SNOWDEN

Messina Minerals Inc.: Tulks South Property, Central Newfoundland, Canada

Technical Report
August 2007

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Tables

Figures

Appendices

1 Summary

This Technical Report refers to the Tulks South Property, a mineral project located in central Newfoundland, Canada. The Tulks South Property is operated by Messina Minerals Inc. (Messina), a Canadian company listed on the TSX Venture Exchange.

The Tulks South Property is located in the Buchans-Victoria Lake area in the Central Mobile Belt of the Dunnage tectonostratigraphic zone of the Appalachian Belt. The Dunnage tectonostratigraphic zone comprises ophiolitic island arc and back arc rocks. The Buchans-Victoria Lake area is host to numerous polymetallic (Zn-Pb-Cu-Au-Ag) volcanogenic massive sulphide deposits; including the historic Buchans area polymetallic deposits and the recently producing Duck Pond copper-zinc mine.

The Tulks South Property was the subject of a previous Technical Report by Dearin (2006). This current Technical Report dated August 2007, is intended to disclose recently updated Mineral Resources at the Boomerang and Domino deposits, and exploration results at the Tulks East B Zone and the Hurricane Zone. The Property also includes historic zinc resources at the Tulks East A Zone, Tulks East B Zone, Skidder, and Long Lake Main Zones. Since the previous Technical Report, Messina has undertaken additional Mineral Resource delineation drilling, Mineral Resource estimations, exploration drilling, metallurgical test work, and environmental base line studies on the Property.

At a 1% Zn cut-off grade, Indicated Mineral Resources at Boomerang are reported as 1.4 Mt at 7.1% Zn, 3.0% Pb, 0.5% Cu, 110.4 g/t Ag, and 1.7 g/t Au. Inferred Mineral Resources at Boomerang are reported as 278 kt at 6.7% Zn, 2.9% Pb, 0.4% Cu, 96.5 g/t Ag, and 1.3 g/t Au at the same cut-off grade.

At Domino, adjacent to the Boomerang deposit, Inferred Mineral Resources at a 1% Zn cut-off grade are reported as 411 kt at 6.3% Zn, 2.8% Pb, 0.4% Cu, 94 g/t Ag, and 0.6 g/t Au.

2 Introduction

This Technical Report has been prepared for Messina Minerals Inc. (Messina) by Snowden Mining Industry Consultants Inc. (Snowden), in compliance with the disclosure requirements of the Canadian National Instrument 43-101 (NI43-101), to disclose relevant information about the Tulks South Property. This information has resulted from additional Mineral Resource delineation drilling, Mineral Resource estimations, exploration drilling, metallurgical test work, and environmental base line studies since the previous Technical Report (Dearin, 2006) on the Property filed in June, 2006 (Previous Technical Report). The reader is referred to the Previous Technical Report for detailed historical and background information.

The Tulks South Property is a mineral project located in central Newfoundland, Canada. The Property is operated by Messina, a Canadian company listed on the TSX Venture Exchange.

This Technical Report has been compiled from sources cited in the text by Ms. Pamela De Mark, MAusIMM, Senior Consultant with Snowden, and by Mr. Charles Dearin, P. Geo., President of FORTIS. Ms De Mark and Mr. Dearin are Qualified Persons as defined by NI43-101. Mr. Dearin visited the Tulks South Project site on 9 July and 10 July, 2007. The responsibilities of each author are provided in Table 2.1.

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Table 2.1 Responsibilities of each co-author

Author	Responsible for sections
Ms. De Mark	1, 2, 3, 10.9.1, 13.2.4, 15.5, 16, 17, 19, 20, 21
Mr. Dearin	All other sections

Unless otherwise stated, all currencies are expressed in Canadian dollars ($).

3 Reliance on other experts

There has been no reliance on experts who are not Qualified Persons in the preparation of this report.

4 Property description and location

The information in this section has been excerpted from Dearin (2006).

4.1 Tulks South Property location

The Tulks South Property is located in central Newfoundland, Canada, at approximately 473,400E, 5,364,000N, UTM Grid Zone 21, NAD 27. The Property is approximately 38 km south-southwest of the town of Buchans and 49 km southwest of Millertown (Figure 4.1). Both towns are located on a paved highway (Route 370) 55 km and 40 km, respectively, west from the town of Badger. Badger is located on the Trans-Canada Highway and is approximately 120 km west of Gander and 420 km west of St. John's, the provincial capital.

4.2 Claims, title, and tenure

The Property covers 17,635 hectares in one contiguous area approximately 32 km long by 6 km wide, on NTS (claims) maps 12A/06 and 11. The Property consists of 414 claims (10,350 hectares) comprised of two contiguous Map Staked Licenses (11924 M and 11925M) and one Fee Simple Mining Grant or mineral concession, Reid Lot 228 (7,285 hectares) in one contiguous block of ground totalling 17,635 hectares (Figure 4.2). Reid Lot 228 contains within it a 4 km^2 property containing the Tulks Hill Prospect, which is held by another exploration company, Buchans River Ltd. The Properties claim statistics and license renewal anniversary dates are summarised in Table 4.1.

Licenses 11924M and 11925M are in good standing to 29 January 2017, the end of the 18th anniversary years of these two Licenses. Both Licenses' 10th year renewal fees (totalling $20,700) are due on 29 January 2009.

Messina must incur an annual exploration expenditure of $12.50 per hectare or $91,061 on Reid Lot 228. Exploration expenditures on Reid Lot 228 place it in good standing to 31 December 2011. An expenditure of $91,062 must be made during 2012 to maintain good standing status.

Figure 4.1 Location map of the Tulks South Property

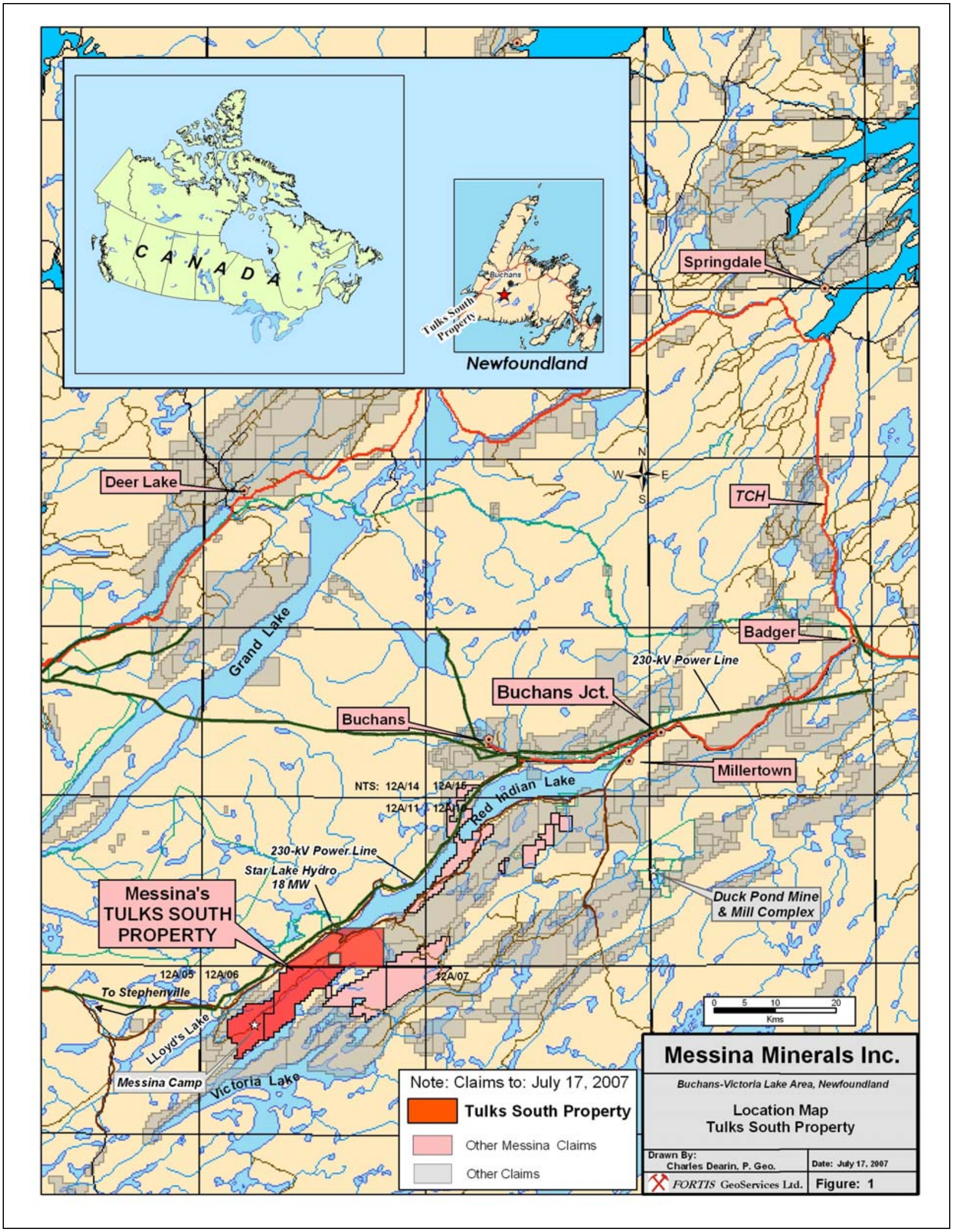


Figure 4.2 Location map of Tulks South Property licenses and lands

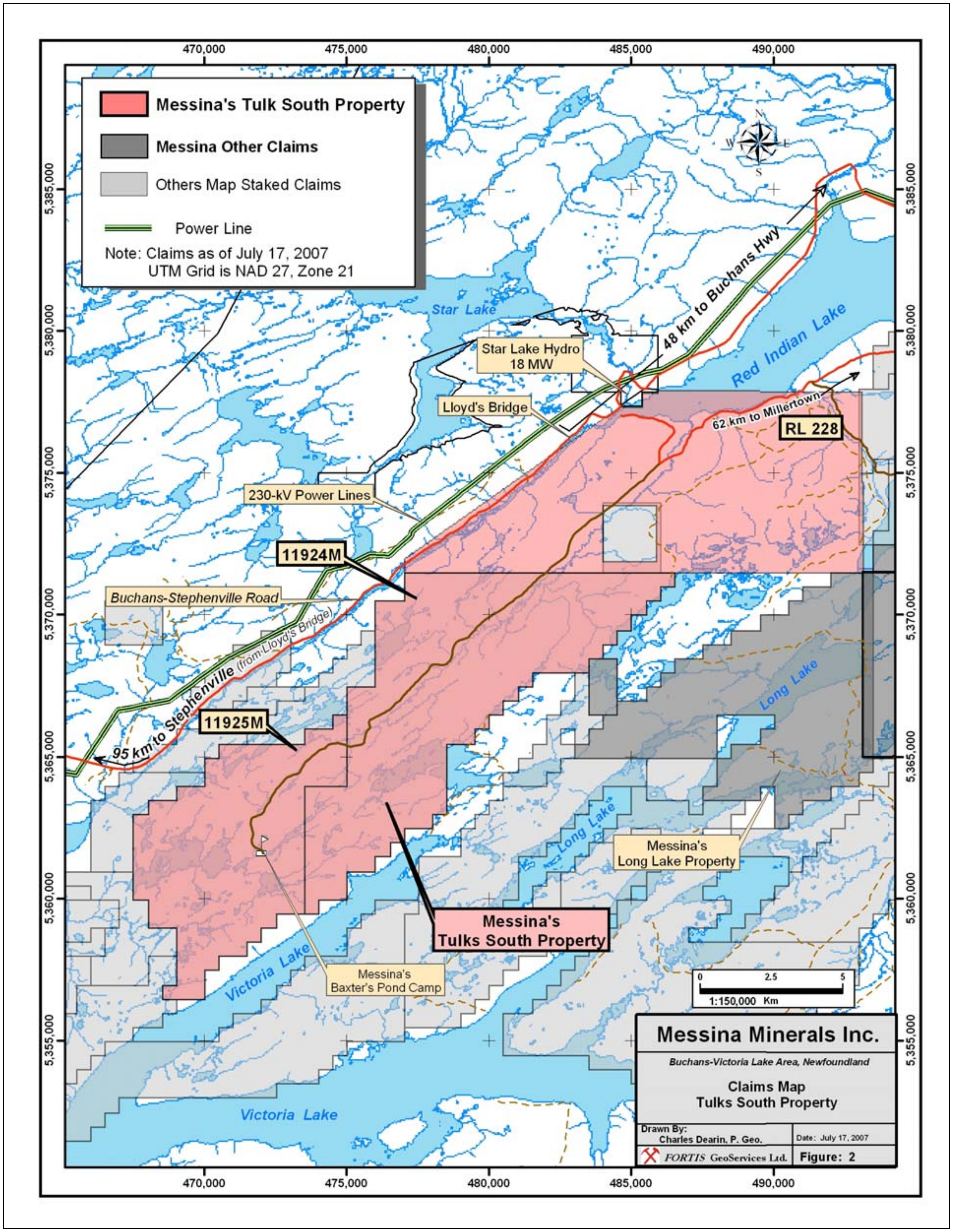


Table 4.1 Summary of Tulks South Property licenses and grants

Map License Number or Grant	Number of claims	Area (hectares)	Issue date	Next work due	Renewal date
11924M	250	6,250	29 January 1999	29 January 2017	29 January 2009
11925M	164	4,100	29 January 1999	29 January 2017	29 January 2009
Reid Lot 228	-	7,285	N/A	31 December 2009	N/A
Total	414	17,635			

4.3 Encumbrances and agreements

Reid Lot 228 is currently encumbered with a 7.5% net profits interest (NPI) on any mineral production, held by the Reid Newfoundland Company Ltd. In addition, the Property is encumbered with a 2% net smelter returns royalty (NSR) payable to Windarra Minerals Ltd. from Messina's share of production from the Property. The NSR may be fully purchased for $2 million. And finally, Tulks Resources Ltd. retains a 0.5% NSR payable from Messina's share of production from the Property.

Falconbridge Ltd (Falconbridge, now Xstrata) retains the right to back in for a 50% working interest in any specific part of the Property only if an economic base metal ore deposit exceeding 10 Mt, or a 1 Moz Au deposit, is defined in a positive Feasibility Study. To exercise this right, Falconbridge must pay 150% of the Feasibility Study costs incurred to that decision date. If Falconbridge elects not to back in, it will retain a 2% NSR on all minerals produced from the Property. Falconbridge retains the right to purchase up to 100% of all mineral concentrates produced from the Property at competitive prices.

4.4 Environmental status and permitting

None of the exploration companies involved with the Property have carried out more advanced work than line cutting, minor trenching, drill skidder trails and diamond drill setups. Messina have represented that none of this work would be considered an environmental liability to the Property.

There are no known environmental liabilities to which the Property is subject; however, the Tulks Hill Property (owned by another company) contains underground workings that are draining into Tulks River, which in turn drains into Red Indian Lake. When Noranda Inc. assumed ownership of the Tulks South Property in 1992, they relinquished this portion of the Property and the Newfoundland government at the time assumed the environmental responsibility. Since that time other operators of the Property have taken bulk samples from the Tulks Hill Property. It is not known if these operators are currently responsible for any environmental liabilities. The Tulks Hill Property lies on the southern margin of Reid Lot 228 and the northern area of the Tulks South Property.

Each year since 2002, Messina has applied for the required provincial exploration permits to carry out their programmes. All exploration and camp permits for 2007 are in place; any required new permits or extensions are applied for as warranted. At this stage of Messina's exploration programmes, there is no government requirement for bonds on the Project.

5 Accessibility, climate, local resources, infrastructure, and physiography

The information in this section has been excerpted from Dearin (2006). The Tulks South Property and regional infrastructure is shown in Figure 5.1.

5.1 Accessibility

The Tulks South Property can be reached by driving from St. John's, the provincial capital, in approximately six hours. Alternately, the Property can be reached from Badger on the Trans-Canada Highway via Millertown in less than a two hour drive, or from Corner Brook via the Burgeo Highway in a two hour drive. Scheduled airlines fly into Deer Lake near Corner Brook on a daily basis from Vancouver, Toronto, Halifax, and St. John's.

The Tulks South Property is readily accessible by seasonally maintained logging roads from Millertown and Buchans. Both of these gravel roads pass by on both the east and west sides of Red Indian Lake, respectively. Direct road access to Stephenville-Corner Brook, approximately 95 km to the west via the paved Burgeo highway (35 km west of the Lloyds River Bridge near Red Indian Lake) is an alternative route to the Property. A network of abandoned logging roads crisscross the area and many abandoned but useable forestry roads give excellent access to most parts of the Property. The Property is easily accessible by pickup truck and can be effectively explored year round without undue difficulty.

5.2 Climate

The climate in central Newfoundland is temperate with six to seven months of snow free and ice free seasons from April or May to November. Typical seasonal variation includes snowy winters from late November to March and summers from June through September, however in recent years, snow cover and frost have been developing several weeks later than usual. At Buchans (elevation 275 m) the approximate 30 year mean winter temperature is -6°C and ranges from 0°C in November to -9°C in February. The mean winter snowfall is approximately 64 cm per month with ranges of 28 cm in November to 78 cm in January. The mean summer temperature is 10° C and ranges from 1° C in April to 16° C in July. The mean annual precipitation is 100 cm per month with ranges of 81 cm in May to 121 cm in December.

5.3 Local resources

The former mining town of Buchans has a population of approximately 1,000 and the logging town of Millertown has a population of approximately 200 people. Both towns have good infrastructure with hardware stores, restaurants, motels, grocery stores, and schools; Buchans has a fully staffed hospital. Several local firms have heavy equipment for hire including backhoes, loaders, dozers, and dump trucks. A good supply of local workers with a variety of exploration and mining skills reside in both towns. The Department of Natural Resources drill core repository is located in Buchans, and Messina has set up its office and core storage facilities in Buchans Junction near Millertown.

5.4 Infrastructure

Local infrastructure of significance includes:

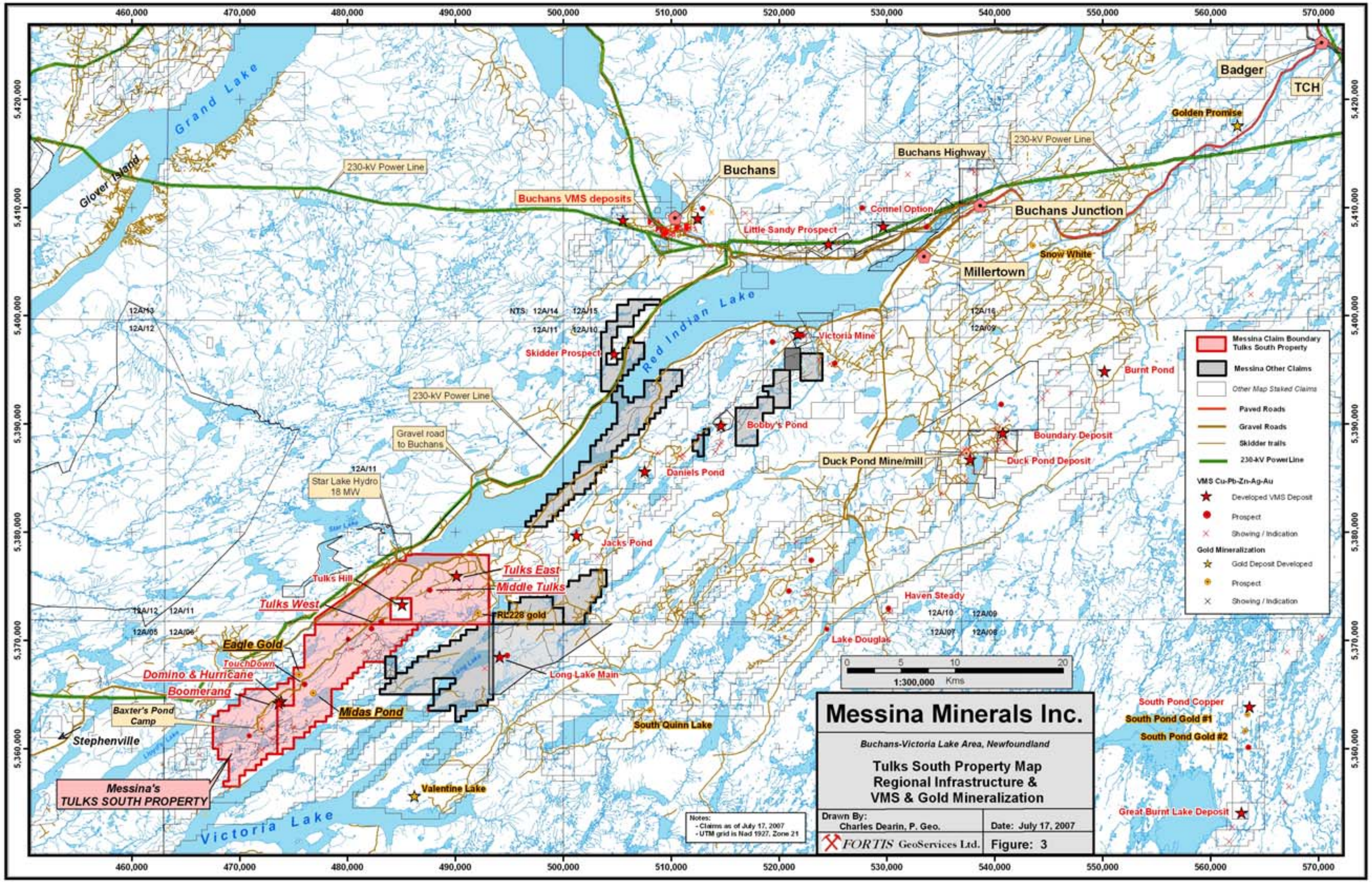
- The important trans-island 230 kV power lines from Bottom Brook (Stephenville) to Buchans (TL 233) run adjacent to the entire west side of the Property. The lines are 5 km directly northwest from the Boomerang and Domino deposits. An electrical switchyard is located near Buchans. In addition, 138 kV lines from Stephenville to Burgeo (TL 250) lie near the Burgeo Highway, approximately 40 km southwest of the Property.
- The Star Lake hydroelectric generating plant (18 MW), owned privately by Abitibi Consolidated, is located on the northwest corner of the Tulks South Property. Abitibi sells this power directly to Newfoundland Hydro via a separate, approximately 45 km long, 66 kV transmission line (TL 280) adjacent to the Red Indian Lake road to the Buchans transformer switch yard. In the future, if electrical power is required on the Property, it may be more advantageous to tap into the Star Lake power source rather than the other two power sources.
- Aur Resources Ltd (Aur). is currently producing from the Duck Pond copper-zinc mine and mill complex near Millertown about 45 km east-northeast of the Property. The Property is connected to the Duck Pond mine complex by a main logging haul road on the east side of Red Indian Lake which Aur plans to use year round to haul its base metal concentrates to Stephenville. This haul road is 17 km by road directly northeast of the Boomerang and Domino deposits. With a production capacity of 1,800 t of ore per day and a current mine life of 6.2 years, this facility may be in a position to custom toll mill ores from other deposits in the area.

5.5 Physiography

The Property lies within the northern end of the Annieopsquotch Mountains with topographic ranges from 180 m to 400 m elevation. The Boomerang and Domino deposits and Messina's Baxter's Pond field camp lie at approximately 350 m elevation. Undulating hilly areas of moderate relief within the northeast flowing Lloyd's River and Tulks River systems characterise the physiography of the Tulks South Property and region. Numerous small and large ponds, lakes, streams, and rivers cover the area. Vegetation consists of spruce and fir forest with 15% to 25% bog and scrub. The region is covered with a thin veneer of Pleistocene glacial till and outwash deposits typically 2 m to 10 m thick but reaching 30 m thick locally in valleys and other linear features. Bedrock exposure ranges from small areas of high outcrop density to large areas with few exposures particularly within the Tulks Valley.

The area is home to abundant moose, caribou, black bear, and small game which are all hunted seasonally. Speckled trout are present in most ponds and brooks. Salmon were introduced into the Red Indian Lake watershed in the 1990s and are present in very small numbers.

Figure 5.1 Tulks South Property map and regional infrastructure



6 History

The following historical information in Table 6.1 is excerpted and updated from Dearin (2006).

Table 6.1 Summary of exploration at the Tulks South Property

Period	Exploration summary
1871	The Geological Survey of Canada undertakes exploration work, identifying sedimentary rocks along the Exploits River and greenstones along Red Indian Lake.
1905	The first Buchans orebodies are discovered by a prospector working on the Anglo-Newfoundland Development Company (AND Co.) concession area north of Red Indian Lake.
1911	AND Co. abandons attempts to develop the Buchans deposit due to metallurgical difficulties.
1916 – 1926	ASARCO undertakes metallurgical test work on the Buchans deposit using flotation techniques and develops a method to treat the ores into separate Pb and Zn concentrates.
1926	ASARCO and AND Co. enter a 50 year agreement to commercially produce from the Buchans deposits, with equal shares in profits. ASARCO operates and controls exploration rights over the entire AND concession.
1926 – 1975	ASARCO partially maps the AND Co. charter lands at 1:12,000. ASARCO undertakes reconnaissance stream and soil sampling and prospecting in the early 1960's, resulting in the discovery of the Tulks Hill Prospect within Reid Lot 228 in 1961. ASARCO conducts detailed work on the Tulks Hill Prospect. ASARCO identifies a number of base metal anomalies in the Boomerang Alteration Zone.
1976 – 1984	The AND Co and ASARCO 50 year lease expires in 1976. Abitibi-Price Mineral Resources (Abitibi) takes over all mineral exploration on the AND charter lands. Abitibi explores the northeastern end of the Tulks South Property, discovering the Tulks East and Jacks Ponds Prospects in 1977 and 1982, respectively. Abitibi undertakes exploration and drilling work on the Tulks East Property, identifying three lenses of massive sulphide mineralisation exceeding 6 Mt. Work on the Jack's Pond discovery outlines a massive sulphide deposit in several bodies of 200,000 t to 1 Mt each. Abitibi follows up the Boomerang Alteration Zone anomalies with exploration surveys and drilling from 1979 to 1980. ASARCO continues to mine the Buchans deposits up to 1984.
1985	Abitibi sells the entire AND Co. concessions and the contained Reid Lots, with no retained royalties or interests (aside from the Reid Ltd royalty) to BP Resources Canada (BP).
1985 – 1991	BP conducts exploration work at Midas Pond, identifying an auriferous shear related alteration zone. BP carries out minor geological mapping over the Boomerang Alteration Zone. In 1989 BP discovers the Curve Pond Prospect at the southern end of the Property, about 2 km southeast of the Boomerang Zone, and undertakes further exploration work and drilling.
1991 – 1992	BP ceases mineral exploration in North America and changes its name to Talisman Energy Inc (Talisman).
1993	Talisman sells all of the rights to the AND Co. charter lands and the contained Reid Lots, with no retained royalties or interests, to Noranda Exploration Co. Ltd. (Noranda).
1993 – 1997	Noranda undertakes extensive exploration and drilling over known zones of mineralisation, including the Boomerang Alteration Zone and the edge of the then undiscovered Domino volcanogenic massive sulphide (VMS) deposit.
1997 – 1998	Noranda divides the AND Co. charter lands and the contained Reid Lots into six packages and sells them off.
1999 – 2000	Tulks Resources Ltd. (Tulks Resources) acquires the right from Noranda to earn a 100% interest in the Tulks South Property. Tulks Resources undertakes a diamond drilling programme on the Tulks East A Zone and B Zone massive sulphide bodies, makes limited evaluations, and undertakes structural mapping on other areas within the Property.
2001	Tulks Resources assigns 100% of their Option Agreement rights to the Tulks South Property to Windarra Minerals Ltd. (Windarra). Windarra undertakes exploration activities, re-evaluates existing information, and identifies the Tulks East Zone, the Boomerang Zone, and the Curve Pond Zone as priorities for further drilling.

Period	Exploration summary
2002	Windarra assigns all of their rights to the Tulks South Property Option Agreement to Mishibishu Gold Corp. (Mishibishu), subject to a 2% NSR royalty. Mishibishu undertakes diamond drilling at Curve Pond, other regional VMS targets, and the Midas Pond Gold Prospect.
2003	Mishibishu changes their name to Messina Minerals Inc. (Messina). Messina undertakes exploration and diamond drilling at the Tulks East Zone, prospecting and sampling at the Midas Pond Gold Zone, and discovers new Au mineralisation at the Eagle Zone.
2004	Messina undertakes diamond drilling and petrographic studies of mineralisation at the Tulks East A Zone and B Zone, and soil sampling over the Eagle Zone Gold Prospect. Prospecting elsewhere on the Property leads to the discovery of two new mesothermal type Au zones at the 228 Gold Zone and an area north of Eagle. In late 2004, Messina discovers VMS style mineralisation at the Boomerang Zone in two diamond drillholes.
2005	Messina conducts follow up drilling at the Boomerang Zone, and undertakes airborne digital photogrammetry surveys and other exploration work over the entire site. Messina conducts exploration over the Tulks East A Zone including one diamond drillhole, and prospect elsewhere in the Middle Tulks Prospect. Messina begins building an exploration camp at Baxter's Pond, and establishes exploration headquarters at Buchans Junction.
2006 – 2007	Messina discovers the Domino deposit and Hurricane and TouchDown targets, and continues follow up and infill drilling at Boomerang, Domino, Tulks East A Zone, and Hurricane. Messina undertakes preliminary mineralogical and metallurgical testing of Boomerang mineralisation, estimate Mineral Resources at Boomerang and Domino, and evaluate results at Tulks East B Zone. Messina carries out exploration of surface mineralisation at Spur Road, 3 km south of Boomerang and Domino, and 3 km southwest of Curve Pond.

7 Geological setting

The following section has been excerpted and updated from Dearin (2006).

7.1 Regional geology

The Tulks South Property occurs within the central part of the Central Mobile Belt of the Dunnage tectonostratigraphic zone of the Appalachian Mountain Belt. This region of the Central Mobile Belt contains the economically important Buchans-Victoria Lake area. The Dunnage tectonostratigraphic zone preserves Cambrian to Middle Ordovician rocks of ophiolitic, island arc, and back arc affinity. The zone is divided into the Notre Dame and Exploits sub-zones by a major and extensive fault system referred to as the Red Indian Line. The Notre Dame zone contains the Buchans Group of volcanic rocks hosting the Buchans Kuroko-style volcanogenic massive sulphide (VMS) deposits plus many other VMS deposits; these rock types are generally mature arc-type and calc-alkaline in nature. The Exploits zone hosts the extensive Victoria Lake Supergroup made up of six separate and distinct volcanic belts which themselves are highly conducive to VMS and gold deposits; these rock types are generally island arc type environments and are more tholeiitic in nature.

The Buchans-Victoria Lake area is made up of a 150 km long by 20 km to 65 km wide series of volcanic and volcaniclastic belts. This region consists of seven separate volcanic belts ranging from Upper Precambrian to Ordovician ages, all of which formed in classic island arc type environments during the Appalachian Orogeny which is marked by the closure of the Iapetus Ocean. From west to east these belts are the Buchans Group (formed on the North American or Laurentia side); the Tally Pond volcanic belt; the Long Lake volcanic belt; the Tulks Hill volcanic belt (host to the Tulks South Property mineralisation); the Harbour Round belt; Harpoon Brook belt, and the Point of the Woods belt. The latter six formed on the African (Gondwana) side and collectively make up the Victoria Lake Supergroup. Five of the six Victoria Lake Supergroup belts consist of mafic and felsic volcanic rocks, volcaniclastic and epiclastic rocks and various intrusive rocks; all five belts are fault bounded by two major faults or terrain bounding structures, the Red Indian Line to the northwest and the Noel Paul's Line to the southeast.

The Victoria Lake Supergroup has a regional penetrative foliation, which is sub-parallel to bedding and is axial planar with tight to isoclinal folds. Regionally the rocks strike north-northeast to northeast and the belts in the western half of the Supergroup have steep dips to the northwest while the eastern belts have steep dips generally to the southeast. Many second and third order folds add to the complexity of structure in the region. Numerous large-scale and local faults, both normal and thrust related, cut the region. Structural repetition by thrust faulting is significant and likely explains the apparent inter-layering and repetition of different geochemically distinct rock units.

Regionally the rocks have been metamorphosed to lower greenschist facies but locally mid-greenschist to lower-amphibolite facies rocks are present.

7.2 Local geology

The Tulks Hill volcanic belt is an extensive northeast trending belt, 80 km long by 8 km wide, of intermixed felsic and mafic volcanic rocks, pyroclastic rocks, tuffs, volcaniclastic, and sedimentary rocks. The southeast margin is defined by the magnetic anomaly fault zone in contact with the Long Lake Belt volcanic rocks and the northwest side is overlain by sedimentary and volcaniclastic rocks of the Harbour Round belt.

The volcanic rocks of the Tulks Hill belt consist of dacitic to rhyolitic felsic flows and pyroclastic rocks, felsic tuffs, quartz crystal tuff, breccia, and minor sub-volcanic porphyries. Intercalated bedded mafic to siliceous volcaniclastic and epiclastic sedimentary rocks are common and form important replacement horizons for VMS style mineralisation. Mafic volcanic rocks are generally less common than felsic rocks but they do form significant parts of the rock units on the Property and consist of mafic to intermediate pyroclastic rocks consisting of tuffs, lapilli tuffs, agglomerates, breccias, and pillow basalts. Stratigraphically overlying the main felsic volcanic rocks is a distinctive sequence of pillow basalts, the Upper Basalts, which are the cap rock of the felsic volcanic and sedimentary-volcaniclastic rocks of the Tulks Hill volcanic belt. The Upper Basalts may be an important regional (over 70 km long) stratigraphic marker horizon which may have been emplaced within a specific distance above the favourable VMS stratigraphic horizon in the belt.

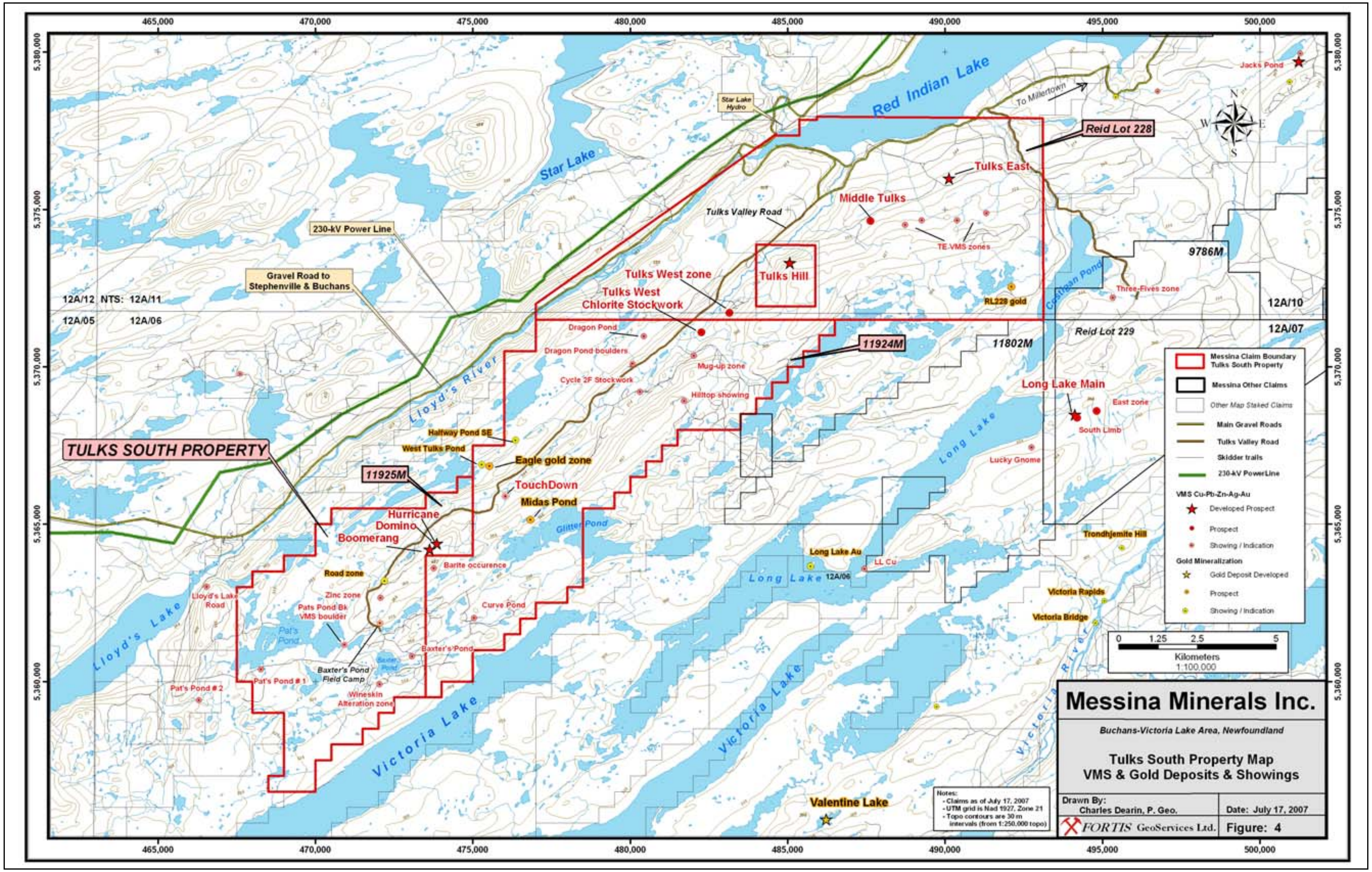
7.3 Property geology

The Tulks South Property is wholly underlain by the Tulks Hill volcanic belt lithologies including felsic and mafic pyroclastic rocks and flows, mafic dykes, intercalated sediments, and sub-volcanic intrusions metamorphosed to greenschist facies. Prospective felsic volcanic rocks extend the 30 km length of the Property. Extensive zones of volcanogenic alteration associated with massive sulphide formation have been mapped.

All rocks within the Tulks South Property area have undergone moderate to strong penetrative deformation and primary textures are frequently obscured or entirely obliterated by a well developed, bedding parallel foliation. The strata are generally steeply dipping and northwest facing. Small-scale isoclinal folds with sub-vertical plunges are common but evidence of large-scale folding is sparse. Two phases of foliation are recognised; many of the sulphide zones within the belt plunge to the northeast indicating structural modification of the massive sulphides has occurred. Later shear zones also transect the Property trending near the orientation of the dominant foliation. These shear zones enclose large areas of argillic alteration which are locally gold-bearing. Younger, high-angle faulting is interpreted to offset structural and stratigraphic units by up to 500 m in places. Such faulting may have cut and displaced several areas within the Boomerang deposit.

A location map showing the various deposits and prospects on the Project is shown in Figure 7.1.

Figure 7.1 Tulks South Property deposits and prospects



7.3.1 Tulks East VMS Deposit

The Tulks East VMS Deposit stratigraphy consists of a 1,000 m thick sequence of felsic volcanic rocks overlain by 200 m of intercalated graphitic argillite intruded by mafic dykes, which is, in turn, overlain by 200 m thick hangingwall quartz phyric felsic volcanic rocks. The host rocks are deformed with a penetrative foliation, and in places become sericite schist.

Three sulphide lenses, the A, B, and C Zones, comprising the Tulks East Deposit are situated within the top 60 m of the lower felsic volcanic unit consisting of quartz-crystal and crystal-lithic tuffs, lapilli tuffs, and local breccia; minor mafic tuffs and common andesitic to basaltic sills and dykes cut all rock types. The B Zone is situated 15 m stratigraphically above the A Zone whereas the C Zone is situated 250 m east of and along strike from the A Zone in the same stratigraphic horizon.

7.3.2 Middle Tulks Alteration Zone

The Middle Tulks Alteration Zone is located about 3,500 m southwest of and along strike from the Tulks East VMS deposits and has been traced intermittently for over 600 m in outcrop and float. The zone consists of an intensely chloritised felsic stockwork with up to 50% buckshot-type pyrite.

7.3.3 228 Gold Zone

The 228 Gold Zone is located in the northeast corner of the Property within Reid Lot 228, about 3,800 m southeast of the Tulks East VMS deposits. The quartz vein outcrop within strongly altered volcanic host rocks is exposed for about 10 m^2.

7.3.4 Tulks Hill VMS Deposit

The Tulks Hill VMS Deposit occurs within the northern part of the Tulks South Property within Reid Lot 228, within a Map Staked License (No. 10212M) held by another company. The Property is approximately 14 km northeast of and 6 km southwest of, and generally along strike with the Boomerang and Domino deposits, and the Tulks East VMS deposits, respectively.

The mineralisation is within northeast trending felsic volcanic rocks of the Tulks Hill volcanic belt. The felsic pyroclastic units hosting this deposit are the same, or stratigraphically very close to the same horizon, as that hosting the Boomerang and Domino deposits, the Tulks East VMS deposits and other VMS deposits to the northeast.

Generally the VMS deposits occur near the transition from felsic volcanic rocks to a mixed volcanic-sedimentary package of rocks to the northwest. Aside from more localised alteration of silica and sericite around the VMS deposits, there is also an extensive disseminated pyrite halo alteration zone over 1,800 m along strike and 400 m wide.

The Tulks Hill VMS deposit comprises four separate stratiform sulphides lenses (T_1 to T_4) hosted in sericitised felsic lapilli tuff, quartz crystal, and crystal-lithic tuff with intercalated intermediate composition tuffs and diabase-andesite dykes and sills. These rocks are intruded by quartz porphyry and aphanitic rhyolite.

7.3.5 Tulks West VMS Prospects

The Tulks West VMS Prospect area occurs about 3.5 km southwest of and along strike with the Tulks Hill VMS deposit and contains numerous VMS prospects, most of which have received only initial stages of exploration work.

The area is underlain by felsic pyroclastic rocks and flows with minor interbedded mafic flows and fine grained graphitic sediments. The favourable massive sulphide bearing horizon in the Tulks Hill altered felsic pyroclastic rocks has been traced from the Tulks East deposits to the Tulks Hill deposits to the West Tulks and further to the southwest at a distance of over 25 km.

7.3.6 Eagle Gold Prospect

The Eagle Gold Prospect occurs near the west side of the Property and about 4,000 m north-northeast of the Boomerang and Domino VMS deposits. Gold mineralisation occurs in a system of auriferous quartz veins within a strong and wide shear zone; two previously known (by BP) gold zones, the West Tulks Pond showing and Halfway Pond Southeast showing, occur in or adjacent to this shear.

The north-northeast trending shear cuts through a 150 m wide zone of silicified, sericitised, and carbonate altered felsic volcanic rocks. These sheared and altered volcanic rocks have been traced via sporadic outcrops for over 6 km and are coincident with airborne geophysical anomalies. The auriferous quartz veins have been traced along 1,400 m of strike length where they are concentrated in a 5 m to 10 m wide sub-zone within the approximately 150 m wide sheared alteration zone.

7.3.7 Midas Pond Gold Prospect

The Midas Pond Gold Prospect (also referred to as Glitter Pond Gold) is located at the southwest end of the Property about 3,500 m east-northeast of the Boomerang VMS deposit and possibly within the faulted but along strike extension of the Boomerang Alteration Zone. The Midas Gold Zone is hosted within an intensely argillic altered and mineralised zone about 200 m wide and over 800 m long within a brittle-ductile shear zone.

The Midas Pond Gold Prospect is hosted in variably deformed felsic and mafic pyroclastic rocks. The main host rock is a felsic quartz-feldspar crystal tuff with minor lapilli tuff and breccia; a strong northeast trending shear zone cuts through and parallel to these rocks. Alteration and mineralisation are restricted to a 200 m wide and over 800 m long zone within a brittle-ductile shear zone. The gold mineralisation is associated with a strong, three-stage alteration zone within and adjacent to the Midas Pond shear zone.

The Midas Pond Gold Zone alteration system may be situated in a similar hydrothermal setting as the extensive argillic alteration system and related low anomalous gold system at the Bobby's Pond sulphur (±Au) Zone located approximately 40 km to the northeast and generally along strike and within the favourable felsic volcanic rocks of the Tulks Hill volcanic belt. These two auriferous argillic type alteration systems may be interpreted as seafloor epithermal (auriferous but base metal poor) systems distal to but directly related to the VMS exhalative systems of the Tulks Hill volcanic belt.

7.3.8 TouchDown VMS Prospect

The TouchDown VMS Prospect is located approximately 3,000 m northeast of and along strike with the Boomerang, Domino, and Hurricane zones. The TouchDown zone lies within geologically similar host rocks as the Boomerang VSM deposit and is coincident with a 900 m long gravity anomaly and an 800 m long HLEM conductor. Mineralisation has been intersected in a sequence of inter-layered black chert, chloritic sediments, and greywacke containing massive sulphide clasts.

7.3.9 Hurricane VMS Prospect

The Hurricane VMS Prospect is located 500 m north east of and along strike with the Boomerang deposit. Mineralisation is hosted within sericitised and mineralised felsic tuffs and reworked sedimentary rocks, similar to those hosting mineralisation at the Boomerang deposit. It is likely that the Hurricane mineralisation lies within the same stratigraphic horizon as Boomerang.

7.3.10 Domino VMS Deposit

The Domino deposit is approximately 200 m northeast of and 100 m deeper than the Boomerang deposit and Messina believes it may lie in a different stratigraphic horizon. Messina is in the early stages of exploration at Domino and continues to develop their geological model.

7.3.11 Boomerang VMS Deposit

The Boomerang Alteration Zone has been defined along a strike length of over 6,500 m and with widths of 200 m to over 500 m. The east-northeast striking Baxter's Pond Fault cuts through the Boomerang Alteration Zone and appears to have cut off and displaced the Boomerang and Domino VMS deposits at their east ends by up to 1,700 m to the southwest.

Three domains of alteration and mineralisation are recognised in the Boomerang Prospect area and can be grouped as hangingwall, mineralised horizon, and footwall domains.

Hangingwall domain

The hangingwall volcanic rocks, consisting of the upper 300 m of the immediate Boomerang stratigraphy, are comprised of a sequence of felsic lithologies including undifferentiated felsic volcanic rocks, felsic tuffs, and derived tuffaceous sediments. A stratigraphic marker agglomerate associated with epiclastic sediments is prominent in the upper hangingwall. Minor seafloor attributed chlorite alteration is associated with the hangingwall sequence, with local stringer pyrite mineralisation and sulphide muds. Historical mapping has outlined VMS style sericite and pyrite alteration at surface in the hangingwall stratigraphy.

Mineralised domain

The mineralised sequence of lithologies (the middle 50 m to 100 m of the Boomerang deposit area stratigraphy) includes black chert units, fine grained tuffs, and tuffaceous sediments as well as graphitic and argillaceous sediments that are intimately associated with massive sulphide mineralisation. The deposit internally consists of several massive sulphide beds with intervening semi-massive and lean sulphide layers. Boudinaged, discontinuous, and recrystallised banding in the massive sulphides is common, probably following bedding in the original tuff. Sub-millimetre sized, clear quartz grains in the massive sulphide ore are interpreted to be remnants of a porphyritic ash tuff that has been almost completely replaced by sulphides.

Footwall domain

The footwall sequence is comprised of strongly sericitised, fine grained felsic volcanic rocks containing 2% to 10% disseminated pyrite, common quartz pyrite base metal bearing stockwork veinlets, and local intervals of intense buckshot pyrite across the lower 200 m of the immediate Boomerang area stratigraphy. Also within the footwall are zones of intense black chlorite and chaotic quartz carbonate on the order of 10 m thick. Some of these zones are associated with the known Boomerang deposit, but due to the preliminary stage of drilling away from the deposit, other zones are not yet correlated with known massive sulphides. A large outcrop of massive barite has been mapped at surface, 200 m southeast of the Boomerang deposit and while it is undoubtedly part of the Boomerang alteration system, its specific relationship to the deposit has not yet been determined.

7.3.12 Curve Pond VMS Prospect

The Curve Pond VMS Zone is about 4 m thick and has been traced along strike in outcrop and drillholes for over 130 m. The Curve Pond Zone lies near the southwest end of the Property and is the possible laterally faulted, northeast strike extension of the Boomerang mineralised horizon, 1,700 m to the northwest.

The zone occurs within a sequence of strongly tectonised felsic pyroclastic rocks of the Tulks Hill volcanic rocks and spectacular breccias with large fragments of crystal lithic tuff and glassy porphyritic rhyolite in a dacitic matrix. The VMS Zone consists of a narrow interval about 4 m wide of banded pyrite, chalcopyrite, sphalerite, and galena that has been traced for over 130 m along strike; it occurs between a black hematitic iron formation (possible hangingwall) on the south side and a strongly sericitised quartz feldspar phyric tuff on the north side (possible footwall).

Two distinct ferruginous horizons, inferred to be structural fold repetitions, overlie the Curve Pond massive sulphide zone and are in turn overlain by siltstone and amygdaloidal felsic flows.

7.3.13 Baxter's Pond VMS Zone

The Baxter's Pond Zone is about 3,000 m south of the Boomerang and Domino deposits and is underlain by a sequence of bi-modal volcanic rocks and related epiclastic rocks. The felsic rocks consist of lithic lapilli tuffs, quartz phyric tuff, ash tuff, and agglomerates and are extensively altered forming erratic but conformable and wide (up to 750 m) lenticular zones of strong sericite-silica-pyrite alteration which may be structural repetitions due to folding and faulting. In places, fine grained epiclastic sediments consisting of thinly bedded argillites and cherty beds are intercalated with the felsic rocks.

8 Deposit types

The following section has been excerpted from Dearin (2006).

Messina is primarily exploring the Tulks South Property for VMS base metal deposits enriched in Cu, Pb, Zn, Ag, and Au. VMS mineralisation and deposits are well known in the Buchans-Victoria Lake region and the geological setting here is prospective for more such mineral deposits. These deposits follow the classic ocean floor exhalative and replacement models, which are well described in the literature.

VMS base metal deposits can be categorised according to a simple, five-fold lithostratigraphic classification using sequence boundaries defined by major time-stratigraphic breaks, faults, or major sub volcanic intrusions. This classification is based on pre-altered host rock composition of some 880 VMS deposits with known ancient and modern day VMS settings.

The Boomerang, Domino, and Tulks East VMS deposits generally fall within the bimodal felsic type of VMS deposits, which are defined as having either greater than 50% felsic volcanic rocks or 35% to 70% felsic volcaniclastic strata and less than 15% siliciclastic rocks in the host stratigraphic succession with mafic volcanic rocks and intrusive rocks forming the remainder. This VMS deposit type forms about 30% of all VMS deposit types, are usually more silver and zinc-rich than the other VMS types, contain approximately 2 g/t Au and are commonly barite rich. Average deposit size is approximately 5 Mt. The Kuroko, Skellefte, Tasmanian, and Buchans VMS deposits also belong to this category.

The Property also has potential for gold mineralisation, specifically epigenetic, structurally controlled mesothermal (orogenic) quartz veins, such as the Eagle and 228 Gold Prospects. There are a number of northeast striking fault-shear zones on the Tulks South Property; these faults are subsidiary splay faults probably originating from and related to the regional Red Indian Line fault and the Noel Paul's Line, a major fault-shear zone underlying and adjacent to the regionally extensive Rogerson Lake conglomerate. These are mostly second order structures and likely have sympathetic orthogonal structures associated with them; both related structures are conducive to hosting gold-rich quartz veins typical of orogenic mesothermal gold depositional environments.

The high aluminous-altered Midas Pond Gold Zone is possibly a syngenetic to early epigenetic ocean floor, exhalative epithermal-style gold deposit that may be the end effect of a dying hydrothermal system forming as the cap rock to a VMS style exhalative system. Such gold deposits are not unusual in VMS terrains and such a model opens a new environment for more extensive epithermal disseminated gold mineralisation as well as adjacent VMS deposits lateral to the Midas Pond alteration zone. Additional such epithermal alteration zones are known throughout the Tulks Hill volcanic belt (e.g., Bobby's Pond sulphur and the Hoffe Pond Gold Zone to the northeast of the Property).

9 Mineralisation

The following section has been excerpted and updated from Dearin (2006).

The Tulks Hill volcanic belt is host to seven significant VMS style deposits and over 15 significant prospects and showings. Three of these deposits and over six additional prospects are within or immediately adjacent to the Tulks South Property. The VMS deposits on the Tulks South Property described below and zones from the Victoria Lake Mine to the Pat's Pond Zone, southwest of Boomerang, all lie along or fairly close to the same general stratigraphic horizon over a nearly continuous strike length exceeding 67 km.

9.1 Tulks East VMS Deposit

The Tulks East VMS deposit represents the largest accumulation of massive sulphide found in the Tulks Hill volcanic belt to date. The Tulks East deposit occurs about 6 km northeast of the Tulks Hill deposit, and lies within Reid Lot 228 on the northern part of the Tulks South Property.

VMS mineralisation consists of three separate but adjacent and stratiform zones of pyritic mineralisation with overall low base metal values. The lenses are tabular to lensoidal in shape and occur at the top of an altered felsic volcanic sequence. Alteration around the VMS zones consists of pyrite, sericite, and silica with insignificant amounts of chlorite; this alteration zone exceeds 1,600 m along strike, over 200 m across strike and has been drilled to depths over 400 m deep where potential exists for additional deposits.

Three lenses, termed the A, B, and C Zones, have been partly outlined by geophysics and drilling; all remain open at depth. They are possibly within the same stratigraphic horizon as the Boomerang and Domino VMS deposits. The three sulphide lenses consist of massive to banded, mostly fine to coarse grained, granular pyrite with much lesser and varying amounts of sphalerite, galena, and chalcopyrite in a mixed gangue of quartz, chlorite, calcite, dolomite, and barite. Arsenic is enriched in the C Zone. Massive sulphides have been historically identified in two adjacent and parallel, 50° plunging zones (A Zone and B Zone) drilled to a vertical depth of approximately 250 m.

The lenses are tabular to lensoidal in shape, strike east-northeast and dip about 70° northwest, plunge about 45° to the northeast and have an overall length to width ratio of about four to one.

9.1.1 A Zone

The A Zone grades laterally from a barren pyritic core near surface and gradually increases in base metal grades with depth from an average of approximately 2% to over 5% base metals near 200 m to 250 m below surface. The A Zone lens is up to 30 m thick and has been drilled to around 250 m vertical depth where the base metal grades have significantly increased and the deposit is still currently open along strike and down plunge.

9.1.2 B Zone

The B Zone is a base metal rich VMS deposit located about 15 m stratigraphically above the A Zone within and at the contact of altered felsic volcanic rocks and overlying graphitic sediments. The deposit has been drill traced for over 180 m along strike and for over 250 m down plunge and remains open past a vertical depth of 200 m below surface.

Abitibi interpreted that the B Zone massive sulphide lens was truncated by faulting at around 100 m depth and did not exist below this level. Drilling by Tulks Resources in 1999 established that the fault truncating the B Zone at around 100 m depth migrates out of section at around 250 m depth and that the B Zone stratigraphy exists untested below this depth.

9.1.3 C Zone

The C Zone occurs about 250 m along strike to the northeast of the A Zone, in the same stratigraphic horizon. Structural mapping by Messina suggests that the C Zone is the folded continuation of the composite A Zone and B Zone sulphide lenses.

9.2 Middle Tulks Alteration Zone

The Middle Tulks Alteration Zone lies approximately 3,500 m to the southwest and along strike with the Tulks East deposit. A distinctive zone of massive chlorite-pyrite felsic stockwork with up to 50% buckshot-type pyrite alteration has been traced along 600 m of strike length with a 1 m wide zone of massive sulphide carrying significant base metal values; samples from several large angular boulders had assay results of up to 5.6% Cu.

9.3 228 Gold Zone

The 228 Gold Zone is located in the northeast corner of the Property within Reid Lot 228, about 3,800 m southeast of the Tulks East VMS deposits. The outcrop is exposed for about 10 m^2 from which six of seven grab samples of quartz veins assayed from 1.6 g/t Au to 19.3 g/t Au and averaged 9.8 g/t Au. Two of three grab samples of the adjacent strongly altered volcanic host rocks assayed 1.1 g/t Au and 2.7 g/t Au.

9.4 Tulks Hill VMS Deposit

The Tulks Hill VMS deposit occurs within the northern part of the Tulks South Property within Reid Lot 228, within a Map Staked License (No. 10212M) held by another company. The Property is approximately 14 km northeast of and 6 km southwest of, and generally along strike with the Boomerang and Domino deposits, and the Tulks East deposits, respectively.

The deposit comprises four separate stratiform sulphides lenses, tabular to lensoidal in shape, predominantly pyritic with up to 70% pyrite and roughly similar in size with average dimensions of 220 m long, 100 m wide, and 6 m thick. Aside from sphalerite with lesser chalcopyrite and galena, the mineralisation also contains accessory arsenopyrite, tetrahedrite-tennantite, and pyrrhotite with minor magnetite. Most of the silver is associated with argentian tetrahedrite and tennantite while most of the gold occurs as native gold.

An extensive disseminated pyrite halo alteration zone over 1,800 m along strike and 400 m wide surrounds more localised alteration of silica and sericite around the VMS deposits.

9.5 Tulks West VMS Prospects

The Tulks West VMS prospects occur about 3.5 km southwest of and along strike with the Tulks Hill VMS deposit and contains numerous VMS prospects, most of which have only received initial stages of exploration work.

The Tulks West Chlorite Stockwork Zone was found by ASARCO during a reconnaissance drill programme following up anomalies and gossan zones of a similar scale as their Tulks Hill VMS deposit discovered in the mid-1970s.

ASARCO's first drillhole into the Tulks West Zone, T-163, was drilled into a strongly chloritic alteration zone containing chalcopyrite and pyrite stringers and samples had values of 2.1% Cu, 1.2% Pb, and 4.0% Zn over 0.6 m and 3.5% Cu, 0.4% Pb, and 0.2% Zn over 1.2 m. Eight additional drillholes drilled by Abitibi in 1978 and five more by BP returned similar intersections in several adjacent mineralised horizons.

Noranda continued with prospecting in the area and located several large angular massive and banded sulphide boulders with sample assays of 1.6% Cu to 2.3% Cu, 5.6% Pb to 10.4% Pb, 10.8% Zn to 28.0% Zn, 298 g/t Ag, and 2.5 g/t Au.

During 2002, Mishibishu drilled four drillholes (drillholes TX02-01 to TX02-04) totalling 522 m in the Tulks West stringer zone. All drillholes cut chloritised and felsic volcanic rocks with stringer and disseminated sulphides carrying weak and sporadic base metals; anomalous arsenic, tin, and mercury were detected in several samples and are considered indicative of VMS-type hydrothermal alteration near a vent. Drillhole TX02-03 was drilled about 500 m to the south of the first two drillholes into a short weak HLEM conductor coincident with a copper-lead-zinc soil anomaly. A sequence of chloritised, sericitised, and pyritised felsic and mafic tuffs was intersected. Several zones of weak sporadic base metal mineralisation were intersected with assays ranging up to 0.2% Cu to 1.4% Cu, 0.4% Pb, 1.1% Zn to 2.8% Zn, and 2.3 g/t Ag to 12 g/t Ag over narrow (0.3 m to 0.5 m) intervals. Drillhole TX02-04, drilled on another separate anomaly in the area, intersected altered felsic tuffs with weak sporadic base metals in one narrow interval.

The area around drillholes TX02-01 and TX02-02 has a favourable stratigraphic horizon for VMS deposits at or near the chloritic agglomeratic sediment altered felsic contact. The felsic rocks contain stringers of base metal rich pyrite and the rocks are intensely and pervasively altered throughout the area. In addition arsenic, tin, and mercury are all enriched in this area, which may indicate the presence of strong hydrothermal activity related to VMS deposit formation.

9.6 Eagle Gold Prospect

The Eagle Gold Prospect occurs near the west side of the Property and about 4,000 m north-northeast of the Boomerang and Domino VMS deposits. Gold mineralisation occurs in a system of auriferous quartz veins concentrated in a 5 m to 10 m wide sub-zone within a 150 m wide and 1,400 m long shear zone. Two previously known (by BP) gold zones, the West Tulks Pond showing and Halfway Pond Southeast showing, occur in or adjacent to this shear.

Seventeen grab samples from five separate outcrops containing quartz veins have assay values between 5.5 g/t Au and 56.5 g/t Au; visible gold has been observed in a number of samples. Samples from other veins taken outside of the main sub-zone and within the alteration zone have yielded assays up to 2.3 g/t Au. Initial mapping of this zone has indicated at least three phases of veining; the earliest veins are well sheared and boudinaged and carry good gold and silver values where these vein sets intersect. The second veining stage is a base metal-rich phase carrying low gold values and the last veining is essentially a set of undeformed and usually barren quartz veins. Despite this typically barren nature, visible gold was noted in one such veinlet in drillhole EO04-01.

During early 2004, Messina drilled five drillholes totalling 366 m (EO04-01 to EO04-05) along 1,500 m of strike length into the auriferous quartz veins. Drillholes EO04-01 and EO04-02 were drilled within 100 m of each other at the northeast end of the 1,400 m long auriferous quartz vein zone; both drillholes intersected anomalous gold values associated with weak quartz veining. Visible gold was observed in a late quartz-carbonate vein in drillhole EO04-01.

Drillhole EO04-03 was collared 1,500 m southwest of the first two drillholes near the southwest end of the 1,400 m long auriferous quartz zone. The drillhole intersected anomalous gold over narrow intervals with best values of 2.8 g/t Au over 0.25 m and 1.1 g/t Au over 0.5 m. The outcropping vein at this locality was sampled with ten random grab samples from one outcrop; values ranged from 5.0 g/t Au to 14.7 g/t Au with an average value of 10.8 g/t Au and silver ranged from 5.1 g/t Ag to 21.9 g/t Ag.

Drillhole EO04-04 was collared 300 m northeast of drillhole EO04-03 and 900 m southwest of EO04-01 and beneath a 1986 BP chip sample of the vein which assayed 7.3 g/t Au over 2 m. The drillhole intersected the mineralised zone 25 m vertically below surface and assayed 3.0 g/t Au and 24.1 g/t Ag over 3.1 m; a high assay in this interval assayed 6.2 g/t Au, 130 g/t Ag, and 1.1% Cu over 0.4 m.

9.7 Midas Pond Gold Prospect

The Midas Pond Gold Prospect (also referred to as Glitter Pond Gold) is located at the southwest end of the Property about 3,500 m east-northeast of the Boomerang VMS deposit and possibly within the faulted but along strike extension of the Boomerang Alteration Zone. The Midas Pond Gold Zone is hosted within an intense argillic altered and mineralised zone about 200 m wide and over 800 m long within a brittle-ductile shear zone.

The gold zone was discovered by BP in 1985 following a lake sediment sampling programme. Following up on this gold in lake sediment anomaly, BP focused on the Midas Pond Gold Zone after re-analysing over 10,000 archived soil samples previously collected in the area by ASARCO and Abitibi. BP had these samples analysed for gold (which had never previously been done) and 30 other elements by ICP-AES. The results indicated numerous base metal anomalies and a number of distinct gold-only anomalies on the Property.

Alteration at Midas Pond consists of an initial pervasive argillic stage (kaolinite-sericite) and silicification which is locally overprinted by an advanced argillic stage (with pyrophyllite-kaolinite-paragonite) and a final stage of sulphidation and carbonatisation which overprints all rock and alteration types; fluorite and chlorite occur locally.

Mineralisation is mainly pyrite in quartz veining with the gold being intimately associated with pyrite; gold occurs as tiny inclusions, micro fracture-controlled veinlets, and as coatings around pyrite grains. Advanced argillic and an extensive iron-carbonate and pyrite halo surround the gold mineralised quartz veining. The auriferous quartz veins and stockwork zone occur as three differently oriented conjugate sets and are confined to a width of 10 m to 12 m along the contact between a highly deformed mafic breccia unit and an overlying felsic tuffaceous unit. Anomalous gold values extend into the adjacent wall rock of silicified-pyritised mafic rocks and for up to 20 m beyond the quartz veining and stockwork.

Most work to date has been confined to the initial 800 m of strike length of the auriferous zones but the host shear and alteration zones continues in both directions. Approximately 19 shallow drillholes, most less than 50 m to 100 m below surface, have been drilled into the zone and indicate increasing width and gold grades with depth. Surface trench channel samples returned up to 14.7 g/t Au over 1.2 m and drilling intersected up to 1.76 g/t Au over 8.3 m (drillhole GA85-20) and 1.52 g/t Au over 3.0 m with one assay of 7.3 g/t Au over 0.3 m (drillhole GP85-21). Silver values are generally very low (1.0 g/t Ag and 0.3 g/t Ag, respectively, for the above two drillhole intersections).

9.8 TouchDown VMS Prospect

The TouchDown VMS Prospect is located approximately 3,000 m northeast of and along strike with the Boomerang, Domino, and Hurricane zones. The TouchDown zone lies within geologically similar host rocks as the Boomerang zones. Exploration at TouchDown is still at an early stage and Messina will be developing the mineralisation model for this prospect with additional exploration and drilling.

9.9 Hurricane VMS Prospect

The Hurricane VMS Prospect is located 500 m northeast of and along strike with the Boomerang deposit. Mineralisation is hosted within sericitised and mineralised felsic tuffs and reworked sedimentary rocks, similar to those hosting mineralisation at the Boomerang deposit, and is likely within the same stratigraphic horizon. Messina is still in the early stages of exploration on this Project and continues to develop the mineralisation model.

9.10 Domino VMS Deposit

The Domino VMS deposit is approximately 200 m northeast of and 100 m deeper than the Boomerang deposit and Messina believes it may lie in a different stratigraphic horizon. The Domino deposit trends approximately 300 m long, has a height of between 25 m and 50 m, and ranges from 1 m to 15 m thick, averaging 11 m thick. This deposit currently remains open along strike to the east and west but it may join into the lower-most section of the Boomerang deposit 200 m to the west. Massive sulphide mineralisation and a 20 m thick pyritic stringer have been intersected in drilling.

9.11 Boomerang VMS Deposit

The Boomerang VMS deposit is located about 15 km southwest of and on strike with the Tulks Hill and Tulks East VMS deposits at the southwest end of the Tulks South Property, at between 65 m and 395 m below surface. The deposit exceeds 400 m along strike, between 5 m and 20 m thick, and ranges between 70 m and 290 m down dip. The deposit dips approximately 85° to the northwest and plunges from 0° to 15° to the southwest. Two styles of mineralisation have been recognised at Boomerang, consisting of massive sulphides and stockwork mineralisation.

Massive sulphide mineralisation comprises fine to medium grained sphalerite-galena-chalcopyrite-pyrite with pyrite becoming more prevalent towards the margins of the massive sulphide lens. Two phases of sphalerite are recognised: reddish sphalerite and pale yellow to light brown sphalerite that correlates with the highest grade zinc intersections. Arsenopyrite and another, unidentified silvery metallic mineral is associated with the highest grade gold and silver sub-intervals within the massive sulphide; this mineral could be the precious metal rich mineral series of tetrahedrite-tennantite (fahlore) which may explain the high arsenic and tin and anomalous mercury values in drillhole samples.

Stockwork mineralisation occurs stratigraphically below the main massive sulphide lens but also lateral to and above it, thus enveloping the core of the deposit. The immediate hangingwall stockwork, gradational contacts, and replacement textures such as veining, sulphide porphyroblasts, and relict quartz phenocrysts, are interpreted to support a shallow sub-seafloor replacement model for the deposition of the sulphides.

9.12 Curve Pond VMS Prospect

The Curve Pond VMS Zone is about 4 m thick and has been traced along strike in outcrop and drillholes for over 130 m. The Curve Pond Zone lies near the southwest end of the Property and is the possible laterally faulted, northeast strike extension of the Boomerang mineralised horizon, 1,700 m to the northwest.

The VMS zone consists of a narrow interval about 4 m wide of banded and massive pyrite with 5% to 10% pyrrhotite, 1% to 2% chalcopyrite, and scattered sphalerite and galena. Surface grab samples have assayed up to 26% Zn and 1.2% Pb. A few shallow drillholes in the zone have intersected base metals at the sheared upper contact of the sediments and felsic rocks and the massive sulphide lens with assays up to 3.1% Cu and 1.9% Zn over 15 cm.

Two distinct ferruginous horizons, interpreted to be structural fold repetitions, overlie the Curve Pond massive sulphide zone. At Curve Pond, the iron formation ranges from a few metres up to 70 m thick and has been traced along strike for about 7,000 m.

Four drillholes (drillholes CVP02-01 to CVP02-04) totalling 249 m were drilled along a 150 m long strike length at 50 m spacing. All four drillholes intersected from one to three intervals of massive sulphides over 0.15 m to 1.8 m downhole. The sulphides, which are structurally attenuated, occur between the contact of the altered footwall felsic volcanic rocks and the overlying hangingwall iron formation sediments. This iron formation is a fairly extensive stratigraphic marker horizon that has been traced over a 6,000 m strike length along which a number of significant VMS-type zones are known. The best assayed intersection of the four drillholes was in drillhole CVP02-02 with values of 0.6% Cu, 0.3% Pb, 3.5% Zn, 14 g/t Ag, and 0.4 g/t Au over 0.63 m.

9.13 Baxter's Pond VMS Zone

ASARCO identified the altered and pyritic zones at the Baxter's Pond area but no VMS zones were located; one significant pyritic gossan zone, very similar in scale to the pyrite zones at the Tulks Hill and Tulks East VMS deposits, was located about 600 m east of Baxter's Pond. During the 1980s several continuous exploration programmes located significant geochemical and geophysical anomalies and numerous zones of alteration and sulphide mineralisation including the extensive Baxter's Alteration Zone, the Curve Pond Zone (formerly Green Pond) and the Wineskin sulphide Zone. A few short drillholes drilled by BP intersected narrow sections of VMS with some base metals grading up to 19.3% Zn over 1 m.

10 Exploration

The following is excerpted and updated from Dearin (2006).

10.1 Historical exploration

The earliest recorded exploration work in the area was undertaken in 1871 by Alexander Murray for the Geological Survey of Canada. Murray identified sedimentary rocks along the Exploits River and greenstones along Red Indian Lake. In 1905, a prospector working on the AND Co. concession area north of Red Indian Lake discovered the first of the Buchans ore bodies, located 38 km to the north-northeast of the Tulks South Property.

Early attempts by the AND Co. to bring the Buchans massive sulphide ore deposits into production were stalled in 1911 due to metallurgical difficulties with the fine grained and interspersed nature of the sulphides.

10.2 Exploration by ASARCO from 1916 to 1975

Around 1916, ASARCO acquired samples of the Buchans ore and began persistent metallurgical testing specifically using the flotation method. By 1925, ASARCO had developed a metallurgical process to successfully treat the ores into separate lead and zinc concentrates using xanthate as a flotation agent. In 1926, ASARCO entered into a 50 year agreement with the AND Co. to bring the Buchans ore deposits into commercial production. While both companies would equally share in the profits of the operations, ASARCO was the mine operator and had full control over the exploration rights to the entire AND Co. concession for a 50-year period.

From 1926 through 1975, ASARCO mapped the AND Co. charter lands in a piecemeal fashion at 1: 12 000 scale. No exploration (excluding mapping) was conducted in the Tulks South Property area prior to the early 1960s due to poor access. In the early 1960s ASARCO initiated reconnaissance stream and soil sampling and prospecting which resulted in the discovery of the Tulks Hill Prospect in 1961. The Tulks Hill Prospect, now held by Buchans River Ltd., is a 4 km^2 Property wholly contained within Reid Lot 228 of the Tulks South Property. ASARCO conducted detailed work on the Tulks Hill Prospect including geophysics, considerable diamond drilling, and limited underground drifting.

During the late 1960s and up to 1975, ASARCO performed geological mapping, gridding, soil sampling, VLF-EM, SP, and magnetic surveys, defining a number of base metal-type anomalies in the extensive Boomerang Alteration Zone, originally known as the Green Zone by ASARCO. ASARCO drilled six short drillholes into the zone returning anomalous but uneconomic values.

10.3 Exploration by Abitibi from 1976 to 1984

Following the expiration of the AND Co. and ASARCO 50 year lease in 1976, Abitibi, the successor company to the AND Co., took over all mineral exploration on the AND Co. charter lands. ASARCO continued to mine the Buchans ore deposits up to 1984 but had no direct involvement in exploration.

Abitibi undertook a moderate level of exploration in the northeastern end of the Tulks South Property area primarily due to the development of forestry access roads in this area. Following up stream and soil geochemical anomalies associated with the Tulks Hill area, Abitibi discovered the Tulks East Prospects in 1977. Following detailed geochemistry, geophysics, trenching, and line cutting, Abitibi drilled approximately 50 drillholes at Tulks East, on the current Tulks South Property, and ultimately discovered three lenses of massive sulphide mineralisation exceeding 6 Mt in size.

During 1979 and 1980, Abitibi carried out a continuation of the ASARCO work with infill exploration surveys and drilled five drillholes into coincident copper-zinc soil and VLF-EM anomalies along the Boomerang Alteration Zone and the Zinc Zone trend, located about 2,000 m to the southwest of Boomerang. All drillholes intersected sericitised felsic tuffs with minor disseminated base metals. After 1980, no further work was done on the Boomerang Alteration Zone portion of the Property by Abitibi.

During 1984 and 1985, Abitibi decided to discontinue all mineral exploration activities in Canada. Abitibi offered the entire AND Co. concession lands and the contained Reid Lots for sale. On 18 September 1985 Abitibi sold all of their rights in the AND Co. charter lands including the contained Reid Lots, with no retained royalties or interests (aside from the Reid Ltd royalty), to BP.

10.4 Exploration by BP from 1985 to 1992

BP focused their exploration efforts on the Tulks Hill volcanic belt where forestry road access had improved to allow reasonable access to all areas including the southern end of the Tulks South Property for the first time. In 1985 BP conducted a detailed lake sediment sampling survey and an airborne EM survey over all of the AND Co. lands. Lake sediment anomalies led to the 1986 discovery of a widespread gold zone at Midas Pond–Glitter Pond in the southern part of the Property.

BP conducted line cutting, soil sampling, magnetic and electromagnetic geophysics, extensive trenching, and mapping surveys prior to drilling 19 drillholes at Midas Pond. This work traced an auriferous shear related alteration zone over 2,000 m along strike and across a width of 200 m but was drilled to generally less than around 50 m vertically below surface.

On the Boomerang Alteration Zone, as a continuation of the Abitibi programme, BP carried out only minor geological mapping and no drilling. In late 1989, BP found the Green Zone Prospect (later renamed Curve Pond) at the southern end of the Tulks South Property about 2,000 m southeast of the Boomerang Zone. BP completed follow up line cutting, detailed mapping, trenching, soil and rock geochemistry, and geophysical surveying over this new discovery and drilled five drillholes at Curve Pond in 1990 before ceasing all activities in Newfoundland in 1991.

During 1991 and 1992, BP made the decision to stop all mineral exploration in North America. BP amalgamated with several of its subsidiaries, changed its name to Talisman Energy Inc. (Talisman Energy) and sought buyers for all of their Canadian mineral properties including the AND Co. charter lands. On 26 February 1993, Talisman Energy sold all of their rights, with no retained royalties or interests, in the AND Co. charter lands including the contained within Reid Lots and staked claims to Noranda. At this point in time the original 5,180 km^2 of the AND Co. charter lands had been significantly reduced in size to approximately 1,440 km^2 over the preceding 15 years by both Abitibi and BP.

10.5 Exploration by Noranda from 1993 to 1998

After acquiring the AND Co. charter lands in 1993, Noranda focused on flying another airborne EM survey plus completing line cutting, grid mapping, soil and till sampling, systematic lithogeochemical surveying, and magnetic and electromagnetic surveying tracing the sulphide rich horizons between known zones of mineralisation within the Tulks South Property. Noranda also tried to evaluate known mineralised zones, such as the Tulks East and Curve Pond Zones, by diamond drilling to 200 m vertical depth and using surface and downhole electromagnetic surveying to guide further drilling.

In the Boomerang Alteration Zone, Noranda cut an extensive new grid and carried out a comprehensive exploration programme including magnetic, VLF-EM, max-min and gravity surveys, and in fill soil sampling. Numerous coincident anomalies were identified over and adjacent to the Boomerang Prospect. During 1993 to 1997, Noranda drilled eight drillholes totalling 3,284 m along approximately 1,000 m of strike length in the Boomerang Alteration Zone, one of which was very likely on the edge of the as yet undiscovered Domino VMS deposit.

In 1997, Noranda ceased all exploration in Newfoundland. During late 1997 and 1998, Noranda divided the large Victoria Lake Project (AND Co. charter lands, Reid Lots and staked claims) into six packages of ground totalling 2,880 km^2 and offered each for option sale. On 16 July 1999, Tulks Resources Ltd. (Tulks Resources), a private Newfoundland corporation, signed an Option Agreement with Noranda and acquired the right to earn a 100% interest in the Tulks South Property.

10.6 Exploration by Tulks Resources from 1999 to 2000

Tulks Resources undertook a four drillhole diamond drilling programme in November 1999 at the Tulks East Prospect. The first two drillholes of the programme intersected both the A Zone and B Zone massive sulphide bodies. Two drillholes intersected the down plunge continuation of the A Zone sulphide lens. Tulks Resources also undertook a limited evaluation and structural mapping programme of other areas within the Tulks South Property.

The programme established that the Tulks East A Zone is zoned with pyritic sulphides close to surface and suggested the base metal content increased at depth. It also showed the Tulks East A Zone is zoned into copper-rich and zinc-rich portions of the massive sulphide lens, which is typical of classic VMS deposits.

On 26 March 2001, Tulks Resources assigned 100% of their Option Agreement rights in the Tulks South Property to Windarra.

10.7 Exploration by Windarra in 2001

During 2001 Windarra Minerals began a Global Positioning System (GPS) based mapping programme, conducted whole rock lithogeochemical analyses extending the Noranda whole rock database to key areas, continued limited structural mapping, prospecting, and re-evaluation of old drillhole core and several VMS style surface showings. Three distinct and separate VMS targets were identified for drilling: the Tulks East Zone; the Boomerang Zone, and the Curve Pond Zone.

On 9 April 2002, Windarra Minerals assigned all of their rights to the Tulks South Property Option Agreement to Mishibishu, subject to a 2% NSR royalty.

10.8 Exploration by Mishibishu in 2002

Between August and October 2002, Mishibishu completed twelve diamond drillholes totalling 1,197 m to test three base metal targets and one gold target. Four drillholes drilled at the Curve Pond VMS Zone all intersected multiple intervals of massive sulphides over narrow widths along a 150 m strike length. Six other drillholes tested regional VMS targets in the main productive felsic horizon; all holes intersected intense VMS style alteration with disseminated and stringer type mineralisation.

Two drillholes tested the Midas Pond Gold Prospect with one drillhole intersected 1.5 g/t Au over 5.3 m downhole.

10.9 Exploration by Messina from 2003 to 2007

On April 7 2003, Mishibishu underwent a corporate restructuring and name change to Messina Minerals Inc, and the original Noranda Option Agreement was assigned to Messina. In February 2004, Noranda was taken over and merged with Falconbridge. All of Noranda's rights to the 1999 Option Agreement were subsequently transferred to Falconbridge.

Messina has undertaken historical data compilation, field mapping, prospecting, sampling, and covered the entire Property with a modern airborne digital photogrammetry survey coupled with detailed elevation data.

10.9.1 Tulks East VMS Deposit

During 2003 Messina carried out compilation work and field evaluations in the Tulks East Zone in preparation for diamond drilling during 2004. 100 km of line cutting and a detailed gravity survey over and along the deposit was completed.

Tulks East A Zone

In 2005, one drillhole (TE05-86) was drilled in the Tulks East A Zone. This 383 m long drillhole was a 100 m step out from a previous drillhole which intersected 30.5 m of massive sulphides with significant grades over 9.7 m. Drillhole TE05-86 intersected 22.3 m of massive sulphides with a 9.7 m section grading 0.4% Cu, 0.3% Pb, 6.2% Zn, 19 g/t Ag, and 0.3 g/t Au at a vertical depth of about 260 m below surface. In 2006, Messina drilled seven diamond drillholes into the Tulks East A Zone, which intersected mineralisation with values ranging from 0.5% Zn to 5% Zn with downhole widths of 10.3 m to 41.1 m. This zone has now been traced over 400 m along strike and to vertical depths of over 260 m; grades appear to be increasing down plunge.

Tulks East B Zone

Six short drillholes (TE04-80 to 85) totalling 474 m intersected significant VMS base metals in the B Zone. Five of the six drillholes intersected significant grades of copper and zinc. The four near-surface drillholes (TE-04-80, TE-04-82, TE-04-83 and TE-04-85) drilled 35 m apart along strike, intersected massive sulphides with overall weighted average grades of 1.1% Cu, 1.3% Pb, 6.6% Zn, 64 g/t Ag and 0.54 g/t Au over an average intersected width of 2.5 m at depths of 8 m to around 65 m vertically below surface. Drillhole TE04-84 intersected the edge of the B Zone 10 m below surface with low grade base metals (approximately 1.4% combined copper, lead, and zinc). The deepest drillhole, TE04-81, intersected sulphides averaging 0.9% Cu, 2.8% Pb, 11.0% Zn, 174 g/t Ag and 1.1 g/t Au over 1.8 m at a depth of 140 m in the B Zone. These drilling results have confirmed the previously estimated base metal grades of the B Zone, extended the B Zone strike length and down plunge extent, and indicates that a near surface portion of the B Zone is accessible by open pit mining techniques and that the Tulks East VMS deposits have potential to extend both down plunge and along strike.

Initial ore microscopy indicated the ore zones to have simple grain relationships and textures that will permit a clean separation of zinc from copper sulphides with common metallurgical extraction techniques.

In 2007, Snowden undertook a change of support analysis of the Tulks East B Zone drillhole data to assist in defining a potential target for further exploration work. Snowden defined a mineralised envelope constraint using a 1% Zn cut-off and 61 samples from 22 drillholes. The change of support calculation used the variogram model interpreted for the Boomerang deposit, assuming the same direction and continuity of grade distribution, and a similar mining selectivity (6 mE by 6 mN by 6 m elevation).

The change of support analysis is a mathematical approach for estimating the likely proportion of a deposit that will be above a specified cut-off grade for a given mining selectivity. This approach gives a global estimate of potential tonnes and grade only (Table 10.1). The quality of the estimate is dependent on geological confidence, data quality, and confidence in the variogram model, all of which are low at this stage of exploration at the Tulks East B Zone. The potential quantity and grade shown in Table 10.1 is conceptual in nature, there has been insufficient exploration to define a Mineral Resource, and it is not known if further exploration will result in the target being delineated as a Mineral Resource.

Table 10.1 Tulks East B Zone potential quantity and grade from change of support analysis

Zn cut-off (%)	Tonnes	Zn (%)	Pb (%)	Cu (%)
0.5	141,000	6.2	1.0	0.5
1.0	140,000	6.3	1.0	0.5
2.0	134,000	6.5	1.0	0.5
3.0	124,000	6.8	1.0	0.5
4.0	110,000	7.2	1.1	0.6

10.9.2 Middle Tulks Alteration Zone

Prospecting in 2005 located a new zone of massive sulphides in outcrop at the Middle Tulks Prospect about 17 km northeast of the Boomerang deposit and 3.5 km southwest of the Tulks East Zone. A distinctive zone of massive chlorite-pyrite footwall alteration has been traced along 600 m of strike length and it has a 1 m wide zone of massive sulphide carrying significant base metal values; several large angular boulders returned assays up to 5.6% Cu.

10.9.3 228 Gold Zone

Prospecting in early 2004 on Reid Lot 228 of the Property led to the discovery of the 228 Gold Zone, 2 km southeast of the Tulks East Zone. Seven grab samples of quartz vein from a 10 m^2 area of the veins had assay values from 1.6 g/t Au to 87 g/t Au.

10.9.4 Tulks West VMS Prospects

The Tulks West VMS zone was drilled with four drillholes (TX02-01 to TX02-04) totalling 522 m in the Tulks West stringer zone. All drillholes intersected chloritised and felsic volcanic rocks with stringer and disseminated sulphides carrying weak and sporadic base metals; anomalous arsenic, tin, and mercury were detected in several samples and are believed to be indicative of VMS-type hydrothermal alteration near a vent. Several zones of weak sporadic base metal mineralisation were intersected with assays ranging up to 0.2% Cu to 1.4% Cu, 0.4% Pb, 1.1% Zn to 2.8% Zn, and 2.3 g/t Ag to 12 g/t Ag over narrow (0.3 m to 0.5 m) intervals.

10.9.5 Eagle Gold Prospect

Prospecting near the western side of the Property led to new gold zone discovery called the Eagle Gold zone. The auriferous quartz veins have been traced along 1,400 m of strike length where they are concentrated in a 5 m to 10 m wide sub-zone within the approximately 150 m wide sheared alteration zone. Some 17 grab samples from the five outcrops have assay values between 5.5 g/t Au to 56.5 g/t Au; visible gold has been observed in a number of samples.

During 2004, Messina drilled five short drillholes (EO04-01 to EO04-05) totalling 366 m along 1,500 m of strike length at the Eagle Gold Zone. The best intersection was in drillhole EO04-04, drilled beneath a trench chip sample of the vein which assayed 7.3 g/t Au over 2 m; the drillhole intersected the mineralised zone 25 m vertically below surface and samples had assay values of 3.0 g/t Au and 24.1 g/t Ag over 3.1 m. The other four drillholes intersected narrow intervals of low grade gold values.

Messina established 25 km of cut line grid and took approximately 1,100 soil samples over a 7 km strike length to the northeast of the Eagle Gold Zone. Numerous gold in soil anomalies consistent with Eagle gold-style mineralisation occur on this portion of the Property.

10.9.6 Midas Pond Gold Prospect

Messina drilled two short drillholes (GP02-38 and GP02-39), totalling 166 m. Drillhole GP02-38 intersected the sheared mineralised zone from 52.5 m to 57.7 m which averaged 1.46 g/t Au over 5.3 m with one high assay of 4.75 g/t Au over 0.5 m. Drillhole GP02-39, drilled directly beneath GP02-38, intersected the mineralised zone from 81.2 m to 89.6 m where it hosted a few weak veins that assayed generally less than 100 ppb Au.

10.9.7 TouchDown VMS Prospect

In May 2007, Messina made a new VMS-style massive sulphide discovery at the TouchDown Prospect located approximately 3,000 m northeast of and along strike with the Boomerang, Domino, and Hurricane zones. The TouchDown zone lies within geologically similar host rocks as the Boomerang zones and is coincident with a 900 m long gravity anomaly and an 800 m long HLEM conductor. Drillhole TD07-01 intersected a near surface 33.2 m thick section of massive sulphides with anomalous base and precious metal values, containing inter-layered black chert, chloritic sediments, and greywacke containing massive sulphide clasts.

10.9.8 Hurricane VMS Prospect

In October 2006, Messina discovered the Hurricane VMS Prospect, located approximately 500 m east of the Boomerang zone in the same stratigraphic horizon, at a depth of approximately 200 m below surface. Drillhole GA07-209 intersected 5.3 m at 19.1% Zn, 9.6% Pb, 1.4% Cu, 177 g/t Ag, and 0.9 g/t Au. Messina followed up with GA07-214 which intersected 15.3 m at 13.0% Zn, 8.3% Pb, 1.5% Cu, 201 g/t Ag, and 1.0 g/t Au. Several subsequent drillholes showed similar grades in both base and precious metals. 27 drillholes totalling 16,738 m along a 600 m strike length have been completed in this zone. Seven of these drillholes have intersected anomalous base and precious metal grades over a strike length of approximately 300 m, with widths ranging from 1.0 m to 15.3 m.

10.9.9 Domino VMS Deposit

Messina discovered the Domino VMS Zone in 2006 during deeper drilling at the northeast end of the Boomerang deposit. 27 diamond drillholes in the Domino deposit, totalling approximately 16,738 m, have confirmed it as a separate, adjacent structure approximately 150 m the east of Boomerang. The mineralised zone at Domino has been defined at approximately 300 m along strike, between 25 m and 50 m in height, and between 1 m and 15 m thick, averaging 11 m thickness.

In 2007, Messina undertook Mineral Resource estimates on the Domino deposit, which are reported in Section 17 of this document.

10.9.10 Boomerang VMS Deposit

In December 2004, Messina made a new discovery of massive sulphides in their second drillhole at the Boomerang VMS Zone following the recognition of many indicators of high VMS potential, including the presence of extensive bedrock alteration and mineralisation, base metal soil anomalies, and gravity and EM anomalies.

Messina re-cut approximately 57 line km of an existing Boomerang grid and carried out a detailed magnetometer survey, geological mapping, prospecting, soil geochemical surveys, HLEM, and gravity surveys.

Since mid-2007, 204 drillholes totalling 54,294 m have been drilled over the Boomerang deposit area along a strike length of less than 1,500 m. This drilling traced out the overall dimensions of the Boomerang VMS deposit ranging from 75 m to 500 m vertical depth and over a strike length of 430 m, confirmed the high grade nature and gold-rich section of the base metals, and identified a number of other areas requiring more detailed drilling.

In 2007, Messina undertook Mineral Resource estimates on the Boomerang deposit, which are reported in Section 17 of this document.

10.9.11 Curve Pond VMS Prospect

Four drillholes (CVP02-01 to CVP02-04) totalling 249 m were drilled along a 150 m long strike length at 50 m spacing. All four drillholes intersected from one to three intervals of massive sulphides over 0.15 m to 1.8 m downhole. The best intersection of the four drillholes was in drillhole CVP02-02, which intersected 0.6% Cu, 0.3% Pb, 3.5% Zn, 14 g/t Ag and 0.4 g/t Au over 0.63 m.

10.9.12 Baxter's Pond VMS Zone

Messina drilled three drillholes (BA05-01 to BA05-03) totalling 954 m along a 3.3 km strike length testing the Baxter's Pond VMS zone, southwest of the Boomerang Alteration Zone VMS horizon. EM and magnetic signatures very similar to those over the Boomerang zone occur along this horizon at Baxter's Pond. All drillholes intersected the altered Boomerang type rocks favourable for hosting mineralisation.

11 Drilling

The information in this section has been excerpted from Dearin (2006).

11.1 Drilling prior to 2003

No detailed records remain of drilling procedures prior to 2003. Messina believes that previous drilling by ASARCO, Abitibi, BP, and Noranda were with AQ and BQ size drill core.

11.2 Drilling by Messina from 2003 to 2007

Messina contract New Valley Drilling Inc. of Springdale Newfoundland for all diamond drilling. All drill rig moves were accomplished with Muskeg tractors. NQ size tools were used in all cases.

The collar positions of each drillhole are designed by Messina's senior geological personnel and are located in the field by a Messina geologist. Drillholes are initially located using older drillholes as a reference if available, the existing cut grid, or with a GPS unit. All Messina drillholes and older drillholes in the vicinity are eventually surveyed with a GPS instrument under the supervision of Dudley Burt Land Surveyors of Springdale, Newfoundland. The GPS unit used is a real time instrument with an accuracy of ±3 cm laterally and ±5 cm elevation. Actual grid line coordinates are also calculated or measured and entered into the drillhole logs. Coordinates are in recorded in UTM NAD 1983 format and elevations are recorded in metres above sea level.

All drillholes are drilled at an angle to the horizontal; the collar azimuth and dip is designed and checked by a Messina geologist. The drillhole azimuth is set with an extended foresight from the drill head and the azimuth of this line direction is measured with a Brunton or Silva type compass. The drillhole collar dip is set and measured with an inclinometer on the drill rods at the drill head.

Prior to mid-2006, each drillhole was surveyed as the drillhole progressed with a single shot Tropari compass-inclinometer to provide directional information on the deviation (both azimuth and dip) of the drillhole. All Tropari measurement depths were determined by and taken by the driller under the supervision of a Messina geologist. Measurements were generally taken every 70 m to 100 m downhole as the drillhole advanced. The Tropari compass was read by a Messina geologist with magnetic north readings recorded and then corrected to true north readings. The trace of the drillhole was plotted to determine if the drillhole was on target to intersect the zone of interest. If a drillhole was deviating too much it may have been cancelled and started over again at a different dip angle to account for the drift. A final Tropari reading was usually taken near the bottom of each drillhole and also at the collar just below the casing in the drillhole.

No serious deviation problems have been encountered in the drilling to date; however, due to the relatively narrow width of the Boomerang and Domino VMS deposits, a number of drillholes have deviated enough that the targets would have been missed. These drillholes were abandoned and re-drilled with a new dip angle.

During mid-2006, Messina began surveying all drillholes with a Reflex EZ-Shot instrument. This downhole single shot survey instrument is similar to the Tropari but has a greater accuracy. The EZ-Shot is used every 50 m to record azimuth and dip. In addition, Messina used the EZ-Shot to re-survey approximately 50 drillholes measured by Tropari which had surveys at a distance of greater than 70 m downhole.

12 Sampling method and approach

The following information in this section has been excerpted and updated from Dearin (2006).

12.1 Sampling prior to 2003

There are no detailed records of the sampling method and approach prior to 2003. Messina believes that sample intervals were taken along geological boundaries rather than a pre-determined length, and that samples were cut with a mechanical core splitter with half the core retained for future reference.

Non-mineralised intersections of the historical diamond drill core is stored at a core storage facility in Buchans, Newfoundland, maintained and operated by the Mines and Energy branch of the Government of Newfoundland and Labrador. Noranda removed all ore intersections for storage at their facilities, and discarded the ore intersections after closing their office in 1998.

12.2 Sampling by Messina from 2003 to 2007

12.2.1 Core logging

The core of every drillhole is examined at the drill site and notes are made by a Messina geologist and passed on to the Chief Geologist. Drill cores are transported daily to either the Baxter's Pond field exploration camp or the Buchans Junction office and core storage yard where the core is logged and sampled where required.

Lithological core logging is done by a Messina geologist under the supervision of Messina's Chief Geologist, who examines the core and checks the hand written drillhole logs for correctness and continuity of logging between geologists. The geologist records the following data:

- Lithological description.
- Alteration types and style.
- Sulphide mineralogy and estimate of percentages.
- Texture, colour, grain size, and other details of the sulphides.
- Description of lithological and mineralogical contacts and angles.
- Structural features such as cleavage, foliation, schistosity, lineations, shearing, fault zones, and attitudes of these structures.
- Core loss and percent core recovery.
- Since 2005, rock quality designation (RQD) measurements.
- Photographs of the more interesting sections, especially massive sulphide zones; various geological details are recorded with close-up photographs.
- Drillhole collar coordinates, drillhole azimuth and downhole dip, drilling dates, and responsible geologist

Messina has developed a comprehensive digital rock code for the project including 71 lithological codes, eight alteration codes, and 21 mineralisation codes.

All drill logs are also entered into Surpac mining software database for detailed plotting of cross and longitudinal sections and for data manipulation.

12.2.2 Sampling

Mineralised drillhole core intervals are sampled by a Messina geologist based upon geological characteristics and mineralogy and not necessarily at regularly spaced intervals. Maximum sample length is generally less than 1.5 m. The sampling procedure is as follows:

- A Messina geologist, immediately after logging is complete, marks up the mineralised sample intervals with a red crayon. Each sample length has a red crayon line drawn the along the length of the core to direct cutting with the saw.
- Most, but not all samples are contiguous with no missing intervals in between sampled intervals.
- Sample tags are placed in a plastic sealable bag and stapled into the core box at the beginning of each sample interval.
- Samples of marked drillhole core are split in half lengthwise with a diamond bladed core saw by a Messina technician.
- Additional samples, around 1.5 m in length, are assayed at least 3 m on either side of significant mineralisation.
- All split samples are measured for specific gravity at the Buchans Junction office using a weigh scale with an accuracy of ±0.5 g.
- Sawn samples are collected in large, new, clear plastic sample bags; the corresponding sample tag is placed in the bag and the bag is tied. Lots of ten to 15 samples are put into shipping fibre bags that are also sealed and marked.
- Samples are trucked by Messina personnel to Eastern Analytical Labs in Springdale, Newfoundland.
- All drillhole core is stored at Messina's office in Buchan's Junction.
- The end of each box is well marked with aluminium labels showing the drillhole number, depths, and box number.

12.2.3 Independent statement on sampling methods

In Mr. Dearin's opinion, the drillhole logging and sampling procedures used by Messina conform to standard industry practice in general and there are no factors that would have resulted in sample bias.

13 Sample preparation, analyses, and security

The information in this section has been excerpted and updated from Dearin (2006).

13.1 Sample preparation, analyses, and security prior to 2003

No detailed records remain on the preparation and analytical procedures used on the property by companies previous to Messina. However it is known that ASARCO split their cores with a mechanical core splitter and initially had the cores analysed by wet chemical analysis methods at the ASARCO laboratory facilities in Buchans. In latter years ASARCO employed an atomic absorption spectrometry (AAS) instrument with wet chemical analysis determinations as a fall back. Abitibi and BP would have used similar mechanical core splitters and used the local laboratories in Springdale (Atlantic Analytical, now Eastern Analytical Laboratories) and Pasadena (Chemex Laboratories or Acme Laboratories), Newfoundland. All of these samples would have been analysed by fire assay with AAS finish for precious metals. Noranda would have used these same analytical methods at both Eastern Analytical Laboratories or at Noranda's own laboratory in Bathurst, New Brunswick.

13.1.1 Independent statement on sample preparation, analyses, and security prior to 2003

Mr. Dearin is of the opinion, based on the limited data, that the sampling techniques and analytical procedures employed prior to 2003 would have been acceptable by today's standards

13.2 Sample preparation, analyses, and security by Messina from 2003 to 2007

Messina use Eastern Analytical Limited (Eastern) of Springdale, Newfoundland for sample preparation and analyses. Eastern are not certified to ISO 90001:2000 or any other recognised organisation. Check assays and other lithogeochemical analyses are performed by Chemex Laboratories (Chemex) of North Vancouver, British Columbia. Chemex are certified by a number of organisations including the National Association of Testing Authorities (NATA) and ISO 9001:2000.

13.2.1 Sample security and chain of custody

Core samples are handled only by authorised Messina personnel from the drill shack to the analytical laboratory. The bags or boxes containing the shipped samples are tied or taped and during transportation to the lab are under the direct care of a Messina employee or senior contract personnel.

Each sample is given a unique sample number that allows it to be traced through the sampling and analytical procedures and for validation against the original sample. The second half of the sawn drill core is stored on site at either Messina's Buchans Junction office or Baxter's Pond field camp as a control sample and is available for review and re-sampling if required. All pulps are stored at Eastern for 30 days and coarse rejects for 90 days.

In Eastern's laboratory, only qualified and authorised laboratory technicians are permitted to handle the samples; there is no indication on the Messina shipping forms or sample bags as to whether samples contain low grade or high grade mineralisation.

13.2.2 Sample preparation

The following sample preparation procedures are used by Eastern for all Messina rock and core samples:

- Once the samples are received by Eastern, the samples are sorted by sample number to ensure no samples are missing. Eastern opens each sample bag and places the entire core sample along with a labelled envelope in separate clean aluminium metal trays for drying, usually in a low heat environment (approximately 100°C) for eight to twelve hours.
- When dry, the entire sample is crushed in a Rhino jaw crusher to approximately 75% passing –10 mesh, all of which is split through a Jones-type riffle splitter; 25% of the split (approximately 250 g to 300 g) is collected for pulverising and the remaining 75% of the crushed sample is saved in the original sample bag as the coarse reject portion. The original sample tags are placed back into this bag.
- The 25% sub-sample of the crushed sample is pulverised in a ring mill to 98% passing –150 mesh. This pulp, usually around 200 g to 300 g, is then rolled and mixed by hand for 30 seconds on a piece of Kraft paper.
- Once rolled the pulp is put in a labelled Kraft envelope for immediate analysis.
- The ring pulverisers and jaw crushers are cleaned with silica sand between different client sample batches. The sample preparation technician also inspects the rings and bowls after each sample is processed, silica sand is used to clean equipment as needed.

13.2.3 Sample analyses

The following procedures are used for copper, lead, zinc, and silver analyses:

- For the base metals, a 0.20 g sample is digested in a beaker with 10 ml of nitric acid and 5 ml of hydrochloric acid for 45 minutes. Samples are then transferred to 100 ml volumetric flasks and analysed on a Varian Atomic Absorption Spectro-Photometer. The lower detection limit is 0.01% for all base metals with no upper detection limit.
- For silver a 1,000 mg sample is digested in a 500 ml beaker with 10 ml of hydrochloric acid and 10 ml of nitric acid with the cover left on for 1 hour. Covers are removed and the liquid is allowed to evaporate leaving a moist paste. 25 ml of hydrochloric acid and 25 ml of de-ionized water are added, heated gently, and swirled to dissolve solids. Samples are cooled, transferred to 100 ml volumetric flasks, and analysed on the Varian Atomic Absorption Spectro-Photometer. The lower detection limit is 0.34 ppm Ag with no upper detection limit.

Gold is analysed in every sample by the fire assay technique. The following procedures are applied for gold analyses:

- The sample is weighed (15 g or 30 g) into an earthen crucible containing lead-oxide fluxes and then mixed. Silver nitrate is then added and the sample is fused in a fire assay oven to obtain a liquid which is poured into a mould and left to cool. The resulting lead button is then separated from the slag and cupelled in the fire assay oven to obtain a silver bead which contains the gold. The silver is removed with nitric acid and then hydrochloric acid is added. After cooling, de-ionized water is added to bring the sample up to a preset volume. Then the sample is analysed by AAS.

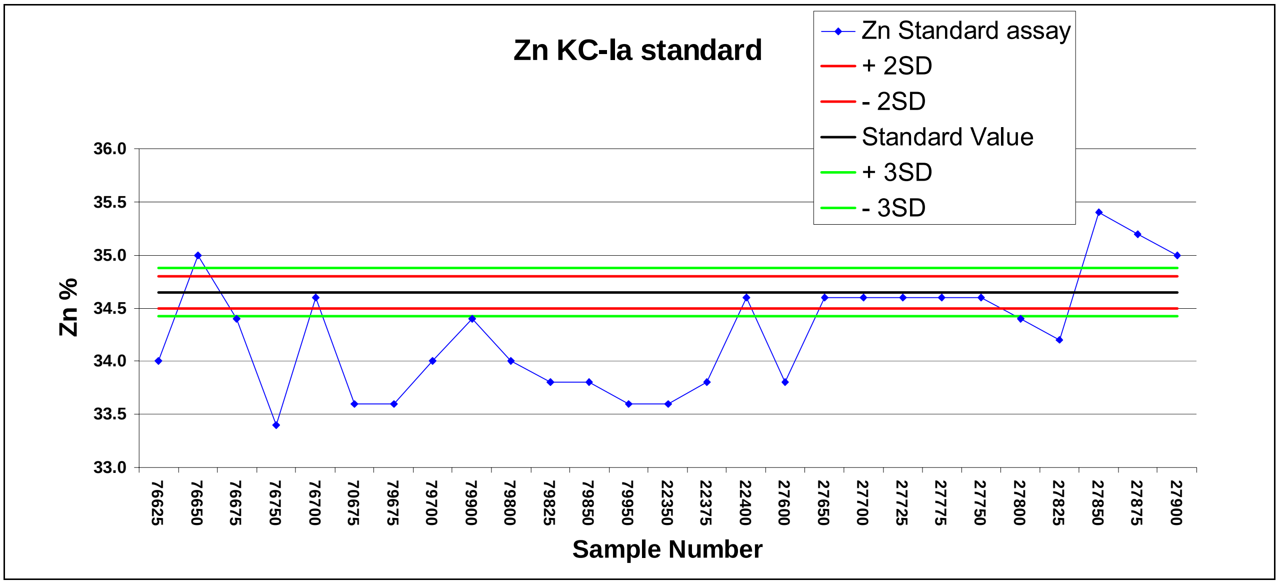
13.2.4 Quality control measures

As part of Messina's quality control procedures, Messina submits certified standard material (Standard KC-la) sourced from the Canada Centre for Mineral and Energy Technology (CANMET) to Eastern for analysis, and submits duplicate pulp samples prepared by Eastern to Chemex for check analyses. Messina have not had a history of submitting blanks or duplicate drill core samples, but have recently initiated a programme of quarter core duplicate sample submission at a frequency of one in every 20 samples.

Certified standards

Certified standard material has been submitted to Eastern for 23 of the 81 drillholes used in the Boomerang Mineral Resource estimate. None have been submitted for the Domino project. Analyses from 27 standard submissions are available for review, and indicate poor accuracy with a negative bias (Figure 13.1). Snowden considers the poor accuracy may be a reflection of the quality of the now depleted standard samples, which easily degrade when exposed to air (CANMET). Messina is currently sourcing an alternative certified standard reference material.

Figure 13.1 KC-la zinc standard analyses from the Boomerang Project



Boomerang duplicate pulp samples

Messina has submitted duplicate pulp sample analyses for 47 of the 81 drillholes used in the Boomerang Mineral Resource estimate for re-analyses by Chemex. 254 duplicate samples analysed by ICP and/or Aqua Regia digest with ICP-AES or AAS finish are available for review from a data set of 826 samples used in the Mineral Resource estimate.

The duplicate pulp samples have returned results indicating good precision between the two types of analyses, with 80% of the samples returning better than ±5% precision. Example plots for zinc are provided in Figure 13.2 and Figure 13.3.

Figure 13.2 Precision pairs of Boomerang duplicate pulps analysed by ICP

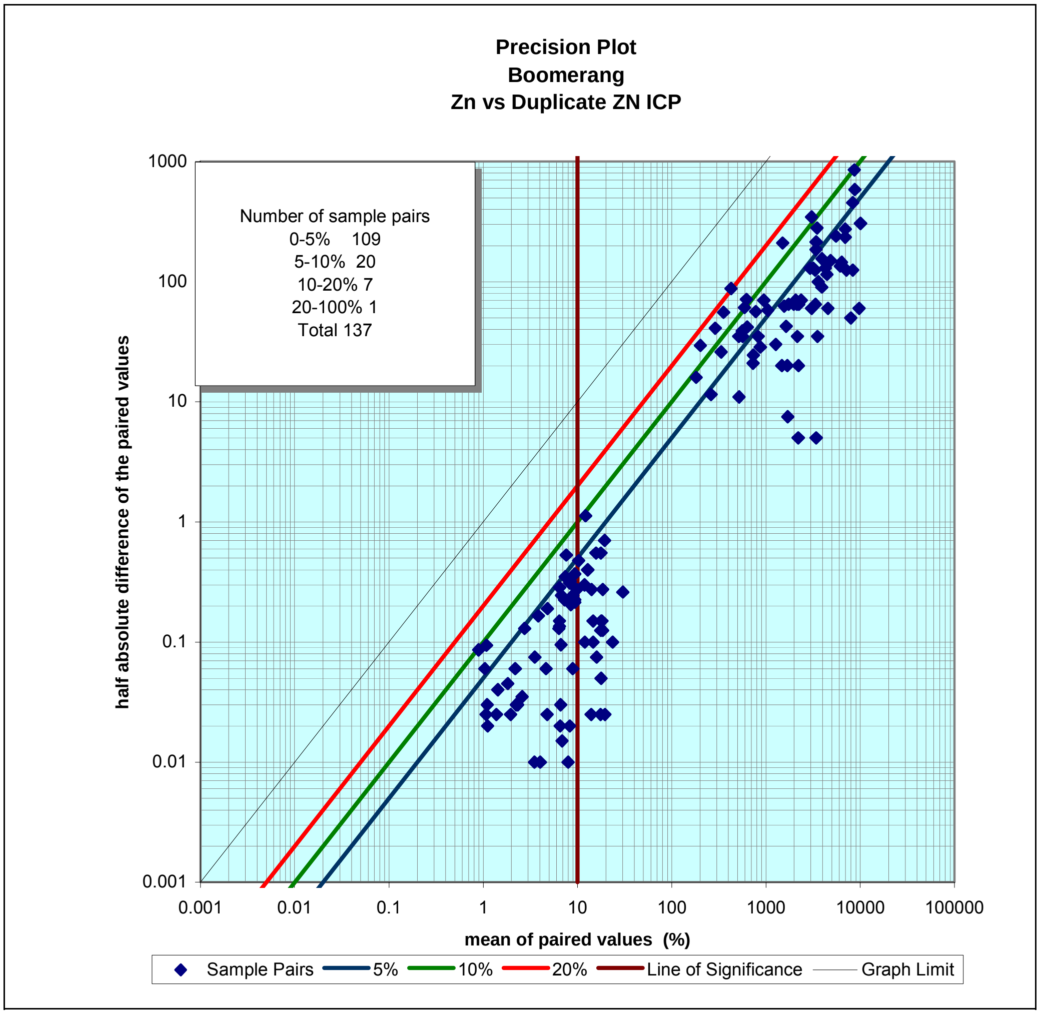
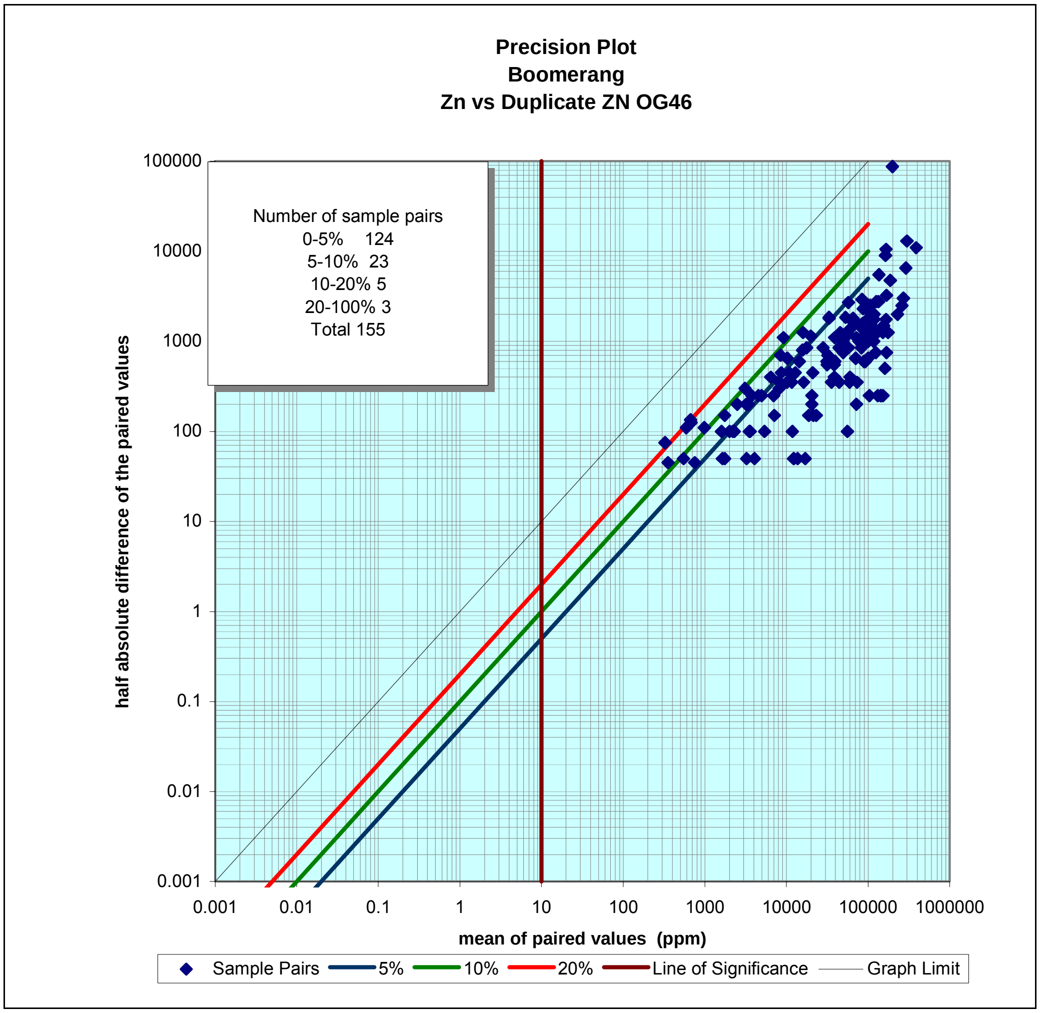


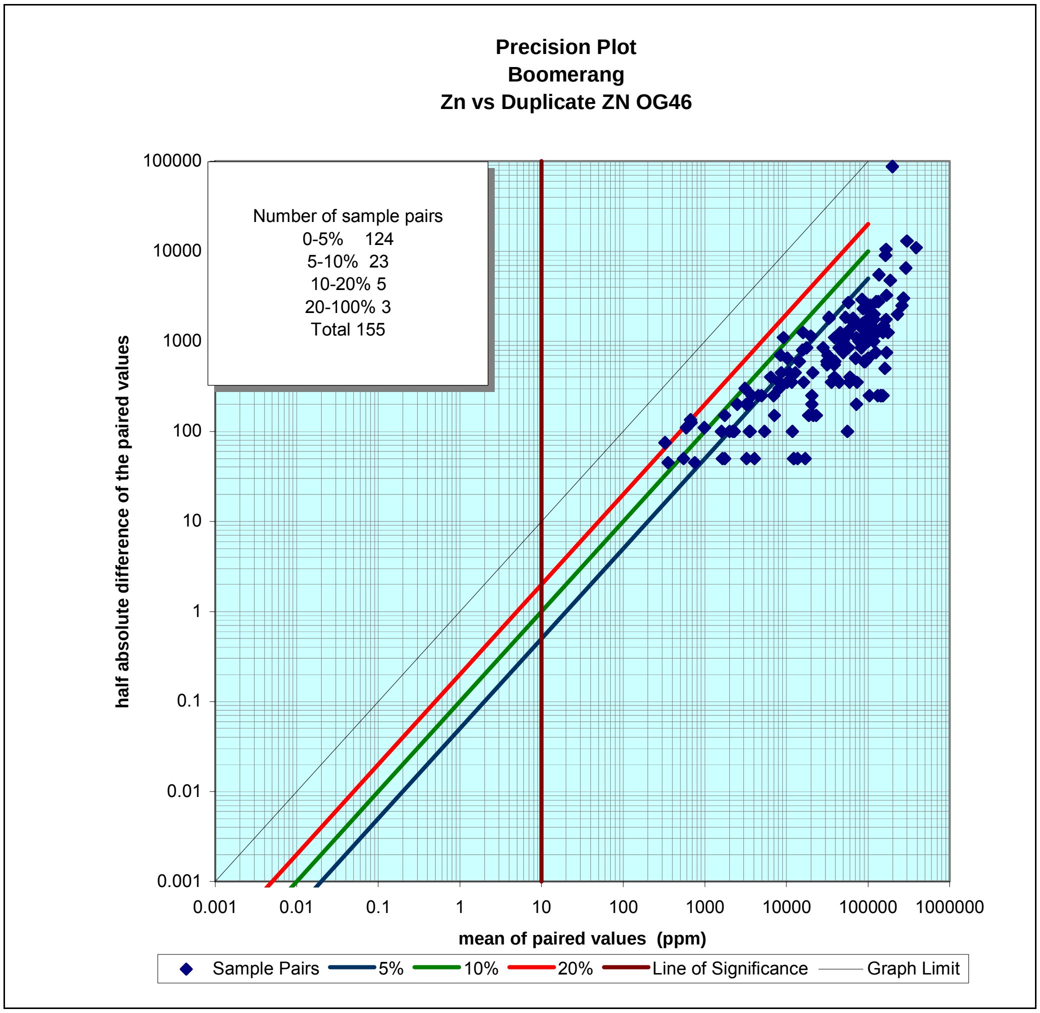
Figure 13.3 Precision pairs of Boomerang duplicate pulps analysed by Aqua Regia digest and ICP-AES or AAS finish



Domino duplicate pulp samples

Messina has submitted duplicate pulp data from ten of the 24 drillholes used in the Domino Mineral Resource estimate for analysis by Chemex. Analyses of 19 samples are available for review. The duplicate pulp samples have returned results indicating good precision, with all but one of the samples returning better than ±5% precision. An example plot for zinc is provided in Figure 13.4.

Figure 13.4 Precision pairs of Domino duplicate pulps analysed by Aqua Regia digest and ICP-AES or AAS finish



Laboratory quality control measures

As part of their internal quality control measures, Eastern uses government certified standards made by CANMET. Duplicates, blanks, internal standards, and CANMET certified standards are inserted between every 40 samples to maintain quality control.

Eastern randomly selects sample pulps at the end of each day and analyse them the following day to check data precision. A number of samples are sent periodically to another laboratory for quality control checks. At the end of each day, Eastern's recording technician and chief technician verify the results before the sample assay data is released.

13.2.5 Independent statement on sample preparation, analyses, and security after 2003

In Mr. Dearin's opinion, the handling of the diamond drill core samples, sample preparation, and chemical analyses is sufficient to ensure reliable assay results for use in Mineral Resource estimates. Snowden recommends that Messina submit blank samples with every mineralised intersection submitted for analysis, and obtain a better quality standard material. Quality control sample submissions should be spatially representative of the mineralised zone, on the order of one in every 20 samples, or at least one per mineralised intersection for each drillhole.

14 Data verification

14.1 Independent site visit July 2007

Mr. Dearin visited the Tulks South Property on 9 July and 10 July 2007 to review data relevant to this Technical Report. Mr. Dearin has previously visited the Property on 15 March and 16 March 2006. Mr. Dearin conducted discussions with key personnel (Table 14.1), a detailed review of most geological cross sections and longitudinal sections, and reviewed the main diamond drillhole logs and diamond drill core for the Boomerang, Domino, Hurricane, and Tulks East deposits. Mr. Dearin reviewed drillhole core logs with base metal sulphide estimates and assays and made a visual comparison of the sawn drill core from 20 drillholes in the Boomerang, Domino, and Hurricane zones. The majority of the diamond drillhole logs and detailed cross sections were constructed by Gerry Squires, P. Geo., Chief Geologist for Messina.

Table 14.1 Key Messina personnel involved in data verification discussions

Name	Position
Peter Tallman, P.Geo.	President
Kerry Sparks, P.Geo.	Vice President Exploration
Gerry Squires, P.Geo.	Chief Geologist
Kevin Regular	Regional Exploration Manager, Health, Safety and Environment Manager
Floyd House	Geologist
Darryl Hyde	Geologist

14.2 Independent review of mineralised intersections

Mr. Dearin did not take independent samples from the project because the grade of the mineralisation can be confirmed visually. Mr. Dearin examined the mineralised sections of twelve recent drillholes from the Boomerang and Domino zones and three mineralised sections from the Hurricane Zone. No discrepancies were noted. The 18 Boomerang and Domino drillholes are stored at Messina's Buchans Junction warehouse while the three Hurricane drillholes are temporarily stored at Messina's Baxter Pond field exploration camp.

Mr. Dearin visually estimated the percentage of sulphides and base metal minerals and converted the mineralogical estimates to approximate base metal grades. The visual estimates were done on a sample by sample basis according to the sample numbers and downhole depth intervals marked by Messina. Mr. Dearin then compared his visual estimates to the drill log visual estimate and the assay value entered in the drill log. In 80% to 90% of the cases, Mr. Dearin was in close agreement with both Messina's visual mineralogical estimate and the assay grade for each interval. In the outstanding cases, Mr. Dearin re-examined the drill core to satisfactorily confirm the drill core assay results.

14.3 Independent review of drillhole collar locations

Mr. Dearin visited the cut line grid over the Boomerang, Domino, and Hurricane deposits and observed the well-marked drillhole casings of all drillholes on seven sections. Mr. Dearin measured the drillhole collar UTM coordinates of a number of the marked drill casings with a hand held GPS unit. These coordinates matched those surveyed by Messina to the accuracy limit of the hand held GPS (±10 m).

14.4 Independent statement on drillhole data

Mr. Dearin is of the opinion that the quality of Messina's exploration work and drillhole logging procedures are within industry standards, and are reliable for use in Mineral Resource estimates.

15 Adjacent properties

The following section has been excerpted and updated from Dearin (2006).

There are at least five significant adjacent properties to the Tulks South Property that contain significant resources of VMS base metals or gold deposits including the Tulks Hill, Long Lake, Valentine Lake, and Tulks North Properties, and the Duck Pond copper-zinc mine. Numerous other, generally untested VMS and gold showings and significant zones exist on adjacent properties; most are not extensively drilled and none have Mineral Resources published to date.

15.1 Tulks Hill Property

The Tulks Property hosting the Tulks Hill VMS deposit is contained within 16 mineral claims totally enclosed by Messina's Tulks South Property within Reid Lot 228 and is approximately 14 km northeast of and 6 km southwest of and generally along strike with the Boomerang and Domino deposits, and Tulks East VMS deposits, respectively. These claims are held as a joint venture between Buchans River Ltd. and Prominex Resource Corp. The Tulks Hill deposit consists of four stratiform adjacent lenses of massive sulphides on the order of 730,000 t.

The mineralisation is hosted within northeast trending felsic volcanic rocks of the Tulks Hill volcanic belt. Mineralisation consists of up to 70% pyrite with sphalerite, galena, and chalcopyrite with variable amounts of arsenopyrite, tetrahedrite-tennantite and pyrrhotite. The felsic pyroclastic units hosting this deposit are the same or stratigraphically very close to the horizon hosting the Boomerang and Domino deposits, the Tulks East deposits, and other VMS deposits to the northeast.

15.2 Long Lake Property

The Long Lake Property lies adjacent to the northeast side of the Tulks South Property and is under option from Falconbridge by Messina. Messina is currently earning a 100% interest in the Property. Messina sub-optioned a portion of the Property to Aldrin Resources Corp.

The Long Lake Property contains the significant Long Lake Main VMS deposit, which occurs in the Long Lake volcanic belt and is approximately 21 km east-northeast from the Boomerang and Domino deposits and 8 km south-southeast from the Tulks East deposits. This deposit is a narrow, high grade, baritic VMS deposit on the order of 560,000 t that has been traced by widely spaced diamond drilling over a 400 m strike length and to depths of 500 m vertically below surface.

15.3 Valentine Lake Property

The Valentine Lake Property occurs about 10 km immediately east of the Tulks South Property and adjacent to the southeast side of the Long Lake Property. The Property is 50% owned by Mountain Lake Resources Inc., who has an option to acquire the remaining 50% from Noranda (Falconbridge). The most important asset on the Valentine Lake Property is the Valentine Lake gold deposit, discovered by BP in 1986. BP drilled some 51 shallow drillholes into the two main gold zones along approximately 3,000 m of strike length and defined an auriferous quartz-tourmaline vein system cutting a quartz monzonite intrusive. In 2005, Inferred Mineral Resources at the

Valentine Lake Property were reported at 1.3 Mt at 8.5 g/t Au using a 58 g/t Au assay top cut (Pilgrim, 2005).

15.4 Tulks North Property

The Tulks North Property lies contiguous to and at the northeast end of the Tulks South Property and is owned by Royal Roads Corp. This Property is host to numerous VMS type mineral zones and the Daniels Pond VMS deposit, all of which are hosted in altered felsic volcanic rocks of the Tulks Hill volcanic belt. The main VMS mineralised horizon, with a strike length of over 60 km, is thought to be the same or stratigraphically similar horizon to that which hosts the Boomerang, Domino, Tulks Hill, and Tulks East VMS deposits plus several other VMS deposits to the northeast of the Daniels Pond deposit.

The Daniels Pond VMS deposit contains typical VMS-style mineralisation hosted in strongly deformed quartz-sericite schists, originally a pyritic felsic volcaniclastic tuff. The mineralised zone has been traced along strike for over 1,200 m to a maximum vertical depth of 325 m and ranges from a few centimetres up to 5 m wide. Barite is present in and adjacent to the zone and the mineralisation is unusually rich in silver in the form of tetrahedrite-tennantite and native silver.

15.5 Duck Pond Cu-Zn Mine

The Duck Pond Mine occurs about 46 km east-northeast of the Tulks South Property and is within the economically important Tally Pond volcanic belt, a bimodal volcanic belt with many similarities to the Tulks Hill volcanic belt. The Duck Pond Mine area contains numerous mineralised zones and alteration zones, all with VMS-style mineralisation potential. The two main deposits are the Duck Pond Mine and the Boundary deposits, which are the largest VMS deposits in Newfoundland outside of the Buchans base metal camp. The Property is owned by Aur Resources Inc., who reported Measured Mineral Resources of 1.029 Mt at 4.05% Cu, 6.40% Zn, 0.98% Pb, 62.3 g/t Ag, and 0.86 g/t Au, and Indicated Mineral Resources of 2.511 Mt at 4.03% Cu, 7.40% Zn, 1.23% Pb, 75.6 g/t Ag, and 1.08 g/t Au above a 2.5% copper equivalent cut-off grade, as at the end of December, 2004 (Belleau and Pelz, 2005).

The Duck Pond deposit is comprised of the Upper Duck, Sleeper, and Lower Duck sulphide zones. The Upper Duck zone is located approximately 200 m to 450 m below surface, has an average thickness of approximately 25 m, and has an average dip of approximately 30° to the south. The Sleeper zone is comprised of several sulphide lenses that occur approximately 50 m below the Upper Duck zone. The mineralisation varies from massive sulphide to semi-massive stockwork sulphides. The Lower Duck zone is located approximately 650 m to 850 m below surface and is comprised of copper and zinc-enriched sulphide lenses ranging from 3 m to 15 m in thickness distributed over an approximate 700 m strike length. The average dip of the Lower Duck zone is approximately 30° to the south.

At the Boundary deposit, which is located approximately 4.5 km to the northeast of the Duck Pond deposit, the massive sulphides zones are comprised of three shallow zones, approximately 50 m below surface and referred to as the North, South, and Southeast Zones. The North Zone is approximately 250 m in length, 25 m to 50 m wide, and up to 25 m thick and is copper and zinc-rich on its western portion, while the eastern third is copper rich. The principally copper-zinc-rich South Zone is 120 m long, 70 m wide and is 15 m to 20 m thick. The Southeast Zone is a small copper-zinc lens representing less than 5% of the Boundary deposit Mineral Resource.

16 Mineral processing and metallurgical testing

Messina are currently undertaking a detailed mineralogy study on 15 half-split NQ-sized diamond drill core samples totalling approximately 45 kg of material from the Boomerang deposit. The samples represent three potential metallurgical types, including a low base metal, high gold grade zone with high pyrite content; a high grade base metal, moderate grade gold zone with low pyrite content; and a high zinc, very low gold zone. The work is being conducted by SGS Laboratories in Lakefield, Ontario, and will include:

- A mineralogical study to detail the modal abundance, particle size, and liberation characteristics of the minerals of interest.
- An assessment of the correlation of arsenopyrite with the base metals.
- Preliminary flotation tests to investigate possible processing options.
- A gold and silver deportment study on samples containing significant levels of both metals.
- Baseline environmental work including environmental characterisation of effluent streams to refine future environmental test programmes and for final process design.
- Tailings solids testing for Acid Base Accounting, Net Acid Generation testing, strong acid digest elemental analysis, and metal contaminant mobility testing.

The results of the test work are expected by the end of 2007.

17 Mineral Resource and Mineral Reserve estimates

17.1 Disclosure

Mineral Resources reported in this section were prepared by Ms. De Mark, a Senior Consultant of Snowden, under the technical supervision of Mr. Trueman, a Divisional Manager for Snowden. Ms De Mark, Mr. Trueman, and Snowden are independent of Messina.

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. No Mineral Reserves are reported in this Technical Report.

Snowden are not aware of any issues that materially affect the Mineral Resources.

17.2 Scope

Ms. De Mark performed a Mineral Resource estimate of the Boomerang and Domino deposits. Snowden worked collaboratively with Messina's staff geologist to produce estimations for reporting of Mineral Resources.

Messina interpreted and created mineralised domain models and provided a validated drillhole and intersections database, suitable for block modelling and estimation. Snowden was responsible for using this supplied data to produce estimations of density, zinc, copper, lead, gold, and silver mineralisation for the mineralised domain of the Boomerang and Domino deposits. Based on geological and statistical analysis, it was necessary to modify the mineralised domain models for the estimation; these modifications were performed by Snowden with the input and approval of Messina.

17.3 Supplied data

Messina provided validated raw drillhole data, models of mineralised domains, and for the Boomerang deposit, a mineralised intersection table flagging intersections of the Boomerang deposit for use in the estimate. Data was supplied in Microsoft Excel CSV and AutoCAD DXF format. Messina also supplied relevant technical documentation.

17.4 Boomerang deposit

17.4.1 Introduction

Pamela De Mark, Senior Consultant, MAusIMM, and an employee of Snowden, served as the Qualified Person responsible for preparing the Mineral Resource estimates for the Boomerang Project. The Mineral Resource estimation work was peer reviewed by Mr. Alex Trueman, Divisional Manager, MAusIMM, and an employee of Snowden.

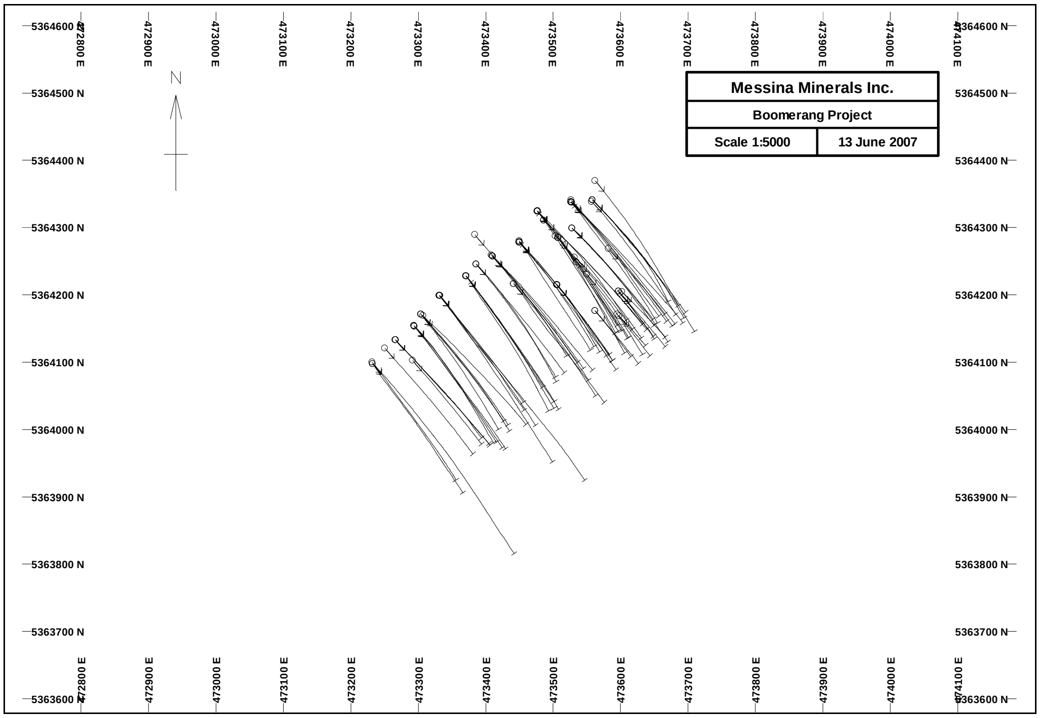
This report uses definitions from and follows the guidelines of the CIM Definition Standards for Mineral Resources and Mineral Reserves and NI43-101 Form F1. The Project is at an early stage, and no mine design or economic parameters have yet been defined.

17.4.2 Data preparation and analysis

Data preparation

Snowden prepared desurveyed drillholes from collar, survey, lithology, and assay data supplied by Messina. Data from 81 diamond drillholes for a total of 26,803.41 m were used for the Messina Boomerang 2007 Mineral Resource estimate. The collar locations are given in Appendix A. A location map of the drillholes is shown in Figure 17.1.

Figure 17.1 Location map of drillholes used in the Boomerang 2007 Mineral Resource estimate



Data transformations

The drilling pattern is oriented to the northeast-southwest on a UTM grid. Messina applied a correction to the magnetic value recorded in downhole surveys to convert to the UTM grid and provided Snowden with the final azimuth data. Snowden converted the downhole dip to conform to Datamine convention (downward direction holes are indicated with a positive dip sign). All holes were drilled downward.

Raw sample grades were provided in units of parts per million (ppm) for copper, zinc, and lead, and in parts per billion (ppb) for gold, which were converted to percent (%) and grams per tonne (g/t), respectively, for Mineral Resource reporting purposes. Silver grade data was supplied in g/t and no changes were made to the units. No other transformations or rotations have been performed by Snowden on the data or models.

Data validation

Validation checks in Datamine mining software included searches for overlaps or gaps in sample and geology intervals, inconsistent drillhole identifiers, and missing data. No errors were noted.

Downhole surveys are taken at irregular intervals on an average of every 43 m. Drillhole lift between surveys averages 1° with a maximum of 5° lift, while drillhole swings average 1.5° with a maximum of 10.5°.

Drillholes collars (except for GA-06-144 and GA-06-152) are surveyed by GPS with an accuracy of ±3 cm.

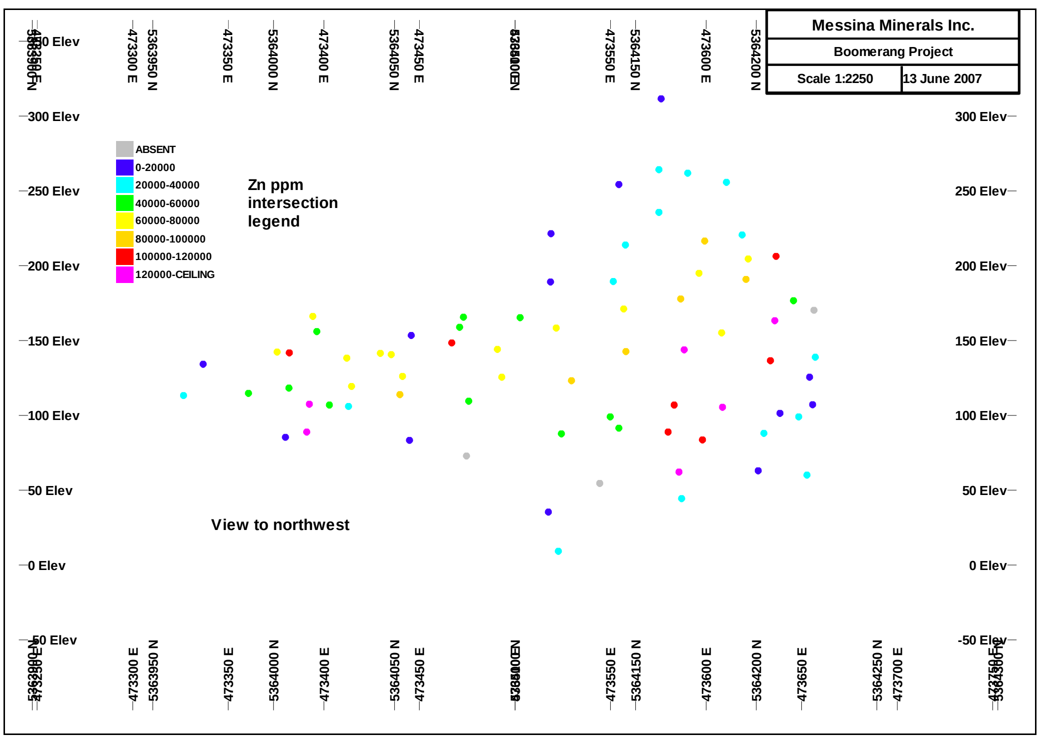
Data domaining

Messina geologists interpreted and produced three-dimensional wireframe models of the mineralised domain for the Boomerang deposit according to a 1% Zn cut-off. Snowden validated and modified the mineralised domain model according to the sample intersections table provided by Messina with the input and approval of Messina. Based on geological and statistical analysis, it was necessary to include additional lower grade intersections around the periphery of the model for the estimation; these modifications were performed by Snowden with the input and approval of Messina. Drillhole samples lying within the wireframe were coded as belonging to the mineralised domain. Samples lying outside the wireframe model were excluded from the estimate.

Messina geologists have identified grade trends in the deposit with higher grade gold values and lower grade zinc values closer to the surface of the deposit and lower grade gold values and higher grade zinc values at depth (Figure 17.2).

Towards the northeastern end of the deposit, the mineralised domain is offset to the south and has been modelled as a separate domain. It is apparent that this area is more structurally complex; however, there is no digital interpretation of the lithological and structural controls on mineralisation, and thus no further sub-domaining was attempted.

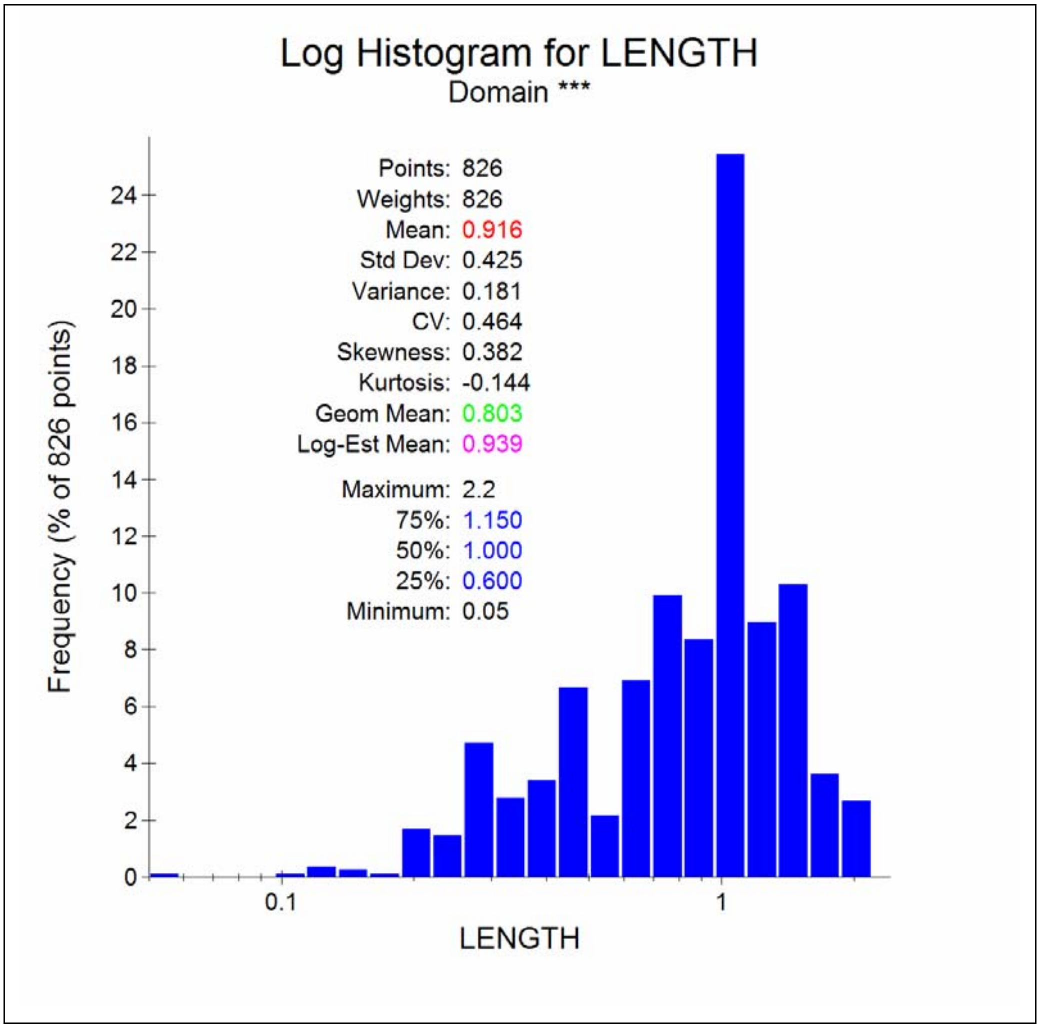
Figure 17.2 Oblique long section of Zn intersections



Sample compositing

Messina sample drillholes at various interval lengths depending on the length of intersected geological features. The majority of samples within the mineralised domain are 1 m in length (Figure 17.3). As mining selectivity has not yet been determined at this stage of the Project, Snowden elected to composite samples at 1 m intervals. The Datamine COMPDH downhole compositing process was used to composite the samples within the mineralised domain (i.e., composites do not cross over the mineralised domain boundaries). The COMPDH parameter MODE was set to a value of 1 to allow adjusting of the composite length while keeping it as close as possible to the composite interval (1 m), this is done to minimize sample loss, and to ensure equal sample support.

Figure 17.3 Log histogram of raw sample lengths within the mineralised domain



826 samples were coded as lying within the mineralised domain and available for use in the estimate. These samples were combined into a total of 764 samples during compositing (Figure 17.4). Table 17.1 shows a comparison of sample length and "metal" (sample length multiplied by grade) loss for the 1 m composite length. There is no loss of "metal" or length during the compositing process.

Figure 17.4 Log histogram of composite sample lengths within the mineralised domain

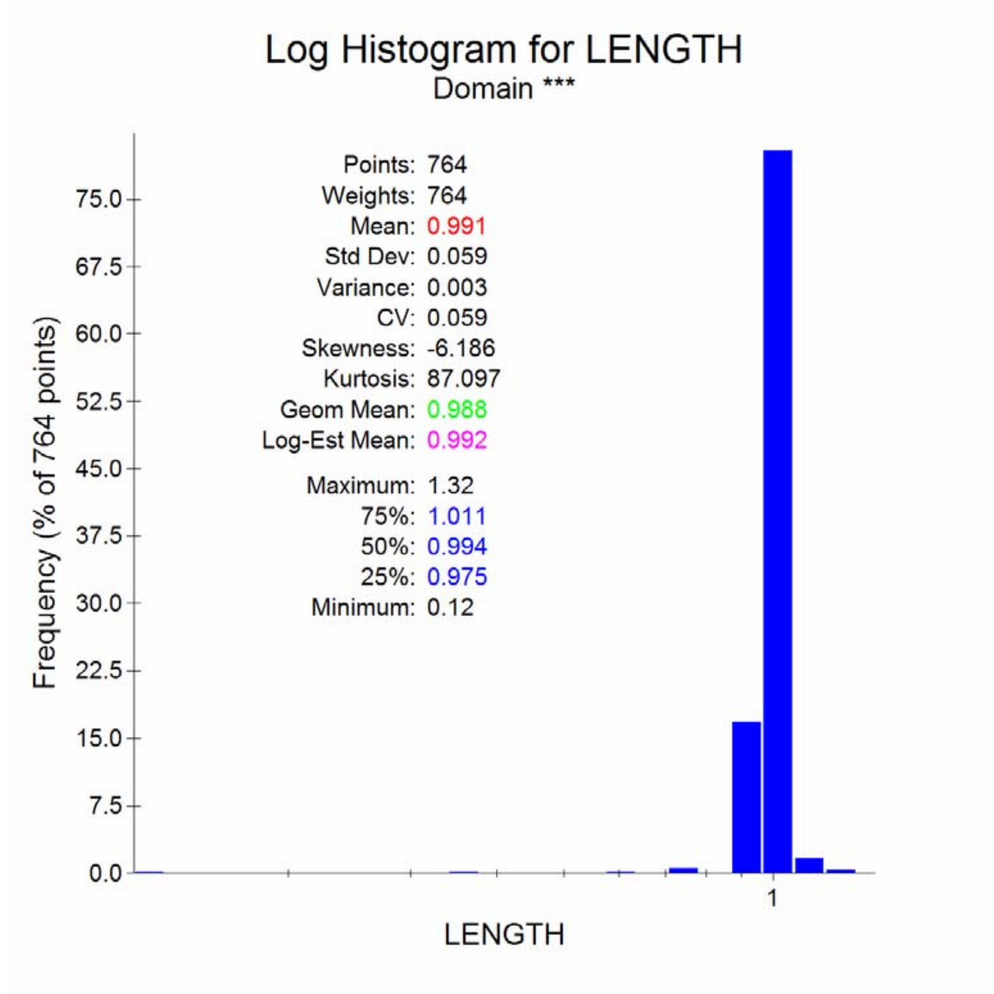


Table 17.1 Summary of metal and length loss by compositing

	Raw samples	1 m composited samples	% difference
Length (m)	756.98	756.98	0%
Zn (ppm*m)	49,880,846	49,880,846	0%
Cu (ppm*m)	3,581,794	3,581,794	0%
Pb (ppm*m)	21,902,987	21,902,987	0%
Ag (g/t*m)	80,465	80,465	0%
Au (ppb*lm)	1,279,659	1,279,659	0%

Core recovery treatment

Drill core recovery is regularly noted at the Boomerang deposit; however, prior to 2007, recovery was not consistently recorded on a sample by sample basis, and thus assigning a grade to the missing portion is not straightforward. Sample recoveries are acceptable with a mean of 97% recovered and there is no correlation between sample grade and recovery for any of the variables. For this reason Snowden elected to assign the grade of the adjacent sample to the missing portion while compositing samples.

Extreme value treatment

For the Boomerang deposit, each variable has been individually examined to identify the presence and nature of extreme values. This has been done by examining the sample histogram, log histogram, log-probability plot, and by examining the spatial location of extreme values. If required, top cut thresholds are determined by examination of the same statistical plots and by examination of the effect of top cuts on the mean, variance, and coefficient of variation (CV) of the sample data. A long section view of the spatial distribution of extreme zinc values in shown in Figure 17.5. Table 17.2 gives the statistics for composited and top cut sample values.

Figure 17.5 Oblique long section of extreme zinc value locations

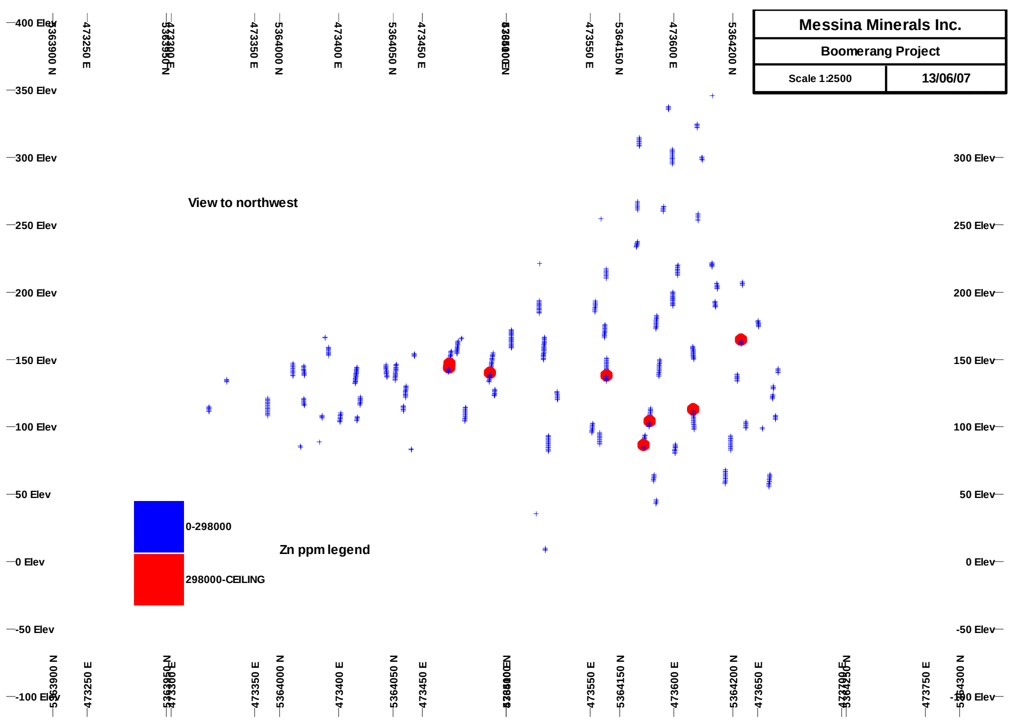


Table 17.2 Composite and top cut data statistics

		Composited data		Top cut data		Decrease (%)	
Variable	**Top cut**	**Mean**	**CV**	**Mean**	**CV**	**Mean**	**CV**
Zn (ppm)	298,000	65,895	1.0	65,544	1.0	1	2
Cu (ppm)	17,700	4,732	0.9	4,653	0.8	2	7
Pb (ppm)	118,000	28,935	1.0	28,835	1.0	0	1
Ag (g/t)	422	106.30	1.0	106.00	1.0	0	1
Au (ppb)	8,850	1,690	1.3	1,657	1.2	2	5
Density	none	3.73	0.2	n/a	n/a	n/a	n/a

17.4.3 Variography

Continuity analysis

Continuity analysis refers to the analysis of the spatial correlation of a value between sample pairs to determine the major axis of spatial continuity.

As the mineralised domain has a long and narrow shape oriented to the northeast, only orientations parallel to the plane of the domain were considered. Directions were determined by examining normal score transformed variogram maps (and their underlying variograms) rotated onto the plane of the mineralised domain.

Variogram modelling

It was not possible to produce a variogram for the minor axes for any of the variables; therefore the ranges for the minor axes were taken from the downhole variograms, which have a similar orientation as the minor axes. Once modelling was complete, a back-transform was performed to derive parameters suitable for OK. Table 17.3 gives the back transformed variogram model parameters used in the estimation.

Table 17.3 Back transformed variogram model parameters

Variable	Major axis orientation	Semi-major axis orientation	Minor axis orientation	C_0§	C_1§	Ranges (m)†	C_2§	Ranges (m)†
Zn	-39° → 238°	49° → 218°	10° → 320°	0.10	0.44	30, 18, 4	0.46	130, 57, 14
Cu	-10° → 232°	76° → 185°	10° → 320°	0.10	0.35	23, 23, 3	0.55	91, 38, 12
Pb	-05° → 241°	74° → 169°	15° → 330°	0.10	0.35	13, 18, 3	0.55	84, 38, 11
Ag	-14° → 240°	65° → 183°	20° → 325°	0.10	0.38	22, 20, 5	0.52	112, 35, 12
Au	-20° → 224°	68° → 194°	10° → 310°	0.10	0.31	59, 35, 7	0.43	107, 114, 19
Density	-10° → 242°	76° → 195°	10° → 330°	0.10	0.46	14, 27, 7	0.44	82, 72, 10

Note: § variances have been normalised to a total of one; † ranges for major, semi-major, and minor axes, respectively; structures two and three are modelled with a spherical model

17.4.4 Kriging parameters

Block size selection

Block size parameters were selected principally based on drillhole spacing, mineralised domain geometry, and possible mining selectivity (no mining selectivity parameters have yet been determined for the Boomerang deposit). Qualitative kriging neighbourhood analysis (QKNA) was used to determine the sensitivity of estimation quality to block size. The results of the analysis are somewhat counterintuitive with larger block sizes resulting in poorer quality outcomes. Snowden concludes that the unexpected outcomes are due to the long and narrow orientation of the mineralised domain trending obliquely to the block axes. Ultimately the block size selected for estimation was 6 mE by 6 mN by 6 m elevation. The selection of this size considered the possible mining selectivity, the QKNA results, and volumetric fit within the mineralised domain wireframe.

Minimum and maximum sample number selection

QKNA was used to determine the sensitivity of estimation quality parameters to changes in sample numbers used in the estimation. The results of the analysis indicate that minimum sample numbers ranging from between six to 15 had an equal effect on estimate quality. Estimation quality continued to improve with larger number of samples; a maximum of 20 samples has been used in this study to minimize the sum of the negative kriging weights. Ultimately, based on the QKNA results and experience, Snowden elected to use a minimum of twelve samples for the first and second search volumes, and eight in the final search volume, and a maximum of 20 samples for all search volumes. An additional restriction of no more than three samples from any one drillhole was also applied to force the sample search outward to include at least three different drillholes.

Search ellipsoid parameters

The search ellipsoid used to define the extents of the sample search neighbourhood has the same anisotropy as the variogram model. Ellipsoids were designed to match the configuration of the drillhole data, where areas of sparser drilling had a larger search ellipse than closer spaced drilling. Search ellipsoid parameters are given in Table 17.4.

Table 17.4 Sample search ellipsoid parameters

Variable	SD1§	SD2§	SD3§	SANGLE1†	SANGLE2†	SANGLE3†	SVOLFAC2‡	SVOLFAC3‡
Zn	60	45	20	145	100	110	1.5	2
Cu	60	45	20	140	100	115	1.5	2
Pb	60	45	20	145	100	125	1.5	2
Ag	60	45	20	145	95	125	1.5	2
Au	60	45	20	140	105	125	1.5	2
Density	60	45	20	145	100	105	1.5	2

Notes: §search distance 1, 2, and 3 respectively; †search angle rotations around the Z, X, and Z axis respectively; ‡first and second search expansion factors, respectively, if first search parameter requirements are unfulfilled.

17.4.5 Block modelling

Block models were created using the mineralised domain models supplied by Messina and modified by Snowden with Messina's input. Datamine block model prototype parameters are given in Table 17.5. Sub-celling of blocks was allowed down to 0.5 m in all directions in order to obtain a reasonable volumetric fit within the model (98%). Estimates were made within parent block cells.

Table 17.5 Datamine block model parameters

Parameter	Easting coordinate (m)	Northing coordinate (m)	Elevation coordinate (m)
Minimum coordinate	473300	5363900	0
Parent cell size	6	6	6
Number of cells	67	67	67

17.4.6 Ordinary kriging

Estimation of zinc, copper, lead, silver, gold, and density into blocks representing the mineralised domain was performed using OK. Kriging parameters were derived from panel size selection, QKNA, and variogram models. The sample data were composited, and where necessary, top cut prior to estimation. 764 samples were used for the estimation.

Block models were discretised to 4 points east by 4 points north by 4 points elevation. The PARENT parameter in Datamine's ESTIMA process was set to 1 which returns an estimate for the parent block rather than individual estimates for each sub-cell.

17.4.7 Estimation validation

The following five techniques were used to validate the block grade models:

- Visual inspection of block and sample composite grades in section, plan, and in three dimensions.
- Global comparison of mean declustered sample statistics with the mean estimated grade.
- Generation of slice validation plots of sample composite grades and estimated block grades to compare sample and estimated grade trends.
- Global change of support to indicate the degree of smoothing in the estimate.
- Comparison to estimations using alternate grade interpolation methods.

Visual validation

Visual comparison of block and composite grades on sections and plans showed good correlation between the input sample data and estimated values. No obvious discrepancies were noted.

Global validation

Snowden compared the global estimate to the top cut, declustered data; the non-declustered data; and to the nearest neighbour model, which in itself is a representation of declustered data (Table 17.6).

Comparisons of declustered sample grades with estimates indicate that the sample grades are sensitive to the dimensions of the declustering grid. Snowden attributes the sensitivity to the orientation of the drill pattern to the declustering grid (45°) and the sample distribution.

Snowden believes that the estimate is within acceptable limits of the input data on the basis of the nearest neighbour results. Snowden has found that the nearest neighbour results give a more robust global mean than cell declustering methods.

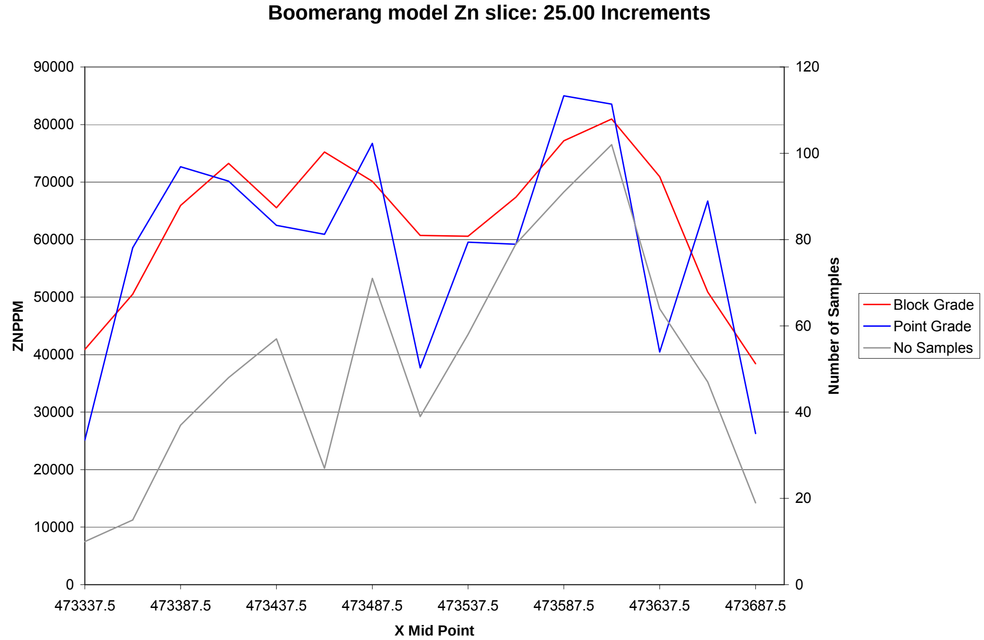
Table 17.6 Comparison of OK estimate to input samples and nearest neighbor model

Variable	Estimation means	Declustered sample means	% error
Zn %	6.46	5.77	12
Cu %	0.45	0.42	7
Pb %	2.70	2.51	8
Ag g/t	97.77	94.25	4
Au g/t	1.36	1.44	-6
Variable	**Estimation means**	**Raw sample means**	**% error**
Zn %	6.46	6.55	-1
Cu %	0.45	0.47	-4
Pb %	2.70	2.88	-6
Ag g/t	97.77	106.00	-8
Au g/t	1.36	1.66	-18
Variable	**Estimation means**	**Nearest neighbour estimates**	**% error**
Zn %	6.46	6.55	-1
Cu %	0.45	0.47	-4
Pb %	2.70	2.72	-1
Ag g/t	97.77	100.28	-3
Au g/t	1.36	1.41	-4

Slice validation plots

Slice validation plots show that the estimate matches the general trend of the sample data with an expected degree of smoothing due to change of support. An example slice plots for zinc on the X axis is shown in Figure 17.6.

Figure 17.6 Zinc grade slice validation plots



Slice plots at 25 m intervals along the X axis for Zn ppm

Global change of support

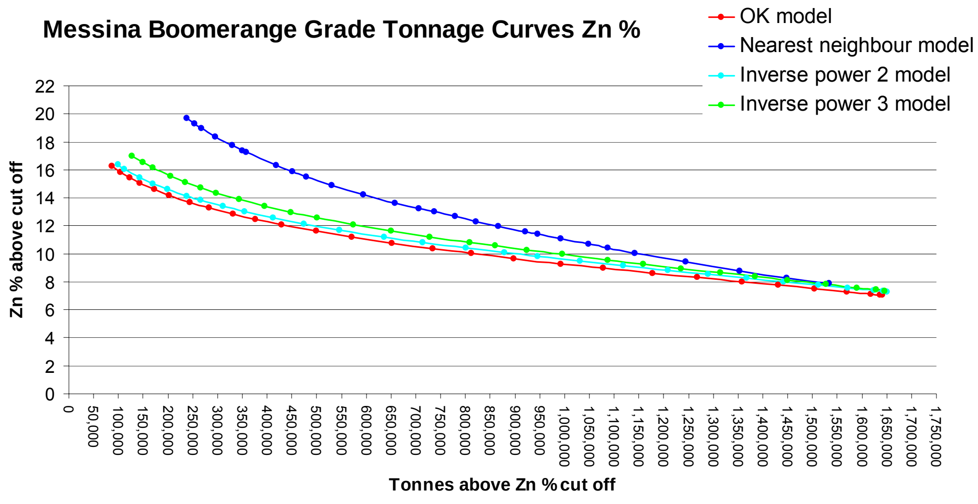
The theoretical grade-tonnage curve from global change of support can be compared to the grade-tonnage from the estimated blocks. This comparison is useful for determining if the degree of smoothing in the estimation is appropriate. For the Boomerang deposit, the comparison of grade-tonnage curves indicates minor conditional bias for poorly drilled areas of the deposit. Well drilled areas of the deposit generally have acceptable results when compared to the theoretical grade-tonnage curve.

Validation with estimates using alternate interpolation methods

Additional estimates using alternate interpolation methods were created validating the OK model. In the OK model, block estimates around very high and very low values are smoothed, or brought closer to the mean value of the sample neighbourhood, through the assignment of kriging weights on samples. Snowden prepared nearest neighbour, inverse distance squared, and inverse distance cubed models to compare with the OK model. Snowden do not consider nearest neighbour or inverse power models to be appropriate interpolation methods as they do not consider the spatial continuity of the domain, do not decluster the data (in the case of inverse distance), nor do they minimise error and bias in the estimate.

Compared to the nearest neighbour model, the OK model is increasingly smoothed at higher cut-off grades (Figure 17.7).

Figure 17.7 Zinc grade tonnage curves for alternate interpolation methods



17.4.8 Mineral Resource confidence classification

Snowden considered a number of aspects affecting confidence in the Mineral Resource estimation when assigning Mineral Resource categories:

- geological continuity (including geological understanding and complexity)
- data density and orientation
- grade continuity (including spatial continuity of mineralisation)
- estimation quality

Geological continuity and understanding

Messina geologists log drillhole core in detail including textural, alteration, structural, mineralisation, and lithological properties. Confidence in geological continuity and an understanding of the geological controls on mineralisation could be increased by applying codes for alteration, structure, and mineralisation to the downhole interval, and creating a digital interpretation of these features.

Data density and orientation

Messina has drilled the Boomerang deposit on a pattern roughly 25 m along strike and down-dip. Drillholes are designed to intersect the steeply dipping mineralisation at angles as close to perpendicular as possible.

Geological confidence and estimation quality are closely related to data density and this is reflected in the classification of Mineral Resource confidence.

Spatial grade continuity

Spatial grade continuity, as indicated by the variogram, is an important consideration when assigning Mineral Resource confidence classification. Variogram characteristics strongly influence estimation quality parameters such as kriging efficiency and regression slope.

The nugget effect and short range variance characteristics of the variogram are the most important measures of continuity. At Boomerang, the variogram nugget effect for zinc is relatively low at 10% of the population variance. 75% of the population variance occurs within a range of 50 m for zinc.

Estimation quality

Estimation quality is influenced by the variogram, the scale of the estimation, and the data configuration. Estimations of small volumes have poorer quality than estimations of large volumes. Measures such as kriging efficiency, kriging variance, and regression slope quantify the quality of local estimations.

Snowden used the estimation quality measures to aid in assignment of Mineral Resource confidence classifications. The classification strategy has resulted in the expected progression from higher to lower quality estimates when going from Indicated to Inferred (Table 17.7).

Table 17.7 Mean zinc estimation quality by classification

Category	Kriging efficiency	Regression slope	Kriging variance
Indicated	49.7	0.9	0.26
Inferred	29.3	0.8	0.37

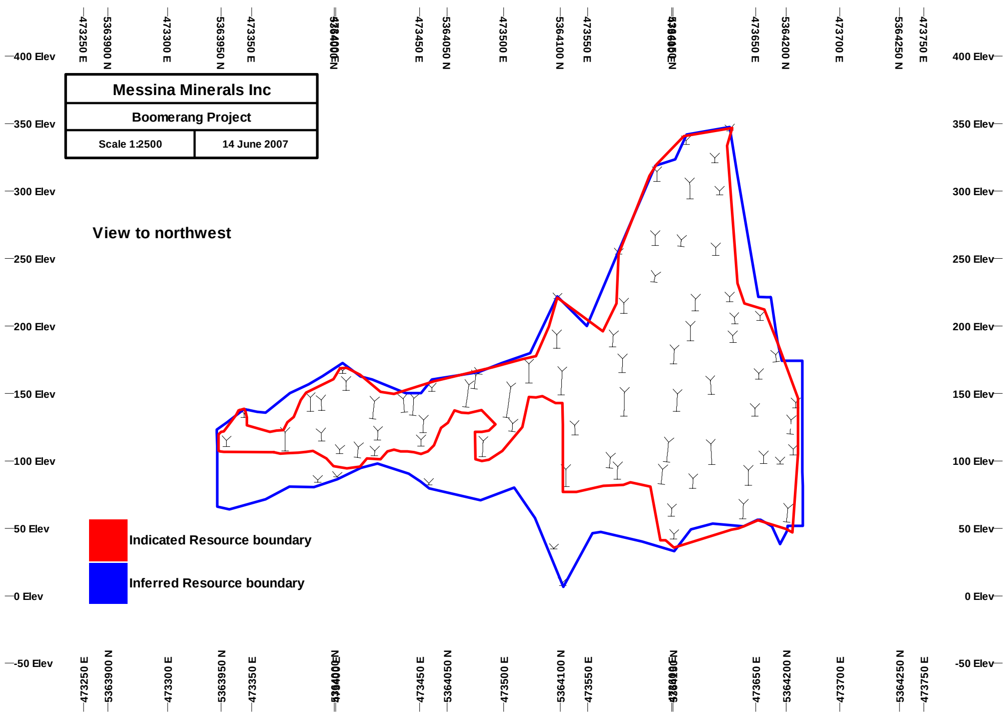
Classification process

Resources were classified by visually assessing drillhole spacing, estimation quality, and by consideration of the other factors described above. Because confidence of the geological continuity is not sufficiently high, no Mineral Resources were classified at the Measured category. The main classification criteria were based on kriging efficiency. Kriging efficiencies greater than 50% were coincident with regular patterns of close-spaced drilling and formed the basis of the following classification criteria:

- Indicated categories should have continuous zones of kriging efficiencies greater than 50%.
- Inferred categories should have continuous zones of kriging efficiencies greater than 30%.

Because the mineralised domain is modelled close to the extents of drilling, there were few continuous zones with kriging efficiencies of less than 30%. Figure 17.8 shows a long section view of wireframes of the mineralised domain and the wireframe used to code the model for Mineral Resource confidence at the Indicated category. The mineralised domain outside the Indicated wireframe was coded as Inferred.

Figure 17.8 Boomerang Mineral Resource confidence oblique long projection



17.4.9 Mineral Resource reporting

The Boomerang Project is at an early stage and no economic studies have been performed. Mineral Resources are reported at a range of zinc cut-off grades, and 1% Zn has been highlighted as an important cut-off grade for Messina (Table 17.8). The Mineral Resources are tightly constrained within a boundary defined by the 1% Zn cut-off. The Mineral Resources are categorised as Indicated and Inferred in order of confidence.

Table 17.8 Mineral Resources for the Boomerang deposit at a range of zinc cut-offs

Category	Cut-off Zn (%)	Volume (m^3)	Density	Tonnes	Zn (%)	Cu (%)	Pb (%)	Au (g)/t	Ag (g)/t
Inferred	0.50	77,700	3.60	278,200	6.71	0.44	2.88	1.29	96.51
	1.00	77,700	3.60	278,100	6.72	0.44	2.88	1.29	96.53
	2.00	74,300	3.61	266,100	6.95	0.45	2.96	1.32	99.25
	3.00	69,600	3.61	249,400	7.24	0.46	3.05	1.34	101.96
	4.00	63,300	3.62	227,800	7.59	0.48	3.12	1.33	103.44
Indicated	0.50	361,800	3.81	1,368,800	7.07	0.51	3.00	1.66	110.22
	1.00	360,800	3.81	1,364,600	7.09	0.51	3.00	1.66	110.43
	2.00	347,900	3.81	1,318,700	7.28	0.52	3.07	1.68	112.37
	3.00	318,900	3.83	1,215,200	7.68	0.54	3.17	1.71	115.40
	4.00	280,300	3.86	1,076,300	8.23	0.57	3.28	1.73	118.66

17.4.10 Conclusions and recommendations

Snowden has the following conclusions and recommendations to make regarding the Boomerang Mineral Resource estimate:

- Quantitative measures of Mineral Resource confidence such as conditional simulation to determine estimation error have not been applied. In future studies a simulation approach to Mineral Resource confidence classification may be beneficial.
- Drill spacing was an important consideration in Mineral Resource classification. It is recommended that future drillholes are targeted to infill areas of less dense drilling to upgrade the Mineral Resource classification.
- Undertake geological and structural analysis to create a model of the geological controls on mineralisation to aid in the definition of geological domains.

17.5 Domino deposit

17.5.1 Introduction

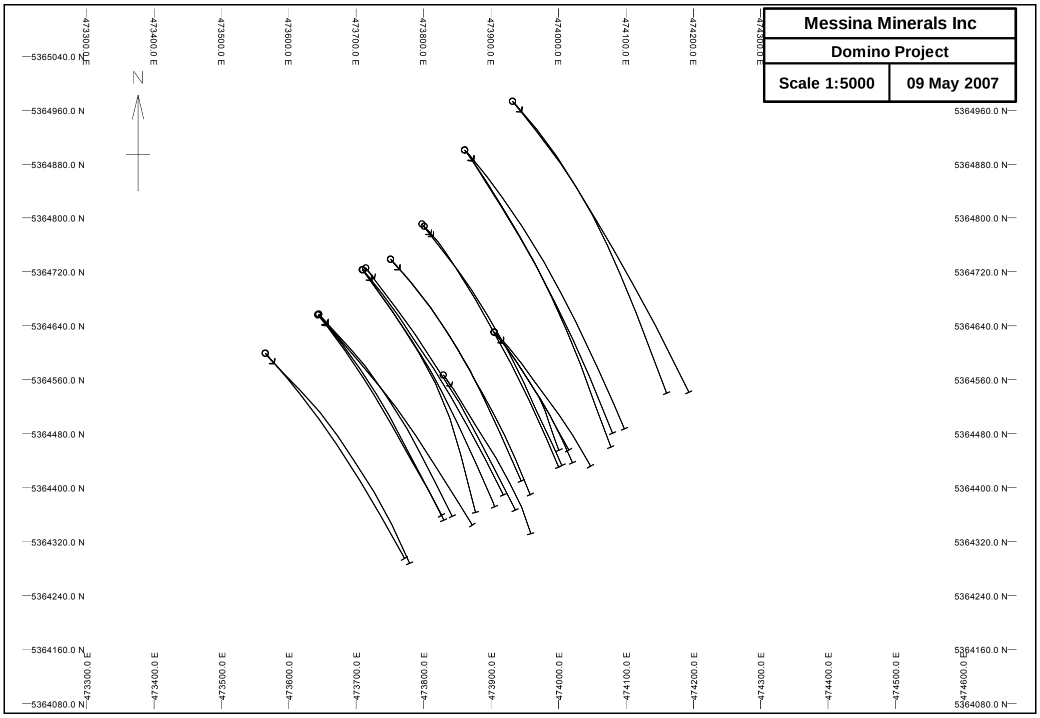
The Domino Project is located about 100 m below and about 200 m along strike to the northeast of the Boomerang deposit. The estimate included undertaking a change of support to provide a mathematical model of the tonnes and grade of the deposit on a block size similar to the Boomerang deposit, based on the Domino Project sample data.

17.5.2 Data preparation and analysis

Data preparation

Snowden prepared desurveyed drillholes from collar, survey, lithology, and assay data supplied by Messina. Data from 24 diamond drillholes for a total of 14,772.65 m was available for analysis. The collar locations are given in Appendix D. A location map of the drillholes is shown in Figure 17.9.

Figure 17.9 Location map of drillholes used in the Domino 2007 Mineral Resource estimate



Data transformations

The drilling pattern is oriented to the northeast on a UTM grid. Messina provided Snowden with downhole surveys rotated from magnetic to UTM grid. Snowden converted the downhole dip to conform to Datamine mining software convention. All holes were drilled downward. No other transformations or rotations were performed on the data.

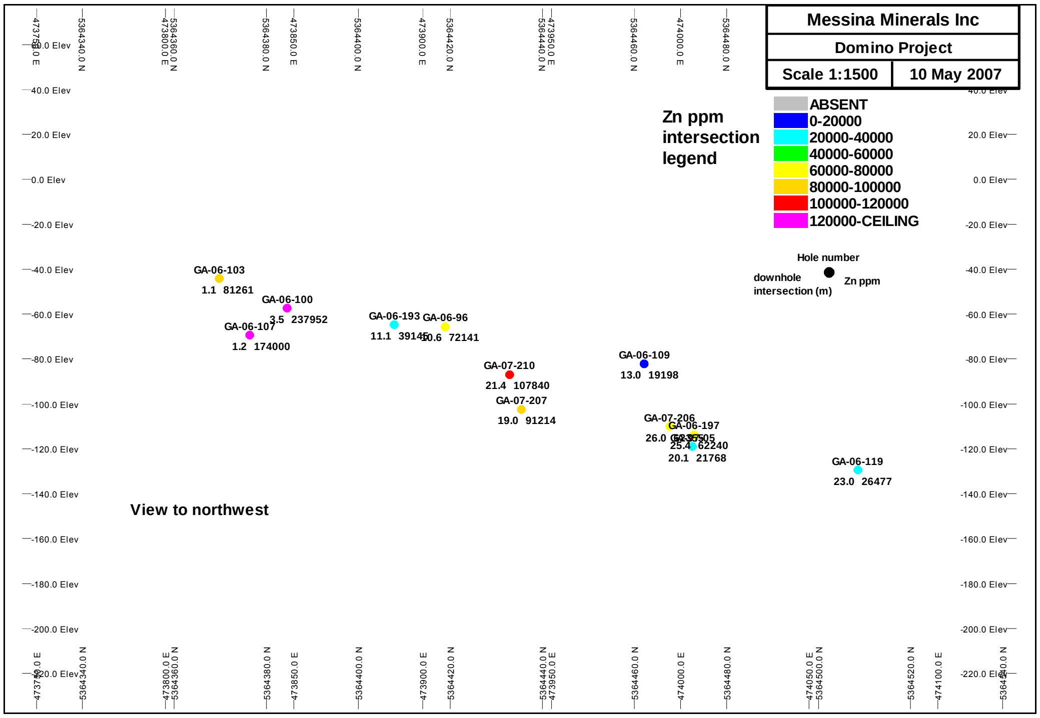
Data validation

Downhole surveys are taken at irregular intervals on an average of every 60 m. Half of the surveys are taken at intervals greater than 73 m. Drillhole lift between surveys averages 1.9° with a maximum of 6° lift, while drillhole swings of up to 9° are recorded, with an average of 2°. Ideally, downhole surveys should be taken at closer intervals of about 30 m.

Data domaining

Messina geologists interpreted and produced three-dimensional wireframe models of the mineralised domain for the Domino deposit according to a 1% Zn cut-off. Snowden validated and modified the mineralised domain model with the input and approval of Messina. A long section of the intersections used in the Mineral Resource estimate is shown in Figure 17.10.

Figure 17.10 Long section of zinc intersections



Sample compositing

The majority of samples within the mineralised domain at Domino are 1 m in length (Figure 17.11), and therefore Snowden elected to composite samples at 1 m intervals. The Datamine COMPDH process described for Boomerang was also applied to the Domino composites.

251 samples were intersected by the mineralised domain wireframe and available for use in the change of support analysis. These samples were combined into a total of 175 samples during compositing (Figure 17.12). Table 17.9 shows a comparison of sample length and "metal" (sample length multiplied by grade) loss for the 1 m composite length. There is no significant loss of "metal" or length during the compositing process.

Figure 17.11 Log histogram of raw sample lengths within the mineralised domain

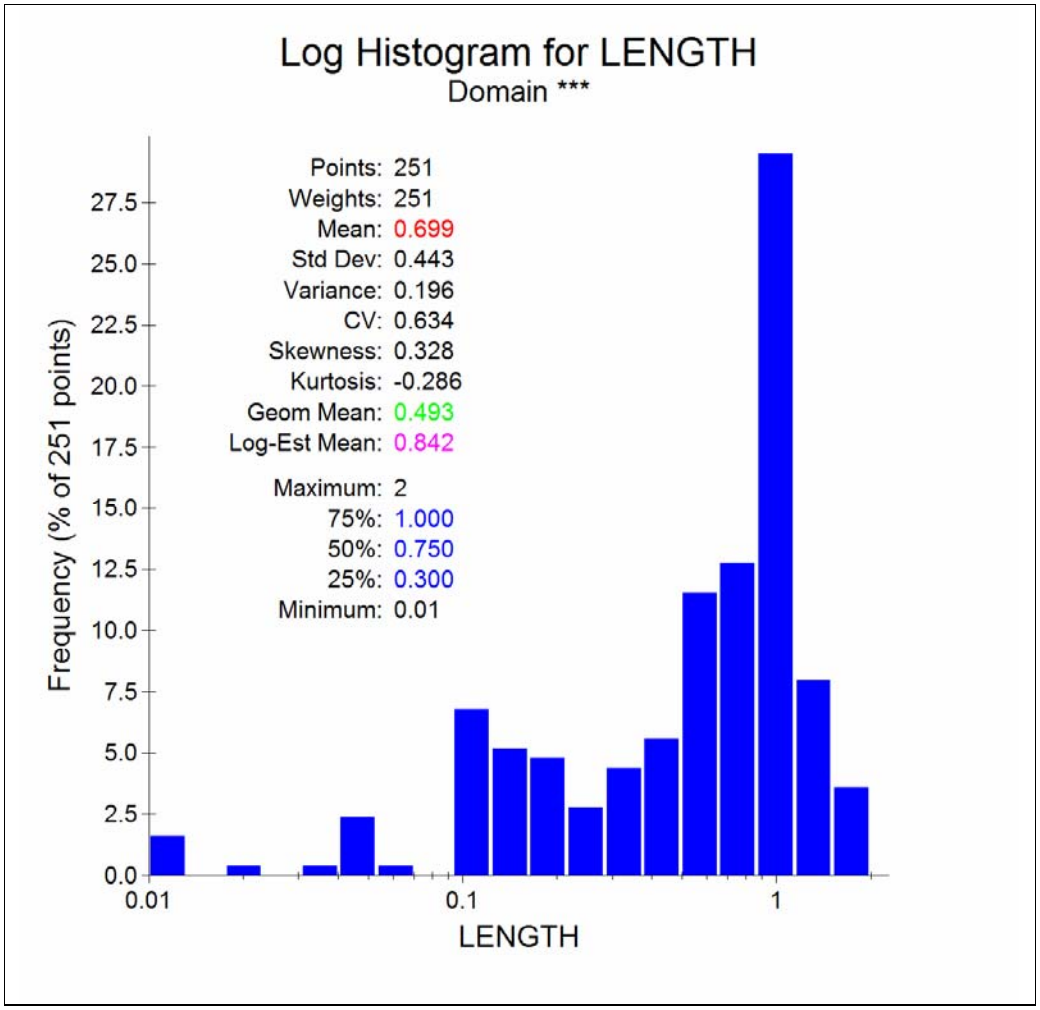
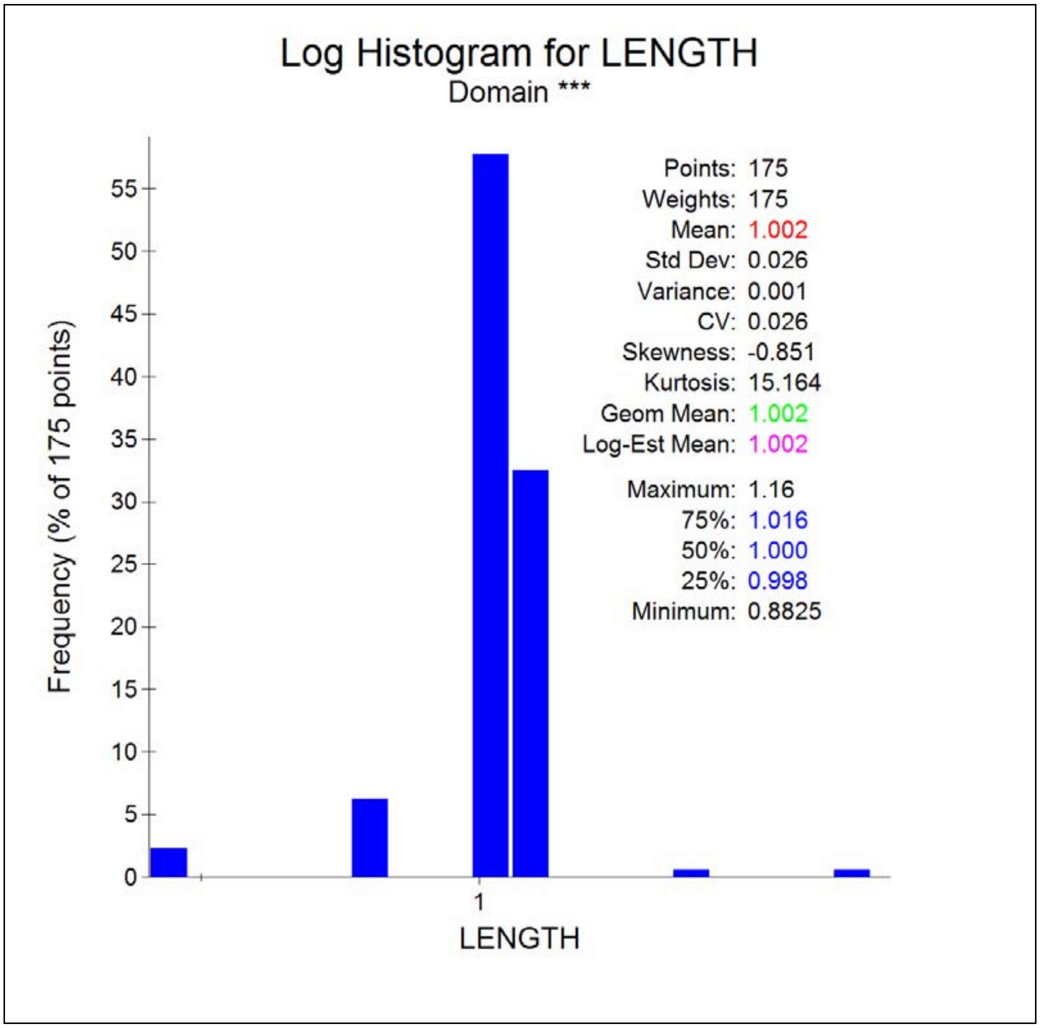


Table 17.9 Summary of data metal and length loss by compositing

Variable	Raw samples	1 m composited samples	% difference
Length (m)	175.33	175.33	0
Zn (ppm*m)	10,865,480	10,865,480	0
Cu (ppm*m)	637,046	637,046	0
Pb (ppm*m)	5,374,438	53,74,483	0
Ag (g/t*m)	15,750	15,750	0
Au (ppb*m)	107,807	107,807	0

Figure 17.12 Log histogram of composite sample lengths within the mineralised domain



Core recovery treatment

Drill core recovery is regularly noted at the Domino deposit, however, but similarly to the Boomerang recovery data collection method, recovery is not consistently recorded on a sample by sample basis. Sample recoveries at Domino are also acceptable with a mean of 98% recovered, and there is no correlation between sample grade and recovery for any of the variables. For this reason Snowden elected to assign the grade of the adjacent sample to the missing portion while compositing grades.

Extreme value treatment

For the Domino deposit, each variable has been individually examined in the same manner as the Boomerang data. A long section view of the spatial distribution of extreme zinc values in shown Figure 17.13. Table 17.10 gives the statistics for composited and top cut, composited values.

Figure 17.13 Long section of Zn extreme value locations

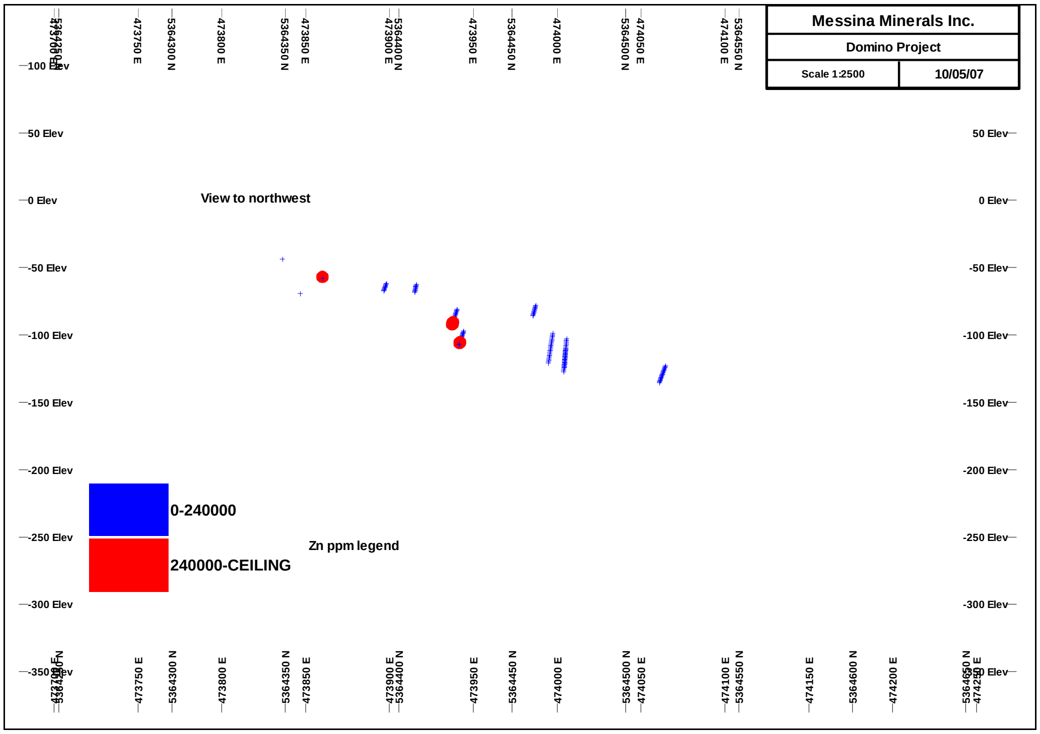


Table 17.10 Composite and top cut data statistics

		Composited data		Top cut data		Decrease (%)	
Variable	**Top cut**	**Mean**	**CV**	**Mean**	**CV**	**Mean**	**CV**
Zn (ppm)	240,000	61,972	1.2	59,354	1.1	4	9
Cu (ppm)	None	3,633	0.8	n/a	n/a	n/a	n/a
Pb (ppm)	100,000	30,654	1.4	26,680	1.1	13	25
Ag (g/t)	335	89.83	1.1	87.33	1.1	3	5
Au (ppb)	1,692	615	0.9	593	0.8	4	9
Density	n/a	3.46	0.2	n/a	n/a	n/a	n/a

17.5.3 Variography

Because of the limited number of sample composites and the geological similarities to the Boomerang deposit, the variogram model and block size selection from the Boomerang deposit have been used as an input to the change of support calculation for Domino, assuming the same direction and continuity of grade distribution.

17.5.4 Global change of support

Global change of support is a mathematical approach for estimating the likely proportion of a deposit that will be above a specified cut-off grade for selective mining at a given selective mining unit (SMU block size). The grade is also determined for the material above cut-off. This approach gives a global estimate of tonnes and grade only.

This method has been used instead of a local method such as OK to produce an estimation of grade and tonnes above a cut-off grade for the deposit.

17.5.5 Mineral Resource confidence classification

The quality of the estimate is dependent on geological confidence, data quality, and confidence in the variogram model. Snowden has tightly constrained the Mineral Resource estimate within a boundary defined by a 1% Zn cut-off, and classified the Mineral Resource estimate in the Inferred category. Snowden considers the Inferred category to be appropriate given uncertainties in geological continuity, continuity of mineralisation, and in the methods used to derive the estimate.

17.5.6 Mineral Resource reporting

At a cut-off of 1% Zn, Inferred Mineral Resources at Domino are reported at 411,200 t at 6.3% Zn, 0.4% Cu, 2.8% Pb, 94 g/t Ag, and 0.6 g/t Au. Mineral Resources at a range of Zn% cut-offs are presented in Table 17.11.

Table 17.11 Inferred Mineral Resources for the Domino deposit at a range of Zn % cut-offs

Cut-off Zn %	Tonnes	Zn (%)	Cu (%)	Pb (%)	Ag (g/t)	Au (g/t)
0.5	430,200	6.1	0.4	2.7	89	0.6
1.0	411,200	6.3	0.4	2.8	94	0.6
2.0	359,000	7.0	0.4	3.1	108	0.7
3.0	304,200	7.8	0.4	3.5	127	0.8
4.0	254,100	8.7	0.5	3.8	150	0.9

18 Other relevant data and information

Snowden is not aware of any other relevant data or information concerning the Tulks South Property to report.

19 Interpretations and conclusions

The Tulks South Property is a mineral project located in central Newfoundland, Canada, operated by Messina.

The Tulks South Property is located in the Buchans-Victoria Lake area, which is host to numerous polymetallic (Zn-Pb-Cu-Au-Ag) volcanogenic massive sulphide deposits; including the historic Buchans area polymetallic deposits and the recently developed Duck Pond Cu-Zn mine.

The Tulks South Property was the subject of a previous Technical Report dated June, 2006. This report dated August 2007 discloses recently updated Mineral Resources at the Boomerang and Domino deposits, and exploration results at the Tulks East B Zone and Hurricane Zone. The Property also includes historic zinc resources at the Tulks East A Zone, Tulks East B Zone, Skidder, and Long Lake Main Zones. Since the Previous Technical Report, Messina has undertaken additional Mineral Resource delineation drilling, Mineral Resource estimations, exploration drilling, metallurgical test work, and environmental base line studies on the Property.

At a 1% Zn cut-off, Indicated Mineral Resources at Boomerang are reported as 1.4 Mt at 7.1% Zn, 3.0% Pb, 0.5% Cu, 110.4 g/t Ag, and 1.7 g/t Au. Inferred Mineral Resources at Boomerang are reported at 278,100 t at 6.7% Zn, 2.9% Pb, 0.4% Cu, 96.5 g/t Ag, and 1.3 g/t Au at the same cut-off.

At Domino, adjacent to the Boomerang deposit, Inferred Mineral Resources at a 1% Zn cut-off are reported as 411,200 t at 6.3% Zn, 2.8% Pb, 0.4% Cu, 94 g/t Ag, and 0.6 g/t Au.

20 Recommendations

The authors recommend that Messina continue with their diamond drilling and exploration programme at the Tulks South Project, and proceed with more detailed metallurgical studies on the Boomerang mineralisation. Messina should continue to develop a geological model for each of the properties including analyses of the lithology, alteration, mineralisation, and structure.

20.1 Exploration and drilling

Additional prospecting, gridding, geophysics, and diamond drilling will be required to further define, delineate, and explore existing deposits and targets. The following drilling is recommended:

- Approximately 5,000 m in delineation drilling at Boomerang to infill poorly covered areas adjacent to the deposit and to gain a better understanding of the stratigraphic setting.
- Approximately 3,000 m in definition drilling at the Domino deposit to extend the deposit along strike, and to gain a better understanding of the geology.
- Approximately 4,000 m in delineation drilling at the Tulks East A and B zones to improve the drill pattern coverage for Mineral Resource estimation purposes.
- Approximately 800 m in exploration drilling at the TouchDown zone.
- Approximately 500 m in exploration drilling at the Tulks West zone.
- Approximately 500 m at other exploration targets on the Property.

20.2 Continuous improvement

20.2.1 Sampling

Messina should continue with continuous sampling through known mineralised zones for Mineral Resource estimation purposes. Sample recovery should be noted on a sample by sample basis. Drill core trays and sample bags should be more robustly labelled for downhole interval depths and sample number.

20.2.2 Quality control measures

As part of ongoing continuous improvement, Messina should submit blank samples on the order of one in every 20 sample submissions, or at least one per drillhole.

Messina should continue with their programme of submitting certified standards and duplicate quarter core samples on a frequency of one in every 20 samples. Considering the poor results of the standard analyses, probably due to the degraded nature of the last remaining standard material in their possession, Messina should source alternative standard material at a grade relevant to each of the base and precious metal grades of the deposits. Messina should closely monitor the results on a batch by batch basis, and take appropriate action wherever anomalous results are noted. Additionally, Messina should ensure that all QAQC sampling is spatially representative of mineralisation in the Mineral Resource estimates.

21 References

Belleau, Guy, and Pelz, Petr, 2005. Technical Report on the Duck Pond Project, Central Newfoundland, Canada. Technical Report prepared by Aur Resources, filed on SEDAR, April 2005.

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Pilgrim, Larry, 2005. Technical Report, Valentine Lake Gold Project. A Joint Venture with Mountain Lake Resources, Near Buchans, Newfoundland, NTS 12A/6 and 12A/7. Technical report prepared for Richmont Mines, filed on SEDAR, January 2005.

22 Dates and signatures

Technical Report

Messina Minerals Ltd.: Tulks South Property, Central Newfoundland, Canada

August 2007

[signed and sealed]	Date
Pamela De Mark	1 August 2007
Charles Dearin	1 August 2007

23 Certificates

CERTIFICATE of QUALIFIED PERSON

(a) I, Pamela L. De Mark, Senior Consultant of Snowden Mining Industry Consultants Inc., 550-1090 W. Pender St, Vancouver, BC, V6E 2N7 Canada; do hereby certify that:

(b) I am the co-author of the technical report titled Messina Minerals Inc.: Tulks South Property, Central Newfoundland, Canada and dated August 2007 (the "Technical Report").

(c) I graduated with a Bachelor of Applied Science (Honours) Degree in Applied Geology from the University of Technology, Sydney (Australia) in 1994. I am a Member of the Australasian Institute of Mining and Metallurgy and have recently submitted my application to APEGBC for registration as a P.Geo. I have worked as a mining and Mineral Resource geologist for a total of 14 years since my graduation from university.

I have read the definition of 'qualified person' set out in National Instrument 43-101 ("the Instrument") and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements of a 'qualified person' for the purposes of the Instrument. I have been involved in mining and resource evaluation consulting practice for 3 years. During my working career I have been involved in mining and resource evaluation.

(d) I am responsible for the preparation of the sections of the Technical Report as detailed in Table 2.1.

(e) I am independent of the issuer as defined in section 1.4 of the Instrument.

(f) I have not had prior involvement with the property that is the subject of the Technical Report.

(g) I have read the Instrument and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

(h) As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all the scientific and technical information that is required to be disclosed to make the Technical report not misleading.

Dated at Vancouver, BC, this 1 August 2007

[signed]

Pamela L. De Mark, BSc(App Geo), MAusIMM

CERTIFICATE of QUALIFIED PERSON

(i) I, Charles Dearin, P. Geo., Consulting Geologist and President of FORTIS GeoServices Ltd., 2 Forest Road, St. John's, Newfoundland, A1C 2B9, Canada; do hereby certify that:

(j) I am the co-author of the technical report titled Messina Minerals Inc.: Tulks South Property, Central Newfoundland, Canada and dated August 2007 (the "Technical Report").

(k) I graduated with a Bachelor of Science Degree in Geology from Memorial University of Newfoundland in 1975. I am a registered Professional Geologist (Member No.: 03022) with the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL). FORTIS GeoServices Ltd. is registered with and holds a Permit to Practice with PEGNL (2007 Permit No.: L-0219). I am a Member of the Prospectors and Developers Association of Canada, the Geological Association of Canada, and the Society of Economic Geologists. I have practiced my profession in mining geology and exploration geology continuously from 1975 to the present date.

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

(l) I visited the Tulks South Property on 9 July and 10 July 2007.

(m) I am responsible for the preparation of the sections of the Technical Report as detailed in Table 2.1.

(n) I am independent of the issuer as defined in section 1.4 of the Instrument, however, a company of which I am a majority shareholder (South Coast Ventures Inc.) has an option agreement with the issuer, dated January 2007, on the Skidder mineral property in the Buchans area, Newfoundland. South Coast Ventures Inc. owns 25,000 shares in Messina.

(o) I have not had prior involvement with the property that is the subject of the Technical Report.

(p) I have read the Instrument and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

(q) As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all the scientific and technical information that is required to be disclosed to make the Technical report not misleading.

Dated at St. John's, Newfoundland, this 1 August 2007

[signed and sealed]

Charles Dearin, P.Geo.

A Collar locations of drillholes used in the Boomerang 2007 Mineral Resource estimate

BHID	Easting (m)	Northing (m)	Elevation (m)	Total length (m)
GA-04-10	473442.4	5364216	377.83	345.9
GA-04-11	473508	5364284	377.77	327
GA-05-12	473508	5364284	377.77	292.6
GA-05-15	473508	5364284	377.77	256.3
GA-05-16	473477.5	5364323	368.88	384.4
GA-05-19	473477.5	5364324	368.884	422.8
GA-05-20	473550.7	5364230	395.815	232.3
GA-05-22	473598.2	5364168	409.105	179.5
GA-05-24	473527.1	5364337	372.9	444.1
GA-05-25	473450.8	5364278	369.365	355.1
GA-05-27	473527.4	5364337	372.952	391.4
GA-05-30	473450.4	5364278	369.35	392.2
GA-05-31	473527.5	5364337	372.961	398.4
GA-05-32	473450.6	5364277	369.343	327.6
GA-05-33	473527.6	5364337	372.947	341.3
GA-05-36	473528.3	5364337	372.847	336.8
GA-05-37	473410.6	5364257	369.176	395
GA-05-38	473384.5	5364288	360.948	464.8
GA-05-39	473410.9	5364256	369.13	370.6
GA-05-41	473411.1	5364256	368.76	342.9
GA-05-43	473371.4	5364227	369.58	357.8
GA-05-46	473332	5364198	363.702	477
GA-05-47	473371.4	5364227	369.58	389.2
GA-05-48	473332	5364198	363.702	373.1
GA-05-49	473371.4	5364227	369.58	397.5
GA-05-50	473332	5364198	363.702	346.9
GA-05-52	473371.4	5364227	369.58	341.4
GA-05-55	473331.9	5364198	363.637	367.3
GA-05-57	473371	5364227	369.405	334.1
GA-05-58	473506.2	5364215	389.91	257.6
GA-05-60	473332.7	5364198	363.645	437.4
GA-05-61	473506.4	5364214	389.916	249.9
GA-05-62	473582.8	5364268	398.001	261.2
GA-05-63	473506.7	5364214	389.969	240.2
GA-05-65	473450.2	5364280	369.077	394.7

BHID	Easting (m)	Northing (m)	Elevation (m)	Total length (m)
GA-05-66	473527.6	5364340	372.905	350.5
GA-05-68	473563	5364369	375.586	365.8
GA-05-79	473307.8	5364169	357.215	330.1
GA-05-83	473266.9	5364132	355.93	321.1
GA-05-85	473295.2	5364152	356.867	355.4
GA-05-86	473266.7	5364133	355.92	340.8
GA-05-88	473295.2	5364152	356.956	334.4
GA-05-89	473267	5364133	355.943	333.4
GA-05-90	473232.7	5364097	354.217	387.9
GA-05-94	473233.1	5364097	354.234	523
GA-06-127	473409.3	5364258	365.916	388.9
GA-06-130	473292.2	5364102	361.545	291.4
GA-06-133	473597.7	5364205	409.323	206.3
GA-06-134	473504.4	5364287	372.329	264.3
GA-06-136	473597.7	5364205	409.323	250.5
GA-06-139	473563	5364176	411.775	202.1
GA-06-142	473532.5	5364255	388.773	264.6
GA-06-143	473563	5364176	411.775	239.6
GA-06-144	473603	5364204	410	130.8
GA-06-150	473293.9	5364154	355.603	317.6
GA-06-152	473442	5364216	378	303.9
GA-06-156	473595.8	5364170	407.842	152.7
GA-06-157	473293.9	5364154	355.603	375.5
GA-06-158	473599.5	5364202	408.93	139.3
GA-06-175	473557.5	5364338	375.76	387.1
GA-06-178	473558.9	5364341	373.192	350.5
GA-06-179	473558.9	5364341	373.192	404.8
GA-06-181	473558.9	5364341	373.192	358.7
GA-06-184	473558.9	5364341	373.192	339.9
GA-06-188	473486.8	5364310	365.144	361.8
GA-06-191	473486.8	5364310	365.144	325.2
GA-07-222	473477.5	5364323	368.88	352.7
GA-07-224	473477.5	5364323	368.88	364.2
GA-07-228	473477.5	5364323	368.88	370.3
GA-07-231	473450.4	5364278	369.35	345.9
GA-07-233	473386.8	5364245	368.83	301.1

BHID	Easting (m)	Northing (m)	Elevation (m)	Total length (m)
GA-07-234	473528.5	5364299	371.624	324.9
GA-07-235	473304.4	5364171	356.34	322.2
GA-07-239	473386.8	5364245	368.83	332.8
GA-07-241	473528.5	5364299	371.624	258.2
GA-07-242	473304.4	5364171	356.34	334.4
GA-07-243	473528.5	5364299	371.624	255.1
GA-07-245	473386.8	5364245	368.83	322.2
GA-07-246	473304.4	5364171	356.34	329.5
GA-07-248	473250.8	5364120	354.23	328.3
GA-07-249	473304.4	5364171	356.34	337.41

B Boomerang Inferred Mineral Resources at a range of Zn cut-offs

ZN % Cut-off	Volume (cubic metres)	Density	Tonnes	Zn %	Cu %	Pb %	Au g/t	Ag g/t
0.50	77,700	3.60	278,200	6.71	0.44	2.88	1.29	96.51
1.00	77,700	3.60	278,100	6.72	0.44	2.88	1.29	96.53
1.50	76,400	3.60	273,500	6.80	0.45	2.91	1.31	97.61
2.00	74,300	3.61	266,100	6.95	0.45	2.96	1.32	99.25
2.50	72,100	3.61	258,300	7.09	0.46	3.00	1.34	100.62
3.00	69,600	3.61	249,400	7.24	0.46	3.05	1.34	101.96
3.50	66,900	3.61	239,900	7.40	0.47	3.09	1.35	102.79
4.00	63,300	3.62	227,800	7.59	0.48	3.12	1.33	103.44
4.50	57,900	3.64	209,300	7.89	0.49	3.19	1.33	104.94
5.00	50,600	3.66	184,000	8.32	0.52	3.29	1.35	107.40
5.50	43,400	3.68	158,900	8.81	0.54	3.38	1.39	109.50
6.00	37,700	3.70	138,500	9.26	0.56	3.43	1.37	110.83
6.50	32,200	3.73	119,200	9.74	0.58	3.53	1.41	112.79
7.00	27,600	3.74	102,700	10.22	0.60	3.55	1.39	111.61
7.50	23,400	3.76	87,500	10.74	0.61	3.60	1.38	112.26
8.00	19,600	3.77	73,400	11.31	0.63	3.62	1.32	110.89
8.50	16,100	3.81	61,000	11.92	0.66	3.75	1.21	111.25
9.00	14,200	3.84	54,000	12.33	0.69	3.86	1.21	112.59
9.50	12,500	3.84	47,600	12.76	0.70	3.90	1.14	110.63
10.00	10,900	3.86	41,700	13.17	0.71	3.98	1.14	111.34
10.50	9,100	3.88	35,000	13.74	0.74	4.13	1.06	113.55
11.00	8,000	3.92	31,200	14.11	0.76	4.21	1.00	111.83
11.50	7,800	3.92	30,300	14.19	0.76	4.23	0.93	111.85
12.00	6,900	3.93	27,200	14.47	0.77	4.30	0.93	114.68
12.50	5,800	3.96	22,900	14.89	0.79	4.44	0.97	117.12
13.00	5,400	3.96	21,100	15.07	0.80	4.44	0.97	116.92
13.50	4,800	3.95	18,900	15.29	0.80	4.43	1.00	117.42
14.00	4,100	3.94	16,200	15.56	0.78	4.27	1.04	117.30

C Boomerang Indicated Mineral Resources at a range of Zn cut-offs

ZN % Cut-off	Volume (cubic metres)	Density	Tonnes	Zn %	Cu %	Pb %	Au g/t	Ag g/t
0.50	361,800	3.81	1,368,800	7.07	0.51	3.00	1.66	110.22
1.00	360,800	3.81	1,364,600	7.09	0.51	3.00	1.66	110.43
1.50	357,600	3.81	1,352,800	7.14	0.51	3.02	1.67	111.04
2.00	347,900	3.81	1,318,700	7.28	0.52	3.07	1.68	112.37
2.50	335,100	3.82	1,273,100	7.46	0.53	3.12	1.70	113.81
3.00	318,900	3.83	1,215,200	7.68	0.54	3.17	1.71	115.40
3.50	298,800	3.85	1,143,400	7.96	0.56	3.23	1.72	117.26
4.00	280,300	3.86	1,076,300	8.23	0.57	3.28	1.73	118.66
4.50	259,400	3.87	1,000,100	8.53	0.58	3.32	1.73	119.96
5.00	239,400	3.88	925,800	8.83	0.60	3.34	1.73	120.44
5.50	218,800	3.90	850,100	9.15	0.61	3.37	1.72	120.77
6.00	201,300	3.91	784,000	9.43	0.62	3.37	1.70	120.83
6.50	181,600	3.92	709,600	9.77	0.63	3.34	1.66	119.75
7.00	163,000	3.93	638,100	10.11	0.64	3.31	1.64	118.16
7.50	141,600	3.93	554,900	10.54	0.64	3.29	1.58	116.81
8.00	123,300	3.94	483,800	10.94	0.65	3.25	1.51	114.62
8.50	107,200	3.94	421,000	11.34	0.65	3.24	1.48	113.12
9.00	91,300	3.95	359,200	11.79	0.66	3.16	1.39	109.18
9.50	80,600	3.95	317,800	12.12	0.66	3.16	1.34	108.74
10.00	66,400	3.98	263,100	12.62	0.68	3.18	1.30	107.98
10.50	55,200	3.99	219,400	13.09	0.69	3.14	1.25	106.84
11.00	47,600	4.00	190,200	13.45	0.70	3.13	1.21	105.33
11.50	38,900	4.01	155,300	13.95	0.71	3.11	1.20	103.70
12.00	33,600	4.01	134,500	14.29	0.72	3.14	1.17	105.10
12.50	26,500	4.03	106,300	14.84	0.75	3.18	1.11	104.51
13.00	21,200	4.05	85,700	15.35	0.77	3.36	1.15	109.07
13.50	17,900	4.07	72,800	15.72	0.80	3.51	1.16	112.56
14.00	14,000	4.09	57,300	16.27	0.82	3.54	1.13	113.23

D Collar locations of drillholes used in the Domino 2007 Mineral Resource estimate

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	EOH
GA-04-09	473829.8	5364566	401.88	629.4
GA-05-73	473905.4	5364630	413.291	591.3
GA-06-100	473644.1	5364655	325.933	575.2
GA-06-103	473644.4	5364656	325.944	529.4
GA-06-105	473644.8	5364656	325.942	573.6
GA-06-107	473645.1	5364656	325.902	550.5
GA-06-109	473801.7	5364787	320.708	592.8
GA-06-115	473862	5364900	300	706.2
GA-06-119	473862	5364900	300	657.5
GA-06-120	473566	5364598	343	548.95
GA-06-122	473862	5364900	300	608.7
GA-06-123	473566	5364598	343	609.6
GA-06-128	473933	5364972	297	703.2
GA-06-137	473933	5364972	297	767.3
GA-06-189	473710	5364722	323	602.6
GA-06-193	473710	5364722	323	580.6
GA-06-197	473905.9	5364629	413.44	604.4
GA-06-95	473798.3	5364790	320.16	649.2
GA-06-96	473714.9	5364725	323.161	602.9
GA-06-98	473710.8	5364722	323.512	650.4
GA-07-206	473905.9	5364629	413.44	585.5
GA-07-207	473752	5364738	322	617.5
GA-07-210	473752	5364738	322	578.2
GA-97-05	473905.9	5364629	413.44	657.7