showing a linear regression slope of 1.00 and a correlation coefficient of 99.5%.

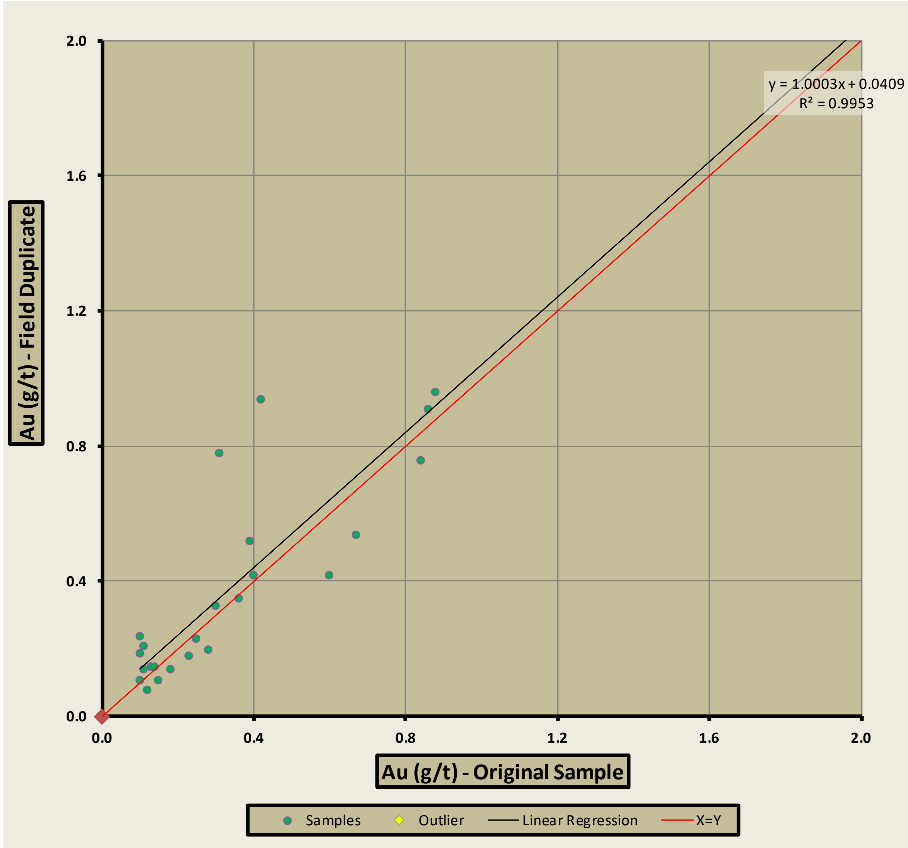

Figure 11.8 – Gold grade comparison for field duplicates grading >0.1 g/t (26 quarter-split core samples): AA finish, post-MRE 2012 (Maudore period).

Coarse crush duplicates

The laboratory was instructed to prepare a coarse crush duplicate for the last regular sample in each batch.

The sample designated to be a coarse duplicate was completely crushed and split into two equal subsamples (up to 1,000 g each if the sample is large enough). Both subsamples were then pulverized and assayed following regular sample procedures.

By measuring the precision of the coarse duplicates, the incremental loss of precision can be determined for the coarse crush stage of the process, thus indicating whether two equal sub-samples taken after primary crushing is enough to ensure a representative sub-split for that crushed particle size.

A total of 37 coarse duplicates grading > 0.1 g/t Au (AA finish) were identified in the assay certificates received after the 2012 MRE database close-out date of August 13, 2012. Figure 11.9 is a plot of the 37 coarse duplicate pairs showing a linear regression slope of 0.95 and a correlation coefficient of 96.3%.

Gravimetric finish was used for two pairs only, which is insufficient for a meaningful comparison with the AA results.

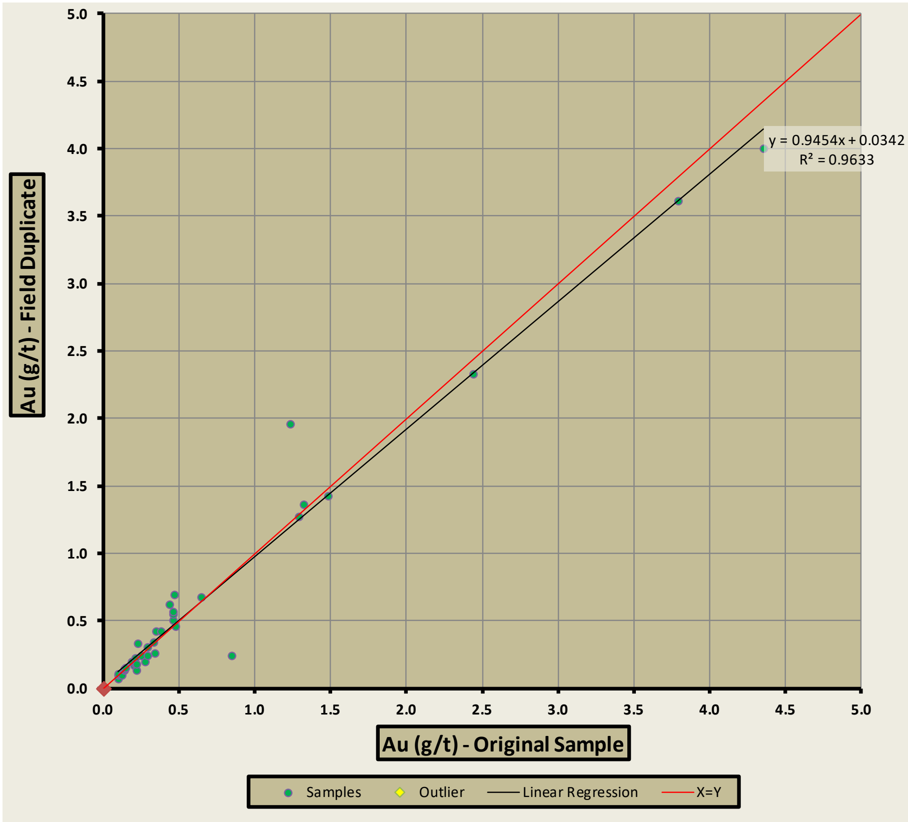

Figure 11.9 – Gold grade comparison for coarse duplicates (reject check) grading >0.1 g/t (37 samples): gravimetric finish, post-MRE 2012 (Maudore period).

Pulp duplicates

The laboratory was instructed to assay a pulp duplicate prepared from three samples selected at random from the large fusion batch of samples.

For each sample yielding a pulp duplicate, two 50 g fractions were collected from a 1,000 g fraction pulverized using a ring mill to 90% passing 75 µm (200 mesh). By measuring the precision of the pulp duplicates, the incremental loss of precision can be determined for the pulp pulverizing stage of the process, thus indicating whether a pulp size of 50 g taken after pulverization is adequate to ensure representative fusing and analysis.

A total of 34 pulp duplicates grading >0.1 g/t Au (AA finish) were identified in the assay certificates received after the 2012 MRE database close-out date of August 13, 2012. Figure 11.10 is a plot of the 34 pulp duplicate pairs, showing a linear regression slope of 0.94 and a correlation coefficient of 99.4%.

Gravimetric finish was used for one pair only, which is insufficient for comparison to the AA results.

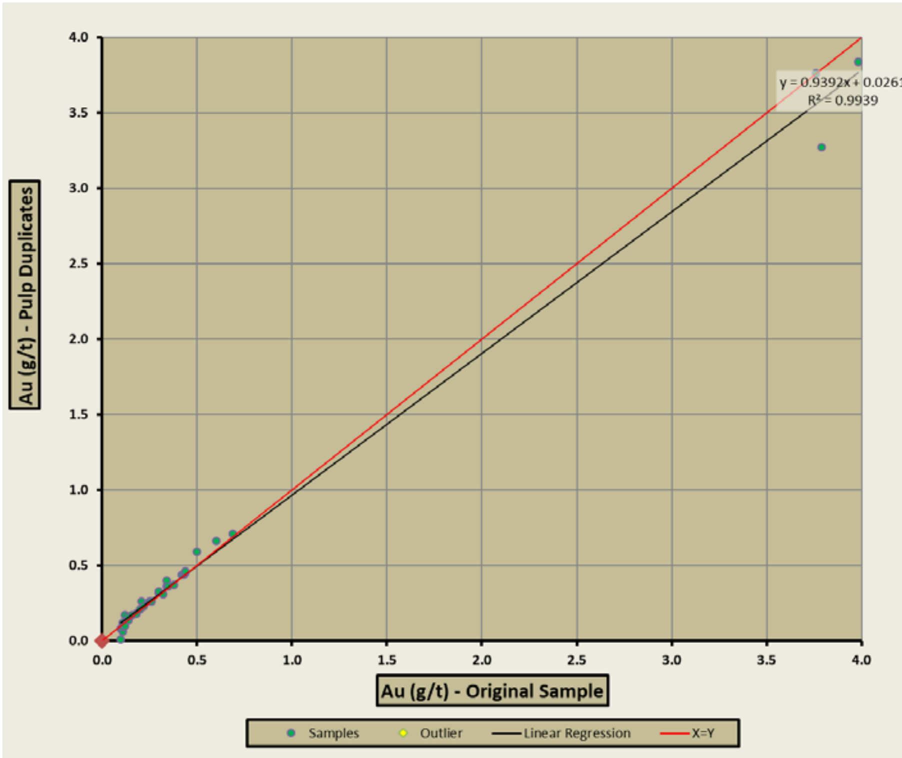

Figure 11.10 – Gold grade comparison for pulp duplicates grading >0.1 g/t (34 samples): AA finish, post-MRE 2012 (Maudore) period.

Precision of duplicates

Precision is calculated by the following formula:

$$\text{Precision (\%)} = \frac{\text{(Duplicate Sample Gold Grade – Original Sample Gold Grade)}}{\text{Average Between Duplicate Sample Gold Grade and Original Sample Gold Grade}} \times 100$$

Note that precision varies from 0 to 200%.

The best precision is 0%, meaning that both the original and duplicate samples returned the same grade. The diagram on Figure 11.11 expresses precision versus cumulative frequency and shows the following aspects:

- 85% of pulp duplicates have a precision better than 20%;
- 73% of coarse duplicates have a precision better than 20%; and
- 50% of field duplicates have a precision better than 20%.

The precision of pulp and coarse duplicates is better than the precision of field duplicates. The lower threshold of field duplicates, with better than 20% precision for >58% of the population, is not respected and is therefore not in line with generally accepted industry standards for gold (Fig. 11.11). As a comparison, historical values in the Maudore database reveal that 52% of field duplicates had a precision better than 20%, which is also not in line with generally accepted industry standards.

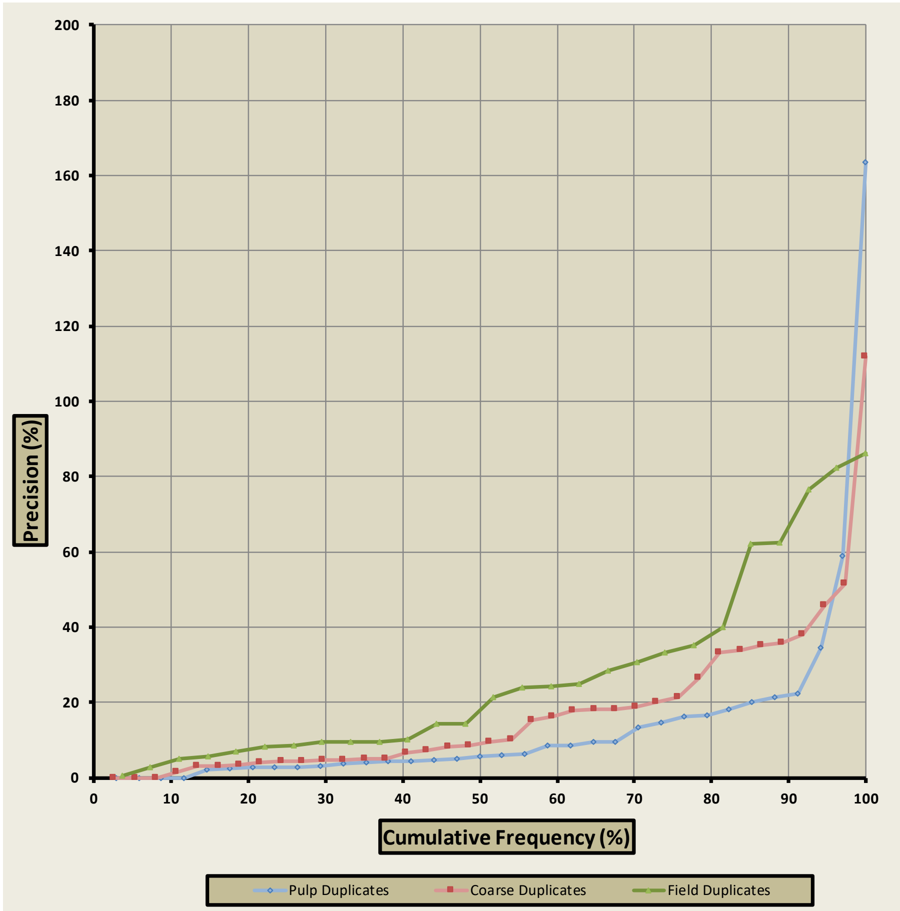

Figure 11.11 – Precision compared to cumulative frequency for pulp, coarse and field duplicates grading >0.1 g/t: post-MRE 2012 (Maudore) period.

Figure 11.12 shows that most samples with the worst precision (>40%) contain less than 1.0 g/t Au (except for a single value of 1.5 g/t Au), whereas samples with higher grades tend to show greater precision. This higher imprecision is generally due to the presence of grades closer to the gold detection limit, which tend to have very poor precision caused by only slight variations of several tens of ppm (0.01 g/t Au). These results do not negatively affect the general reproducibility of the duplicates because most instances of poor precision can be attributed to original-duplicate pairs with the lowest grades.

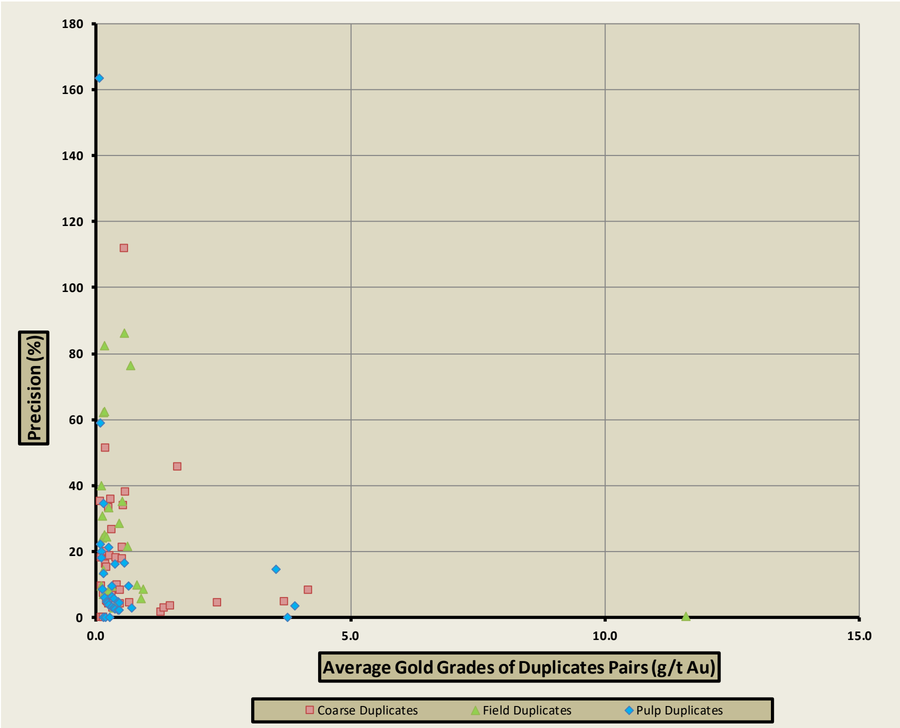

Figure 11.12 – Precision compared to average gold grade for pulp, coarse and field duplicates grading >0.1 g/t: post-MRE 2012 (Maudore period).

Conclusions on the duplicate results (Maudore period)

Gold segregates easily due to its high density. At the Osborne-Bell deposit, low-grade and very high-grade materials coexist, and coarse-grained gold is known to be locally present. These conditions make the mineralized material susceptible to bias during the duplicate exercise.

The suitability of InnovExplo's duplicate protocols was verified using tools such as cumulative frequency and linear regressions to compare sample duplicate pairs.

A perfect relationship between a duplicate sample and the original sample would generate a linear regression slope equal to 1.

Pulp and coarse duplicates produced linear regression slopes deviating only slightly from unity, with 0.94 and 0.95 respectively. The correlation coefficients for pulp and coarse duplicates are respectively 99.4% and 96.3%. The cumulative frequencies of the pair populations for pulp and coarse duplicates followed the same pattern, with 85% of pairs better than 20% precision for the first and 73% of pairs better than 20% precision for the second. These results demonstrate the ability of the lab to reproduce the overall average despite discrepancies among individual assays.

Field duplicates returned a linear regression slope of 1.00. The correlation coefficient for field duplicates is 99.5%. The cumulative frequencies of the pair populations for field duplicates yielded 50% better than 20% precision. Field duplicates are less precise than pulp and coarse duplicates.

InnovExplo considers the Maudore duplicate results received after the 2012 MRE database close-out date of August 13, 2012 to be reliable and valid, although the precision of the field duplicate population is lower than generally accepted industry standards. Native gold coarse grains frequently observed in drill core could explain this level of precision by recurrent nugget effect.

Comparison between AA and gravimetric finishes

Between 2006 and 2012, InnovExplo's protocol was to re-assay grades over 3.0 g/t Au using a gravimetric finish.

Figure 11.13 illustrates the linear correlation between the two AA and gravimetric finishes for each category of sample (economic assays, coarse duplicates and pulp duplicates). The number of coarse and pulp duplicate results was too low to identify a trend, but the 35 economic assays are sufficient to make a meaningful comparison.

Economic assays generate a linear regression slope of 1.01 with a correlation coefficient of 99.6%. The results for the two coarse duplicates yield a linear regression slope of 0.844 with a correlation coefficient of 100%. Conclusions cannot be drawn for the single pulp duplicate result.

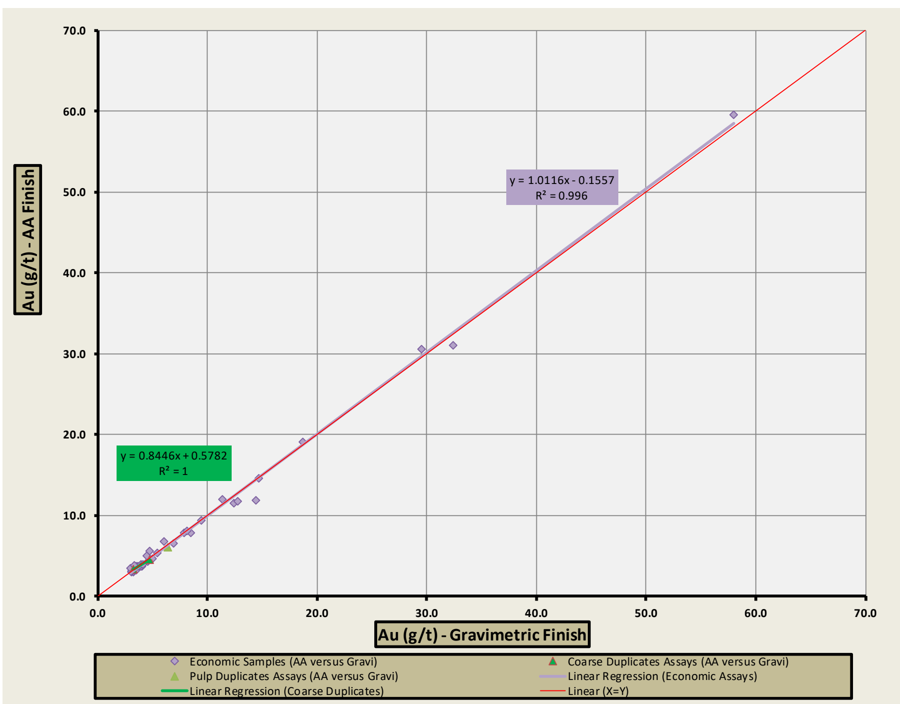

Figure 11.13 – Linear graph comparing AA finish versus gravimetric finish for economic assays (35 samples), coarse duplicates (2 samples) and pulp duplicates (1 sample): post-MRE 2012 (Maudore) period.

Conclusions about QA/QC (Maudore period)

Overall, the available QA/QC data for the Maudore period shows acceptable results even though there are some discrepancies for individual re-assays.

The level of contamination appears to be very low as all the blank samples returned values below the acceptance limit of 0.1 g/t Au.

The statistics on the CRMs (standards) is considered reliable and within acceptable limits of accuracy in the industry. Note that for the majority of samples, the ALS results show a slight negative bias when compared to the expected values provided by RockLabs. The charts are also useful for revealing other trends or drift indicating problems with instrument calibration or, if the accepted value is repeatedly returned, that the standard has been identified and its value is being faked; neither scenario was suggested by the results. The CRM results show that all assay populations passed InnovExplo's protocol. InnovExplo considers this accuracy to be adequate.

In the case of duplicates, the presence of bias or discrepancy trends can be identified by linear regression lines deviating from unity or by outliers plotting far from the regression lines. All types of duplicates for the Maudore program (pulp, coarse and field) were plotted on binary graphs. Pulp and coarse duplicates returned linear regression slopes deviating only slightly from unity. The correlation coefficients for pulp and coarse duplicates are greater than 96%. The cumulative frequencies of the pair populations for pulp and coarse duplicates followed the same pattern, with 85% and 73% of pairs better than 20% precision. These results demonstrate the ability of the laboratory to reproduce the overall average despite discrepancies among individual assays. Field duplicates returned a linear regression slope of 1.00. The correlation coefficient for field duplicates is 99.5%. The cumulative frequencies of pair populations for field duplicates yielded 50% better than 20% precision. Field duplicates are generally less precise than pulp and coarse duplicates.

The comparison between the AA and gravimetric finishes is reliable, as demonstrated by correlation coefficients up to 99.6%. The final gold grades for any samples in the database were determined using AA and gravimetric finishes (see Item 12).

The results discussed above demonstrate that sample preparation, QA/QC protocols and QA/QC results for assays received after the 2012 MRE database close-out date of August 13, 2012 are appropriate for the 2018 mineral resource estimation.

11.6 Sampling Preparation, Analyses and Security (Osisko period)

The following sections discuss the QA/QC results for sample batches for which the assay certificates were received after the database close-out date of January 31, 2018. These batches include the 4 DDH included in the present resource estimate (OSK-OB-17-001 to OSK-OB-17-004). InnovExplo has not been involved in any drilling or sampling programs on the Property since 2013. Data pertaining to sampling, analytical, security and QA/QC protocols were supplied by the issuer and discussed during the site visit by Stéphane Faure on January 14, 2018.

11.6.1 Laboratory accreditation and certification

All samples are submitted to ALS Minerals ("ALS") in Val-d'Or for sample preparation and analysis. Gold analyses are performed using fire assay with atomic absorption spectroscopy (AA) and gravimetric finishes. The ALS laboratory in Val-d'Or is ISO 9001 certified and accredited (ISO/IEC 17025) for the analytical methods used routinely on samples from the Property. It is a commercial laboratory independent of the issuer and has no interest in the Property.

11.6.2 Core handling, sampling and security

Samples are collected and processed by Osisko personnel at the core shack located in the town of Lebel-sur-Quévillon (Fig. 11.14). Samples collected from drilling are split using a rock saw and are immediately placed in plastic sample bags, tagged and recorded with unique sample numbers, and the bags stapled (Fig. 11.15). Each drill core sample is usually composed of a 1-metre interval, and samples honour lithological boundaries. Sealed samples are placed in shipping bags, which in turn are sealed with plastic tie straps or fibreglass tape. Bags remain sealed until ALS personnel opened them in Val-d'Or.

All samples are stored in a closed hangar adjacent to the core shack facilities. The bag samples are delivered weekly to ALS by the carrier Excavation Steve Rioux.

Figure 11.14 – Osisko logging facility in Lebel-sur-Quévillon where the core is received, logged and sampled by geologists (January 14, 2018).

Figure 11.15 – Splitting facilities at the Lebel-sur-Quévillon Osisko core shack (January 14, 2018).

11.6.3 Sample preparation at ALS

After logging and sorting, the samples were dried and weighed at the ALS facility. Samples were crushed using method CRU-32, consisting of fine crushing to better than 90% of the sample passing 2 mm. A crushed sample split of up to 1000 g was pulverized in a ring mill using a chrome steel ring set to at least 85% of the ground material passing through a 75 µm screen (PUL-32 method).

11.6.4 Analytical methods

Gold is tested by fire assay at ALS with AA finish, gravimetric finish or the metallic screen method, depending on the gold grade.

For trace level detection of gold, fire assay was performed on a 50 g aliquot followed by aqua regia (HNO_3-HCl) digestion and measurement by AA (Au-AA26 method).

Samples for which the gold concentration exceeded 100 g/t Au with the Au-AA26 method were re-assayed automatically by ALS from the same pulp by method Au-GRA22, which consists of fire assay of a 50 g aliquot, parting with nitric acid (HNO_3) followed by gravimetric gold determination.

At the request of Osisko, all samples exceeding 10 g/t Au with the Au-AA26 method, or any samples containing high grade or visible gold were rerun with the screen method (Au-SCR24 method). A 1,000 g split of the final prepared pulp (PUL-32) is passed through a 75 µm stainless steel screen to separate the oversize fractions. Any +75 µm material remaining on the screen is retained and analyzed in its entirety by fire assay with gravimetric finish using pycnometer (OA-GRA08B method) and reported as the Au(+) fraction result. The -75 µm fraction is homogenized and two 50 g sub-samples are analyzed by fire assay with AA finish. The average of the two AA results is taken and reported as the Au(-) fraction result. All three values are used in calculating the combined gold content of the plus and minus fractions.

$$\textit{Au Total (ppm)} = \frac{((Au(–)\ av\ ppm) \times Wt.\ Min(g)) + (Au(+)ppm \times Wt.\ Plus\ (g))}{(Wt.\ Min(g) + Wt.\ Plus\ (g))}$$

11.6.5 QA/QC results

Osisko's quality control-quality assurance procedures include routine insertion of standards and field blanks. A minimum of two CRMs and one blank are added systematically to each batch of 20 core samples. The standards are OREAS 202 and 210. The blank consists of an uncertified material made of calcite to monitor potential contamination at the crushing and pulverization stage. No duplicate was taken during Osisko drilling program for the period considered herein. QA/QC management is done by Osisko geologists using DH Logger software.

ALS, as part of their standard internal quality control, also runs duplicate check samples and CRMs. No secondary laboratory was involved in the QA/QC program.

The authors were not involved in the collecting and recording of the data, which was performed by Osisko employees. InnovExplo only synthesized sample batches for which the assay certificates were received after the database close-out date of January 31, 2018. A total 2,174 samples were assayed in the 4 DDH used in the present mineral resource estimate (Table 11.3).

Table 11.3 – Osisko samples submitted to ALS for analysis along with routine drill core samples.

Hole ID	Length (m)	Nb assays	Nb Standard*	Nb Blank	Assays Length
OSK-OB-17-001	535	528	63	31	510.3
OSK-OB-17-002	358	357	42	21	335.3
OSK-OB-17-003	622	572	66	34	590.6
OSK-OB-17-004	377.7	390	47	23	373.5
Total	**1892.7**	**1847**	**218**	**109**	**1809.7**

Note:*including seven NSS samples (Not Sufficient Sample)

11.6.5.1 Blanks

The field blank used for Osisko's drilling program is from a gold-barren sample of calcareous rock. Normally, one sample of a blank was inserted into every batch of 20 samples at the 15th sample. The position of the field blank changes places after potential high-grade samples (visible gold) to detect contamination during the preparation process.

A total of 109 blanks were submitted to ALS with the samples. All the blank values recorded a grade lower than or equal to the threshold of 0.05 g/t Au, the value corresponding to 5x the detection limit (Fig. 11.16).

Conclusions about blanks

None of the blanks failed the 0.05 g/t Au limit (Fig. 11.16). The batch of blanks appears to be reliable according to InnovExplo's quality control with no contamination issues. Osisko's quality control results are reliable and valid.

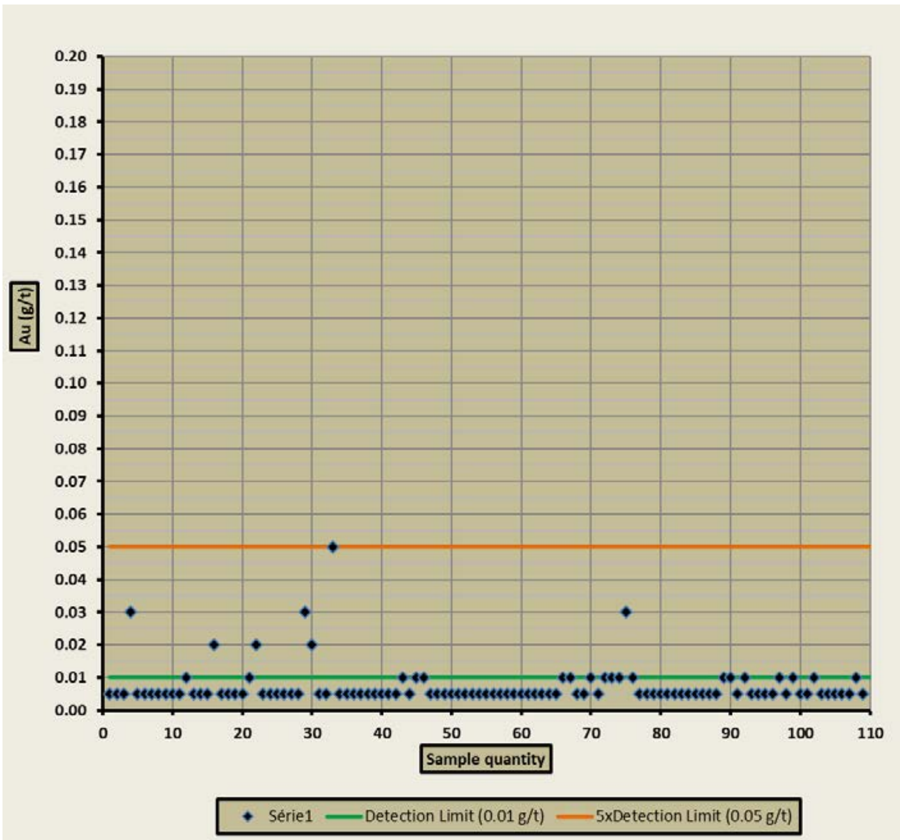

Figure 11.16 – Results for Osisko's blanks. All blanks returning values of "-0.01 g/t" (below the detection limit) were plotted at half the detection limit (0.005 g/t).

11.6.5.2 Certified reference materials (standards)

Two CRM samples are inserted into every batch of 20 samples at the 5th and 10th sample.

The following CRMs are supplied by Ore Research and Exploration (Australia). They were used in sample batches for which the assay certificates were received before the Osisko database close-out date of January 31, 2018:

- OREAS 202 with a theoretical value of 0.752 g/t Au
- OREAS 210 with a theoretical value of 5.49 g/t Au

Standards OREAS 202 and 210 were analyzed by AA. A total of 218 samples were submitted to ALS (Table 11.4): 108 samples of OREAS 202, 104 of OREAS 210, and 6 samples for which assay results returning “NSS” (not sufficient sample).

Table 11.4 – Summary of results for standards use by Osisko

Standard Reference Material used by Osisko Drilling Program									
Standard ID	Finish	Amount	Certified Value (ppm)	Mean observed	1StdDev observed	Accuracy (%)	Precision (%)	% Passing	Gross outlier removed
202	AAS	108	0.752	0.746	0.024	-0.76	3.28	99.07	1
210	AAS	104	5.490	5.439	0.139	-0.93	2.55	99.03	0

Conclusions about standards

There are enough results for standards to be represented on RockLabs charts (Fig. 11.17 and 11.18). Overall, the results exhibit a slight positive bias in terms of accuracy (0.76 and 0.93%). The average results for the CRMs are within ±3% of the expected values and range from precise to typical based on standard industry precision criteria (3-5%).

Results for standard OREAS 202 show that only one outlier and one gross outlier fell outside the process limits (Fig. 11.17). Results for standard OREAS 210 are shown on Figure 11.18. Only one blank returned a value of 5.91, just over the 3SD threshold of 5.90.

Table 11.4 shows that more than 99% of the assays passed the ±3SD criterion. The observed standard deviation for OREAS results is similar to the expected standard deviation from the supplier. InnovExplo considers this accuracy to be good. The only gross outlier value is excluded from Table 11.4 as these calculations are designed to document the overall accuracy of the laboratory’s analytical methods, and not random human errors.

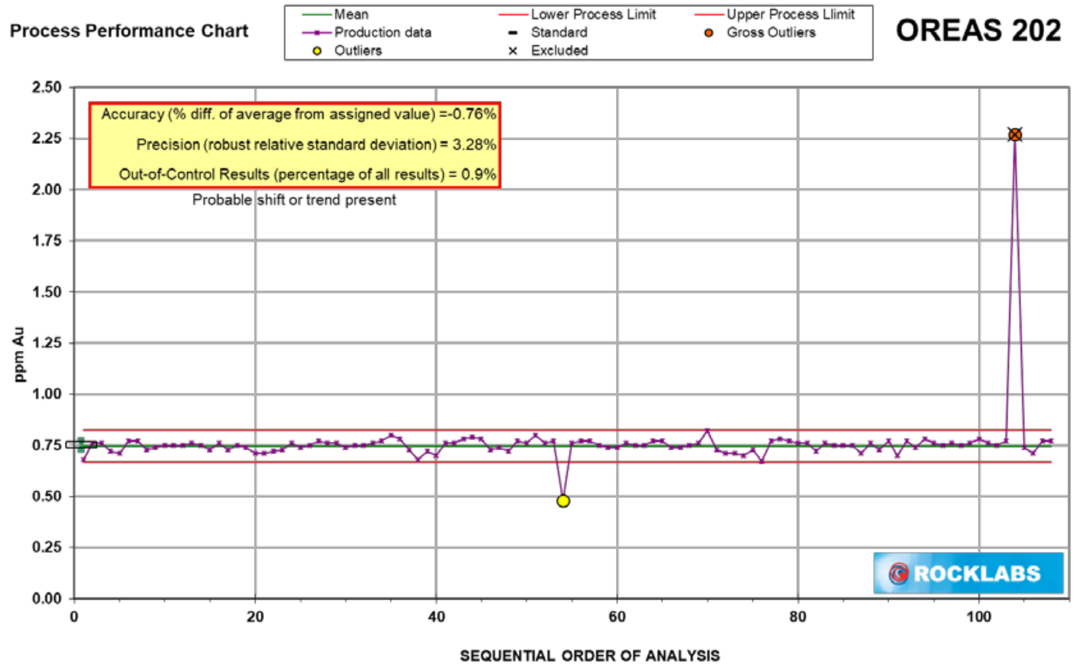

Figure 11.17 – Results of standard OREAS 202 using AA finish. The green line indicates the measured average grade for OREAS 202 and the two red lines indicate ±3SD.

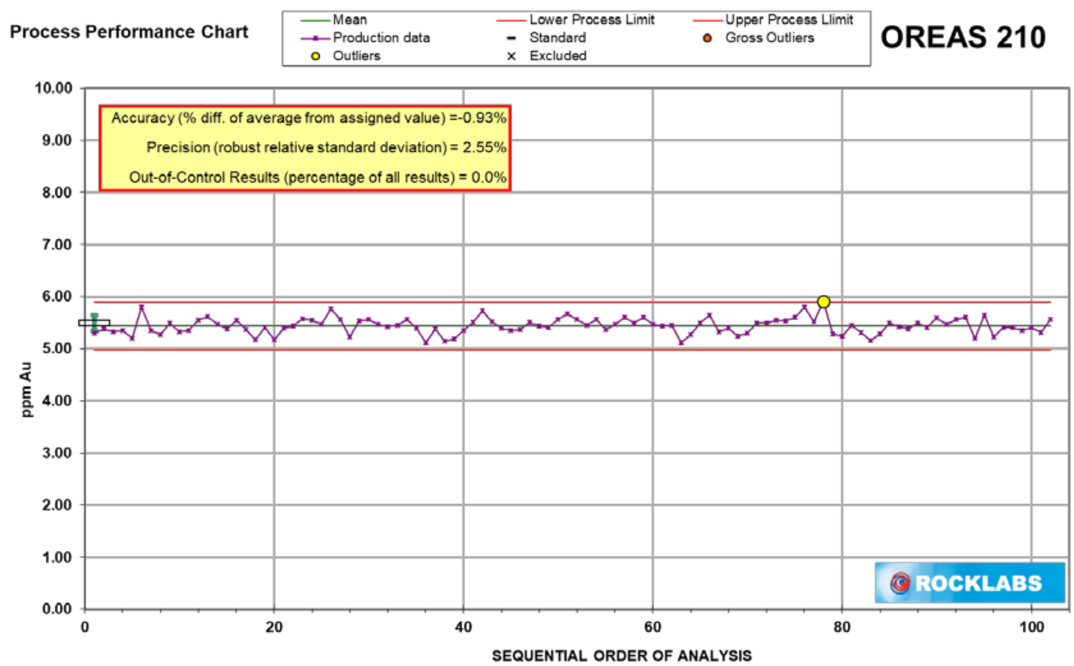

Figure 11.18 – Results of standard OREAS 210 using AA finish. The green line indicates the measured average grade for OREAS 210 and the two red lines indicate ±3SD.

11.6.5.3 Conclusions about QA/QC (Osisko period)

The available Osisko QA/QC data for the Property shows acceptable results.

The level of contamination appears to be very low as all the blank samples returned values below or equal to the acceptance limit of 0.05 g/t Au (5x the detection limit). The statistics on the CRMs (standards) is considered reliable and within acceptable limits of accuracy in the industry.

The results discussed above demonstrate that sample preparation, QA/QC protocols and QA/QC results for the assays obtained before the Osisko database close-out date of January 31, 2018 are appropriate for the 2018 mineral resource estimation.

12. DATA VERIFICATION

InnovExplo employees have visited the Property and the core shack and core storage facilities on several occasions since 2006. Alain Carrier (P.Geo.) was responsible for overseeing the exploration and drilling programs from 2006 to 2013 and has been involved in all InnovExplo work relating to the property, including technical reports, since 2006.

Data verification in this Technical Report concerns the diamond drill hole ("DDH") database used to prepare the 2018 MRE. The database contains the 877 DDH used for the 2012 MRE (Carrier et al., 2012) supplemented by 54 additional holes, for a total of 931. The 54 new holes were rigorously validated.

In 2016, Alain Carrier visited the property and core shack facilities several times with Guilhem Servelle (P.Geo.), also of InnovExplo. They were given access to the long-term core storage facility of MD Entreposage in Lebel-sur-Quévillon, as well as the Osborne-Bell deposit area and some drill hole collars.

12.1 Historical Work

The historical work discussed in this report consists of validated DDH, channel and grab sample data obtained before the 2012 MRE's effective database close-out date of August 13, 2012. The verification and validation work for the current study focused on the 54 DDH added to the 2018 MRE database. Basic cross-check routines were performed between the original GeoticLog database and the GEMS database.

12.2 Description of Drill Hole Data Acquisition and Database Management

Of the 54 additional drill holes, 50 were drilled under the supervision of InnovExplo. The following data acquisition, assaying, QA/QC and database management protocols were the same as those described in the 2012 technical report.

Core logging and data entry was done at the Lebel-sur-Quévillon core shack using a laptop and Geotic Log software. The geological descriptions, down-hole survey data (Flex-It), surveyed collar locations and assay results were incorporated into a single database. The database has been validated and is available for the Project in two formats: GeoticLog (Access) and Gems.

Drill sites were initially located using a handheld Garmin GPS. For the infill drilling, in areas with existing line cutting, the grid lines and stations were used to accurately position the hole. For areas without cut grids, the surveyed casings of historical drill holes were also used to confirm new hole positions. Once drilling was finished, a professional survey of the casings was conducted by Descarreaux Dubé et Associés Arpenteurs-Géomètres from Val-d'Or (now Geoposition). Deviation tests were obtained using the drilling company's Flexit (from 2006 to 2008) and Reflex (2009 and 2013) instruments. Azimuth and plunge were monitored using single shot deviation tests every 30 metres. After the end of the hole was reached, measurements (azimuth, plunge and magnetism) were taken every 3 metres while pulling out the rods. Deviation tests obtained from the Reflex instrument were electronically transferred to the GeoticLog database.

One standard, one field duplicate (quarter-split) and one blank were typically sent for every batch of 25 samples. Exploration standards were obtained from RockLabs Ltd. These quality control samples are completely independent of the laboratory. ALS Chemex Laboratory also performed internal checks as part of their protocol.

InnovExplo reviewed the certificates of analysis and did not uncover any discrepancies. The electronic transfer of the data from the laboratory to the database prevents the possibility of typing errors.

The laboratory delivered results in electronic format through the ALS Chemex Webtrieve™ system via the Internet, as well as by e-mail sent to various recipients at InnovExplo and Maudore. Assay results were reported in grams per tonne (g/t) and transferred directly into the centralized assay database (available as an Access database for Geotic Log®, Geotic Graph® and GEMS®). In electronic format, assay results were validated (QA/QC) and incorporated daily into the database to prevent any QA/QC-related bias from going unnoticed for an extended period of time. For batches with QA/QC biases or discrepancies, the final decision to re-analyze resided with the project geologist.

The reported values for duplicates (field, coarse and pulp) met gold industry standards. The comparison of AAS and gravimetric finishes for economic assays, the AAS comparisons between first assays (regular samples versus duplicates), and the laboratory checks all show good correlation. These findings led InnovExplo to use a calculated grade based on the average of each gold value attributed to each possible subfield. This calculated grade field, named “Au_Final (g/t)”, is processed for any samples in the database.

In addition to assay results, database integration included geological descriptions, downhole survey data (Reflex®) and surveyed collar locations. Drafting of the cross-sections, plan views, and follow-up longitudinal views were drafted in Geotic Graph® and GEMS®. Once the assay results were received, they were also incorporated into the logs.

In 2018, InnovExplo reviewed the entire database using cross-check routines between the Geotic log database and the GEMS database used for the Project. After reviewing the entire database, InnovExplo decided to withdraw 9 DDH from the resource database. Drill holes B-1 to B-6 were rejected due to uncertainty about their locations.

The authors are of the opinion that the overall acquisition and database management of the 2018 MRE data is adequate and reliable for the purpose of this Technical Report.

12.2.1 Coordinate system

The GEMS project is in UTM NAD 83 Zone 18 system.

12.2.2 Drill hole location

Most drill hole casings on the Project were professionally surveyed by Descarreaux Dubé et Associés Arpenteurs-Géomètres. Several other holes are wedges for which the pilot hole set-ups were professionally surveyed for the 2012 MRE. The authors concluded that the collar locations for the 54 additional drill holes are adequate and reliable.

12.2.3 Down-hole survey

Each of the 54 additional drill holes on the Osborne-Bell deposit was subjected to a multi-shot downhole survey. The information for all drill holes in the database was mathematically reviewed to identify anomalies, and visual checks were performed on all downhole surveys. No issues were identified and the survey data are considered valid and reliable.

12.2.4 Assays

InnovExplo had access to all assay certificates for holes drilled after the previous official database close-out date of August 13, 2012.

The original database was updated with the new additional data and validated. Minor errors of the type normally encountered in a project database were identified and corrected. InnovExplo considers the database to be valid, reliable and of good overall quality.

12.2.5 QA/QC

In 2018, InnovExplo conducted a QA/QC review for the additional drilling data on the Property and did not uncover any specific issues.

The overall QA/QC review is described in Item 11. InnovExplo is of the opinion that the final drill hole database used for the 2018 MRE is adequate and reliable for the purpose of this Technical Report.

12.3 Site Visit

In January 14, 2018, Stéphane Faure, P.Geo., of InnovExplo, visited the Quévillon Property and the core shack facilities. During this site visit, he was given access to the long-term core storage facility of Osisko in Lebel-sur-Quévillon, the core shack and splitting room, the Osborne-Bell deposit area, drill pads and some drill hole collars. Drilling was underway during this site visit, which provided an opportunity for Osisko personnel to explain the entire path of the drill core, from the drill rig to the logging and sampling facility and finally to the laboratory.

12.4 Conclusion

The authors are of the opinion that the data acquisition and database management for the 54 supplemental drill holes are of sufficient quality to be used for a resource estimate. None of the 54 holes were rejected from the database.

Moreover, the authors are of the opinion that data verification, from site visits to subsequent validation, demonstrates the validity of the Osborne-Bell deposit database.

13. MINERAL PROCESSING AND METALLURGICAL TESTING

The only event relevant change to this item since the publication of the 2012 technical report (Carrier et al., 2012) is the receipt in December 2012 of the final report on metallurgical tests performed on composite samples selected by InnovExplo in 2010 and 2011. The final report (Dymov and Hendry, 2012) presents the results of several types of studies, including relative gold extraction under different conditions, communition, and mineralogical examination. Having had access to the findings before the report was issued, InnovExplo was able to discuss the test results in the 2012 technical report.

In early 2012, based on the preliminary testwork results, InnovExplo recommended that more tests be performed to refine the information that would eventually be needed for optimization and an updated resource estimate. Ten HQ-calibre holes were drilled under InnovExplo's supervision in March and August 2012 for this purpose, yielding 1,086.5 metres of core. Half-core metallurgical samples were selected under InnovExplo's supervision but when budget cuts and subsequent events forced the project to be placed on hold, the samples were never sent for testing and the core remains in boxes at the Osisko storage facilities in Lebel-sur-Quévillon.

The following summaries of the metallurgical studies and results are taken from Carrier et al. (2012) with minor modifications.

13.1 Testwork

The metallurgical testing and mineralogical characterization was conducted at the SGS Minerals ("SGS") facilities in Lakefield, Ontario, under the direction of Roche Ltd in Montreal, Quebec. The composite samples were selected by InnovExplo.

The composite samples tested and characterized by SGS indicated non-optimized recoveries (gravity + cyanidation) ranging from 86.2% to 97.0% depending on ore type, grind size and test conditions. Overall, it is estimated that an average gold recovery of 93% can be achieved depending on the relative proportions of the various ore types that will feed the beneficiation plant. Table 13.1 summarizes the metallurgical results obtained by SGS.

Table 13.1 – Summary of the metallurgical test results (2012)

		COMPOSITES						
	Units	Osbell Low grade	Osbell High grade	Bell Felsic	Camten Au	Midway Mafic South	Midway Mafic South B (*)	Osbell Mafic North(*)
Feed Grade (Au)	g/t	2.25	7.41	1.57	9.64	22.0	22.0	2.01
Feed Grade (Ag)	g/t	2.60	5.10	-	-	-	-	-
Feed size	microns	56 to 94	57 to 75	113 to 46	89 to 49	112 to 38	43 to 45	55 to.63
Gravity recovery	%	26,4	29,2 to 33.3	39,7	23,6	26,2	26,2	18,9
CN extraction (48 hrs)	%	87.6 to 95.8	86.0 to 88.8	88.5 to 93.5	86.0 to 94.7	81.3 to 88.4	90.9	87.7 to 88.5
Overall Au Extraction	**%**	**90.9 to 97.0**	**90.7 to 91.1**	**93.1 to 96.1**	**89.3 to 95.9**	**86.2 to 91.4**	**93,3**	**90.0 to 90.7**

(*) Note: The presented % of CN extraction for Midway Mafic South B and Osborn Mafic North, were obtained with the use of Oxygen during leaching.

Fine grinding is required to obtain the highest recovery values. Trade-off calculations will be required at the PEA level to determine the optimum economical grinding scenario.

Comminution testwork

The Bond Ball Mill Work Index (BWi) considered an average hardness of 13.8 kWh/t for the Osborne-Bell Low Grade composite and 14.4 kWh/t for the Osborne-Bell High Grade composite. The Bond Rod Mill Index (RWi) was considered high at 17.9 kWh/t for the Low Grade composite and 17.4 kWh/t for the High Grade composite. The fact that RWi is higher than BWi is an indication that a pebble crusher would most likely be required in the grinding circuit if SAG milling is selected. This is also supported by the SMC test results which yielded low values for AXb (23.0 to 32.0), an indication that the same samples are considered very hard in terms of resistance to impact. Table 13.2 summarizes the comminution characterization conducted to date on the Osborne-Bell High Grade and Low Grade composite samples and on the Camten Zn and Osbell Mafic North composite samples.

Table 13.2 – Summary of the comminution test results (2012)

Sample Name	Relative	JK Parameters		RWI	BWI (kWh/t)		AI
	Density	A x b	t_a	(kWh/t)	100M	200M	(g)
High Grade Comp	2,84	23,0	0,21	17,4	14,4	-	0,292
Low Grade Comp	2,82	23,9	0,22	17,9	13,8	-	0,330
Camten Zn Comp2	2,77	32,0	0,30	18,8	-	18,3	0,312
Osbell Mafic North	2,88	26,6	0,24	21,7	-	18,6	0,297

Mineralogical study

A gold deportment study was conducted on Osborne-Bell Low Grade and High Grade composites.

The majority of gold present in both the High Grade and Low Grade composites occurred as native gold. Several electrum grains were also present in the High Grade sample. The Low Grade sample contained a few petzite grains.

A total of 476 gold grains were found by gold scanning in the High Grade sample, ranging in size from 0.6 to 179.1 µm with an average of 5.3 µm, including:

- 118 liberated grains with sizes ranging from 0.6 to 179.1 µm, and an average size of 12.5 µm;
- 28 attached grains with sizes ranging from 0.6 to 24.5 µm, and an average size of 6.2 µm;
- 330 locked grains with sizes ranging from 0.6 to 35.6 µm, and an average size of 2.6 µm.

The overall distribution of liberated, attached and locked gold in the High Grade sample accounted for 19.0%, 4.5% and 76.5% of the total gold, respectively.

A total of 243 gold grains were found by gold scanning in the Low Grade sample, ranging in size from 0.6 to 60.3 µm with an average of 4.3 µm, including:

- 31 liberated grains with sizes ranging from 0.8 to 44.2 µm, and an average size of 9.2 µm;
- 37 attached grains with sizes ranging from 0.6 to 60.3 µm, and an average size of 6.6 µm;
- 175 locked grains with sizes ranging from 0.6 to 30.7 µm, and an average size of 3.0 µm.

The overall distribution of liberated, attached, and locked gold in the Low Grade sample accounted for 16.6%, 15.2% and 68.2% of the total gold, respectively.

Most gold grains identified (by occurrence) in both the High Grade and Low Grade samples were associated with pyrite and non-opaque minerals.

Metallurgical testing

Gravity recoverable gold ("GRG") determinations were conducted on Bell Felsic (57.1%), Camten Au (53.9%) and Midway Mafic (24.3%) samples. These results indicate that gravity separation offers great potential and needs to be included in the grinding circuit.

Gravity separation testwork with a Mozley table also confirmed the potential for gravity separation: the initial gravity separation results allowed to recover 28.6% of the gold in 0.128% mass pull for the Osborne-Bell Low Grade composite sample and 33.3% in 0.130% mass pull for the Osborne-Bell High Grade composite sample. Similarly, 39.7% of the gold was recovered with a mass pull of 0.121% with the Bell Felsic composite sample, 23.6% of the gold was recovered with a mass pull of 0.087% from the Camten Au composite sample, 26.2% of the gold was recovered with a mass pull of 0.147% for the Midway Mafic South composite sample, and 18.9% of the gold was recovered with a mass pull of 0.045% from the Osbell Mafic North composite sample.

Flotation testwork: the initial flotation test gave interesting results demonstrating that when combined with gravity concentration, it is possible to recover approximately 92% of the gold prior to cyanidation. No cyanidation test on the flotation concentrate was performed at that time, but the results obtained were considered encouraging and further testing may be required during the optimization phase.

Cyanidation testwork

A series of cyanidation tests at various grind size were conducted on gravity tails for the various ore types.

For most ore types, the optimal recovery was achieved under normal leaching conditions within 48 hours.

The leaching efficiency is directly dependent on the grind size. For most ore types, the highest recoveries were obtained at P80 varying from 45 to 68 µm. At these grind sizes, the combined highest gold gravity recovery and cyanide extractions reached 91.0% to 97.0%.

More laboratory testing is required to optimize the results, but it appears that for now a global recovery (gravity + cyanidation) of 93.0% is a realistic value for an average grind size between 50 and 60 µm.

Table 13.3 summarizes the characterization of the different composites based on the metallurgical test results.

Table 13.3 – Summary of characterization work conducted at SGS (2012)

Test No.	Composite		Head Grade Au g/t	Head Grade Ag g/t	Mineralogy	Comminution Rod Mill Wi kWh/t	Comminution Ball mill Wi kWh/t (100M)	Comminution Ball mill Wi kWh/t (200M)	Comminution Ai (g)	Comminution SMC A*b	Gravity GRG %	Gravity Au Recovery %	CN Feed Size K_{80} (µm)	Cyanidation Au Extraction (%) 7h	8h	24h	30 h	36 h	48h	60 h	72h	96h	120h	Assays (g/t) Residue Au g/t	Calc Head Au g/t	Calc Feed to CN - Au g/t	Direct Assay Feed to CN- Au g/t	Overall Au Extraction (%) (Grav+Fotta tion + flot tail CN)	Overall Au Extraction (%) (Grav+CN)
CN- 01	Osbell	Low Grade	2,25	2,6	Done	17,9	13,8	n.a.	0,330	23,9	n.a.	26,4	94	75,3	n.a	85,0	n.a	n.a	87,6	n.a	86,4	87,1	88,1	0,22	1,74	n.a.	n.a.	n.a.	90,9
CN- 02													62	77,7		86,6			88,9					0,19	1,71				91,8
CN- 03													56	81,2		89,9			90,8					0,16	1,73				93,2
CN- 08												28,6	68	31,9		83,4			95,8					0,18	1,48				97,0
CN - 04	Osbell	High Grade	7,41	5,41	Done	17,4	14,4	n.a.	0,292	23,0	n.a.	29,2	102	71,5	n.a.	81,5	n.a.	n.a.	83,5	n.a.	87,2	87,6	88,1	0,90	5,41	n.a.	n.a.	n.a.	88,3
CN - 05													69	79,3		86,6			88,4					0,62	5,33				91,8
CN- 06													57	78,1		86,8			88,8					0,62	5,54				92,1
CN- 07												33,3	75	24,4		81,0			86,0					0,60					90,7
CN- 09												29,2	78	55,0		66,0			67,0		68,0	69,0	72,8	0,37	1,34			95,90	n.a.
CN- 10													27	81,0		84,0			85,0		87,0	87,0	89,1	0,15	1,20			98,40	
CN- 11													78	57,0		67,0			70,0		71,0	74,0	74,4	0,35	1,25			96,10	
CN-12	Bell Felsic	G-5 tails	1,57	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	57.1	39,7	46	n.a.	64,1	87,7	92,3	92,9	93,5	n.a	n.a.	n.a.	n.a.	0,06	1,23	0,85	0,75	n.a.	96,1
CN-13													68		66,4	89,9	92,3	91,0	91,6					0,08		0,95			94,9
CN-14													113		72,6	85,6	85,9	89,7	88,5					0,10		0,87			93,1
CN-15	Camten Au	G-6 tails	9,64	n.a.	n.a.	18,8	n.a.	18,3	0,312	32,0	53.9	23,6	49	n.a.	51,0	89,3	92,5	93,2	94,7	n.a.	n.a.	n.a.		0,33	11,30	6,20	8,61		95,9
CN-16													64		50,4	83,1	86,9	88,3	91,2					0,55		6,22	8,61		93,3
CN-17													89		44,1	68,4	76,0	77,9	86,0					1,02		7,28	8,61		89,3
CN-18	Midway Mafic South	G-7 tails	22,0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	24,3	26,2	38	n.a.	24,0	76,5	81,5	83,0	88,4		n.a.	n.a.	n.a.	1,79		15,4	14,0	n.a.	91,4
CN-25													45		43,3	83,7	87,8	88,2	89,8	91,2				1,31		14,8	14,0		93,5
CN-19													70		47,9	76,7	77,3	80,0	84,9	n.a.				2,49		16,5	14,0		88,9
CN-20													112		58,9	76,3	77,9	77,9	81,3					2,98		16,0	14,0		86,2
CN-29													45		87,4	90,1	91,3	89,9	90,8	90,9				1,36		14,8	14,0		93,3
CN-30													43		88,0	90,8	91,1	89,7	90,9	90,9				1,36		14,8	14,0		93,3
CN-24	Osbell Mafic North	G-8 tails	2,08	n.a.	n.a.	21,7	n.a.	18,6	0,297	26,6	n.a.	18,9	52	n.a.	54,9		83,1	84,4	87,0	88,9	n.a.	n.a.	n.a.	0,19	2,05	1,71	1,66	n.a.	91,0
CN-26													63		76,1	86,6	87,6	87,1	88,1	87,7				0,21		1,70	1,66		90,0
CN-23													63		38,6	77,7	81,8	81,0	85,3	n.a.				0,25		1,70	1,66		88,1
CN-22													85		34,8	78,2	79,0	77,8	82,5					0,29		1,66	1,66		85,8
CN-21													106		42,7	74,7	75,5	76,0	79					0,35		1,64	1,66		82,73
CN-26													63		76,1	86,6	87,6	87,1	88	87,7				0,21		1,70	1,66		90,02
CN-27													61		83,4	86,6	86,8	86,2	87,2	87,8				0,22		1,76	1,66		90,1
CN-28													55		86,1	86,5	87,3	87,4	88,2	88,5				0,20		1,70	1,66		90,7

14. MINERAL RESOURCE ESTIMATE

The 2018 Osborne-Bell Deposit Mineral Resource Estimate (the "2018 MRE") was prepared by Pierre-Luc Richard, P.Geo., using all available information.

The main objective was to update the previous 43-101 mineral resource estimate for the Osborne-Bell deposit prepared by InnovExplo and published in a report titled "43-101 Technical Report and Mineral Resources Estimate – Osborne-Bell Deposit, Comtois Property", dated November 30, 2012 (Carrier et al., 2012) (the "2012 MRE").

The 2018 MRE uses additional diamond drilling data that was not available at the effective date of the 2012 MRE. The 2018 MRE drill hole database contains the 877 holes used for the 2012 MRE, supplemented by 54 additional holes, for a total of 931.

Many changes were made to the approaches and assumptions used in 2012, most notably to the mineralized domain interpretation, the capping assumptions, the grade interpolation strategies, and the approach to creating a late barren dyke dilution model ("dyke dilution model"). In addition, the gold price, project costs and exchange rate assumptions were revised to reflect 2018 market conditions.

Figure 14.1 illustrates the main geological events observed in the Osborne-Bell deposit area. Information relating to the estimation process is presented under the following sections:

- 14.1– Grade model methodology;
- 14.2– Dyke dilution model methodology;
- 14.3– Final consolidated model;
- 14.4– Mineral Resource classification;
- 14.5– Cut-off grade;
- 14.6– Mineral Resources estimation;
- 14.7– Comparison to previous Mineral Resources Estimates.

Details of the three-step approach of the block modelling strategy are shown on Figure 14.2 and described in sections 14.1 to 14.3.

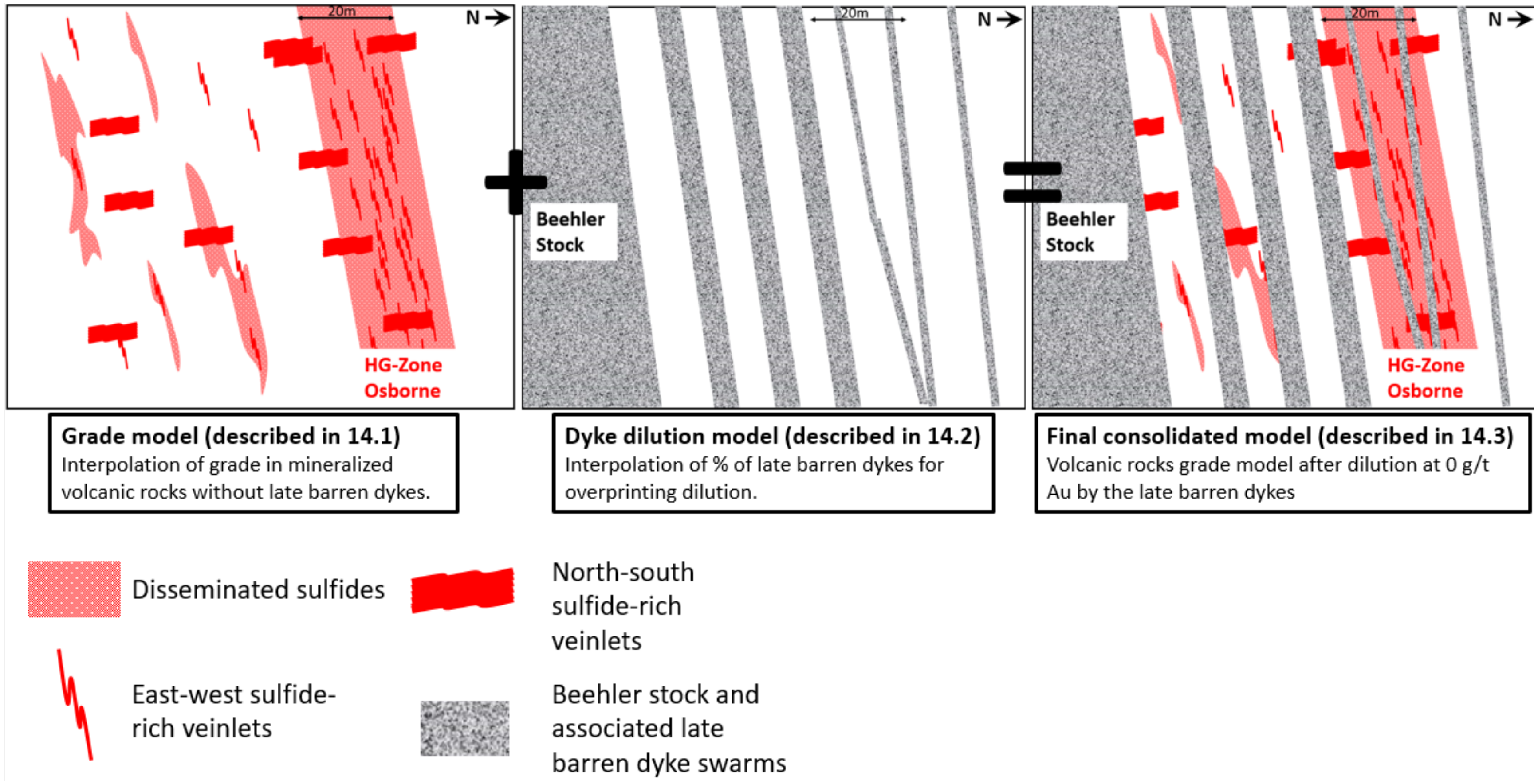

Figure 14.1 – Vertical cross-section illustrating the geological events used for the block modelling approach in the 2018 MRE

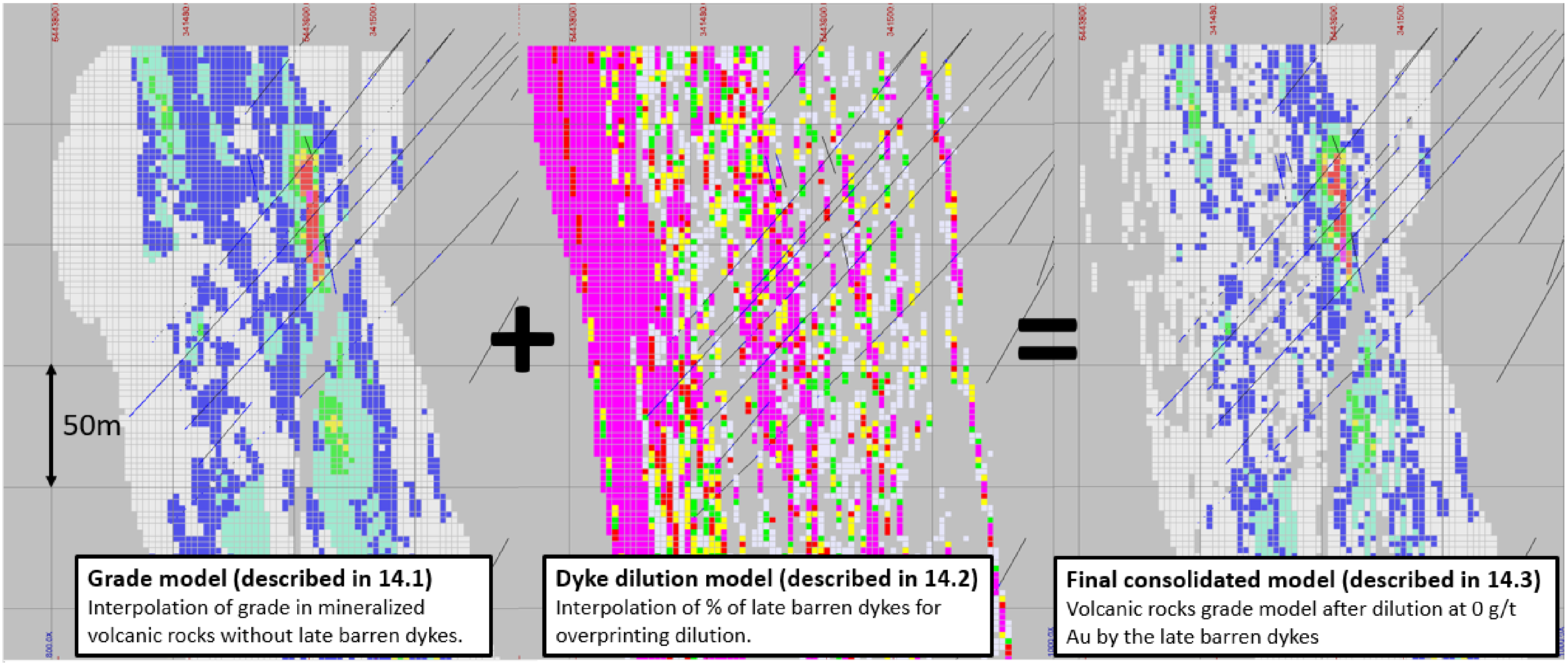

Figure 14.2 – Vertical cross-section illustrating the three major steps in the block modelling approach for the 2018 MRE.

The result of this study is a broad lower-grade gold-mineralized domain (“LG 610”) containing 17 higher-grade subzones (“HG” zones), and a single mineral resource estimate for the nine (9) HG zones with sufficient geological confidence, tonnage and grade. The distribution of the following features guided the delineation: volcanic rocks (system centered on felsic volcanics), mineralization (disseminated sulphides and veinlets), gold values, metal associations (Cu and Zn), alteration (high VMS alteration index (IALT) and aluminosilicate alteration trend) and main local lineation trend. Overall, the grade model honours the attitude of the volcanic rocks and the spatial distribution of the mineralization and alteration. The dyke model is based on the delineation of corridors containing >50% and >75% late barren dykes when compared to the total lithological volume, supplemented by an envelope containing narrow and erratic occurrences of such dykes.

The final grade resource model corresponds to the grade model (interpolated gold values in mineralized volcanic material) diluted by the late barren dyke model (dilution at 0 g/t Au per the weighted percentage of late barren dyke). This process allows better control of the two main geological features that affect grade distribution in the Osborne-Bell deposit.

The mineral resources in the 2018 MRE are not mineral reserves as they do not have demonstrated economic viability. The estimate is categorized as Inferred Resources for an underground scenario.

The effective date of this mineral resource estimate is March 2, 2018.

14.1 Grade Model Methodology

The 2018 MRE was prepared using GEOVIA GEMS software v. 6.8 (“GEMS”). GEMS was used for modelling purposes, construction of mineralized solids, block model and grade estimation (ordinary kriging (“OK”) interpolation method). Sensitivities to different interpolation methods were also performed in GEMS. The variography study and the statistical validation for the grade block model were performed using Snowden Supervisor software v. 8.8.1.0 (“Supervisor”). Capping and several validations were done in Microsoft Access 2016. Basic and spatial statistics were established using a combination of GEMS, Supervisor, Microsoft Excel, and Access. The main steps in the methodology were as follows:

- Drill hole database compilation and validation for the 2012 MRE DDH and additional DDH;
- Modelling of mineralized zones based on metal content, lithological information and alteration footprint;
- Generation of drill hole intercepts for the grade model;
- Grade compositing;
- Capping study on composite data;
- Interpolation using new parameters.

14.1.1 Grade model – Drill hole database

The 2018 MRE drill hole database contains the 877 DDH used in the 2012 MRE, supplemented by 54 additional DDH. Information for the latter was transferred into GEMS from the Geotic/MS Access database containing all drill holes from the Property. The GEMS database does not retain every hole drilled on the Property because many holes were too far from the deposit to be of use for the estimation (see items 6 and 10).

The drill hole database contains the following raw information:

- Collar and deviation surveys;
- Conventional assaying for gold, silver, copper and zinc;
- Principal and secondary lithological descriptions;
- Whole rock assaying for major elements; and
- RQD measurements.

The 931 drill holes extend over the 1.8-kilometre strike-length of the mineralized system at a drill spacing ranging from 12.5 to 200.0 metres (Fig. 14.3). Of the 54 additional holes, 10 DDH improve the level of knowledge for the deepest portion of the deposit, from 700 to 1,350 metres below surface, whereas another 24 DDH improve the level of knowledge for the intermediate portion, from 200 to 700 metres below surface, and 4 DDH were drilled on the uppermost portion of the deposit, from surface to 100 metres below surface. Outside the deposit itself, 9 DDH were drilled to test the potential of the Mafic North area 200 metres to the north and 7 DDH were drilled in the area previously known as the Western Extension.

In addition to the basic tables of raw data, the GEMS database contains tables of grade intercepts and the calculated grade composites required for statistical analysis and grade block modelling.

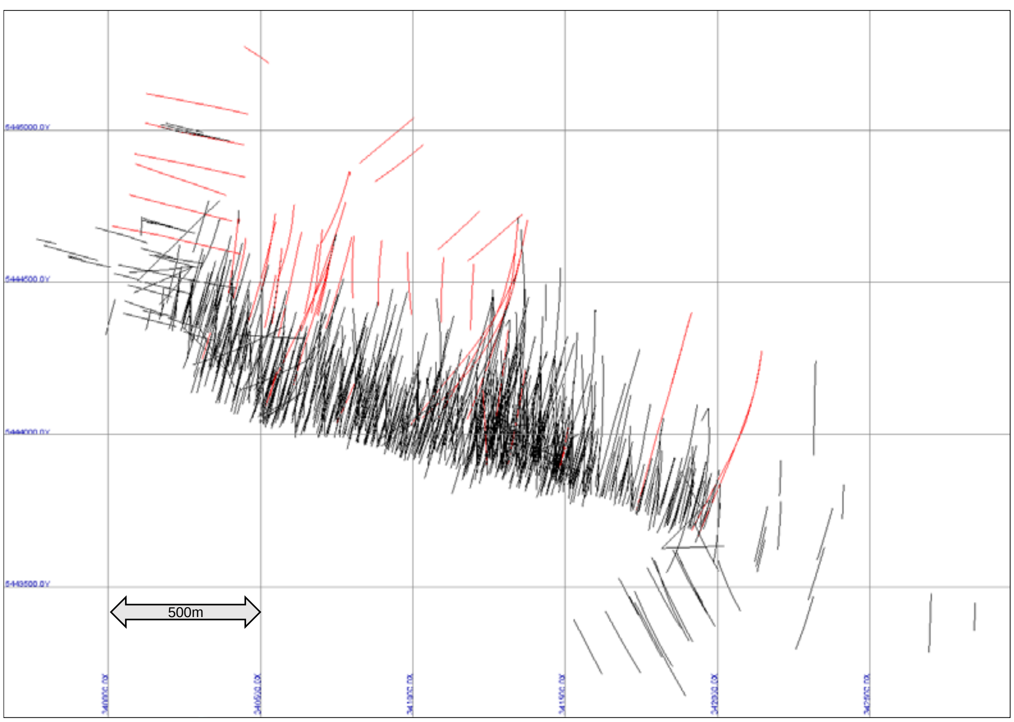

Figure 14.3 – Plan view showing the 931 drill holes used for the 2018 MRE. Red traces represent DDH included in the 2012 MRE (n = 877); green traces represent the new DDH in the 2018 MRE (n=54).

14.1.2 Grade model – Interpretation of mineralized zones

In order to better constrain the resource estimation for the Osborne-Bell deposit, InnovExplo constructed wireframes based on geological criteria (volcanic rocks, alteration and gold mineralization). Martin Barette, Senior Technician for InnovExplo, was involved in the 3D geological interpretation of the mineralized zones (the lower-grade domain and higher-grade subzones) under the supervision of authors Pierre-Luc Richard and Alain Carrier.

The lower-grade mineralized volcanic rock envelope (LG 610 – Osborne-Bell) consists of a broad domain characterized by occurences of disseminated sulphides and veinlets straddling strongly altered volcanic rocks. It was delineated using an approximate grade of 0.2 g/t Au (or lower). This broader domain can be traced over a strike length of 1,800 metres, a width of 400 metres and a depth of 1,400 metres below surface. This domain is centered on the felsic volcanic rocks but extends into the surrounding mafic rocks on both sides. The interpretation of the mineralized envelope starts on its northern side with a significant increase in sulphide content (mostly finely disseminated pyrite) in the volcanic rocks, supplemented by strong VMS alteration (IALT) and/or aluminosilicate-rich alteration in the central portion. The southern limit is established by the contact of the Beehler Stock (a younger intrusion), which cuts across the mineralized system and post-dates it. InnovExplo generated a 3D geological model of the Beehler intrusion for the entire area covered by the block model and resource estimate. The mineralized envelope was interpreted along a steeply dipping, roughly WNW-ESE trend. The mineralized envelope interpreted in 2018 merges the two mineralized zones interpreted in 2012 (Osborne and Bell), supported by the additional drilling data.

The 17 higher-grade HG zones interpreted within the LG 610 envelope include nine (9) with sufficient geological confidence, tonnage and grade to be included in the 2018 MRE (Fig. 14.4).

All 17 mineralized zones throughout the deposit include lower-grade material to maintain geological continuity. A minimum true width of 2 metres was applied during interpretation. The mineralized zones were interpreted by ignoring occurrences of late barren dykes. The barren synvolcanic dyke (the Zebra felsic unit; see section *7.3.3*) cuts across the mineralized envelope and several HG zones, has been reinterpreted in light of the new drilling data. The volume of the Zebra felsic unit was removed from any gold interpolation during the resource estimation process.

The wireframe solid of the mineralized envelope was created by digitizing an interpretation onto plan views and sections spaced 25 metres apart. The wireframe solids of the HG zones were created using Leapfrog software based on geological and grade criteria.

Some isolated gold intercepts exist outside the interpreted mineralized envelope. Those isolated values are not attributed to any zone given the lack of continuity.

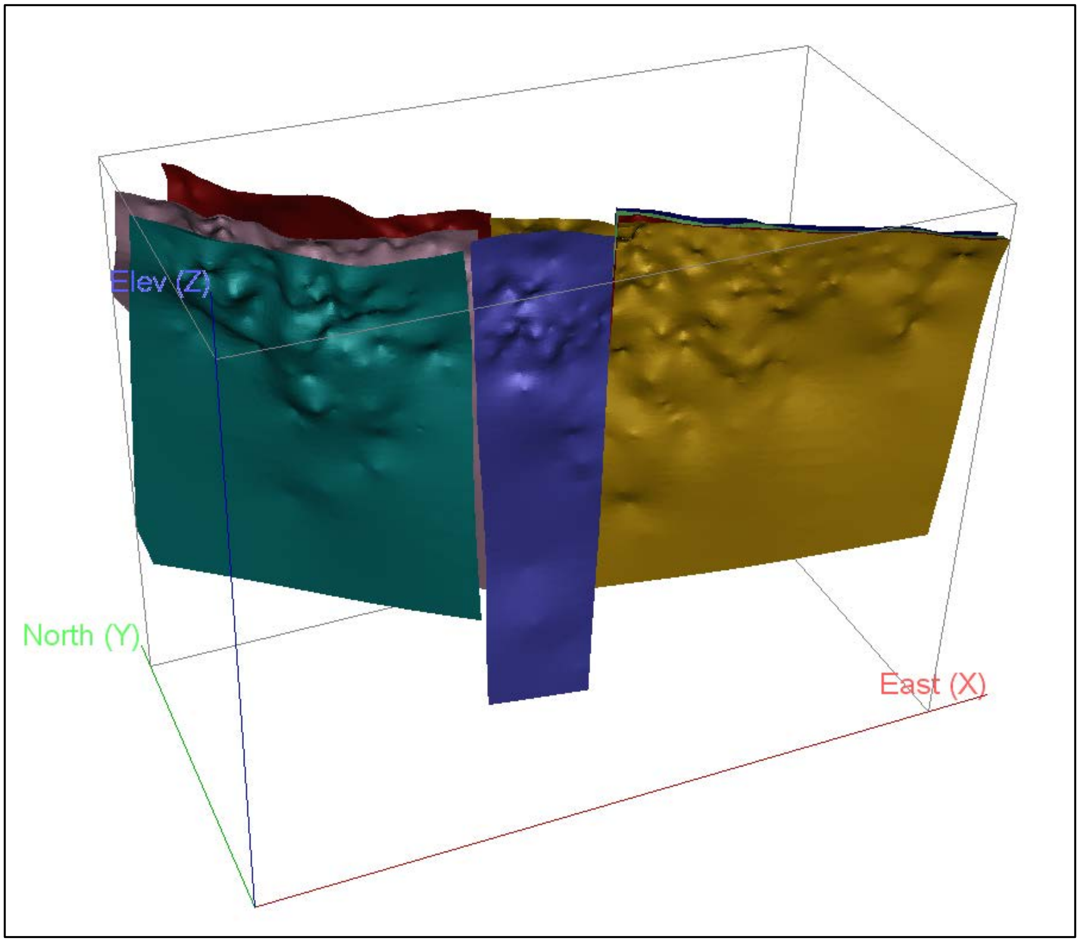

Figure 14.4 – 3D view of the mineralized model for the Osborne-Bell deposit, looking northeast.

14.1.3 Grade model – Compositing

Late barren dykes were not considered during the interpretation of the mineralized volcanic rock zones. Sample intervals that fall within late barren dykes were excluded from the composited gold values (see sections 14.2 and 14.3).

Drill hole assays were composited to minimize any bias introduced by the variable sample lengths.

For geological and statistical reasons, a 1.5-metre ("1.5m") composite with an allowable spread of 0.75 to 2.25 metres was selected as the logical option for the Osborne-Bell deposit.

The total number of composites used in the DDH dataset is 130,862. A grade of 0.00 g/t Au was assigned to missing sample intervals. Table 14.1 shows the basic statistics by grouped zone.

Table 14.1 – Summary statistics for composites before capping

Dataset	Block Code	Metal	# of Composites	Max (g/t)	Mean (g/t)	Standard Deviation	Coefficient of Variation
1550	1550	Au (g/t)	709	193.55	1.21	8.60	7.09
1651	1651	Au (g/t)	998	116.82	1.17	5.08	4.36
1653	1653	Au (g/t)	363	236.78	2.07	13.70	6.62
2650	2650	Au (g/t)	455	153.50	2.72	11.24	4.13
2652	2652	Au (g/t)	423	33.05	1.61	4.07	2.53
3551	3551	Au (g/t)	1 161	68.80	1.85	4.76	2.57
3552	3552	Au (g/t)	765	56.17	1.02	3.68	3.62
3652	3652	Au (g/t)	751	542.46	2.41	21.49	8.90
3653	3653	Au (g/t)	1 125	186.32	1.87	9.22	4.93
Dilution Envelope	610	Au (g/t)	61 440	47.83	0.13	0.45	3.45

14.1.4 Grade model – High grade capping

In the 2018 MRE, the treatment of extreme high-grade values was based on the statistical features and distribution of composites. In the database, the composites were automatically coded by zone directly from the 3D mineralized zone solids and were then used to generate basic univariate statistics.

Basic univariate statistics, probability plots and histograms were generated on grade composite datasets grouped by zone using point area files containing raw gold assays. High grade capping was established on a per zone basis, and a total of 95 grade composites were capped (Table. 14.2).

Table 14.2 – Summary statistics for the capping by dataset

Dataset	Block Code	Metal	# of Samples	Max (g/t)	Uncut Mean (g/t)	High Grade Capping (g/t)	Cut Mean (g/t)	# of Samples Cut	% of Samples Cut	% Metal Factor Loss	Coefficient of Variation
1550	1550	Au (g/t)	709	193.55	1.21	35.00	0.89	3	0.42%	25.56%	3.40
1651	1651	Au (g/t)	998	116.82	1.17	25.00	1.00	5	0.50%	14.19%	2.84
1653	1653	Au (g/t)	363	236.78	2.07	30.00	1.28	4	1.10%	34.09%	3.40
2650	2650	Au (g/t)	455	153.50	2.72	55.00	2.30	4	0.88%	16.01%	3.09
2652	2652	Au (g/t)	423	33.05	1.61	25.00	1.58	2	0.47%	1.89%	2.45
3551	3551	Au (g/t)	1 161	68.80	1.85	55.00	1.83	2	0.17%	0.84%	2.46
3552	3552	Au (g/t)	765	56.17	1.02	25.00	0.94	4	0.52%	8.65%	2.83
3652	3652	Au (g/t)	751	542.46	2.41	35.00	1.39	4	0.53%	43.73%	2.88
3653	3653	Au (g/t)	1 125	186.32	1.87	40.00	1.54	3	0.27%	18.91%	2.48
Dilution Envelope	610	Au (g/t)	61 440	47.83	0.13	3.00	0.13	64	0.10%	4.74%	1.87

The following criteria were used to decide whether or not capping of the composites was warranted, and to determine the threshold when warranted. The following criteria were also used to determine the gold grade capping:

- If the quantity of metal contained in the last decile is above 40%, capping is warranted; if below 40%, the uncapped dataset may be used;
- No more than 10% of the overall contained metal must be contained within the first 1% of the highest-grade samples;

- The probability plot of grade distribution must not show abnormal breaks or scattered points outside of the main distribution curve;
- The log normal distribution of grades must not show any erratic grade bins or distanced values from the main population.

Figure 14.5 shows an example of statistical plots for capping gold grade composites in the mineralized zones.

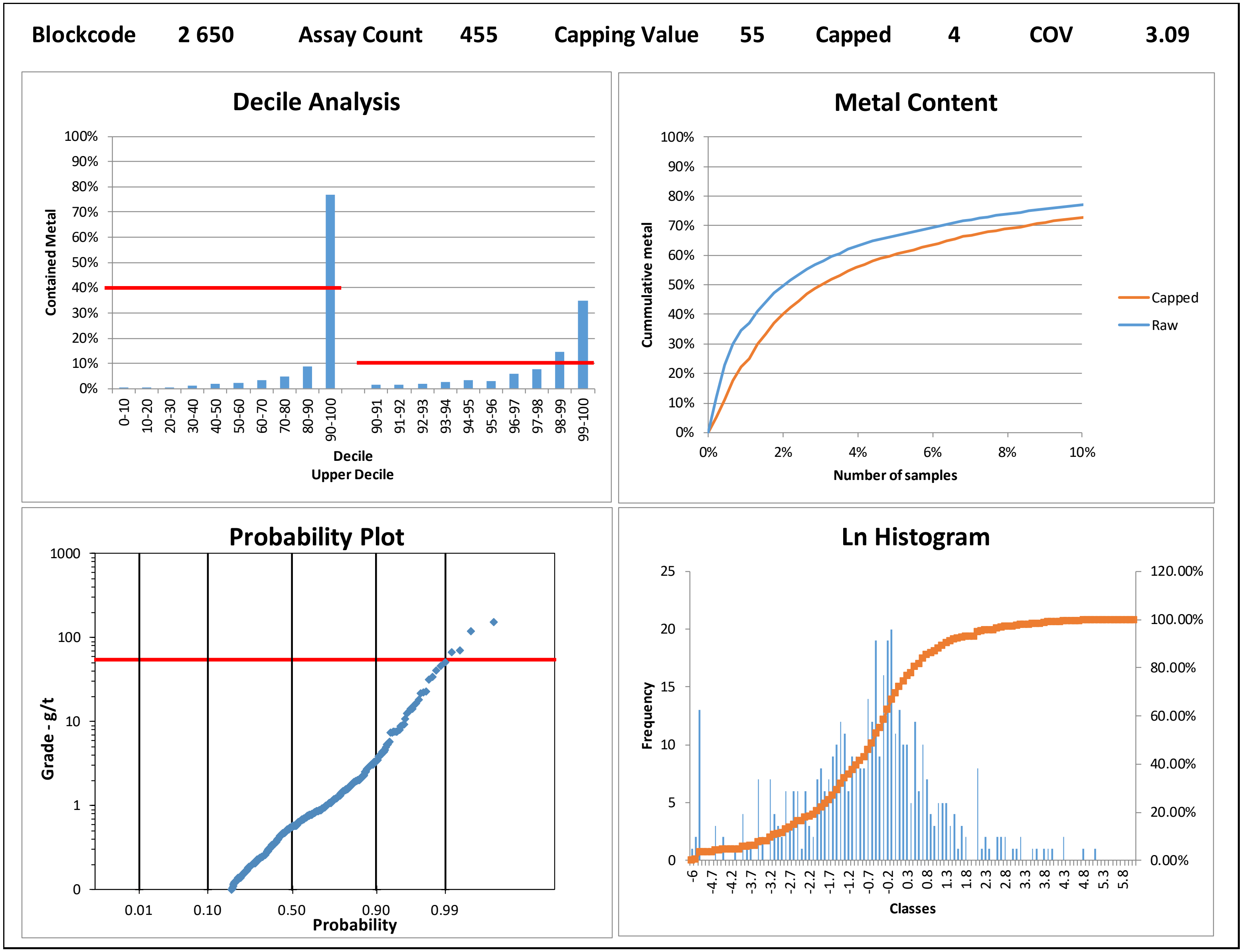

Figure 14.5 – Summary statistical plots for capping gold in Zone 2650

14.1.5 Grade model - Variography, search ellipsoids and boundaries

14.1.5.1 Variography

Grade composites within interpreted mineralized zones were used to generate variography and ultimately determine search ellipsoids.

A 3D directional-specific variographic analysis of the composites was completed for all mineralized zones. Variography analysis, realized in Supervisor, was conducted for all high-grade zones and the lower grade envelope.

14.1.5.2 Search ellipsoid

The 3D directional-specific investigations yielded the best-fit model along an orientation that roughly corresponds to the strike and dip of the mineralized zones.

Table 14.3 summarizes the parameters of the final ellipsoids used for interpolation. Figure 14.6 illustrates the shapes and ranges of the search ellipsoids for Pass 1 applied to Zone 1653.

Table 14.3 – Search ellipsoid parameters

Zone	Blockcode	Ellipsoid	ORIENTATION			RANGES			General Parameters		
			Azimuth (Gems)	Dip (Gems)	Azimuth (Gems)	X (m)	Y (m)	Z (m)	Min Composites	Max Composites	Minimum DDH
1550	1550	Pass 1	186.30	74.20	293.70	47	44	33	5	12	2
		Pass 2	186.30	74.20	293.70	71	66	50	4	12	2
1651	1651	Pass 1	242.20	67.70	308.40	73	50	20	5	12	2
		Pass 2	242.20	67.70	308.40	110	75	30	4	12	2
1653	1653	Pass 1	147.10	54.70	316.50	58	39	20	5	12	2
		Pass 2	147.10	54.70	316.50	87	59	30	4	12	2
2650	2650	Pass 1	126.30	78.80	279.12	52	44	20	5	12	2
		Pass 2	126.30	78.80	279.12	78	66	30	4	12	2
2652	2652	Pass 1	154.00	68.90	286.00	49	35	20	5	12	2
		Pass 2	154.00	68.90	286.00	74	53	30	4	12	2
3551	3551	Pass 1	128.60	59.60	297.10	71	40	20	5	12	2
		Pass 2	128.60	59.60	297.10	107	60	30	4	12	2
3552	3552	Pass 1	170.73	72.04	292.39	61	45	20	5	12	2
		Pass 2	170.73	72.04	292.39	92	68	30	4	12	2
3652	3652	Pass 1	120.00	60.00	300.00	63	64	20	5	12	2
		Pass 2	120.00	60.00	300.00	95	96	30	4	12	2
3653	3653	Pass 1	88.70	78.80	295.80	41	41	20	5	12	2
		Pass 2	88.70	78.80	295.80	62	62	30	4	12	2
610	610	Pass 1	78.70	78.80	285.80	43	43	21	5	12	2
		Pass 2	78.70	78.80	285.80	65	65	32	4	12	2

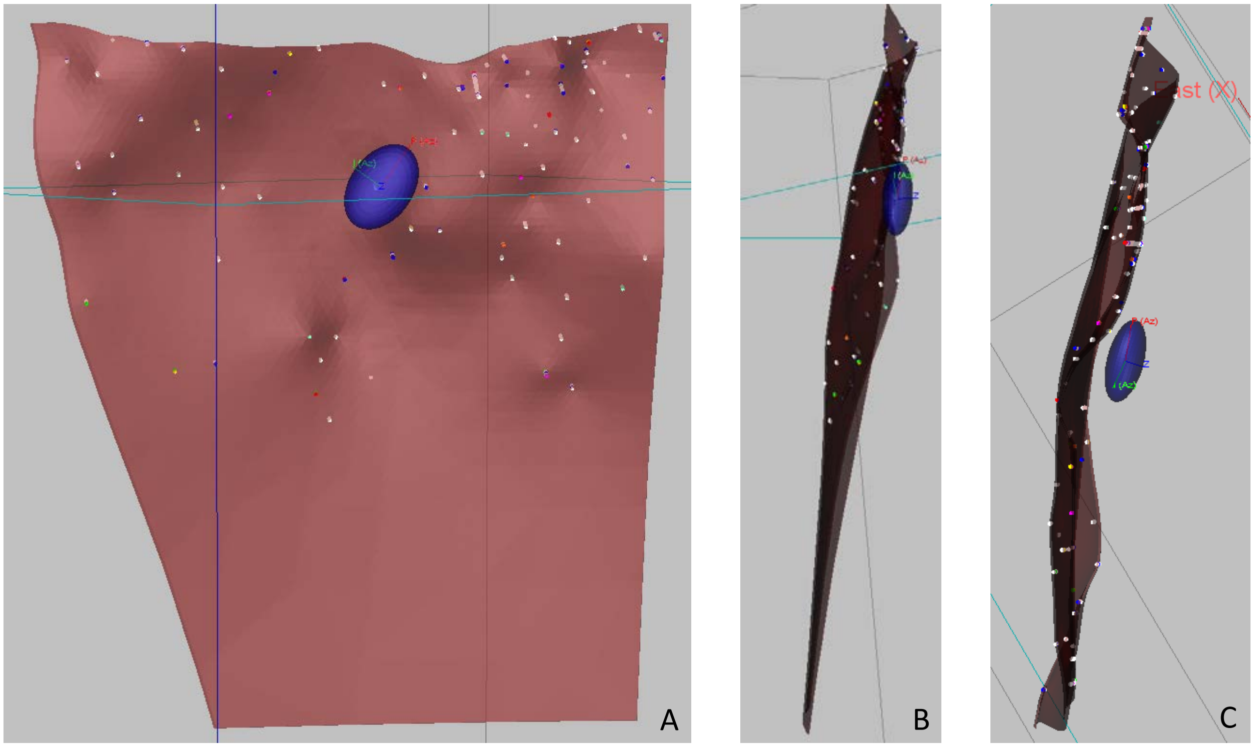

Figure 14.6 – Different views of Zone 1653 showing the ellipsoid obtained from the variography study: A) 3D longitudinal view; B) 3D section view; C) 3D plan view.

14.1.6 Grade model – Bulk density

Bulk density study is based on two datasets:

- In lithologies used for grade interpolation, 541 measurements of specific gravity on core samples from 20 drill holes (COM-08-167, COM-08-173A, COM-10-428 and COM-10-432A to COM-10-448). The analyses were performed by ALS Chemex at InnovExplo's request.
- In lithologies used for grade interpolation, 4,491 specific gravities calculated with NORMAT in 559 DDH.

Measured specific gravity values are confirmed by NORMAT calculations (Table 14.4). On a lithological basis, intermediate to mafic volcanic rocks (V2-V3Tu) present an average value of about 2.80 g/cm^3. InnovExplo decided to use 2.80 g/cm^3 for the felsic unit (V1C) instead of measured values (2.79 g/cm^3) because it is the most sulphide-rich rock, even though the value of 2.80 g/cm^3 was confirmed by additional drilling samples and metallurgical tests.

Table 14.4 – Specific gravity compilation for lithologies used for the grade model

Lithology	Measured Specific Gravity					Calculated Specific Gravity					Value used for 2017 MRE
	N Sample	Mean	Median	Min	Max	N Sample	Mean	Median	Min	Max	
V1C	356	2.79	2.79	2.55	3.30	1 317	2.79	2.79	2.64	3.15	2.80
V2-V3Tu	185	2.80	2.81	2.49	3.11	3 142	2.84	2.84	2.66	3.33	2.80
Total	541			2.49	3.30	4 459			2.64	3.33	

For the 2018 MRE, a specific gravity value of 2.80 g/cm^3 was applied to the tonnage calculation for all blocks interpolated for grade.

It should be noted that for the 2018 MRE, a specific gravity value of 2.72 g/cm^3 was applied to the tonnage calculation for all blocks interpolated in the Zebra felsic unit based on 33 drill core measurements.

14.1.7 Grade model – Block model

A block model was established to cover the entire drilled area and an area sufficient to host any open-pit scenario. The model has been pushed down to a depth of 1,200 metres below surface. The origins of the block model are shown in Table 14.5.

The grade block model was rotated -15° from a north grid azimuth. Individual block cells have dimensions of 2.5 metres long (X-axis) by 2.5 metres wide (Y) by 2.5 metres vertical (Z). The grade block model is coded using the percent model method for rock code identification and contains three folders.

Table 14.5 – Osborne-Bell deposit block model properties

Properties	X (Columns)	Y (Rows)	Z (Levels)
Origin coordinates (UTM NAD83)	339918.489	5443702.118	345
Block size	2.5	2.5	2.5
Number of blocks	894	468	580
Block model extent (m)	2235	1170	1450
Rotation	345		

All blocks with more than 0.001% of their volume falling within a selected solid were assigned the corresponding solid block code in their respective folder. A percent block model was generated, reflecting the proportion of each block inside every solid (i.e., individual mineralized zones, individual lithological domains, the overburden and the country rock).

Table 14.6 provides details about the naming convention for the corresponding GEMS solids, as well as the rock codes and block codes assigned to each individual solid. The resulting multi-folder percent block model was used for the mineral resource estimation.

Table 14.6 – Osborne-Bell deposit block model and associated solids

Workspace	Description	Rockcode	GEMS Triangulation Name			Precedence
			NAME1	NAME2	NAME3	
HG_A	Mineralised Zone	1550	1-650South	20180130	clipFinal	1550
	Mineralised Zone	1551*	1-651North	20180130	clipFinal_POT	1551
	Mineralised Zone	2651*	2-651	20180130	clipFinal_POT	2651
	Mineralised Zone	3650*	3-650	20180130	clipFinal_POT	3650
	Mineralised Zone	3653	3-653South	20180130	clipFinal	3653
	Mineralised Zone	3654*	3-654	20180130	clipFinal_POT	3654
HG_B	Mineralised Zone	1650*	1-650	20180130	clipFinal_POT	1650
	Mineralised Zone	1653	1-653South	20180130	clipFinal	1653
	Mineralised Zone	2652	2-652	20180130	clipFinal	2652
	Mineralised Zone	3651*	3-651	20180130	clipFinal_POT	3651
	Mineralised Zone	3551	3-653Center	20180130	clipFinal	3551
HG_C	Mineralised Zone	1651	1-651	20180130	clipFinal	1651
	Mineralised Zone	1652*	1-652	20180130	clipFinal_POT	1652
	Mineralised Zone	2650	2-650	20180130	clipFinal	2650
	Mineralised Zone	2653*	2-653South	20180130	clipFinal_POT	2653
	Mineralised Zone	3652	3-652	20180130	clipFinal	3652
	Mineralised Zone	3552	3-653North	20180130	clipFinal	3552
Waste	Beehler Stock	560	Beehler	20170111	Clip_Final	560
	Felsic Zebra	613	16_Zeb	20170202	Clip_Final	613
	WasteBM	999	Waste_All	20170112	Clip_Bed	999
LG	Envelope	610	ENV_610	20170202	Clip_Final	610
OVB	Overburden	6	Ovb	20161221	Final	5

**Only considered for mineral potential.*

14.1.8 Grade Model – Grade interpolation

The variography study provided the parameters to interpolate the grade model. The interpolation was run on a point area workspace extracted from the composite dataset.

The composite points were assigned block codes corresponding to the mineralized zone in which they occur. The interpolation profiles specify a single composite block code for each mineralized-zone solid, thus establishing hard boundaries between the mineralized zones and preventing block grades from being estimated using sample points with different block codes than the block being estimated.

The interpolation profiles were customized to estimate grades separately for each of the mineralized zones (n=18). The OK method was selected for the final resource estimation as it better honours the grade distribution in the Osborne Bell deposit.

Two passes were defined: Pass 1 ellipsoid radiuses were established using the variography results and Pass 2 ellipsoid radiuses were 1.5x the variography results. Pass 2 interpolated the blocks that were not interpolated during Pass 1.

Parameters used to interpolate gold during Pass 1:

- 1x the variography range results;
- Minimum 5 composites;
- Maximum 12 composites;
- Minimum 2 holes.

Parameters used to interpolate gold during Pass 2:

- 1.5x the variography range results;
- Minimum 4 composites;
- Maximum 12 composites;
- Minimum 2 holes.

14.2 Dyke Dilution Model Methodology

The dyke table used for the 2018 MRE was constructed using a combination of GEMS, Microsoft Excel and Access. The modelling of dyke corridors was carried out in both GEMS and ARANZ Leapfrog Geo software v. 4.0 (“Leapfrog”). Several validations were done in Microsoft Access 2013. The main steps in the methodology were as follows:

- Modelling of late dyke corridors based on lithological compilation;
- Generation of drill hole intercepts for the dyke model;
- Dyke compositing;
- Interpolation using parameters established in 2018, establishment of search ellipsoid parameters and boundaries methodology;
- Block modelling (geometry and structure).

14.2.1 Dyke dilution model – Interpretation of late barren dyke swarms

In order to better constrain the resource modelling of the Osborne-Bell deposit, InnovExplo constructed a wireframe model delimiting the geologically defined extent of the late barren dyke swarms (“dyke corridors”) using a 2,300-metre strike-length area measuring 400 metres wide and extending down to 1,400 metres below surface (Figs. 14.7 and 14.8). The interpretation of the dyke corridors was performed by Stéphane Faure and Alain Carrier.

The late barren feldspar-amphibole porphyry dykes (I2; pFpAm) and granitic dykes (I1B) used for the interpretation of dyke corridors are related to the Beehler stock, which cuts across the Osborne-Bell deposit in the south. These two late barren dyke families are similar in terms of composition and represent close to 80% of late dyke occurrences in the Osborne-Bell deposit. Dyke corridors, extending from the contact of the Beehler stock to the north, correlate well laterally (Fig. 14.7). From south to north, dyke corridors become thinner and farther apart (Fig. 14.7). Globally oriented at N280° and dipping steeply at 85°, they cut across mineralized zones at a slightly discordant angle.

Eight wireframes were built according to the following visual criteria:

- Corridors 550 to 552 (Fig. 14.8), where a late dyke swarm represents more than 75% of total lithological material and displays consistent lateral and depth continuity in terms of dyke distribution.
- Corridors 553 to 550 (Fig. 14.8), where a late dyke swarm represents more than 50% of total lithological material and displays consistent lateral and depth continuity in terms of dyke distribution.

A broad dyke envelope separated into four parts (510, 515, 520 and 570) was used to obtain the dyke dilution model between modelled dyke corridors, and thus takes into account narrow and isolated late barren dyke intercepts.

The late Beehler stock (560) is considered to be homogeneous late barren material throughout its modelled volume (Fig. 14.7).

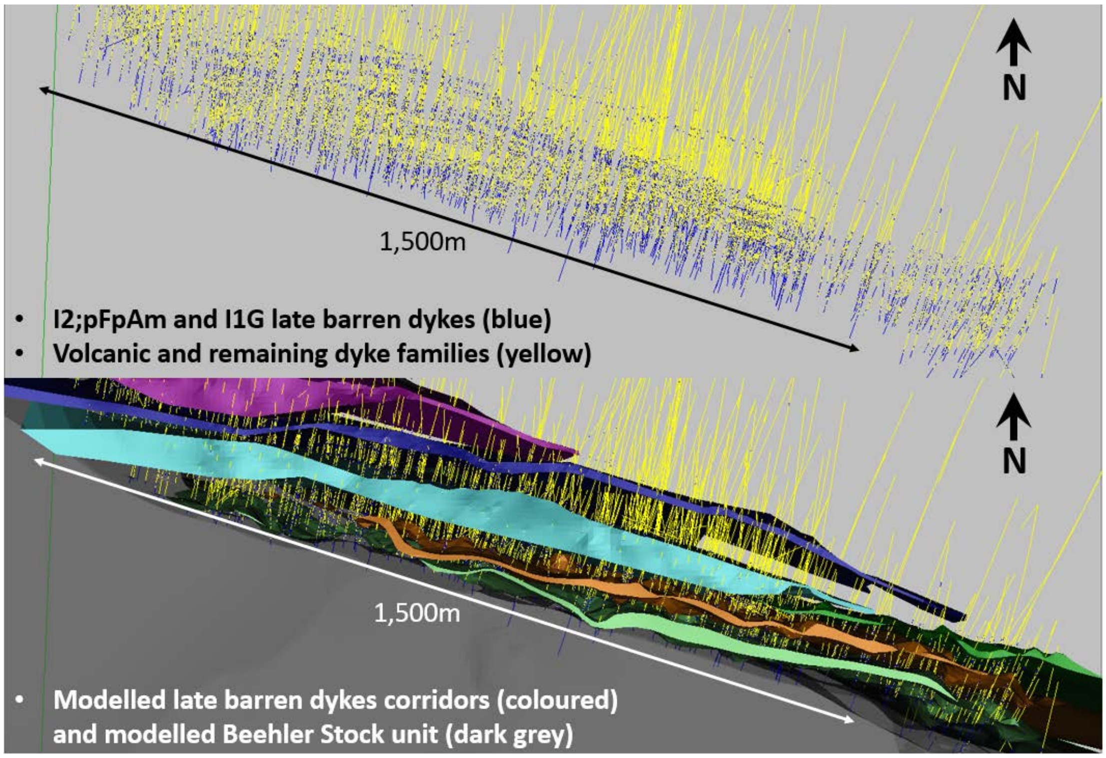

Figure 14.7 – Dyke composite plan views slightly tilted to the north illustrating the distribution of the two late barren dyke families used for the dyke model (top) and the subsequent delineation of corresponding corridors (bottom)

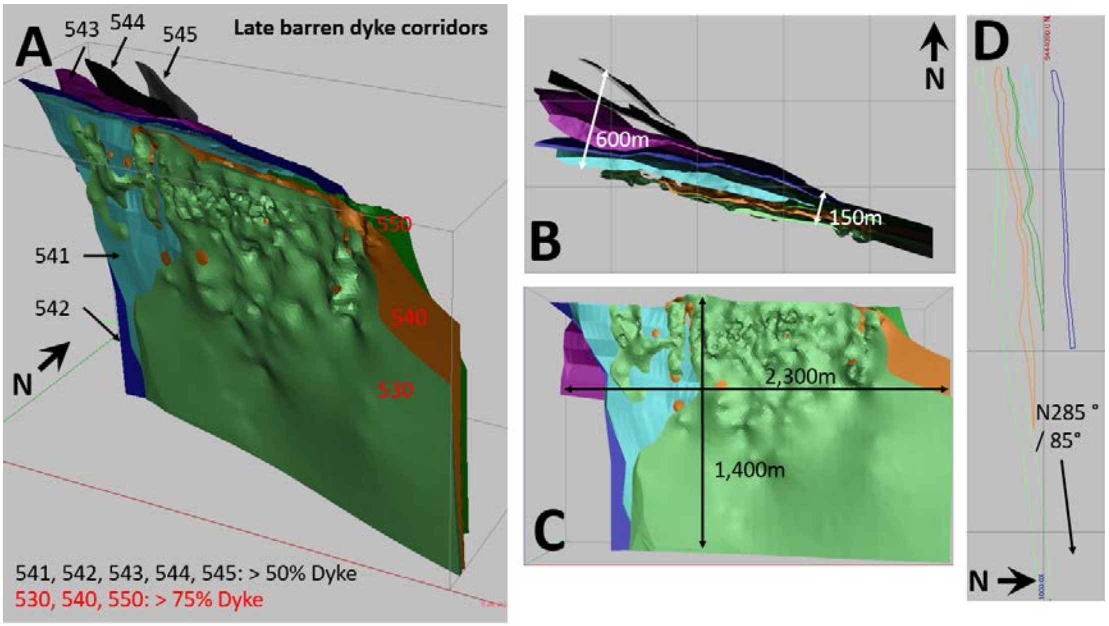

Figure 14.8 – Illustration of the eight (8) modelled late barren dyke corridors (A). The composite plan view (B) illustrates the slight change in their direction towards the west. Late barren dyke corridors show a relatively constant attitude, both laterally (C) and at depth (D).

The other late barren dyke families, such as aplitic (I1F), pegmatitic (I1G), intermediate (I2) and lamprophyres (I3), were not used for the dyke dilution model (see section 14.1.6).

14.2.2 Dyke dilution model – Compositing

In order to adequately interpolate the late barren dyke percentages throughout the deposit, dyke percentages were composited to 1-metre equal lengths ("1m dyke composites"). Compositing for late barren dyke percentages was completed on drill hole intervals from top to bottom. A total of 277,890 1m dyke composites were generated from 16,999 dyke intercepts.

It was determined that a length of 1 metre would produce a better resolution of the distribution and width range of the late barren dyke percentages (Fig. 14.9). Tests using 3 metres and 10 metres did not properly reflect of the presence of thin intervals.

InnovExplo did not use dyke corridor wireframes to control dyke compositing. They were only used during the interpolation process.

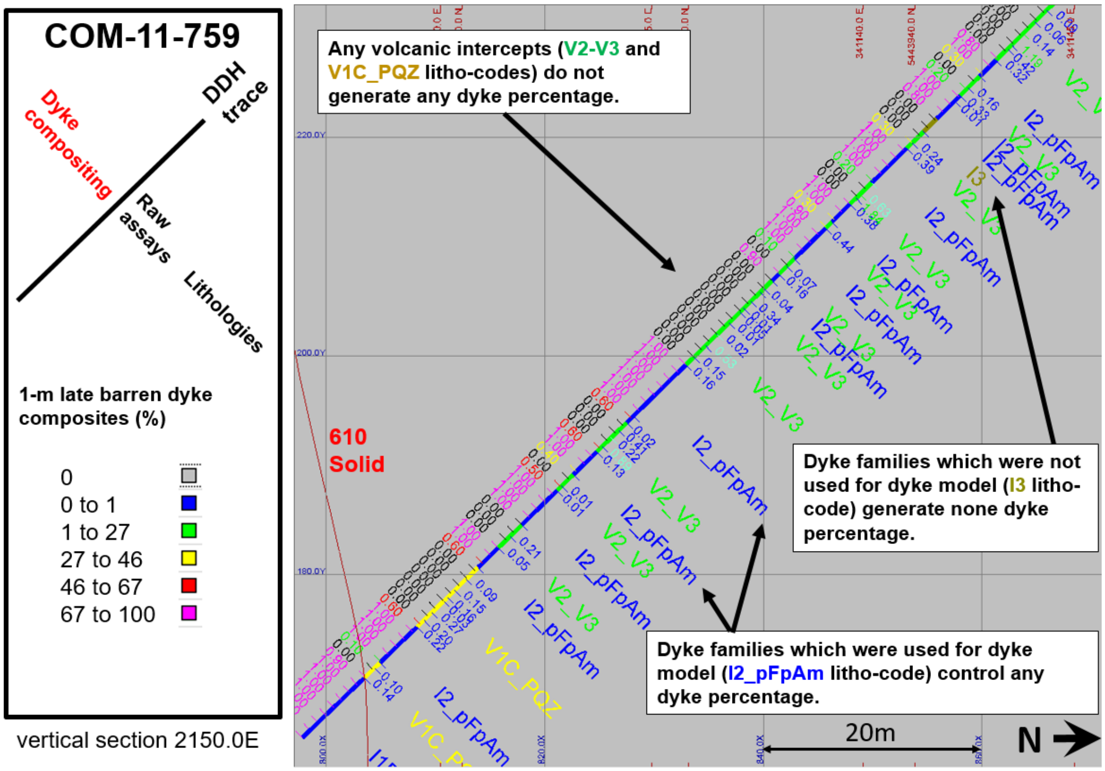

Figure 14.9 – Close-up view of DDH COM-11-759 illustrating the approach to dyke compositing. Where dyke composites straddle the boundary between two lithologies, one of which is not included in the dyke model, the percentage is weighted to portions belonging to the unit included in the model.

14.2.3 Dyke dilution model – Variography, search ellipsoids and boundaries

14.2.3.1 Variography

InnovExplo did not conduct a variography study on the dyke composite population; instead, geological features were used to determine search ellipsoid parameters.

14.2.3.2 Search ellipsoid

Search ellipsoids were built for any dyke corridor or dyke envelope supporting the dyke model. The shape of the search ellipsoid is a very thin disk reflecting geological continuity observed on field outcrops and in the drill hole database (see section 14.2.5). This shape is common for all dyke domains. The strike and dip of search ellipsoids are in accordance with dyke distribution and continuities observed for each dyke corridor/envelope.

Table 14.7 summarizes the parameters of the final ellipsoids used for interpolation. Figure 14.10 illustrates the shapes and ranges of the search ellipsoid applied to the “541” dyke corridor.

Table 14.7 – Final search ellipsoid parameters for the dyke model

Zone	Blockcode	ORIENTATION			Pass	RADIUS			
		Z	X	Z		Ellipsoid	X (m)	Y (m)	Z (m)
Dyke_Envelope_1	510	5	-85	0	P1	DYK510	250.0	250.0	3.0
Dyke_Envelope_2	515	0	-83	0	P1	DYK515	250.0	250.0	3.0
Dyke_Envelope_3	520	5	-83	0	P1	DYK520	250.0	250.0	3.0
Dyke_Envelope_4	570	225	-83	0	P1	DYK570	250.0	250.0	3.0
Dyke_Corridor_1	530	5	-83	0	P1	DYK530	250.0	250.0	3.0
Dyke_Corridor_2	540	5	-83	0	P1	DYK540	250.0	250.0	3.0
Dyke_Corridor_3	550	5	-83	0	P1	DYK550	250.0	250.0	3.0
Dyke_Corridor_4	541	0	-83	0	P1	DYK541	250.0	250.0	3.0
Dyke_Corridor_5	542	0	-87	0	P1	DYK542	250.0	250.0	3.0
Dyke_Corridor_6	543	0	-83	0	P1	DYK543	250.0	250.0	3.0
Dyke_Corridor_7	544	-10	-85	0	P1	DYK544	250.0	250.0	3.0
Dyke_Corridor_8	545	-25	-85	0	P1	DYK545	250.0	250.0	3.0

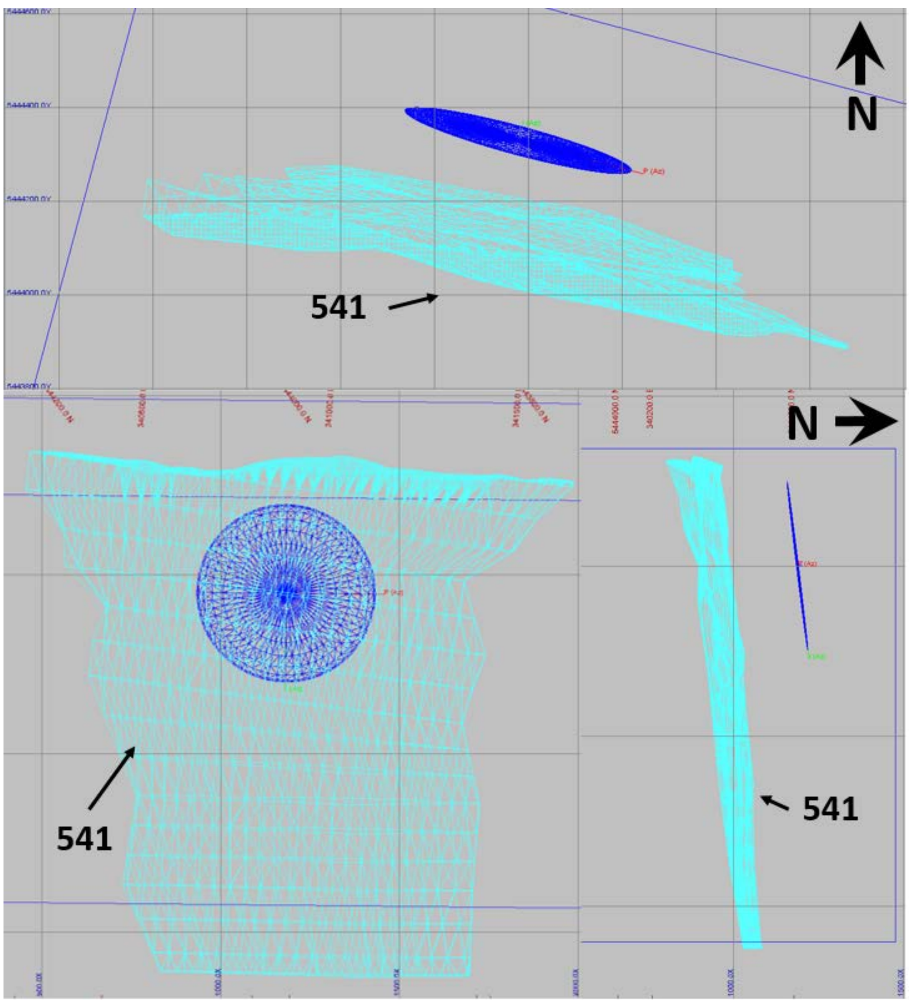

Figure 14.10 – Composite views of the 541 dyke corridor illustrating the shape and ranges of the search ellipsoid used for dyke interpolation

14.2.3.3 Boundaries

The hard boundary methodology was selected for the 2018 MRE dyke interpolation.

Hard boundaries were applied to dyke envelopes (510, 515, 520 and 570) and to dyke corridors (530, 540 to 545 and 550). The interpolation profiles specify a single target and sample rock code for each dyke solid, thus establishing hard boundaries between the corridors and/or envelopes and preventing block percentages from being estimated using sample points with different block codes than the code of the block being estimated.

14.2.4 Dyke dilution model – Bulk density

Bulk density study is based on two datasets:

- In lithologies used for dyke interpolation, one measurement of specific gravity on core samples from one drill hole (COM-08-167). The analysis was performed by ALS Chemex at InnovExplo's request.

- In lithologies used for grade interpolation, 101 specific gravities calculated with NORMAT in the 559 DDH selected for the exercise.

Measured specific gravity values are confirmed by NORMAT calculations (Table 14.8); the most commonly encountered late barren dyke (I2_pFpAm) yielded an average specific gravity of 2.79 g/cm^3.

Table 14.8 – Specific gravity compilation for the most abundant of the two lithologies used for the dyke model; Value used for the 2018 MRE is 2.78.

Lithology	Measured Specific Gravity					Calculated Specific Gravity				
	N Sample	Mean	Median	Min	Max	N Sample	Mean	Median	Min	Max
I2_pFpAm	1	2.78	2.78	2.78	2.78	101	2.79	2.78	2.64	3.09
Total	1			2.78	2.78	101			2.64	3.09

For the 2018 MRE, a specific gravity value of 2.78 g/cm^3 was applied to the tonnage calculation for all blocks interpolated for the dyke dilution model.

14.2.5 Dyke dilution model – Block model geometry

The block model used for the dyke model has the same properties and geometry as the one used for the grade model. The origins of the block model (UTM NAD83, Zone 18) are shown in Table 14.9 and Fig 14.11.

The dyke block model was rotated -15° from a north grid azimuth. Individual block cells have dimensions of 2.5 metres long (X-axis) by 2.5 metres wide (Y) by 2.5 metres vertical (Z). The dyke dilution block model is coded using the 50/50 method for rock code identification and contains one folder.

Table 14.9 – Osborne-Bell deposit block model properties

Properties	X (Columns)	Y (Rows)	Z (Levels)
Origin coordinates (UTM Nad83, Zone 18)	339 918.489	5 443 702.118	345
Number of blocks	894	468	580
Block extent (m)	2 235	1 170	1 450
Block size	2.5	2.5	2.5
Rotation	345		

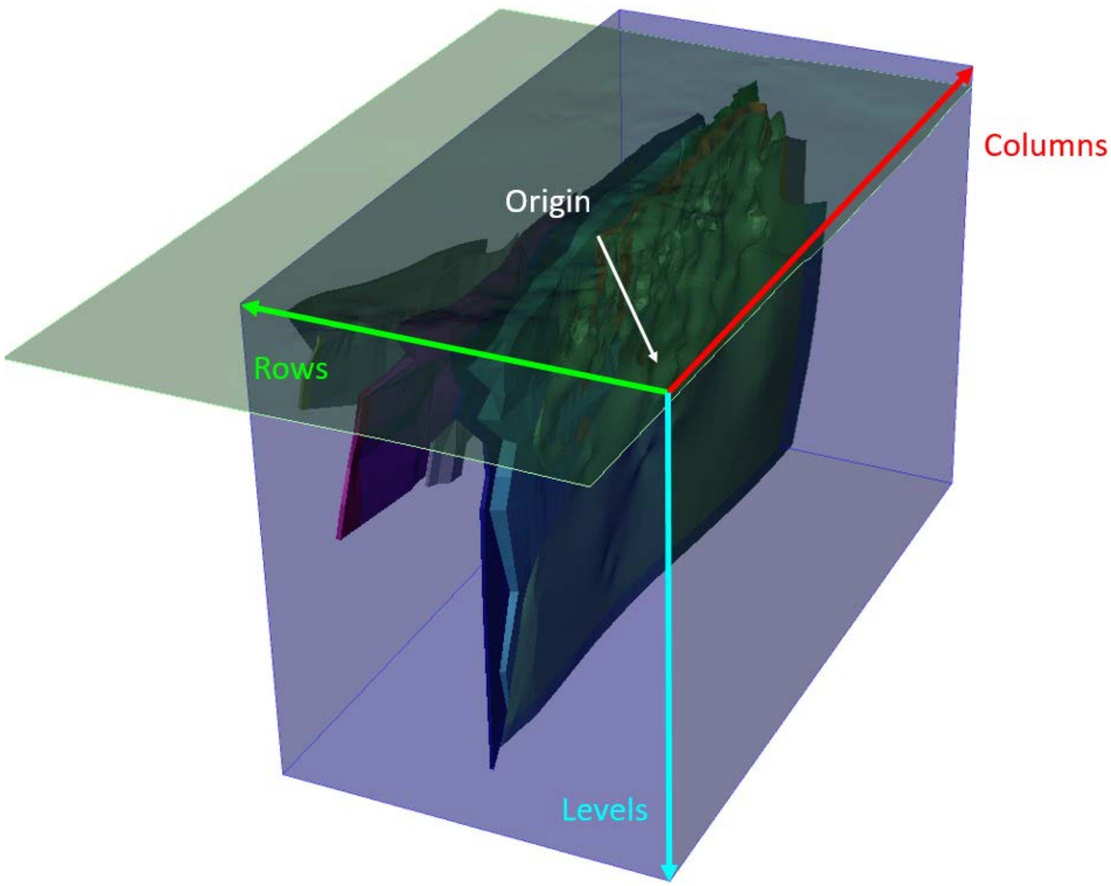

Figure 14.11 - 3D view of the block model volume (translucent blue) looking east. The block model hosts the dyke corridors used in the 2018 MRE. The green translucent surface corresponds to the topographic surface.

14.2.6 Dyke dilution model – Dyke block model

A majority-rule block model was generated using the precedence of solids. All blocks with at least 50% of their volume falling within a selected solid were assigned a corresponding block code for that solid (Table 14.11) in one folder. Dyke envelopes and dyke corridors were also clipped against the bedrock surface. The 50/50 method was also used for overburden, air and waste.

Table 14.10 shows the Osborne-Bell block model with its interpolated dyke corridors. The table also provides details about the corresponding GEMS naming convention for solids, as well as the rock codes, block codes and precedence assigned to each individual solid.

Table 14.10 – Osborne-Bell deposit dyke block model and associated solids

Folder	Description	RockCode	BlockCode	GEMS Solid Names			Precedence
				Name 1	Name 2	Name 3	
Standard	**Air**	AIR	5	Air	20161221	Final	5
	Overburden	OB	6	Ovb	20161221	Final	6
	Beehler Stock	560	560	Beehler	20170111	clipBed	560
	Dyke Envelopes	510	510	510	20170112	clipBed	590
		515	515	515	20170112	clipBed	585
		520	520	520	20170112	clipBedBee	580
		570	570	570	20170111	clipFinal	570
	Dyke Corridors	530	530	Dyke1	20161219	Clip_Final	530
		540	540	Dyke2	20161219	Clip_Final	540
		550	550	Dyke3	20161219	Clip_Final	550
		541	541	Dyke4	20170111	Clip_Final	541
		542	542	Dyke5	20170111	Clip_Final	542
		543	543	Dyke6	20170111	Clip_Final	543
		544	544	Dyke7	20170111	Clip_Final	544
		545	545	Dyke8	20170111	Clip_Final	545

14.2.7 Dyke dilution model – Dyke percentage interpolation

The dyke dilution model was interpolated using the 1m dyke percentage composites in order to produce the best possible barren dyke percentage estimate for the defined resource area in the Osborne-Bell deposit. The interpolation was done on a point area derived from the DDH database.

The method retained for the dyke percentage estimation was inverse-distance power six (ID6).

The composite points were assigned rock codes and block codes corresponding to the dyke corridor/envelope in which they occur. The search/interpolation ellipse orientations and ranges used in each of the dyke envelopes/corridors correspond to those developed in the Variography section (14.2.8.2). Hard boundaries were applied as described in section 14.2.8.3. One pass was used for all of the interpolated dyke envelopes (510, 515, 520 and 570) and dyke corridors (530, 540 to 545 and 550). The parameters were as follows:

- Pass 1
  - Minimum of one and maximum of four sample points in the search ellipse for interpolation;
  - Minimum of one drill hole for interpolation.

The estimation of the late barren dyke percentage is illustrated on a cross section in Figure 14.12.

Note: Any block contained in the Beehler stock (560) was coded 100% dyke by default.

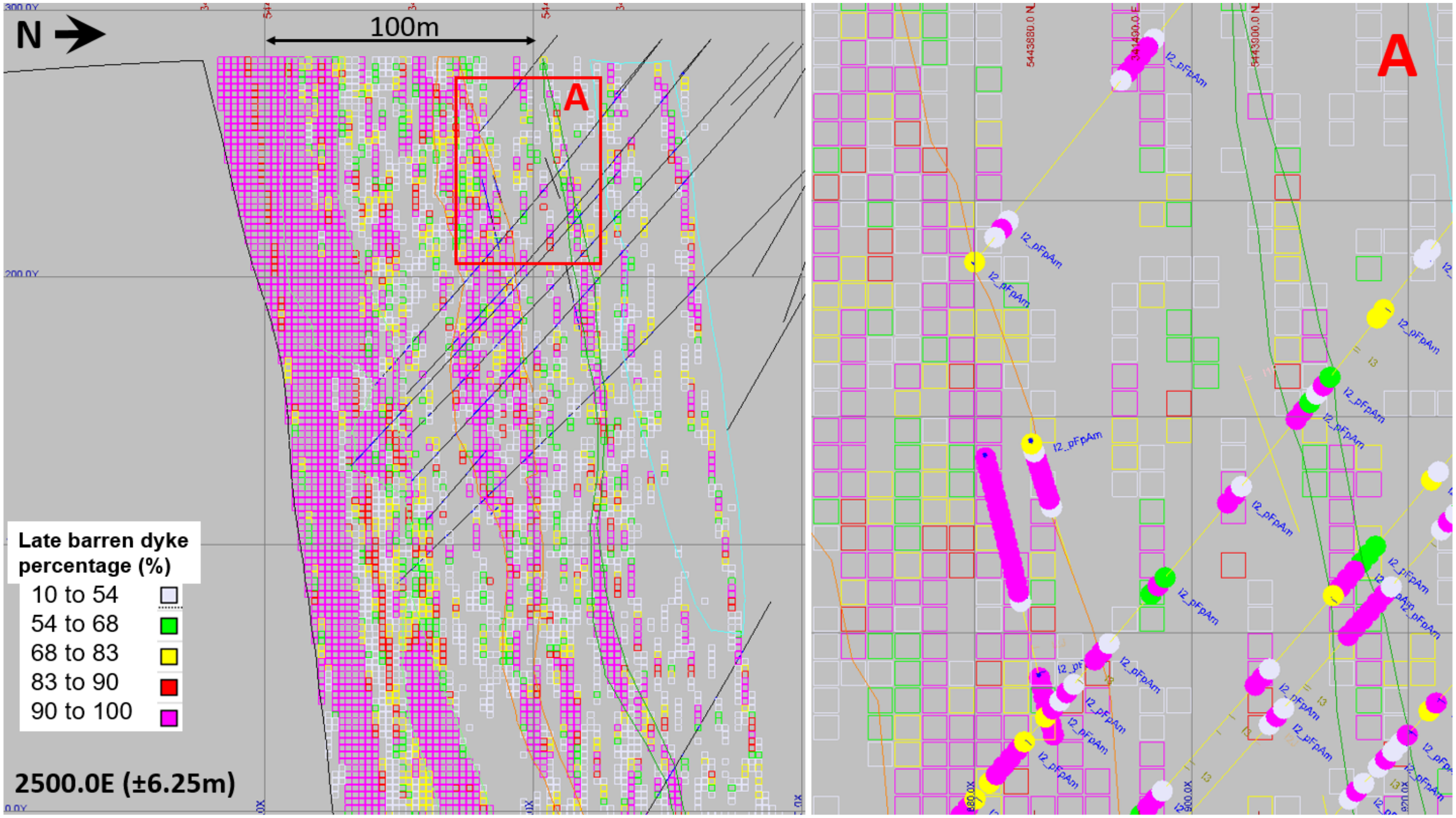

Figure 14.12 – Vertical cross-section illustrating dyke percentage interpolation based on dyke percentage (%) for each 1m composite. Drill hole information shows late barren dyke occurrences along traces (I2_pFpAm) and dyke composite percentages (coloured spheres). Only wireframes for dyke corridors (530, 540 to 545 and 550) are illustrated. The close-up view (A-right) illustrates the interpolation result compared to composites supporting it. Block sides are 2.5m long.

14.2.8 Dyke dilution model – Block model validation

14.2.8.1 Visual comparison

A visual comparison between the block model dyke percentage, the composite percentage and hole–to-hole continuity was conducted on sections (Fig. 14.13), on plans and in 3D. No significant smearing was observed during the comparison. InnovExplo is of the opinion that the interpolation results properly reflect the fact that late barren dykes sharply crosscut volcanic lithologies as observed on field outcrops and in drill holes (Fig. 14.13).

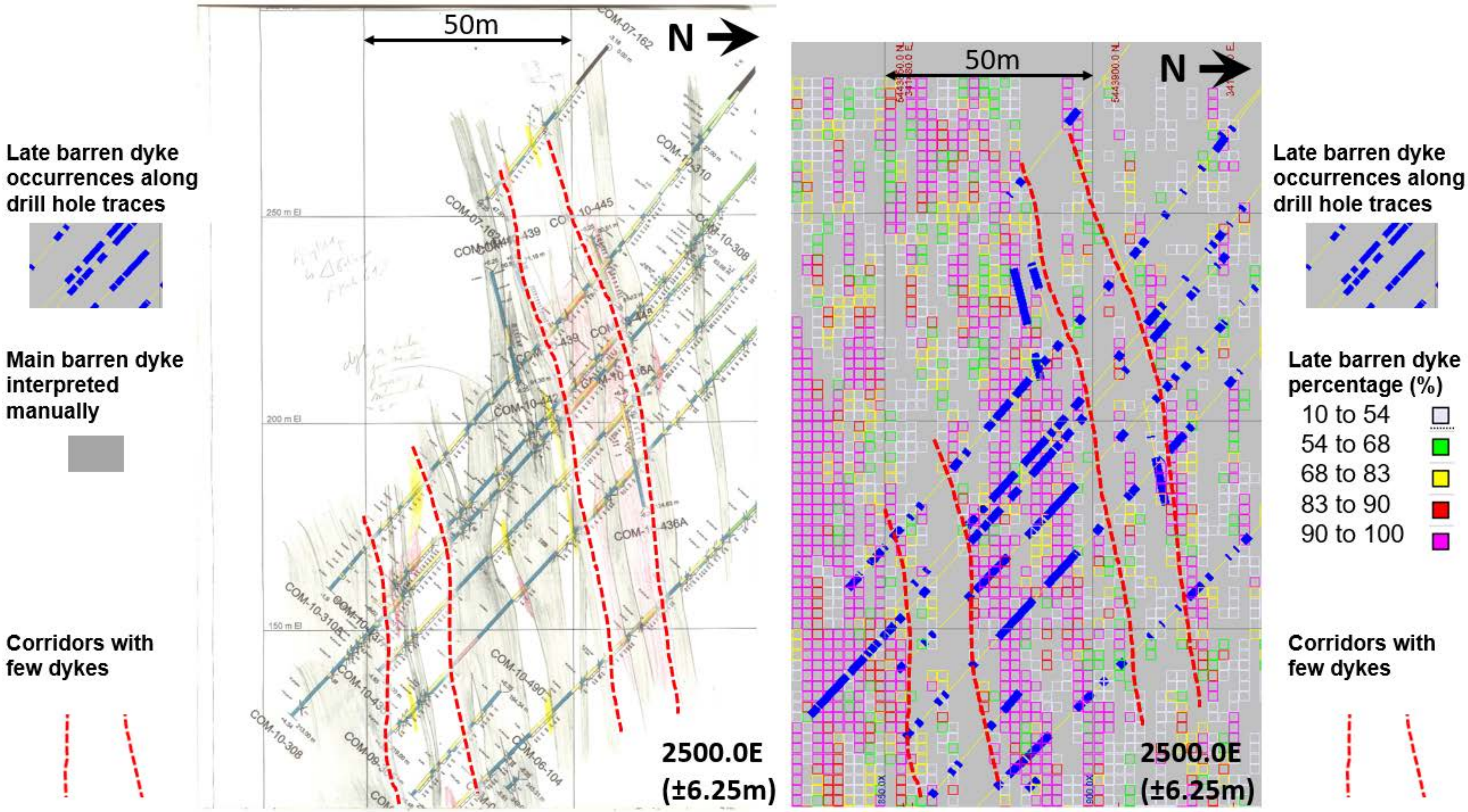

Figure 14.13 – Vertical cross-section illustrating the manual interpretation of the main late barren dyke swarms (left) and the 2018 dyke percentage interpolation (right). The 2018 interpolation properly reflects the dyke swarm distribution and prevents the smearing of dyke percentages in volcanic lithologies devoid of late barren dykes (illustrated by dashed red lines on both pictures). The drill hole information shows late barren dyke occurrences along the drill hole trace. Block sides are 2.5m long.

14.3 Final Consolidated Model

The final consolidated model (this section) is the last step of the 2018 MRE block modelling strategy. In this step, the grade model (section 14.1) is diluted at 0 g/t Au by the percentage of late barren dyke (section 14.2). The reader is reminded that late barren dykes were not considered when interpreting the mineralized zones. Intervals falling inside late barren dykes were not considered while compositing gold values. In order to assess such dykes in the mineral resource process, they were composited in a dyke-percentage block model and used to dilute the interpolated gold values.

The final grade resource estimation corresponds to interpolated gold values (see section 14.1) diluted by the dyke model percentage (see section 14.2) and weighted by the proportions of volcanic rock and late barren dyke for specific gravities.

14.3.1 Gold grade

For each block, the Au Cut OK final (g/t Au) is calculated by the following formula:

$$\text{AU Cut OK Final (g/t Au)} = \frac{\text{Au Cut OK (g/t Au)} \times \text{Volcanic rock proportion (\%)} \times \text{Volcanic rock S.G. (g/cm3)}}{\left(\text{Volcanic rock proportion (\%)} \times \text{Volcanic rock S.G. (g/cm3)}\right) + \left(\text{Late dyke proportion (\%)} \times \text{Late dyke S.G. (g/cm3)}\right)}$$

Figure 14.14 illustrates the effect of the application of dyke dilution weighted by specific gravities on the cut gold grade values.

14.3.2 Specific gravity

For each block, the final specific gravity value (g/cm^3) is calculated by the following formula:

$$\text{Final Specific Gravity (S.G.) value (g/cm3)} = \left(\text{Volcanic rock proportion (\%)} \times \text{Volcanic rock S.G. (g/cm3)}\right) + \left(\text{Late dyke proportion (\%)} \times \text{Late dyke S.G. (g/cm3)}\right)$$

Figure 14.15 illustrates the effect of the application of dyke dilution on default specific gravities.

14.3.3 Impact of dyke dilution

Application of dyke dilution causes an ounce content reduction of 30% at 0.0 g/t Au cut-off grade on the final cut gold grade. This effect is observed independently of the interpolation method used for the cut gold grade estimation. The authors are of the opinion that this impact properly reflects the effect of the late barren dyke on the volcanic rock volume.

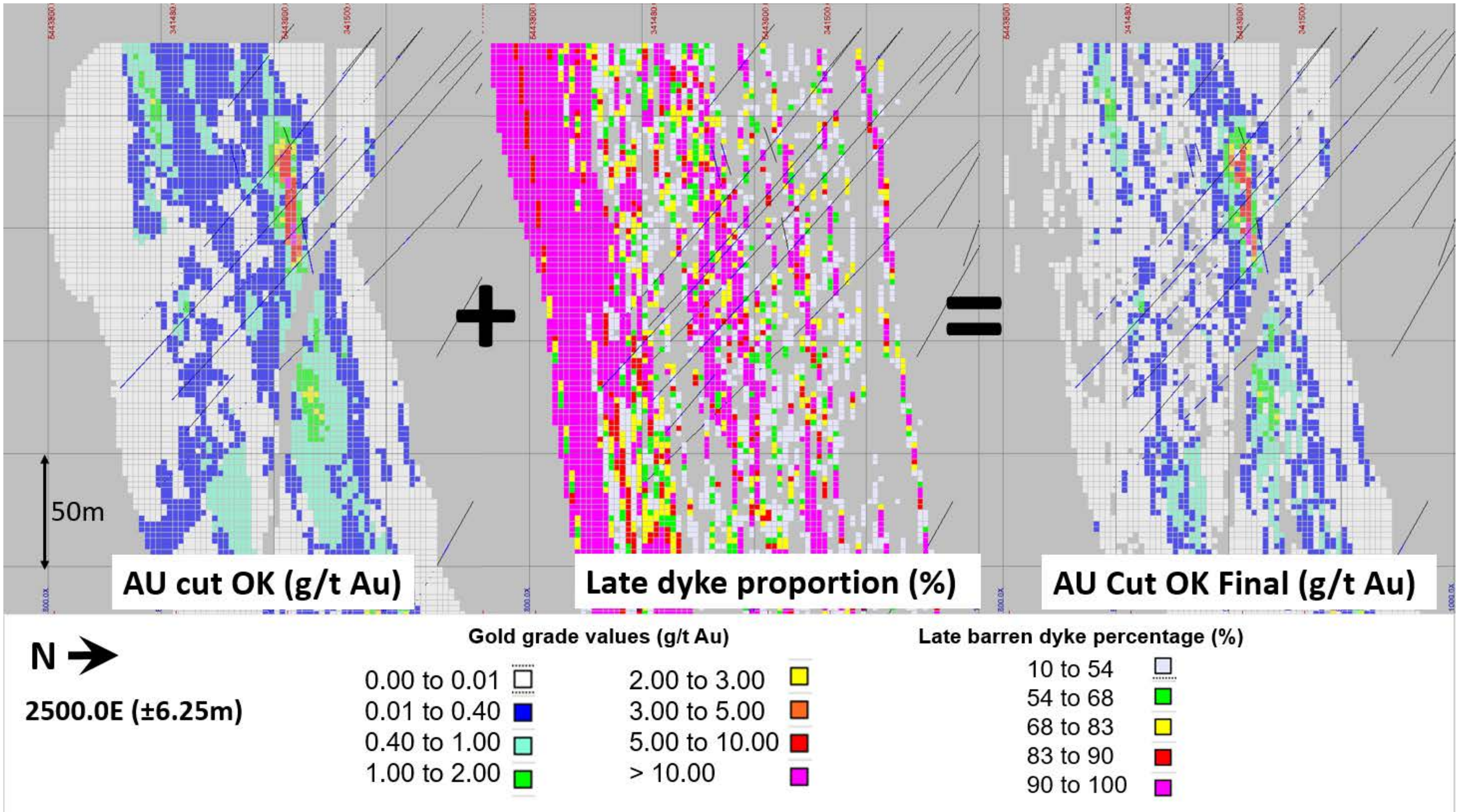

Figure 14.14 – Vertical cross-section illustrating cut gold grade model (left) where dyke dilution (middle) weighted by specific gravities is applied to obtain the final cut gold grade model (right). Block sides are 2.5 metres long.

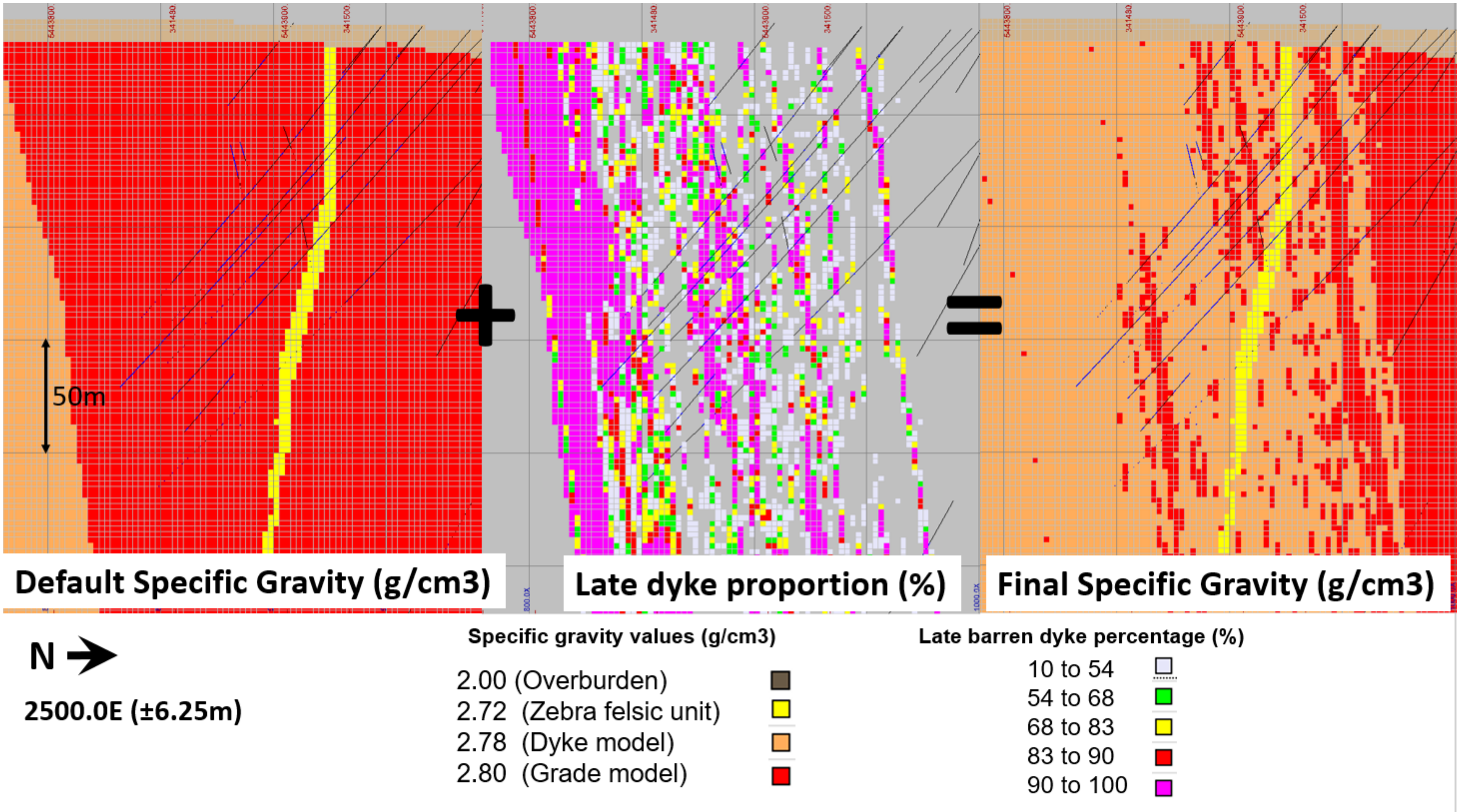

Figure 14.15 – Vertical cross-section illustrating default specific gravity values (left) where dyke dilution (middle) is applied to obtain the final specific gravity values (right). Block sides are 2.5 metres long.

14.4 Mineral Resource Definition and Classification

14.4.1 Definition

The resource classification definitions used for this report are those published by the Canadian Institute of Mining, Metallurgy and Petroleum in their document "*CIM Definition Standards for Mineral Resources and Reserves*".

Measured Mineral Resource: that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.

Geological evidence is derived from detailed and reliable exploration, sampling and testing, and is sufficient to confirm geological and grade or quality continuity between points of observation.

Indicated Mineral Resource: that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing, and is sufficient to assume geological and grade or quality continuity between points of observation.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Inferred Mineral Resource: that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

14.4.2 Classification

By default, interpolated blocks were assigned to geological potential for all blocks concerned by grade interpolation.

The reclassification to the Inferred category was established for blocks meeting all the following conditions:

- Blocks showing geological and grade continuity;
- Blocks within area with drill spacing of 100 metres or less;
- Blocks interpolated with a minimum of two drill holes.

Outline rings were created on longitudinal section views using the criteria described above to recode blocks accordingly.

14.5 Minimum Cut-off Grade

Mineral resources were compiled using a minimum cut-off grade of 3.00 g/t Au for an underground scenario.

Other cut-off grade results were also compiled for comparative purposes. The cut-off grade must be re-evaluated in light of future prevailing market conditions and other factors, such as gold price, exchange rate, mining method, related costs, etc.

The underground cut-off grade (UCoG) estimation used the parameters presented in Table 14.11.

Table 14.11 – Underground cut-off grade input parameters

Parameters	Value
Gold price (CAD/oz)	1679
Exchange rate	1.29
Selling cost (CAD/oz)	5.00
Mining cost (CAD/t mined)	80.00
G&A cost (CAD/t milled)	10.00
Metallurgic recovery	93%
Processing cost (CAD/t milled)	40.00
Transport cost (CAD/t milled)	18.00
Calculated cut-off grade (Au g/t)	**2.96**

1. The gold price and exchange rate represent the 1-year trading averages on February 12, 2018.
2. A selling cost of 5 CAD/t was considered, based on similar projects.
3. The mining and G&A costs are based similar projects.
4. The metallurgic recovery from the MRE 2012 was used.
5. The processing cost reflects the average owner-operation cost at a third-party milling facility.
6. The transport cost reflects ore transport to a third-party milling facility.

Using the parameters above, a UCoG of 2.96 g/t Au was calculated as follows:

$$UCoG = \frac{(\text{Mining cost}+\text{Processing cost}+\text{Transport cost}+\text{G\&A cost}) * 31.1035}{(Gold\ price - selling\ cost) * \text{Exchange rate} * \text{Mill recovery}\ \%}$$

The 2018 MRE uses a rounded value of 3.00 g/t Au for the UCoG.

14.6 Mineral Resource Estimate

Based on data density, search ellipse criteria, drill hole density and interpolation parameters, the 2018 Osborne-Bell Deposit Mineral Resource Estimate is categorized as Inferred resources totalling 2,587,000 tonnes at an average grade of 6.13 g/t Au for 510,000 ounces of gold. The 2018 MRE follows CIM Definition Standards.

The 2018 MRE is presented undiluted and in situ for an underground scenario at a cut-off grade of 3.00 g/t Au.

Table 14.12 displays the results of the 2018 MRE at the official 3.00 g/t Au cut-off. Table 14.13 breaks down the estimate by zone. Table 14.14 displays the official in-situ resource and sensitivity at other cut-off grades. The reader should be cautioned that the figures in Table 14.14 should not be misinterpreted as a mineral resource statement. Tonnage and grade estimates are reported at different cut-off grades only to demonstrate the sensitivity of the resource model to the selection of a reporting cut-off grade.

Figures 14.16 and 14.17 show the grade distribution of the Osborne-Bell deposit above the selected 3.00 g/t Au cut-off in 3D and longitudinal views.

Table 14.12 – 2018 Osborne-Bell Deposit Inferred Resource Estimate

Cut-off Grade	Tonnage	Au g/t	Ounces
> 3.00 g/t	2 587 000	6.13	510 000

Mineral Resource Estimate notes:

1. *The independent and qualified person for the mineral resource estimate, as defined by NI 43-101, is Pierre-Luc Richard, P.Geo. (InnovExplo), and the effective date of the estimate is March 2, 2018.*
2. *These mineral resources are not mineral reserves as they do not have demonstrated economic viability. The quantity and grade of reported Inferred resources in this Mineral Resource Estimate are uncertain in nature and there has been insufficient exploration to define these Inferred resources as Indicated or Measured, and it is uncertain if further exploration will result in upgrading them to these categories.*
3. *Resources are presented undiluted and in situ for an underground scenario and are considered to have reasonable prospects for economic extraction.*
4. *The estimate encompasses nine (9) gold-bearing zones each defined by individual wireframes with a minimum true thickness of 2 metres.*
5. *High-grade capping was done on composite data and established on a per zone basis for gold. It varies from 25 to 55 g/t.*
6. *Density values were applied on the following lithological basis (g/cm^3): volcanic rocks = 2.80; late barren dykes and Beehler stock = 2.78; Zebra felsic unit = 2.72.*
7. *Grade model resource estimation was evaluated from drill hole data using an Ordinary Kriging interpolation method on a block model using a block size of 2.5 metres x 2.5 metres x 2.5 m metres.*
8. *The estimate is reported at 3.00 g/t Au cut-off. The cut-off grade was calculated using the following parameters: mining cost = CAD80; processing cost = CAD40; G&A = CAD10; gold price = USD1,300/oz; CAD:USD exchange rate = 1.29 (1-year trailing average). The cut-off grade should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).*
9. *The mineral resource estimate presented herein is categorized as inferred mineral resource. The inferred mineral resource category is only defined within the areas where drill spacing is less than 100 metres and shows reasonable geological and grade continuity.*
10. *The mineral resource estimate was prepared using GEOVIA GEMS 6.8. The estimate is based on 931 surface diamond drill holes. A minimum true thickness of 2.0 metres was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.*
11. *Calculations used metric units (metres, tonnes, gram per tonne). Metal contents are presented in troy ounces (tonne x grade / 31.10348).*
12. *The number of metric tons was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding errors.*
13. *CIM definitions and guidelines for mineral resources have been followed.*
14. *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political or marketing issues, or any other relevant issue not reported in this Technical Report, that could materially affect the mineral resource estimate.*

Table 14.13 – 2018 Osborne-Bell Deposit Mineral Resource Estimate by zone

Cut-off Grade	Tonnage	Au_Cut	Ounces
1550	176 000	5.26	30 000
1651	303 000	4.83	47 000
1653	268 000	8.00	69 000
2650	323 000	7.52	78 000
2652	359 000	5.18	60 000
3551	310 000	5.63	56 000
3552	159 000	5.95	30 000
3652	278 000	7.75	69 000
3653	411 000	5.30	70 000

Table 14.14 – 2018 Osborne-Bell Deposit Mineral Resource Estimate cut-off sensitivity

Cut-off Grade	Tonnage	Au_Cut	Ounces
> 6.00 g/t	883 000	9.77	277 000
> 5.00 g/t	1 273 000	8.44	346 000
> 4.00 g/t	1 816 000	7.26	424 000
> 3.50 g/t	2 156 000	6.70	465 000
> 3.25 g/t	2 358 000	6.42	487 000
> 3.00 g/t	2 587 000	6.13	510 000
> 2.75 g/t	2 847 000	5.83	533 000
> 2.50 g/t	3 166 000	5.51	560 000

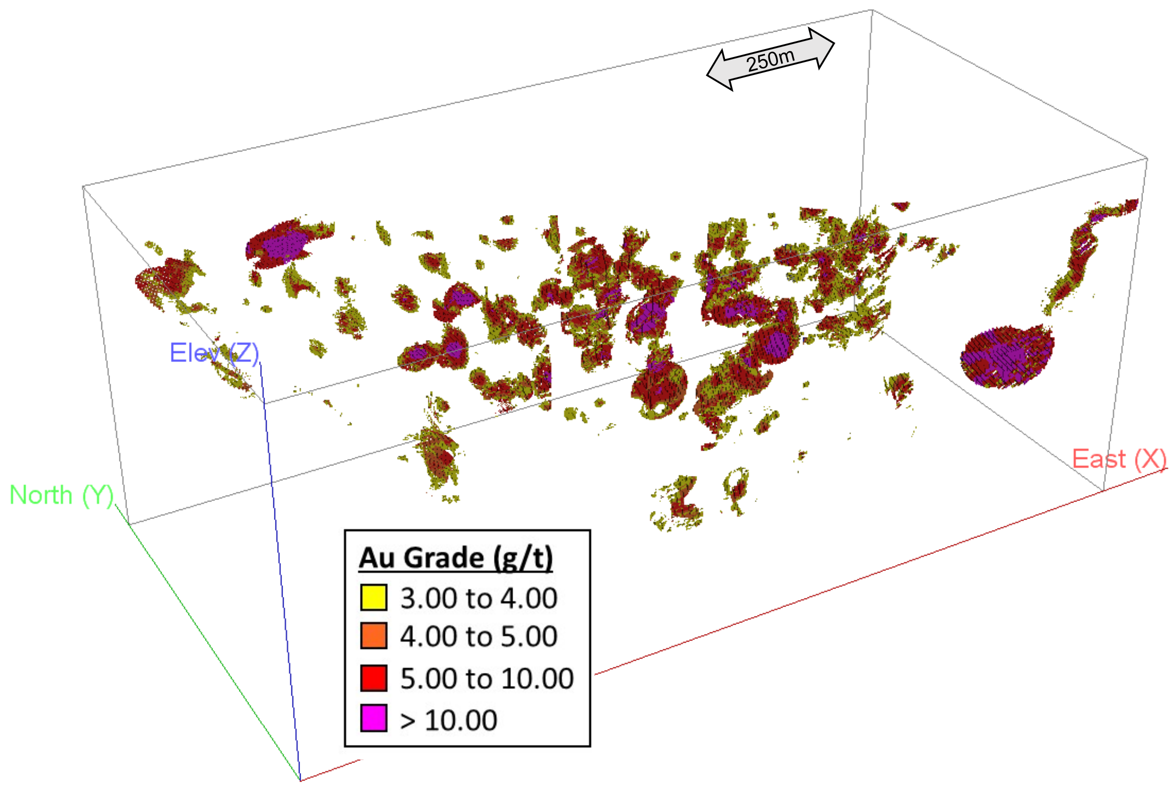

Figure 14.16 – Longitudinal view showing grade distribution above the selected 3.00 g/t Au cut-off grade

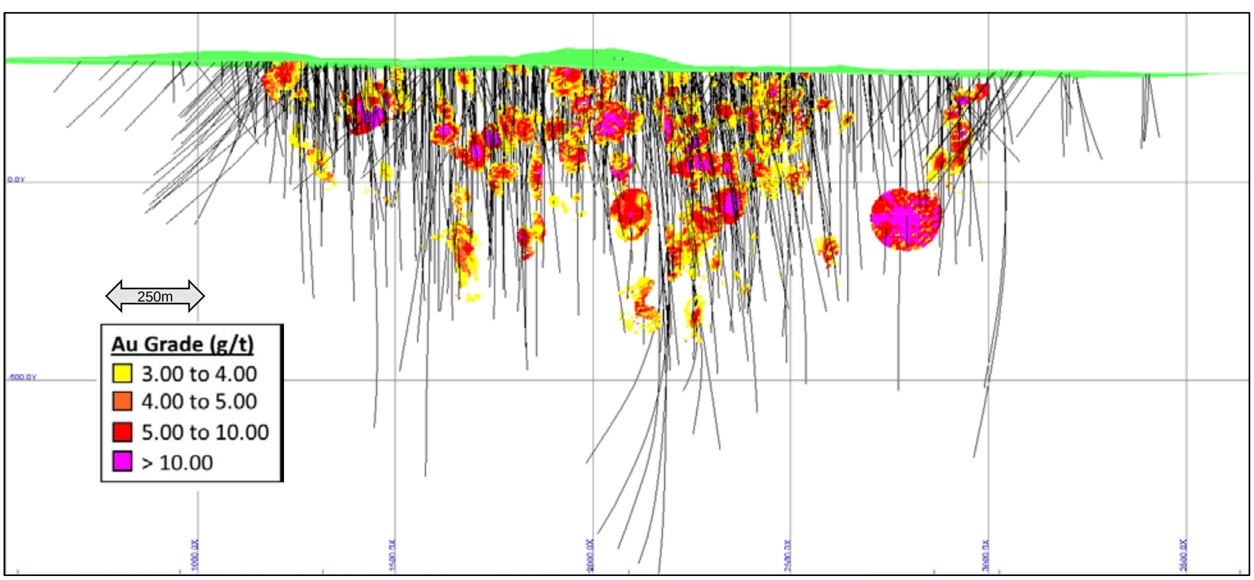

Figure 14.17 – Longitudinal view showing grade distribution above the selected 3.00 g/t Au cut-off grade (with drill holes)

14.7 Comparison to Previous Mineral Resource Estimates

The 2018 MRE is the fourth mineral resource estimate on the Osborne-Bell deposit since the implementation of NI 43-101. The aim of the discussion below is to examine the resource evolution from 2002 to 2018. The parameters and method developed for the comparison relates to grade modelling, the late barren dyke approach, and statistical and interpolation parameters. These are summarized in Table 14.15.

14.7.1 Grade modelling

Two main approaches were adopted to model the deposit. From 2002 to 2010, geological modelling was based on the interpretation of mineralized panels between main late barren dykes. This selective approach produced E-W mineralized panels subdivided into two main areas in 2002. In 2010, the strike of the mineralized zones was re-interpreted as ESE-WNW, subparallel to the felsic volcanic unit. This significant change allowed the Bell and Osborne deposits to be linked into the single mineralized trend (deposit). Eighteen mineralized zones were interpreted over the entire Osborne-Bell trend, of which the three most significant were spatially associated with the northern mafic-felsic contact. In 2012, broad zones were interpreted that merged mineralized panels and did not take into consideration the dykes. Also in 2012, two mineralized envelopes (Bell and Osborne) were digitized based on volcanic stratigraphy. In 2018, InnovExplo significantly reviewed the geological model and merged the mineralized envelopes into a single envelope based on additional drilling data. In addition, nine higher-grade subzones (“HG zones”) were delineated based on the zonation of several geological features identified on the Osborne-Bell deposit (see section 14.1.5).

14.7.2 Late barren dyke approach

Similar to the grade modelling, two main approaches were adopted for the late barren dykes. From 2002 to 2010, the interpretation isolated the dykes from the gold zones while creating 3D rings in sections and/or plans. Only narrow occurences were included in order to preserve the minimum true width (1.5 m in 2002 and 2.0 m in 2012). The 2012 and 2018 approach did not take into account the dykes when creating the mineralized zones, and instead interpolated the percentage of dykes (as 1 m composites) in a parallel Block Model Attribute and diluting the final gold interpolations with this attribute. In 2018, InnovExplo digitized eight late barren dyke corridors in order to constrain the risk of smearing as much as possible during the dyke percentage interpolation.

14.7.3 High-grade gold values

High-grade gold values (and locally some extreme gold values greater than 200 g/t Au) are commonly documented in the Osborne-Bell deposit. In most cases, high-grade gold values are associated with millimetric to centimetric sulphide veinlets (pyrite±chacopyrite±sphalerite). In other cases, high-grade gold values are associated with disseminated sulphides (pyrite). In most of the zones, disseminated pyrite seems to have better hole-to-hole geological continuity than the narrow sulphide veinlets. Geologically, the association of centimetric narrow sulphide-rich veinlets with very high-grade gold values warrants prudent judgment to avoid potential smearing. Currently, the Osborne (653) HG Zone seems to be the exception with better hole-to-hole continuity (with a higher capping value).

Capping thresholds were applied in 2002 (30 g/t Au), 2010 (65 g/t Au) and 2018 (ranging from 15 to 55, depending on the mineralized zone). The 2012 MRE used uncapped values based on the recommendations of a geostatistical study (D'Amours, 2012). In this study, InnovExplo reviewed this approach by constraining high-gold grade values into nine HG zones. The authors are of the opinion that high gold values should not be interpolated at the scale of the entire Osborne-Bell deposit. Also in 2018, final capping thresholds were determined using basic statistics for each mineralized zone. The consequence of the current approach is a lower grade, particularly where high-grade gold values are the most erratic.

14.7.4 Interpolation parameters

In 2002, the methodology was polygonal on longitudinal sections. InnovExplo is of the opinion that this methodology could have created a positive bias by smearing high-grade gold values (even if capped) due to the 50-metre drilling pattern at the time. In 2010, 2012 and 2018, Ordinary Kriging (OK) was used. The current variography study on each mineralized zone of the Osborne-Bell deposit yielded shorter search ellipsoid ranges than those used in 2010 and 2012. The consequence is a decrease in tonnage and ounces in areas where the drilling pattern is greater than 50 metres.

14.7.5 Classification

In 2002 and 2010, only Inferred Resources were defined due to the drilling pattern being more than 50 metres. In 2012, Indicated Resources were classified for the first time. They were defined in the Osborne mineralized zone for blocks with a calculated gold-value regression slope greater than 0.2. The 2018 MRE is categorized as Inferred Resources only; additional drilling is warranted to reduce drill spacing and prove the new model.

14.7.6 Conclusion

The Osborne-Bell deposit appears to be very sensitive to the modelling methodology, the approach to constrain high-grade gold values, and the drill spacing.

Table 14.15 – Osborne-Bell deposit mineral resource estimate evolution (2002-2018) – Datasets and interpretation

	Maiden 2002 MRE	2010 MRE	2012 MRE	2018 MRE
Overall DDH used	185	353	877	931
Open-pit potential DDH spacing	50m	50m	12.5 to 25m	N/A
Underground potential DDH spacing		300m	50 to 150m	50 to 150m
Overall channel samples used	7 over 1,169	Guide for interpretation only (n=1,355)	Guide for interpretation only (n= 1,355)	Guide for interpretation only (n=1,355)
Overall grab samples used	Not used (n=198)	Guide for interpretation only (n=217)	Guide for interpretation only (n=217)	Guide for interpretation only (n=217)
Capping strategy	Capped at 30 g/t Au (Raw assays)	Capped at 65 g/t Au (Raw assays)	Uncapped (Raw assays)	Capped from 25 to 55 g/t Au (Composites)
Specific gravity	2.90 g/cm3	2.82 g/cm3	2.80 g/cm3	2.72 to 2.80 g/cm3
Interpolation method	Polygonal	Ordinary Kriging	Ordinary Kriging	Ordinary Kriging
Interpreted Mineralized Zones approach	Defined between late barren dyke corridors.	Defined between late barren dyke corridors.	Interpretation based on stratigraphy of mineralized volcanic rocks and alteration footprint ignoring late barren dyke occurrences.	Interpretation based on stratigraphy of mineralized volcanic rocks, population of High-grade gold values and alteration footprint thresholds ingnoring late barren dyke occurrences.
Number of mineralized zones	6	18	-	-
Number of envelopes	-	1	2	1
Number of high-grade zones for Gold	Not defined	Not defined	Not defined	9
Late barren dyke approach	Mineralized zones are interpreted between main late barren dyke corridors.	Mineralized zones are interpreted between main late barren dyke corridors.	Grade interpolation (excluding late barren dyke intercepts) and late barren dykes are interpolated into two parallel block-models. The final grade model is diluted by late barren dyke percentage.	Same approach as the 2012 MRE but improved by the modelling of eight dyke corridors to better constrain interpolation.The final grade model is diluted by late barren dyke percentage and weighted by specific gravity proportions.
Resource Classification	Only Inferred resources were defined based on the drill spacing criteria.	Only Inferred resources were defined based on some uncertainties regarding the late dyke interpretation and because grade correlograms did not seem to be very robust.	Inferred resources were defined for all interpolated blocks during the creation of the grade block model. Indicated resources were defined according to the following criteria: Blocks inside the Osborne mineralized zone and blocks with a calculated regression slope of the gold values higher than 0.2.	The inferred mineral resource category is only defined within the areas where drill spacing is less than 100 metres and shows reasonable geological and grade continuity.
Resource categories	Inferred	Inferred	Indicated and Inferred	Inferred

15. MINERAL RESERVE ESTIMATES

Not applicable at this current stage.

16. MINING METHODS

Not applicable at the current stage.

17. RECOVERY METHODS

Not applicable at the current stage.

18. PROJECT INFRASTRUCTURE

Not applicable at the current stage.

19. MARKET STUDIES AND CONTRACTS

Not applicable at the current stage.

20. ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

In 2011 and 2012, Simon Thibault, M.Sc., a biologist from Roche Ltd, conducted an environmental baseline study ("EBS") on the Comtois Property for Maudore. The aim of the study was to refine the technical description of the project for its eventual use in an Environmental and Social Impact Assessment ("ESIA") pursuant to the *Environment Quality Act* (RSQ, c Q-2).

The EBS defined the reference state of the receiving environment before implementing the mining project. Field surveys conducted from July to October 2011 and in August 2012 provided the following:

- Characterization of local vegetation cover;
- Definition of soil, groundwater, surface water and sediment quality;
- Characterization of fish habitat and biodiversity;
- Characterization of benthic communities;
- Stream flow measurements; and
- Identification of project-related constraints and opportunities.

Detailed information about the EBS can be consulted in the 2012 technical report (Carrier et al., 2012).

No other significant environmental work has been undertaken on the Property since the publication of the EBS. Kevin Kivi, former Chief Geologist for Maudore, has confirmed through personal communication that the EBS report recommended proceeding with the ESIA, but nothing materialized as the company became focused on work related to its Sleeping Giant and Vezza acquisitions in 2013.

Subsequently, Gestion SDM was hired to manage the land and still acts in that regard.

In 2017, drilling permits were issued for Osisko to cut trails and erect drill pads on the Quévillon Property.

21. CAPITAL AND OPERATING COSTS

Not applicable at the current stage.

22. ECONOMIC ANALYSIS

Not applicable at the current stage.

23. ADJACENT PROPERTIES

According to the GESTIM database in February 2018, there are numerous mineral exploration properties in the region surrounding the Quévillon Property, of which two host mines (the active Langlois mine and the past-producing Sleeping Giant mine) and another two have had significant potential and recent exploration activity (the Mousseau Project and the Laflamme Property) (Fig. 23.1). The remainder of the tenements in the region principally consist of small land packages owned by junior exploration companies or local prospectors. Recent exploration on adjacent properties by competitor companies and independent prospectors has focused on gold and base metals.

The authors did not verify the information from the adjacent properties, and the information is not necessarily indicative of the mineralization on the Quévillon Property.

Nyrstar operates the underground zinc, copper and silver Langlois mine located between the Central and Northeastern blocks (Fig. 23.1). In August 2011, Langlois became the property of Nyrstar through the acquisition of Breakwater Resources Ltd (www.nyrstar.com). Production of concentrates in 2017 amounted to 34,500 t Zn, 2,100 t Cu, 553,000 oz Ag and 1,900 oz Au (Nyrstar press release, February 22, 2018). The total mineral reserves in 2016 were 1.9 Mt at 8.56% Zn, 0.65% Cu, 40.59 g/t Ag, and 0.06 g/t Au, measured and indicated mineral resources were 4.63 Mt at 9.29% Zn, 0.6% Cu, 41.99 g/t Ag and 0.07 g/t Au, and inferred mineral resources were 1.89 Mt at 6.51% Zn, 0.38% Cu, 34.35 g/t Ag and 0.08 g/t Au (Nyrstar press release of May 18, 2017). The Langlois base metal mineralization is interpreted as a VMS deposit.

Abcourt Mines Inc. owns the closed Sleeping Giant gold mine since its purchase in June 2016. The property is located half-way between Western and Central blocks and touch one Osisko claim (Fig. 23.1). In 2013, Verschelden and Jourdain (2013) estimated in a campliant 43-101 report that the Sleeping Giant deposit contained measured resources of 2,000 t grading 6.9 g/t Au (450 oz Au), indicated resources of 304,100 t grading 12.4 g/t Au (120,800 oz Au) and inferred resources of 41,700 t grading 12.4 g/t Au (16,700 oz Au).

Adjacent to the eastern boundary of the Central Block lies the Mousseau Project of Vior Inc. (vior.ca). This project is considered prospective given the historical mineral resource of 360,008 t at 3.22 g/t known as the Morono “M Zone” (cited in Simard, 1997) (Fig. 23.1).

This “resource” is historical in nature and should not be relied upon. It is unlikely it complies with NI 43-101 requirements or follows CIM Definition Standards, and it has not been verified to determine its relevance or reliability. It is included in this section for illustrative purposes only and should not be disclosed out of context. InnovExplo did not review the databases, key assumptions, parameters or methods used for this estimate.

Gold mineralization at the Morono M Zone is associated with shear zones parallel to the NW-SE-trending stratigraphy at the nearby contact between the intrusive rocks of the Wilson Pluton and the volcanics of the Quévillon Group to the south. The mineralization occurs in quartz-sericite schists with disseminated pyrite and minor chalcopyrite along a continuous shear zone 950 metres long by 5 to 15 metres thick. Visible gold has been noted with pyrite (Simard, 1997). All historical drill holes on the Morono M Zone have cut across the shear. The zone remains open at depth, with the deepest mineralized drill intercept at 270 metres (4.42 g/t Au over 5.84 m true width, hole M4-88). Gold mineralization can be traced over a strike length of 3 kilometres to the northwest through the adjacent Verneuil Property of SOQUEM Inc., which is surrounded by the Quévillon Property.

The Laflamme Property, held by the joint venture between Midland Exploration Inc. ("Midland") and Aurbec Mines Inc. ("Aurbec") is of interest for its significant Ni-Cu-PGE±Au and Au drill intercepts (www.midlandexploration.com). Midland believes it has identified a new ultramafic sill complex directly north of the Quévillon Property on strike with the NNE-trending volcanic sequence of the Hudson Zone. Significant intercepts were discovered on the Laflamme Property between 2011 and 2016, and the following highlights were published in various press releases:

2011:

- LA-11-08 intersected 1.55% Ni, 0.53% Cu, 0.26 g/t Pt, 0.28 g/t Pd, 0.13 g/t Au and 1.9 g/t Ag over 1.6 m.
- LA-11-11 intersected 9.7 g/t Au over 1.0 m.

2013:

- LAF-13-21 tested a VTEM-type conductor and intersected two new gold-bearing structures grading 0.34 g/t Au over 25.56 m, including 3.12 g/t Au over 1.50 m and 1.95 g/t Au over 1.25 m

2014:

- LAF-14-30 intersected 3.70 g/t Au over 2.29 m, including 4.43 g/t Au over 1.74 m.

2016

- LAF-16-38 intersected a new Ni-Cu-PGE zone, called Copernick, with disseminated, locally semi-massive and net-textured mineralization grading 0.45% Ni, 0.35% Cu, 0.15 g/t Pt and 0.24 g/t Pd over 42.60 m, including 1.11% Ni, 0.47% Cu, 0.21 g/t Pt and 0.79 g/t Pd over 3.50 m, and 0.44% Ni, 0.88% Cu, 0.21 g/t Pt and 0.27 g/t Pd over 4.05 m.

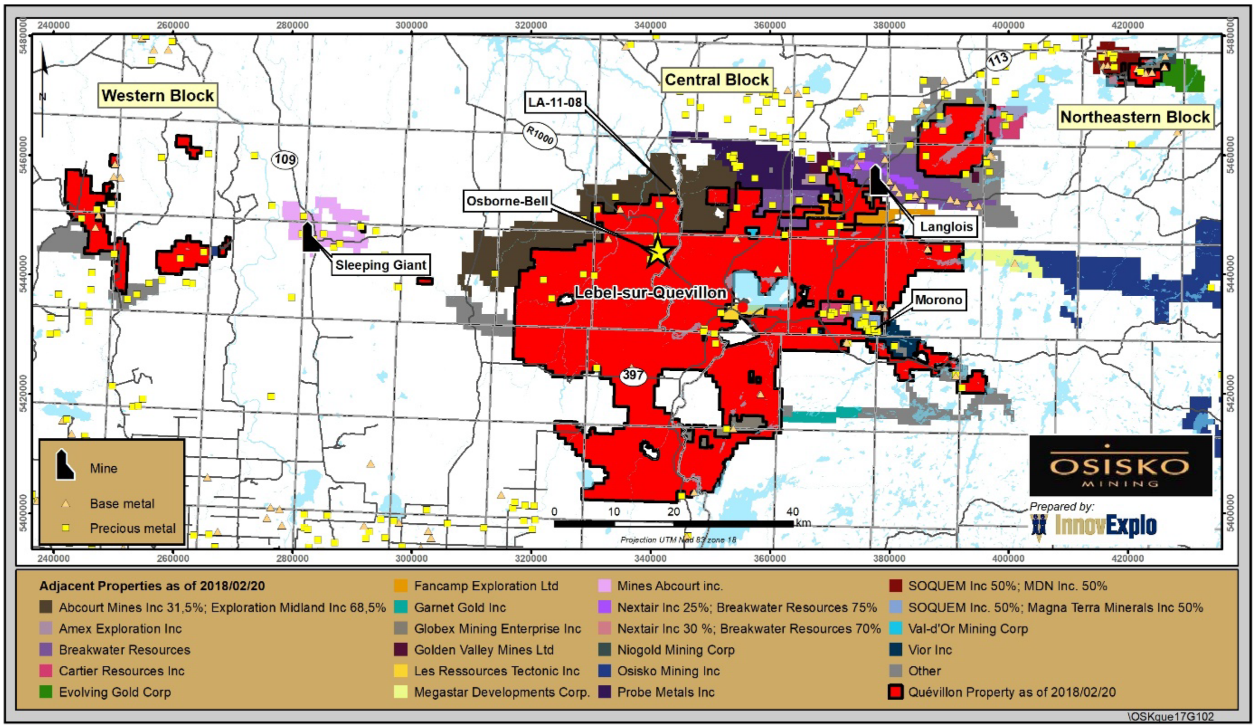

Figure 23.1 – Properties and mineralization in the vicinity of the Quévillon Property as of February 2018.

24. OTHER RELEVANT DATA AND INFORMATION

All relevant data and information regarding the issuer's Property have been disclosed under the relevant sections of this report.

25. INTERPRETATION AND CONCLUSIONS

The objective of InnovExplo's mandate was to produce a mineral resource estimate for the Osborne-Bell gold deposit and a supporting NI 43-101 Technical Report. This report and the 2018 MRE herein meet this objective.

The mineral resource estimation parameters and geological interpretation for the Osborne-Bell deposit were established by InnovExplo. Previously published information on metallurgical testing was reviewed.

25.1 2018 Osborne-Bell Mineral Resource Estimate

The 2018 Osborne-Bell Mineral Resource Estimate (the "2018 MRE") was prepared by Pierre-Luc Richard, P.Geo., using all available information. It is different in many respects to the previous estimate of Carrier et al. (2012) (the "2012 MRE"). Changes were made to the approaches and assumptions of 2012, most notably to the mineralized domain interpretation, the capping assumptions, the grade interpolation strategy, and the approach to creating a late barren dyke dilution model. In addition, the gold price, project costs and exchange rate assumptions were revised to reflect 2018 market conditions.

The resource area measures 1,800 metres along strike, up to 400 metres wide, and 750 metres deep. The estimate was based on a compilation of historical and recent diamond drill holes. Wireframed mineralized zones were built by InnovExplo.

The mineral resources in the 2018 MRE are not mineral reserves as they do not have demonstrated economic viability. The estimate is categorized as Inferred Resources based on data density, search ellipse criteria, drill hole density and specific interpolation parameters. The effective date of the estimate is March 2, 2018 based on the compilation status and cut-off grade parameters.

InnovExplo considers the 2018 MRE to be reliable and based on quality data, reasonable hypotheses and parameters that follow CIM Definition Standards.

After completing the MRE and a detailed review of all pertinent information, InnovExplo concluded the following:

- Geological and grade continuity have been demonstrated for nine (9) gold-bearing zones in the Osborne-Bell deposit;
- Using a lower cut-off grade of 3.00 g/t Au, the Inferred Resources amount to 2,587,000 tonnes at an average grade of 6.13 g/t Au for 510,000 ounces of gold.
- No Indicated Resources have been defined in the 2018 MRE.
- It is likely that additional diamond drilling would upgrade some of the Inferred Resources to Indicated Resources.
- It is likely that additional diamond drilling would identify more resources down-plunge or in the vicinity of known ore-shoots.

The Osborne-Bell deposit appears to be very sensitive to modelling methodology, capping strategy, the approach to constrain high-grade gold values, and drill spacing.

The revised modelling strategy and parameters for the 2018 MRE resulted in significantly lower tonnage, grade and ounces compared to the 2012 MRE.

25.2 Exploration Potential

Following a detailed review of all pertinent information, including the MRE, InnovExplo concluded the following:

- The highest potential for adding additional resources to the Osborne-Bell deposit is by drilling the depth extension of the currently identified shoots that originate in the resource area;
- The potential is high for adding additional resources to the Osborne-Bell deposit by drilling the depth extension of subparallel mineralized zones in the vicinity of the currently identified zones;
- In light of recent and historical drilling data, the areas between the Osborne-Bell deposit and the Greer and Hudson showings should be reinterpreted in terms of stratigraphy and their potential for new mineralized zones; and
- The exploration potential remains high at the property scale, justifying compilation and target generation programs. The Quévillon Property hosts several other mineral occurrences: Greer, Cooper, Hudson and Comtois NW for gold; KC-86-2 for base metals; and numerous semi-massive to massive lenses of barren sulphides (potential for new discoveries). The winter 2012 drilling program at Comtois NW demonstrated the area's potential by confirming a new gold discovery 12 km northwest of the known Osborne-Bell resource area.

25.3 Risks and Opportunities

Table 25.1 identifies the significant internal risks, potential impacts and possible risk mitigation measures that could affect the future economic outcome of the project. The list does not include the external risks that apply to all mining projects (e.g., changes in metal prices, exchange rates, availability of investment capital, change in government regulations, etc.). Significant opportunities that could improve the economics, timing and permitting are identified in Table 25.2. Further information and study is required before these opportunities can be included in the project economics.

Table 25.1 – Risks for the Osborne-Bell Deposit

Risk	Potential Impact	Possible Risk Mitigation
Metallurgical recoveries are based on limited testwork	Recovery might be lower than what is currently being assumed	Conduct additional metallurgical tests
Potentially poor social acceptability	Social acceptability is an inherent risk for all mining projects. This could potentially impact permitting and the Project's development schedule.	Develop a pro-active and transparent strategy to identify all stakeholders and develop a communication plan. Organize information sessions, publish information on the activities on the Property, and meet with host communities.

Table 25.2 – Opportunities for the Osborne-Bell Deposit

Opportunities	Explanation	Potential Benefit
Potential for high-grade shoots inside current higher-grade subzones	Geological interpretation could still be challenged and revised, which could potentially lead to the delineation of additional high-grade shoots.	Potentially better understanding of mineralization and higher confidence in geological and grade continuities.
Exploration potential	Potential for additional discoveries at depth and around the Osborne-Bell deposit by drilling.	Potential to increase resources.
Potential improvement in metallurgical recoveries	Additional metallurgical testwork can be performed to determine if recovery can be improved through flotation or cyanidation.	Would alleviate the need to achieve a finer grind to maintain metallurgical performance (OPEX and CAPEX reduction).

26. RECOMMENDATIONS

Based on the results of the 2018 MRE, InnovExplo recommends additional exploration/delineation drilling and further geological interpretation to gain a better understanding of the deposit before updating the current mineral resource estimate.

Phase 1

In Phase 1, InnovExplo recommends addressing the following technical aspects of the project:

Delineation drilling on the Osborne-Bell deposit

The objective of the delineation drilling would be to continue investigating untested gold targets along the entire Osborne-Bell trend and any potential lateral and depth extensions. InnovExplo recommends prioritizing deep delineation drilling to detect higher-grade subzones. Positive results would potentially add Inferred resources. Approximately 10,000 metres should be dedicated to this purpose.

Exploration drilling

Several targets (structures, geochemical anomalies, IP anomalies and EM conductors) remain untested in the immediate area of the Osborne-Bell deposit and over the entire Comtois Property. Exploration drilling on identified targets can potentially add new resources. Approximately 32,000 metres should be dedicated as follows: 10,000 metres on Comtois NW, 9,000 metres on Hudson, 4,000 metres on Mafic North, 1,500 metres on the Comtois-Hudson Trend, 1,750 metres on Greer, 500 metres on Cooper, and 5,250 metres on additional isolated targets.

Phase 2

In Phase 2, InnovExplo recommends addressing the following technical aspects of the Project (contingent upon the success of Phase 1).

Update of litho-structural/mineralization models on Osborne-Bell deposit

Depending on the conclusions of the geological study in the test area proposed in Phase 1, InnovExplo recommends updating the litho-structural and mineralization models at the scale of the Osborne-Bell deposit.

Metallurgical tests

The tests should include a mineralogical evaluation of gold mineralization, standard characterization tests (head analysis, comminution and basic environmental testing), gold recovery by gravity separation, flotation and cyanidation of gold mineralization, and an evaluation of the gravity tailings and flotation concentrate. InnovExplo recommends conducting these additional tests in selected areas deriving from the update of the litho-structural/mineralization models.

Engineering studies

InnovExplo recommends engineering studies, such as rock mechanics, on currently available drill core and new geotechnical drill core (approximately 5 holes). Such studies should provide sufficient information to address open pit slope angles (if applicable) as well as stope and pillar dimensions.

Additional exploration drilling

Assuming a positive outcome for the Phase 1 Exploration drilling program, a provision of approximately 40,000 metres of delineation drilling should be considered. The objective would be to continue investigating any potential lateral and depth extensions of identified ore zones.

NI 43-101 MRE update on the Osborne-Bell deposit and PEA

InnovExplo recommends updating the MRE after completing the drilling program, the update to the litho-structural/mineralization models, and the engineering studies. This update should be used in the preparation of a PEA.

Maiden NI 43-101 MRE on the Hudson Zone

InnovExplo recommends initiating a mineral resource estimate on the Hudson Zone, and on any other deposit on the Quévillon Property that reaches a stage warranting resource estimation.

Cost estimate for recommended programs

InnovExplo has prepared a cost estimate for the recommended exploration program. Items from Phase 2 of the proposed work plan are contingent upon the success of Phase 1. The estimated cost for Phase 1, which would include the consideration of the technical abovementioned recommendations, is approximately $5,796,000 (including 15% for contingencies). The estimated cost for Phase 2 is approximately $6,411,250 (including 15% for contingencies). The grand total is $12,207,250 (including 15% for contingencies).

InnovExplo is of the opinion that the recommended work program and proposed expenditures are appropriate and well thought out. InnovExplo believes that the proposed budget reasonably reflects the type and scope of the contemplated activities. Table 26.1 presents the estimated costs for the various phases of the recommended exploration program.

Table 26.1 – Estimated costs for the recommended work program

	Phase 1 - Work Program	Budget	
		Description	Cost (CAD)
1a	Delineation drilling on Osborne-Bell deposit	10,000 m	$ 1,200,000
1b	Exploration drilling	32,000 m	$ 3,840,000
	Contingencies (~ 15%)		$ 756,000
	Phase 1 subtotal		**$ 5,796,000**

	Phase 2 - Work Program	Budget	
		Description	Cost (CAD)
2a	Update of litho-structural/mineralization models		$ 50,000
2b	Metallurgical tests		$ 250,000
2c	Engineering studies	1,000m	$ 250,000
2d	Additional exploration drilling	40,000 m	$ 4,800,000
2e	*Mineral Resource Estimate update on the Osborne-Bell deposit*		$ 125,000
2f	NI 43-101 Mineral Resource Estimate on the Hudson Zone		$ 100,000
	Contingencies (~ 15%)		$ 836,250
	Phase 1 subtotal		**$ 6,411,250**

TOTAL (Phase 1 and Phase 2) **$ 12,207,250**

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RP 122
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APPENDIX I – LIST OF QUÉVILLON PROPERTY MINING TITLES

APPENDIX II – CRM CHARTS (FROM ROCKLABS) BASED ON MAUDORE'S ASSAY RESULTS RECEIVED AFTER AUGUST 13, 2012

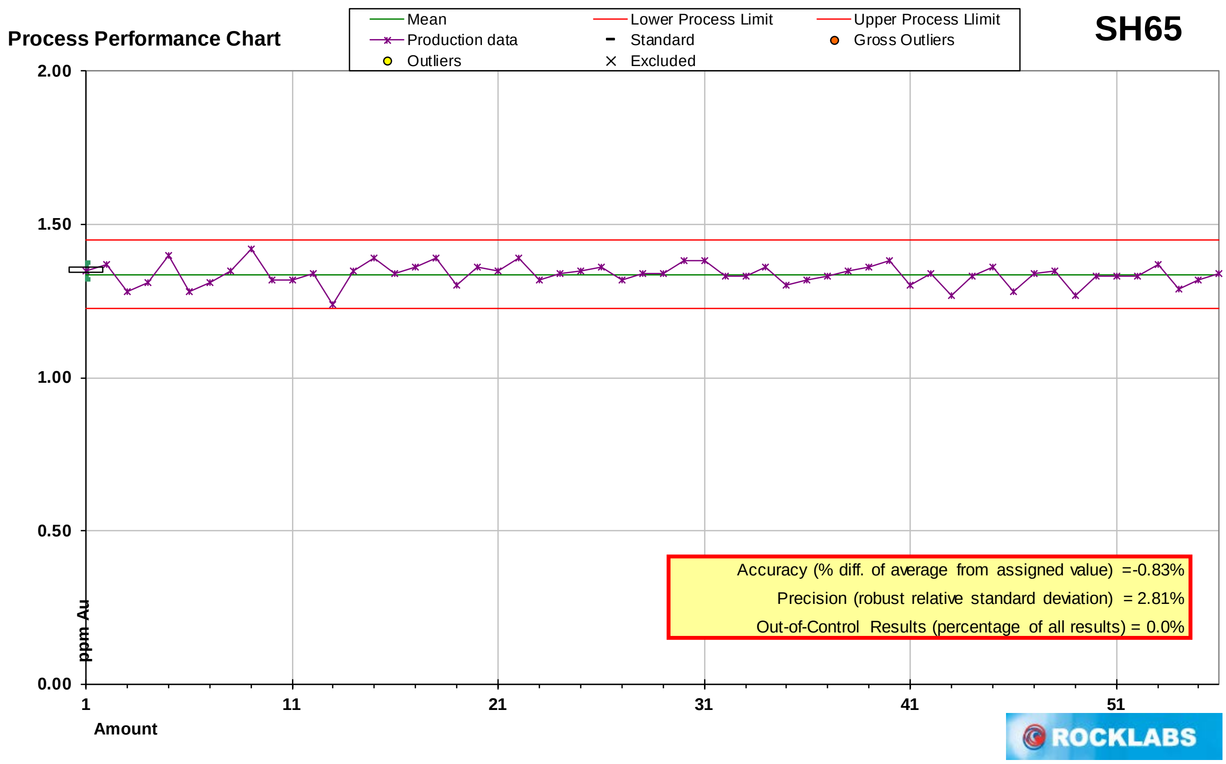
- SH65 with a theoretical value of 1.348 g/t Au

  AAS finish (RockLabs chart)
- SK62 with a theoretical value of 4.075 g/t Au

  AAS finish (RockLabs chart) and gravimetric finish (RockLabs chart)
- SQ48 with a theoretical value of 30.250 g/t Au

  AAS finish (RockLabs chart) and gravimetric finish (RockLabs lab chart)

- **SH65 with a theoretical value of 1.348 g/t Au**

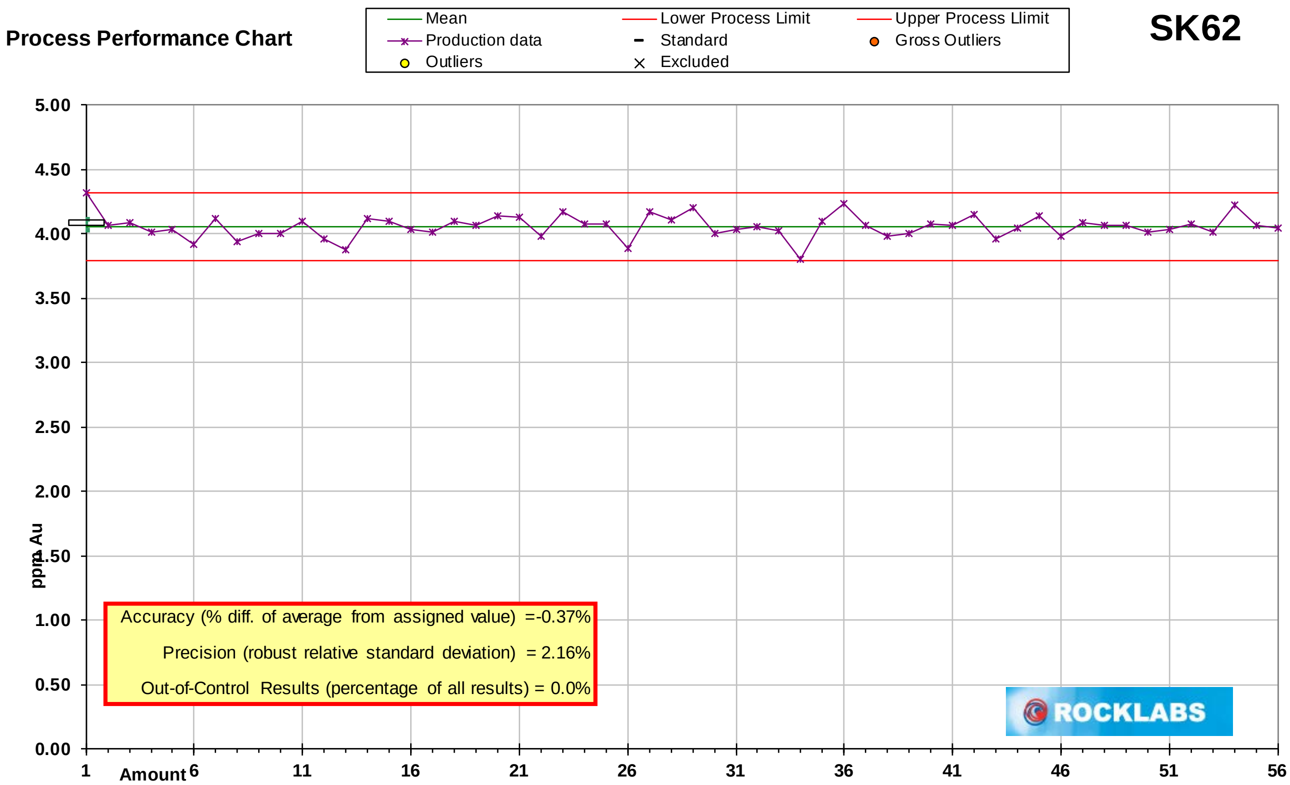


Results of standard SH65 using AAS finish

The green line indicates the RockLabs average grade for SH65 and the two red lines indicate ±10% of the expected grade (±0.1348 g/t Au). Fifty-six (56) SH65 standards were inserted among the final samples batch completing the 2012 Maudore drilling program and analyzed by AAS.

All SH65 assays with AAS finish passed InnovExplo's quality control as all of the samples values plotted within ±3SD.

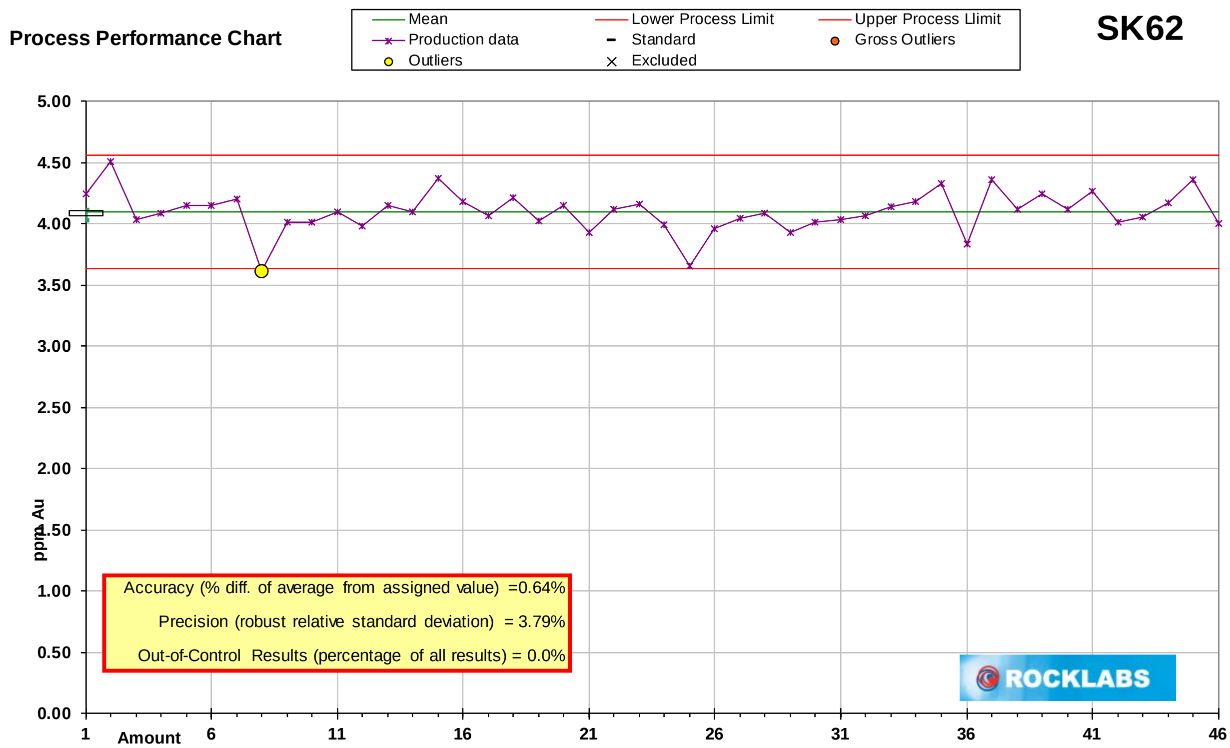
➢ SK62 with a theoretical value of 4.075 g/t Au



Results of standard SK62 using AAS finish

The green line indicates the RockLabs average grade for SK62 and the two red lines indicate ±3SD. Fifty-six (56) SK62 standards were inserted among the samples received after the close-out date for the 2012 MRE resource database (August 13, 2012) and analyzed by AAS. No outlier results fell outside the process limits.

All SK62 assays with AAS finish passed InnovExplo's quality control as all of the sample values plotted within ±3SD.

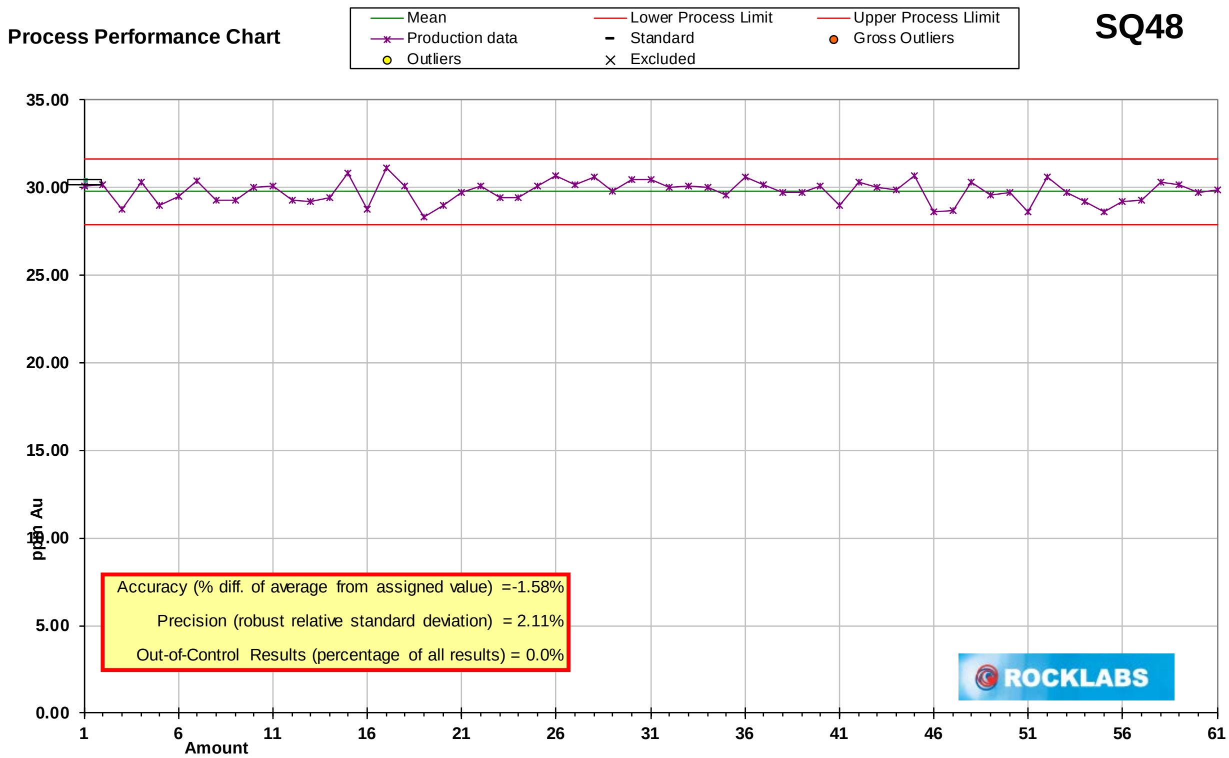


Results of standard SK62 using gravimetric finish

The green line indicates the RockLabs average grade for SK62 and the two red lines indicate ±3SD. Forty-six (46) SK62 standards were analyzed by gravimetry. No gross outliers were noted and one value fell outside the process limits.

InnovExplo judge that the quality control for the batch of samples controlled by this standard is adequate.

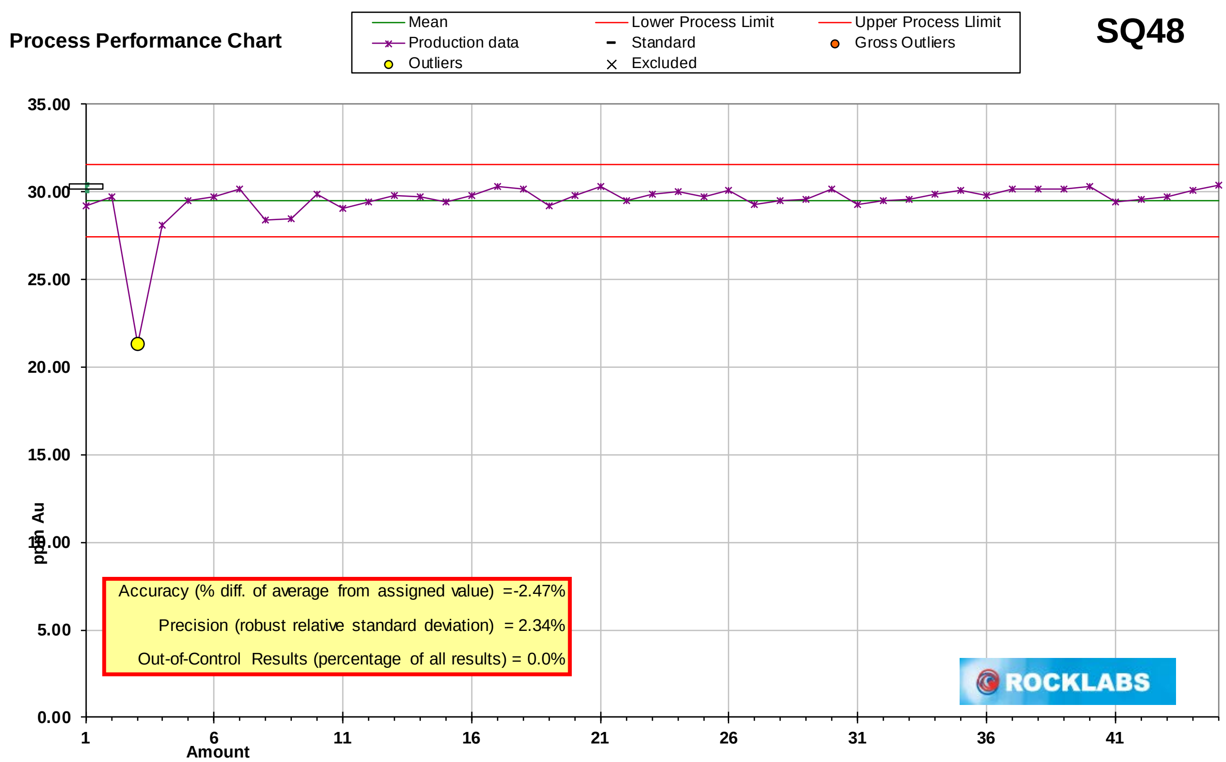
- **SQ48 with a theoretical value of 30.250 g/t Au**



Results of standard SQ48 using AAS finish

The green line indicates the RockLabs average grade for SQ48 and the two red lines indicate ±3SD. Sixty one (61) SQ48 standards were inserted among the samples received after the close-out date for the 2012 MRE resource database (August 13, 2012) and analyzed by AAS.

All SQ48 assays with AAS finish passed InnovExplo's quality control.



Results of standard SQ48 using gravimetric finish

The green line indicates the RockLabs average grade for SQ48 and the two red lines indicate ±3SD. Forty-five (45) SQ48 standards were analyzed by gravimetry. Only one outlier results fell outside the process limits.

The outlier is from batches without significant gold grades, therefore re-analysis was not deemed necessary.

All SQ48 assays with gravimetric finish passed InnovExplo’s quality control.