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Report

Ying NI 43-101 Technical Report
Silvercorp Metals Inc.

Henan Province, China

In accordance with the requirements of National Instrument 43-101 "Standards of Disclosure for Mineral Projects" of the Canadian Securities Administrators

Qualified Persons:

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1 Summary

Introduction

AMC Mining Consultants (Canada) Ltd (AMC) was commissioned by Silvercorp Metals Inc. (Silvercorp) to prepare a Technical Report on the Ying gold-silver-lead-zinc property in Henan Province, China, encompassing the SGX (/HZG), HPG and TLP / LM underground mines. The previous Technical Report, prepared by AMC, was dated 30 April 2013 and was a revised version of a Technical Report filed on 15 June 2012, with an effective date of 1 May 2012.

P R Stephenson and A P Fowler visited the Ying property in September 2013. H A Smith visited the property in February 2012 and September 2013. A Riles visited in February 2012. The four authors all qualify as independent Qualified Persons.

Silvercorp, through wholly owned subsidiaries, has effective interests of 77.5% in the SGX / HZG and TLP projects, and 80% in the HPG and LM projects. It has all the exploration and mining permits necessary to cover its mining and exploration activities. There are no known or recognized environmental problems that might preclude or inhibit a mining operation in this area.

The Ying Property is about 240 km west-southwest of Zhengzhou, the capital city of Henan Province, and 145 km southwest of Luoyang, which is the nearest major city. The nearest small city to the project area is Luoning, about 56 km by paved roads from Silvercorp's Ying mill site. The project areas have good road access and operate year round. The area has a continental sub-tropical climate with four distinct seasons.

Silver-lead-zinc mineralization in the Ying district has been known and intermittently mined for several hundred years. Silvercorp acquired an interest in the SGX project in 2004, the HPG project in 2006, and the TLP / LM projects in late 2007. Annual production has ramped up substantially in recent years, reaching 735,000 tonnes of ore in calendar 2013.

Geology, exploration and Mineral Resources

Geologically, the Ying Property occurs in the 300 km-long west-northwest trending Qinling orogenic belt, a major structural belt formed by the collision of two large continental tectonic plates in Paleozoic time. Rocks along the orogenic belt are severely folded and faulted, offering optimal structural conditions for the emplacement of mineral deposits. Several operating silver-lead-zinc mines, including those in the Ying district, occur along this belt. The dominant structures in the region are west-northwest trending folds and faults, the faults comprising numerous thrusts with sets of conjugate shear structures trending either northwest or northeast. These shear zones are associated with all the important mineralization in the district.

Mineralization comprises numerous mesothermal, silver-lead-zinc-rich, quartz-carbonate veins in steeply-dipping fault-fissure zones which cut Precambrian gneiss and greenstone. The veins thin and thicken abruptly along the structures in classic "pinch-and-swell" fashion with widths varying from a few centimetres up to a few metres. The fault-fissure zones extend for hundreds to a few thousand metres along strike. To date, significant mineralization has been defined or developed in at least 167 discrete vein structures, and many other smaller veins have been found but not, as yet, well explored. The vein systems of the various mine areas in the district are generally similar in mineralogy, with slight differences between some of the separate mine areas and between the different vein systems within each area

Between 2004 and 2011, Silvercorp drilled 1,744 underground holes and 265 surface holes, for a total of approximately 591,000 m. An additional 1,013 underground holes and 24 surface holes for a total of approximately 267,000 m were drilled in 2012 and the first half of 2013. Most drill core (core) is NQ-sized. Core recoveries are influenced by lithology and average 98-99%. Core is logged, photographed and sampled in the surface core shack. Samples are prepared by cutting the core in half with a diamond saw. One half of the core is marked with sample number and sample boundary and then returned to the core box for archival storage. The other half is placed in a labelled cotton cloth bag with sample number marked on the bag. The bagged sample is then shipped to the laboratory for assaying.

Other than drilling, the projects have been explored primarily from underground workings. The workings follow vein structures along strike, on levels spaced approximately 40 m apart. Chip samples across the structures are collected at 5 m intervals. During 2012-2013, Silvercorp undertook 58 km of tunnelling and collected approximately 19,000 channel/chip samples.

Core samples are sent in securely sealed bags to four commercial laboratories: Analytical Lab of Henan Geological Exploration Bureau in Zhengzhou; Analytical Lab of the Institute of Geophysical and Geochemical Exploration of the Chinese Academy of Geosciences in Langfang; The Chengde Huakan 514 Geology and Mineral Testing and Research Institute in Chengde; and Analytical Lab of the Inner Mongolia Geological Exploration Bureau in Hohhot. All laboratories are officially accredited in China. Sample preparation and assaying procedures follow standard practices, although a splitting stage precedes final pulverization.

The QA / QC program for the January 2012 to June 2013 exploration programs comprised 4,026 samples, including 1,125 Certified Reference Material (CRM) samples, 921 blank samples, 777 duplicates, 519 external check samples, and 684 internal check samples. Samples were inserted at a rate of one RMS, one blank and one duplicate per 40 sample batch to monitor for possible contamination in sample preparation, accuracy and precision of assay results and laboratory bias. Silvercorp also randomly selected rejects of the mineralized samples for rechecking (internal check) at the same laboratory, and randomly selected pulp of the mineralized samples for external check at other laboratories. Silvercorp geologists at each mine review QA / QC data on a regular basis. Any batch that reaches warning threshold or fails the QA / QC program is automatically notified for investigation or re-assayed, and only approved assay results are used for Mineral Resource estimation.

AMC is satisfied that drilling, sampling, sample security, sub-sampling, analyzing and QA / QC procedures meet accepted industry standards, that the QA / QC results show no material bias or imprecision and that the assay results may be relied upon for Mineral Resource estimation.

The Mineral Resource estimates for the Ying property were prepared by independent Qualified Person, Dr Andrew Fowler MAusIMM (CP) using Datamine software. As a result of a recommendation in AMC's 2012 Technical Report, the June 2013 Resources were estimated using a block modelling approach, with 3D ordinary kriging and Datamine's™ dynamic anisotropy application[1]. Because of the numerous veins (167) for which Resource estimates were prepared, this proved to be an extremely time-consuming process.

The Mineral Resources include material (approximately 25% of the Indicated Resource) below the lower limit of Silvercorp's current mining permits. However, because of the nature of Chinese regulations governing applications for new or extended mining permits, and because Mineral Resources have been shown to extend below the current lower limit, AMC is satisfied that there is no material risk of Silvercorp not being granted approval to extend the lower depth limit of its permits to develop these Resources as and when required

Table 1.1 shows the Mineral Resources and metal content for the property as of 30 June 2013. The Mineral Resources are reported above cut-offs after applying a minimum practical extraction width of 0.3 m. Diluted grades were estimated for blocks with mineralization widths less than 0.3 m by adding a waste envelope with zero grade. Cut-off grades are based on in situ values in silver equivalent (AgEq) terms in grams per tonne and incorporate mining, processing and general & administration (G & A) costs provided by Silvercorp for each mine and reviewed by AMC.

[1] Dynamic anisotropy re-orientates the search ellipsoid for each estimated block based on the local orientation of the mineralization

Table 1.1 Mineral Resource estimates, Ying Property, 30 June 2013

Mine	Resource Category	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Metal Contained in Resource			
							Au (koz)	Ag (Moz)	Pb (kt)	Zn (kt)
SGX	Measured	2.74		304	5.81	3.01		26.77	159.0	82.4
	Indicated	2.33		244	4.42	2.36		18.29	103.1	55.0
	Measured + Indicated	**5.07**		**276**	**5.17**	**2.71**		**45.06**	**262.1**	**137.4**
	Inferred	2.80		282	4.55	2.01		25.42	127.5	56.2
HZG	Measured	0.29		417	1.56	0.25		3.83	4.5	0.7
	Indicated	0.38		336	1.46	0.17		4.11	5.5	0.6
	Measured + Indicated	**0.67**		**371**	**1.50**	**0.20**		**7.94**	**10.0**	**1.4**
	Inferred	0.17		374	1.01	0.19		2.02	1.7	0.3
HPG	Measured	0.66	1.12	118	5.45	1.09	23.9	2.50	36.0	7.2
	Indicated	0.50	1.25	93	3.72	1.43	20.0	1.50	18.6	7.2
	Measured + Indicated	**1.16**	**1.18**	**107**	**4.71**	**1.24**	**43.8**	**4.00**	**54.6**	**14.3**
	Inferred	0.43	1.07	77	3.88	1.55	14.6	1.05	16.5	6.6
LME	Measured	0.28		343	1.63	0.29		3.09	4.6	0.8
	Indicated	0.87		322	1.39	0.37		9.02	12.1	3.2
	Measured + Indicated	**1.15**		**327**	**1.45**	**0.35**		**12.11**	**16.7**	**4.0**
	Inferred	0.60		294	1.46	0.45		5.67	8.8	2.7
LMW	Measured	0.30		321	2.49	0.21		3.05	7.4	0.6
	Indicated	1.79		244	2.59	0.28		14.05	46.3	5.0
	Measured + Indicated	**2.08**		**255**	**2.58**	**0.27**		**17.10**	**53.7**	**5.7**
	Inferred	1.44		313	2.15	0.31		14.46	30.9	4.5
TLP	Measured	1.30		157	3.23	0.22		6.58	42.0	2.8
	Indicated	2.57		175	2.84	0.27		14.52	73.1	7.0
	Measured + Indicated	**3.88**		**169**	**2.97**	**0.25**		**21.10**	**115.1**	**9.8**
	Inferred	2.09		176	2.87	0.22		11.88	60.1	4.6
Total	Measured	5.56	0.13	253	4.53	1.67	23.9	45.81	253.4	94.6
	Indicated	8.45	0.07	226	3.05	0.92	20.0	61.49	258.8	78.1
	Measured + Indicated	**14.01**	**0.10**	**237**	**3.64**	**1.22**	**43.8**	**107.30**	**512.2**	**172.6**
	Inferred	7.53	0.06	251	3.26	0.99	14.6	60.50	245.5	74.9

Notes:
1. Measured and Indicated Resources are inclusive of Resources from which Mineral Reserves are estimated.
2. Metal prices: gold US$1,250/troy oz, silver US$19/troy oz, lead US$1.00/lb, zinc US$0.82/lb
3. Exchange rate: 6.20RMB : US$1.00
4. Veins factored to minimum extraction width of 0.3 m
5. Cut-off grades: SGX 140 g/t AgEq; HZG 155 g/t AgEq; HPG 160 g/t AgEq; LM 135 g/t AgEq; TLP 120 g/t AgEq
6. Exclusive of mine production to 30 June 2013
7. Rounding of some figures may lead to minor discrepancies in totals

Comparison of Mineral Resources, end-2011 to mid-2013

A comparison of Mineral Resource estimates for end-2011 (previous Technical Report, referred to as 2012 estimates) and end-June 2013 (this Technical Report) indicates the following:

- Total Ying Measured plus Indicated tonnes have increased by 52%, while total Ying Inferred tonnes have increased by 59%.
- Total Ying Measured plus Indicated grades have decreased by between 27% and 33%, while total Ying Inferred grades have decreased by between 15% and 36% (both comparisons excluding gold, as it is a very minor contributor).
- Total Ying Measured plus Indicated contained silver metal has increased by 12%, and contained lead metal has increased by 8%.
- Total Ying Inferred contained silver metal has increased by 35%, and contained lead metal has increased by 29%.

The decrease in grades is believed to be mainly due to two factors: (1) the addition of more lower grade, wall rock mineralization in the 2013 wireframes than was included in the 2012 polygonal Resource estimate (this is also part of the explanation for the significantly increased tonnages); (2) the use of ordinary kriging in 2013 as opposed to the polygonal method in 2012 (polygonal estimation can result in grade over-estimation). In addition, the 2013 Resource estimate includes more lower grade drillhole intercepts than the 2012 Resource estimate.

Other reasons for the differences in grade, tonnes and contained metal include Resource addition and conversion to higher categories arising from drilling and level development, increased extrapolation distance away from the nearest drillhole in the 2013 Inferred Resource estimate compared with the 2012 estimate, and depletion due to mining.

Mining and Mineral Reserves

Table 1.2 Mineral Reserve estimates, Ying Property, 30 June 2013

Mines	Categories	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Metal Contained in Reserves			
							Au (koz)	Ag (Moz)	Pb (kt)	Zn (kt)
SGX	Proven	2.66		230	4.41	2.33		19.64	117.3	61.9
	Probable	2.20		206	3.75	1.90		14.56	82.5	41.9
Total Proven & Probable		4.86		219	4.11	2.14		34.20	199.8	103.8
HZG	Proven	0.30		344	1.16	0.19		3.32	3.5	0.6
	Probable	0.39		279	1.12	0.13		3.49	4.4	0.5
Total Proven & Probable		0.69		307	1.14	0.16		6.82	7.8	1.1
HPG	Proven	0.56	0.94	100	4.54	0.81	16.9	1.80	25.4	4.5
	Probable	0.36	1.05	84	3.33	1.14	12.2	0.97	12.1	4.1
Total Proven & Probable		0.92	0.98	94	4.06	0.94	29.2	2.77	37.4	8.7
TLP	Proven	1.18		135	2.67	0.18		5.13	31.4	2.1
	Probable	2.10		160	2.45	0.22		10.80	51.3	4.7
Total Proven & Probable		3.28		151	2.52	0.21		15.94	82.8	6.8
LM-E	Proven	0.25		289	1.24	0.24		2.32	3.1	0.6

Mines	Categories	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Metal Contained in Reserves			
							Au (koz)	Ag (Moz)	Pb (kt)	Zn (kt)
	Probable	0.79		271	1.10	0.29		6.86	8.7	2.3
Total Proven & Probable		1.04		275	1.14	0.28		9.17	11.8	2.9
LM-W	Proven	0.29		276	2.04	0.17		2.60	6.0	0.5
	Probable	1.56		219	2.22	0.22		11.03	34.8	3.5
Total Proven & Probable		1.86		228	2.19	0.21		13.62	40.7	4.0
Ying Mine	**Proven**	**5.24**	**0.10**	**207**	**3.56**	**1.34**	**16.9**	**34.81**	**186.7**	**70.2**
	Probable	**7.40**	**0.05**	**200**	**2.62**	**0.77**	**12.2**	**47.71**	**193.7**	**57.0**
Total Proven & Probable		**12.64**	**0.07**	**203**	**3.01**	**1.01**	**29.2**	**82.52**	**380.4**	**127.2**

Notes to Mineral Reserve Statement:
1. Stope Cut-off grades (Ag/Eq g/t): SGX – 176 Resuing, 120 Shrinkage; HZG – 170 Resuing; HPG – 229 Resuing, 139 Shrinkage; LM - 161 Resuing, 117 Shrinkage; TLP - 163 Resuing, 116 Shrinkage.
2. Vein development cut-off grades of 50 g/t AgEq for all mines.
3. Unplanned dilution (zero grade) assumed as 0.1m on each wall of a resuing stope and 0.15m on each wall of a shrinkage stope.
4. Mining recovery factors assumed as 95% for resuing and 92% for shrinkage.
5. Metal prices assumed are Ag - US$19 troy ounce, Au - US$1250 per troy ounce, Pb - US$1 per pound, Zn - $US0.82 per pound.
6. Processing recovery factors: SGX – 93.1% Ag, 96.4% Pb, 67.2% Zn; HZG – 96.3% Ag, 92.4% Pb; HPG – 87.5% Ag, 91.2% Pb, 65.6% Zn; LM – 93.4% Ag, 94.6% Pb; TLP – 90.0% Ag, 89.1% Pb.
7. Exclusive of mine production to 30 June 2013.
8. Exchange rate assumed is 6.29 RMB : US$1.00.
9. Rounding of some figures may lead to minor discrepancies in totals.

Mineral Reserve estimates are based on the assumption that the current stoping practices of cut and fill resuing and shrinkage stoping will continue to be predominant. The sub-vertical veins, generally competent ground, reasonably regular vein width, and hand-mining techniques using short rounds, allow a significant degree of selectivity and control in the stoping process. Minimum extraction widths of 0.3 m for resuing and 0.8 m for shrinkage were assumed. AMC has observed the mining methods at Ying and considers these widths to be reasonable.

Mining dilution and recovery factors vary from mine to mine and with mining method. Average unplanned dilution factors have been estimated at 40% for resuing and 24% for shrinkage, while assumed mining recovery factors are 95% for resue stopes and 92% for shrinkage stopes.

AMC notes that the average silver and lead grades for the total combined Ying Mines Mineral Reserves are about 14% and 19% respectively lower than reported mined grades for 2012 alone, and about 24% and 33% respectively lower than reported mined grades for the period January 2010 to June 2013. This is consistent with the mining plan moving into generally lower grade areas, particularly at the SGX mine; however, AMC notes that the grade distribution of the Mineral Reserves allows opportunity to mine at above-overall-average grades in the first part of the projected remaining life-of-mine (LOM). AMC advises that best mining practices and tight dilution control will be key to optimizing grade throughout the extraction of the Ying Mineral Reserves.

AMC has tested the sensitivity of the Ying Mineral Reserves to variation in cut-off grade (COG) by applying a 20% increase in COG to Mineral Resources at each of the Ying mines. The lowest sensitivity is seen at SGX, with an estimated 2.1% reduction in contained AgEq ounces when the COG is increased by 20%. The highest reductions of 9.5% and 9.6% are noted at HPG and TLP respectively. For Ying as a whole, a 4.7% reduction demonstrates low overall COG sensitivity.

For the property as a whole, total Mineral Reserve tonnes are noted to be 89% of Mineral Resource tonnes. Silver, lead and zinc grades show a conversion percentage between 83% and 86%. Metal content conversion for silver, lead and zinc is between 73% and 76%.

Underground access to each of the mines in the steeply-sloped, mountainous area is generally via adits at various elevations, inclined haulageways, and internal shafts (winzes). The only shaft to surface is at LM West. It has a current hoisting capacity of 150,000 tpa of combined ore and waste with a standard cage. The mines are developed using trackless equipment – 20 t trucks and one-boom jumbos; and small, conventional tracked equipment – electric/diesel locomotives, rail cars, electric rocker shovels and pneumatic hand-held drills (jacklegs). Since October 2011, Silvercorp has also been developing two approximately 5 km ramps at the LM and SGX mines. The ramps will facilitate transport of men and materials, ventilation, and further development for access and exploration. In particular, the ramp at the SGX mine will be used to access mineralized areas below zero m RL.

The global extraction sequence is top-down between levels, and generally outwards from the central shaft or main access location. The stope extraction sequence is bottom-up. Stope production drilling is by jackleg. In-stope rock movement is by gravity to draw points or by hand-carting to steel ore passes or chutes. Production mucking uses mostly hand shovels or, occasionally, rocker shovels, with rail cars and electric or diesel locomotives transporting ore to the main shaft or inclined haulageway. Ore transport to surface is via skip/cage hoisting (shaft), rail-cars (tracked adit and/or inclined haulageway), small tricycle trucks (adit), or 20 t trucks (ramp). Some hand picking of high grade ore and waste is done on surface, with transport to the centralized processing plants being via 30 t or 45 t trucks or barge and truck combination.

Reconciliation

Table 1.3 summarizes the Silvercorp reconciliation between Mineral Reserve estimates and mill feed, including high grade, hand-sorted ore, for the Ying mines from 1 January 2012 to 30 June 2013.

Table 1.3 Mineral Reserve to Production Reconciliation: January 2012 – June 2013

	Mine	Ore	Grade			Metal		
		(kt)	Ag (g/t)	Pb (%)	Zn (%)	Ag (koz)	Pb (kt)	Zn (kt)
Reserve (Proven + Probable)	SGX	372.8	377	6.35	3.20	4,519	23.7	11.9
	HZG	70.9	344	0.73	-	784	0.5	-
	HPG	73.8	88	4.47	1.17	209	3.3	0.9
	LM	113.4	364	2.96	-	1,327	3.4	-
	TLP	158.7	195	4.19	-	995	6.6	-
	Total	789.5	309	4.75	1.62	7,833	37.5	12.8
Reconciled Mine Production*	SGX	514.8	279	4.83	1.97	4,618	24.9	10.1
	HZG	115.6	221	0.59	-	821	0.7	-
	HPG	96.4	114	4.36	1.13	353	4.2	1.1
	LM	154.8	263	1.72	-	1,309	2.7	-
	TLP	223.9	118	2.25	-	849	5.0	-
	Total	1,105.6	224	3.39	1.01	7,951	37.5	11.2
Difference: Mill Feed* and Reserve (%)	SGX	+38%	-26%	-24%	-38%	+2%	+5%	-15%
	HZG	+63%	-36%	-19%	-	+5%	+32%	-
	HPG	+31%	+30%	-2%	-4%	+69%	+28%	+26%
	LM	+37%	-28%	-42%	-	-1%	-20%	-
	TLP	+41%	-40%	-46%	-	-15%	-24%	-
	Total	+40%	-28%	-29%	-37%	+2%	0%	-12%

*Includes high-grade, hand-sorted ore.
Differences from Table 16.12 in the text (Ying Mines Production) arise from the non-inclusion of "Other" ore sources in Table 1.3

AMC makes the following observations relative to the data in Table 1.3:

- The overall 40% more tonnes and approximately 30% less metal grade for production compared to Mineral Reserve estimates is cause for concern, and suggests substantial unplanned dilution. AMC understands that sub-optimal contractor mining practices have been a large contributor to increased dilution and that Silvercorp has initiated tighter controls in this regard, which AMC endorses.
- Other than unplanned dilution, Silvercorp has also noted that adverse ground conditions and use of shrinkage stoping in veins less than 0.8m in width and/or discontinuous may have also played a role in the difference between production and Mineral Reserve estimates.
- AMC also understands that an intentional move to mine lower grade, but still economic, material outside of the vein proper may have partially contributed to the lower-grade production in 2012 and 2013, especially at SGX.
- AMC notes other factors that could, if present, also have contributed to collective and individual site tonnage and grade differences, including mining of Inferred and/or unclassified material, over- and/or under-estimation of Mineral Resource/Reserve tonnes and grades at individual sites, feed source attribution errors, and mill process control issues.

Comparison of Mineral Reserves, end-2011 to mid-2013

A comparison of Mineral Reserve estimates for end-2011 (previous Technical Report) and end-June 2013 (this Technical Report) indicates the following:

- 29% increase in total Ying Proven plus Probable tonnage.
- A small increase in total Ying Proven plus Probable silver content and a small decrease in total lead and zinc content.
- Respective decreases in total Ying Proven plus Probable silver, lead and zinc grades of 19%, 25% and 28%.

Thus, despite the continuing move into lower grade mining and the production achieved in the period between the two estimates, ongoing exploration, delineation, and preparation for mining have resulted in increased Mineral Reserves in terms of tonnage and largely unchanged Mineral Reserves in terms of metal content.

Life of mine plan

Table 1.4 is a summary of the projected LOM production for each of the Ying mines and for the entire operation based on the mid-2013 Mineral Reserve estimates.

Table 1.4 Life of mine production plan, Ying Property

SGX	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Production (kt)	222.6	278.5	336.4	362.1	362.4	340.4	327.9	317.3	328.9	321.9	307.7	328.7	301.9	269.7	315.5	135.4		4,857
Ag(g/t)	265	268	248	261	257	225	226	194	211	209	202	215	183	167	159	183		219
Pb（%)	4.99	4.37	4.28	4.69	4.87	4.37	4.29	3.55	3.3	3.99	3.62	3.85	3.85	4.24	3.69	3.55		4.11
Zn（%)	2.08	2.33	2.3	2.37	2.59	2.53	2.23	2.49	2.29	2.26	2.08	1.74	1.92	1.38	1.57	1.31		2.14
HZG	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023								Total
Production (kt)	63.2	84.1	80.2	83.7	86.0	87.8	82.2	63.8	59.0									690
Ag (g/t)	347	359	341	326	288	311	309	227	214									306
Pb (%)	0.96	0.63	1.18	1.39	1.02	1.03	1.1	1.3	1.9									1.14
Zn (%)	0.16	0.19	0.13	0.13	0.13	0.16	0.2	0.15	0.14									0.15
HPG	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026					Total
Production (kt)	64.7	67.0	70.8	70.4	70.9	71.6	72.5	74.1	74.0	71.2	71.8	70.9	71.7					922
Au(g/t)	0.65	0.7	0.76	0.53	1.7	1.32	1.23	1.11	0.78	1.01	1.26	0.91	0.82					0.99
Ag (g/t)	89	91	95	94	94	95	96	95	94	94	92	92	95					94
Pb (%)	4.59	4.93	4.06	4.89	2.52	3.54	3.98	3.87	3.87	3.08	4.46	5.07	3.96					4.05
Zn (%)	0.59	0.44	1.05	1.16	1.08	0.88	0.83	0.88	1.12	1.32	0.94	0.88	1.02					0.94
TLP	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Production (kt)	183.7	187.3	199.4	200.0	200.0	208.7	206.2	207.4	206.4	200.0	199.9	200.0	199.8	199.9	200.0	200.0	80.5	3,279
Ag (g/t)	151.31	151.27	151.25	151.84	150.95	151.77	153.52	153.64	154.28	154.87	152.18	155.21	153.91	154.15	155.79	154.48	72.45	151
Pb (%)	2.54	2.53	2.51	2.5	2.5	2.51	2.51	2.52	2.54	2.5	2.55	2.54	2.49	2.46	2.5	2.63	2.73	2.53
Zn (%)	0.17	0.16	0.15	0.15	0.21	0.17	0.21	0.16	0.18	0.21	0.24	0.22	0.38	0.26	0.35	0.17	0.04	0.21
LM East	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026					Total
Production (kt)	71.6	78.6	83.2	83.7	84.8	88.6	90.6	91.3	90.1	87.5	86.3	86.0	13.9					1,036
Ag (g/t)	293	310	306	273	308	320	294	283	280	229	217	211	181					275
Pb (%)	1.18	1.19	1.14	1.17	1.44	1.43	1.36	1.18	0.87	1.03	0.7	1.07	0.4					1.14
Zn (%)	0.22	0.23	0.23	0.29	0.37	0.35	0.34	0.32	0.35	0.33	0.17	0.2	0.09					0.28
LM West	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023								Total
Production (kt)	83.1	166.2	192.6	197.5	197.8	200.5	201.3	211.2	210.3	196.5								1,857
Ag (g/t)	259	232	210	223	193	218	231	232	243	255								228
Pb (%)	1.93	2.25	2.4	2.52	2.59	1.92	2.28	2.09	1.87	1.95								2.19
Zn (%)	0.18	0.2	0.2	0.16	0.18	0.17	0.22	0.26	0.28	0.27								0.21
Ying Mine	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023								Total
Production (kt)	688.9	861.7	962.6	997.4	1,001.9	997.6	980.7	965.1	968.7	877.1	665.7	685.6	587.3	469.6	515.5	335.4	80.5	12,641
Au (g/t)	0.06	0.05	0.06	0.04	0.12	0.09	0.09	0.09	0.06	0.08	0.14	0.09	0.10					0.07
Ag (g/t)	228	235	222	226	219	215	215	197	204	200	177	184	162	162	158	166	72	203
Pb (%)	3.16	2.95	2.99	3.26	3.16	2.87	2.94	2.66	2.56	2.82	3.01	3.25	3.32	3.48	3.23	3.00	2.73	3.01
Zn (%)	0.83	0.90	0.98	1.04	1.13	1.04	0.94	1.02	1.00	1.08	1.16	1.01	1.24	0.90	1.10	0.63	0.04	1.01

*Rounding of some figures may lead to minor discrepancies in totals.

A particularly significant aspect of the production profile is the ramp up to just over 1 M tonnes per annum by 2017/2018, an approximately 40% increase over the production achieved in 2013. AMC notes that the development and infrastructure required for the projected production increase is either already in-place, is in development, or has been planned. Total LOM development, capital and operating, is projected at 515 km through to 2030. AMC considers that the projected development profile is reasonable. AMC also notes that the ability to achieve the production increase will, to a large degree, be dependent on the consistent availability of resources, particularly skilled manpower. AMC considers that there is a certain amount of risk associated with the provision of those resources and recommends that Silvercorp maintain particular focus in this area.

A further key aspect of the LOM profile is that the major part of the increased production will come from the TLP and LM mines. Together they will provide about 50% of the Ying production by 2015. AMC notes that projected metal grades through to around 2023 are largely in-line with grades reported in 2012 and 2013 to June 30.

Metallurgical testwork and processing

Prior to operation of the mines and the construction of Silvercorp's mills, metallurgical tests had been conducted by various labs to address the recoveries of the different types of mineralization. TLP mineralization was tested by the Changsha Design and Research Institute (CDRI) in 1994, SGX mineralization was tested by Hunan Non-ferrous Metals Research Institute (HNMRI) in May 2005, and HZG mineralization was tested by Tongling Nonferrous Metals Design Institute (TNMDI) in 2006.

The results predicted a metallurgically amenable ore with clean lead-zinc separation by differential flotation and, with the possible exception of silver halides in the upper zones of the TLP deposit, high silver recoveries. Although on-site plant tuning has been carried out, AMC is not aware of any external testwork programs since the compilation of the original design criteria data.

Silvercorp runs two processing plants, Plants 1 and 2, at the Ying Mine with a total current design capacity of 2,600 tpd. The two plants are situated within 2 km of each other. Both were designed based on the lab tests completed by HNMRI in 2005. Plant 1 (Xiayu Plant, 600 tpd) has been in operation since March, 2007. Plant 2 (Zhuangtou Plant) has been in production since December 2009, with an expansion from 1,000 tpd to 2,000 tpd completed in October 2011. From January 2012, the total design processing capacity is about 2,600 tpd, but the actual capacity can reach 3,000 – 3,350 tpd. Up until now plant capacity has been under-utilized (especially Plant 2) relative to design and ultimate capacity. However the LOM plan calls for 3,000 tpd during the period 2016-2022 as LM-W becomes a more significant contributor to ore supply;

The overall processes of the two plants are similar and comprise crushing, grinding, flotation of lead and zinc concentrates, and concentrate dewatering. Plant 1 also has a lead / copper flotation separation circuit for use when treating high grade copper ore. Plant 1 feed (35% of combined Plant 1/2 feed) comprises mainly low grade ore from LM, HZG, and part of TLP; while Plant 2 feed (65% of combined Plant 1/2 feed) comprises mostly ore from SGX, HPG, and part of TLP and HZG.

To optimize profitability, high grade lead concentrate from Plant 2 is blended with middle grade lead concentrate from Plant 1, and high grade zinc concentrate from Plant 2 is blended with the very minor production tonnage of low grade zinc concentrate from low Zn ores fed to Plant 1, before shipment to clients.

SGX/HPG ores also contain high grade, large-size galena lumps with characteristic specular silver-grey colour. These are hand-sorted at the mine sites, crushed, and then shipped by dedicated trucks to Plant 1. The lumps are milled in a dedicated facility, and then sold directly or mixed with flotation lead concentrate for sale.

Both Plants 1 and 2 are exceeding design throughput levels. Lead and silver recovery targets are being met, although zinc recovery is lower than design, attributed to low zinc feed grades. In general, lead concentrate grades have fallen in recent years, a reflection of lower lead feed grades, whilst maintaining recoveries. As indicated above, projected grades through to around 2023 are largely in-line with grades reported in 2012 and 2013 to June 30.

Historically, higher-grade feed from SGX has enhanced plant performance but, with the proportion and grade of SGX ore decreasing, the challenge is to maintain similar metallurgical performance on lower grade feedstock. Maintaining recovery seems reasonably achievable, but with a moderately adverse impact on concentrate lead grades, still marketable, but incurring higher treatment charges and lower % payables.

Manpower

Silvercorp operates the Ying mines mainly using contractors for mine development, production, and exploration. The mill plant and surface workshops are operated and maintained using Silvercorp personnel. Silvercorp provides its own management, technical services and supervisory staff to manage the mine operations. Since 2012 Silvercorp has also employed its own hourly workers for underground production and development in parts of HZG, HPG, and TLP. The Ying Mining District has about 3,000 workers in total, comprising approximately 1000 Silvercorp staff, 350 Silvercorp hourly workers, and 1650 contract workers.

Main infrastructure, including tailings dams

There are two tailings management facilities (TMF); TMF1, adjacent to and serving Plant 1, and TMF 2, adjacent to and serving Plant 2. TMF 2 was completed in July 2012, and put into service in April 2013. Design of the dams was undertaken by Chinese design / engineering institutes and site-specific risk assessment such as geotechnical risk was carried out by Henan Luoyang Yuxi Hydrological & Geological Reconnaissance Company. Flood and safety calculations have been performed in accordance with Chinese standards, which require flood control measures to meet a 1 in 100 year recurrence interval with a 1 in 500 year probable maximum flood criterion. The calculated factors of safety are consistent with Chinese practice requirements, although they are lower than those required by international practices.

About 75% of the process water is recycled to the plants. The TMFs have working volumes of 0.86 Mm^3 (TMF1) and 3.75 Mm^3 (TMF2) and a remaining life at projected production rates of seven years and 11 years respectively. The TMFs were designed based on then-current Resource/Reserve estimates and LOM production projections. Subsequent Resource expansion and increased production projections indicate that the current tailings capacity will not be adequate for the full Ying LOM. Additional tailings capacity will thus be required in the later period of the LOM production.

Each mine in the Ying Property has a number of mine waste dumps. Those for SGX, HZG and HPG are sufficient for the envisaged life of mine production, while additional waste dumps will be constructed at LM and TLP to ensure adequate capacity. Total current capacity is around 2.8 Mm^3.

Power for the Ying Property is drawn from Chinese National Grids with high-voltage lines to the different mine camps and mill plants. At SGX, one 35kV overhead line supplies main power for all production, and two 10 kV lines act mainly as a standby source of power in case of disruption. In addition, two 1,500 kW and one 1,200 kW diesel generators installed at one of the substations act as backup power supply in the event of a grid power outage.

Access to the SGX/HZG mine from Silvercorp's mill office complex is via a 7 km paved road to the Hedong wharf of the Guxian Reservoir, and then across the reservoir by boat to the mine site. Two large barges carry up to five 45 t ore trucks from the SGX/HZG and HPG mines to the plants. At the SGX mines, ore for hand-sorting is transported to a facility at the north side of the mine by diesel powered locomotive railcars in a 2.69 km long tunnel rail system. Silvercorp has constructed a 1.27 km long tunnel in order to transport ore from HZG to SGX, with completion achieved in December 2012. Ore from the TLP and LM mines is hauled to the Silvercorp central mill using 30 and 45 t truck fleets.

Domestic water for SGX mine is drawn from the Guxian Reservoir, while water for the HPG, TLP, LM, and HZG mines comes from nearby creeks and springs. Mine production water for drilling and dust suppression is sourced from underground.

Market studies and contracts

AMC understands that the lead and zinc concentrates will be marketed to existing smelter customers in Henan and Shaanxi provinces. Appropriate terms have been negotiated and calculate out to 85-90% payable for the lead concentrate and approximately 70% for zinc, at long-term prices. AMC considers these to be favourable terms relative to global smelter industry norms. Silver payables of approximately 90% are similarly in accord with industry norms.

Monthly sales contracts are in place for the lead concentrates with leading smelters mostly located in Henan province. For the zinc concentrate, sales contracts are in place with two smelters. The contracts are renewed on a monthly basis.

With respect to copper, testwork has so far been unsuccessful in producing a saleable copper concentrate, but copper levels in the ore are low and this is not a material commercial issue, nor does it materially impact on lead concentrate quality.

Environmental, permitting, social / community impact

Silvercorp has all the required permits for its operations on the Ying Property. The existing mining permits cover all the active mining areas and, in conjunction with safety and environmental certificates, give Silvercorp the right to carry out full mining and mineral processing operations. Five safety certificates and five environmental certificates have been issued by the relevant government departments, for each of which there is a related mine development/utilization and soil/water conservation program, and rehabilitation plan.

There are no cultural minority groups within the area surrounding the general project and no records of cultural heritage sites exist within or near the SGX and HPG project areas. The mining areas do not cover any natural conservation, ecological forests or strict land control zones, current vegetation being mainly secondary, including farm plantings. Larger wild mammals have not been found in the region.

Silvercorp has made a range of cash donations and contributions to local capital projects and community support programs, sponsoring university students as well as the undertaking of projects such as road construction, school construction and school repairs and upgrading. Silvercorp has also made economic contributions in the form of direct hiring and retention of local contractors, suppliers and service providers.

Silvercorp's main waste by-products are waste rocks produced during mining operations and mine tailings produced during processing. Waste rock is deposited in various waste rock stockpiles adjacent to the mine portals and is utilized for construction around the site. Once the stockpile is full (or at the time of site closure), the waste rock stockpiles will be covered with soil and replanted with vegetation. For stabilization, retaining wall structures will be built downstream of the waste rock site. An interception ditch will be constructed upstream to prevent the slope surface from washing out. A waste rock stockpile at the SGX mine, and several waste rock stockpiles at the TLP mine, have already been covered with soil and vegetation planted.

Process tailings are discharged into purpose built TMFs, which have decant and under-drainage systems to provide for flood protection and for the collection of return water. Daily inspections are undertaken for the tailings pipelines, TMF embankment and the seepage / return water collection system. After the completion of the TMFs, the facilities will be covered with soil and vegetation will be replanted. The SGX Environmental Impact Assessment (EIA) Report states that the tailings do not contain significant sulphides and have no material potential for acid generation.

Silvercorp has established an environmental protection department consisting of five full time staff, which is responsible for environment / rehabilitation management work in the Ying Property. Monitoring plans include air and dust emissions and noise and waste water monitoring, and are undertaken by qualified persons and licensed institutes. AMC understands that results from 2007 to mid-2013 indicate that surface water, sanitary / process plant waste water and mining water are in compliance with the required standards. In addition, project completion inspection results were all compliant for waste water discharge, air emission, noise and solid waste disposal. There have been a few exceptional cases in which pH values of the discharged mining water were slightly over 9.0 and Pb concentrations slightly exceeded the permitted limit of 0.011 mg/l at the general discharge point after sedimentation tank for both SGX and TLP mines.

Maintaining water quality for the Guxian Reservoir, while operating the SGX and HPG projects, is a key requirement in the project environmental approvals. Silvercorp has created a SGX / HPG surface water discharge management plan which comprises collection and sedimentation treatment of mine water combined with a containment system (i.e. zero surface water discharge), and installation of a stormwater drainage bypass system. Overflow water from the mill process and water generated from the tailings by the pressure filter are returned to the milling process to ensure that waste water (including tailings water) is not discharged.

Water from mining operations is reused for mining operations and the remaining water is treated according to the required standards before being discharged into the Guxian Reservoir at approved discharge points. AMC understands that monthly monitoring results by independent organizations have indicated that water discharged to the Guxian Reservoir is in compliance.

With the exception of one small creek, there are no surface water sources near the TLP and LM mines, and no mining water is discharged to this creek from the mines. There is a limited volume of mining water generated from the lower sections of the TLP and LM mines, most of which is used in the mining activities, and none generated from the upper sections.

There is a groundwater monitoring program for the processing plant area, but not for the mining areas. It is recognized that there is no requirement under the Chinese environmental approval to monitor this potential impact. It is AMC`s understanding that test results indicate that groundwater quality is in compliance with the required standard.

The nearest significant community to the Ying projects is the Xia Yu Township, located 2 km to the southwest of the Ying processing plant. Silvercorp has provided several donations and contributions to communities within the Luoning County, comprising a range of cash donations to local capital projects and community support programs. Silvercorp also employs several local contractors and local suppliers where practical. AMC is not aware of any complaints in relation to Silvercorp's Ying Property operations.

Silvercorp's production activities are in compliance with Chinese and international labour regulations. Formal contracts are signed for all the full time employees with wages that AMC understands are well above minimum levels. The company provides annual medical surveillance and checks are conducted for its employees before, during and after their employment with the Company. The Company does not use child or under-aged labour.

In accordance with Chinese national regulatory requirements, Silvercorp will complete a site decommissioning plan at least one year before mine closure. Site rehabilitation and closure cost estimates will be made at that time.

Capital and operating costs

The principal capital requirement in the Ying district is for mine development. Capital provision is also made for exploration drilling and for sustaining surface facilities and equipment in general. Specific processing plant capital requirements going forward are projected to be minimal as plant capacity has already been expanded to meet the forecast mine production. Projected capital costs are summarized by mine in Table 1.5.

Table 1.5 Total capital cost – Ying property

	Mine	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
RMB (M)	SGX	28.12	26.04	13.39	10.11	12.39	9.3	4.19		1.14	1.4	0.08	2.31	0.21					108.69
	HZG	0.45	8.27	22.8	3.4	0.37	3.57	2.01	0.21										41.08
	HPG	4.31	9.03	1.39	3.62	2.62	3.61	3.12	3.15	1.6	2.72	3.04	2.75	0.27					41.22
	TLP	11.12	12.45	12.86	14.23	25.64	23.29	11.95	9.01	7.93	5.83	4.37	6.04	4.37	4.45	2.01	2.04	1.14	158.73
	LM East	13.68	13.68	10.84	8.35	4.77	7.42	4.58	6.22	5.54	6.46	7.76	2.92	0.36					92.57
	LM West	17.78	12.02	8.37	12.05	11.71	12.64	13.81	15.13	11.41	5.69								120.61
	Total Mining	75.47	81.5	69.66	51.76	57.5	59.82	39.66	33.72	27.62	22.09	15.24	14.01	5.21	4.45	2.01	2.04	1.14	561.78
US$ (M)	SGX	4.47	4.14	2.13	1.61	1.97	1.48	0.67		0.18	0.22	0.01	0.37	0.03					17.28
	HZG	0.07	1.31	3.63	0.54	0.06	0.57	0.32	0.03										6.53
	HPG	0.69	1.44	0.22	0.58	0.42	0.57	0.5	0.5	0.25	0.43	0.48	0.44	0.04					6.55
	TLP	1.77	1.98	2.04	2.26	4.08	3.7	1.9	1.43	1.26	0.93	0.69	0.96	0.69	0.71	0.32	0.32	0.18	25.24
	LM East	2.17	2.18	1.72	1.33	0.76	1.18	0.73	0.99	0.88	1.03	1.23	0.46	0.06					14.72
	LM West	2.83	1.91	1.33	1.92	1.86	2.01	2.2	2.41	1.81	0.9								19.18
	Total Mining	12	12.96	11.07	8.23	9.14	9.51	6.3	5.36	4.39	3.51	2.42	2.23	0.83	0.71	0.32	0.32	0.18	89.31
	Drilling Program	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.2	1.2	1.1	0.9	0.8	0.72		21.7
	Surface Facilities	3.7	3.7	3.6	3.2	2.8	2.8	2.7	2.7	3.1	2.4	2.6	2.1	2.1	3.2	1.6	1.4	2.8	46.5
	Total	17.6	18.56	16.47	13.23	13.74	14.01	10.7	9.66	9.09	7.41	6.22	5.53	4.03	4.81	2.72	2.44	2.98	157.51

Operating costs are summarized by mine in Table 1.6. AMC considers these costs to be reasonable for the methods and technology used and the scale of the operations.

Table 1.6 Operating cost summary, Ying property

Cost Item (US$/t ore)	SGX	HZG	HPG	LM	TLP
Mining Cost	49.42	59.48	54.37	41.49	38.5
Hauling cost	4.06	4.23	4.13	3.05	3.19
Milling cost	11.32	10.67	11.3	11.64	12.95
G&A and Other Cost	9.29	9.29	9.29	9.29	9.29
Mineral resources tax	1.92	1.92	1.92	1.92	1.92
Totals	**76.01**	**85.59**	**81.01**	**67.39**	**63.93**

The principal components of the milling costs are utilities (power and water), consumables (grinding steel and reagents) and labour, each approximately one-third of the total cost. “G&A and Other” cost includes an allowance for tailings dam and other environmental costs. The major capital expenditure on the two tailings storage facilities has already been expended and the ongoing costs associated with progressively raising the dam with tailings are regarded as an operating cost.

Economic analysis

Although Ying is a producing property and therefore does not require an economic analysis for the purposes of this report, AMC believes it is reasonable to include a summary-level analysis to illustrate the potential economic impact relative to the latest Mineral Reserve estimations and to the associated production schedules.

The Ying District is largely a mature operation. Average grades are projected to be strong, although lower than in earlier years. Operating costs and capital costs are anticipated to be reasonable. For the summary economic analysis, AMC has used the same metal prices as in the Mineral Reserve estimation, namely:

Gold US$1,250/oz

Silver US$19/oz

Lead US$1.00/lb

Zinc US$0.82/lb

An exchange rate of 1US$ = 6.2RMB has been used.

Based on the LOM production forecast and the metal price and other assumptions shown above, a base case pre-tax NPV at 8% discount rate of $601M is projected ($451M post-tax). Over the LOM, 62% of the net revenue is projected to come from silver, 33% from lead and 5% from zinc.

A simple economic sensitivity exercise has indicated that NPV is most sensitive to silver price, capital cost and operating cost, with a 20% adverse change in either of these items showing a decrease in NPV of similar magnitude. The NPV is moderately sensitive to lead price and only slightly sensitive to zinc price.

Recommendations

(Costs are estimated for those recommendations not covered by operational activities).

1 Review Resource modelling approach prior to next estimate with specific focus on block model versus polygonal method for all or some of the veins.

2 Continue to build on the bulk density database and refine the relationship between grade and bulk density.

3 Continue exploration tunnelling and diamond drilling at the Ying Property. The exploration tunnelling is used to upgrade the drill-defined Resources to the Measured category, and the diamond drilling is used to expand and upgrade the previous drill-defined Resources, explore for new mineralized zones within the unexplored portions of vein structures, and test for the down-dip and along-strike extensions of the vein structures. The proposed exploration work is as follows:

SGX and HZG:

Exploration Tunnelling:

12,300 m exploration tunnelling on vein structures S2, S4, S6, S7, S7-1, S7-2, S7E2, S8, S8E, S8 Branch, S14, S14-1, and S14-2 between levels 260 m and 625 m at SGX, and HZ20 and H22 between levels 450 m and 810 m at HZG.

Diamond Drilling:

35,000 m underground and surface diamond drilling on major vein structures S2, S6, S7-1, S8, S14, S16W and S18 at SGX, and HZ20, HZ20W, HZ20E, HZ22, HZ5, HZ23 at HZG.

HPG:

Exploration Tunnelling:

3,560 m exploration tunnelling on major vein structures H4, H5, H13, H14, H15, H16, H16E and H17 between levels 200 m and 800 m.

Underground Drilling:

8,185 m underground diamond drilling on vein structures H5W, H16 and H17 as well as their subzones.

LM

Exploration Tunnelling:

8,800 m on vein structures LM2, LM3, LM5 and LM6 between levels 500 m and 750 m at LME, and LM7, LM8, LM10, LM11, LM12, LM13, LM14, LM16, LM19, and LM20 between levels 650 m and 900 m at LMW.

Diamond Drilling:

13,000 m underground drilling on LM5 and LM6 at LME, and LM8, LM17, LMW4 and LMW18 at LMW.

TLP:

Exploration Tunnelling:

5,400 m exploration tunnelling on vein structures T1W1, T1, T11, T14-1, T16, T16E, T16W, T17, T23, T33, T33E and T33W between levels 690 m and 990 m.

Diamond Drilling:

8,000 m underground drilling on vein structures T3, T33, T33W3 and T11.

The estimated cost for the above exploration work is:

- Tunnelling: RMB 36,812,600 (US$6M);
- Drilling: RMB 17,306,504 (US$2.8M).

4 Investigate the assay bias issue (reference silver results for CDN-ME-1206 show a high bias, while the zinc results for CDN-FCM-7 show a low-bias) in preparation for the next Mineral Resource estimate.

5. Continue with recent comprehensive efforts to fully integrate the Resource estimation, Reserve estimation and mine planning processes
6. Consider removing sustaining capital from cut-off grade calculations.
7. Maintain particular focus on consistent provision of the skilled resources that will be necessary to achieve targeted production over the LOM.
8. Continue current efforts on dilution and grade control via the Mining Quality Control Department.
9. Clarify seismic ratings and design peak acceleration parameters. (Cost estimate US$35,000.)
10. Maintain the highly focused development approach that will be necessary throughout the Ying operation for LOM development targets to be achieved.
11. Continue with a focus on safety improvement, including implementation of a policy where the more stringent of either Chinese or Canadian safety standards are employed.
12. Investigate the use of portable compressors in mining areas with a view to minimizing power costs. (Cost estimate US$20,000.)
13. Investigate the benefits of a wider application of slushers for muck movement in stopes. (Cost estimate US$20,000.)
14. Consider the application of more bulk-mining methods such as long-hole benching. (Cost estimate US$60,000.)
15. Place a strong focus on stockpiling and record keeping procedures, and ensure that the summation of individual ore car weights by stope and zone is fully integrated into the tracking and reconciliation process.
16. Undertake periodic mill audits aimed at ensuring optimum process control and mill performance.
17. Begin planning for additional tailings capacity requirement towards end of LOM.

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2 Introduction

AMC Mining Consultants (Canada) Ltd (AMC) was commissioned by Silvercorp Metals Inc. (Silvercorp) to prepare a Technical Report on the Ying gold-silver-lead-zinc property in Henan Province, China, encompassing the SGX (/HZG), HPG and TLP / LM underground mines. The previous Technical Report, prepared by AMC, was dated 30 April 2013 and was a revised version of a Technical Report filed on 15 June 2012, with an effective date of 1 May 2012.

P R Stephenson and A P Fowler visited the Ying property in September 2013. H A Smith visited the property in February 2012 and September 2013. A Riles visited in February 2012. The four authors all qualify as independent Qualified Persons.

Silvercorp, through wholly owned subsidiaries, has effective interests of 77.5% in the SGX / HZG and TLP projects, and 80% in the HPG and LM projects. It has all the exploration and mining permits necessary to cover its mining and exploration activities. There are no known or recognized environmental problems that might preclude or inhibit a mining operation in this area.

The Ying Property is about 240 km west-southwest of Zhengzhou, the capital city of Henan Province, and 145 km southwest of Luoyang, which is the nearest major city. The nearest county town to the project area is Luoning, about 56 km by paved roads from Silvercorp's Ying mill site. The project areas have good road access and operate year round. The area has a continental sub-tropical climate with four distinct seasons.

Silver-lead-zinc mineralization in the Ying district has been known and intermittently mined for the last several hundred years. Silvercorp acquired an interest in the SGX project in 2004, the HPG project in 2006, and the TLP / LM projects in late 2007. Annual production has ramped up substantially in recent years, reaching 735,000 tonnes of ore in calendar 2013.

The current Technical Report is an update to the Mineral Resource and Mineral Reserve Estimates incorporating new drilling and underground channel sample results and updated depletion due to mining. The Mineral Resource and Mineral Reserve are reported with an effective date of the 1 July 2013. Table 2.1 lists the persons who prepared or contributed to this report.

Table 2.1 Persons who prepared or contributed to this technical report

Qualified Persons responsible for the preparation of this Technical Report						
Qualified Person	**Position**	**Employer**	**Independent of Silvercorp?**	**Date of Last Site Visit**	**Professional Designation**	**Sections of Report**
Mr P R Stephenson	General Manager, Principal Geologist	AMC Mining Consultants (Canada) Ltd	Yes	3-6 September 2013	PGeo (BC), PGeo (Sask), BSc (Hons), FAusIMM (CP), MCIM	Overall compilation, 20, parts of 1
Mr H A Smith	Mining Manager, Principal Mining Engineer	AMC Mining Consultants (Canada) Ltd	Yes	3-6 September 2013 16-19 February 2012	PEng (BC), PEng (Ontario), PEng (Alberta) MSc, BSc	15, 16,18, 21 and parts of 1, 22, 25 and 26
Mr A Riles	Principal Metallurgical Consultant	Riles Integrated Resource Management Ltd	Yes	16-19 February 2012	B.Met (Hons) Grad Dipl Professional Management, MAIG	13, 17, 19, parts of 22,
Dr A Fowler	Senior Geologist	AMC Mining Consultants (Canada) Ltd	Yes	3-6 September 2013	MAusIMM CP(Geo)	2 to 12, 14, 23, 24 and parts of 1,25 and 26

Table continues…

Other Experts who assisted the Qualified Persons					
Expert	**Position**	**Employer**	**Independent of Silvercorp**	**Visited Site**	**Sections of Report**
Mr M Gao, P.Geo	President and Chief Operating Officer	Silvercorp Metals Inc	No	Since 2004	General
Mr R Jiang, P.Geo	Vice-President, Exploration	Silvercorp Metals Inc	No	Since Jan 2012	General
Mr Z Li, P.Eng	Senior Mining Engineer	Silvercorp Metals Inc.	No	Since April, 2010	Parts of 15 to 21
Dr A Ross	Senior Geologist	AMC Mining Consultants (Canada) Ltd	Yes	No	General
Mr C Keogh	Principal Mining Engineer	AMC Mining Consultants (Canada) Ltd	Yes	No	15, 16
Mr M Shannon	Geology Manager, Principal Geologist	AMC Mining Consultants (Canada) Ltd	Yes	No	4

P R Stephenson and A P Fowler visited the Ying property in September 2013. H A Smith visited the Ying property in February 2012 and September 2013. A Riles visited the Ying property in February 2012. All aspects of the project were examined by the Qualified Persons, including drill core, exploration sites, underground workings, processing plant and surface infrastructure.

In preparing this report, AMC relied on various geological maps, reports and other technical information provided by Silvercorp. AMC reviewed and analyzed the data provided and drew its own conclusions augmented by its direct field observations. The key information used in this report is listed in Section 27, References.

Much of the geological information in this report was originally written in Chinese. Translations of key technical documents and data into English were provided by Silvercorp. The Qualified Persons have no reason to believe that the translations are not credible and believe they are generally reliable but cannot attest to their absolute accuracy.

Unless otherwise stated:

- All currency amounts and commodity prices are in US dollars.
- Quantities are in metric (SI) units.
- Years are calendar years.
- Tonnes are dry tonnes.

This report includes the tabulation of numerical data which involves a degree of rounding for the purpose of Resource and Reserve estimation. AMC does not consider any rounding of the numerical data to be material to the project.

This report has been produced in accordance with the Standards of Disclosure for Mineral Projects as contained in NI 43-101 and accompanying policies and documents. NI 43-101 utilizes the definitions and categories of Mineral Resources and Mineral Reserves as set out in the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Mineral Reserves Definitions and Guidelines (CIM Standards).

A draft of this report was provided to Silvercorp for checking for factual accuracy.

This report is dated 29 July 2014 and has an effective date of 31 December 2013.

3 Reliance on other experts

The Qualified Persons have relied, in respect of legal aspects, upon the work of an Expert listed below. To the extent permitted under NI 43-101, the Qualified Persons disclaim responsibility for the relevant section of the Report.

The following disclosure is made in respect of this Expert:

Audrey Chen, Partner, Jun He Law Offices, Beijing.

Report, opinion or statement relied upon: information on mineral tenure and status, title issues, royalty obligations, etc.

Extent of reliance: full reliance following a review by the Qualified Persons.

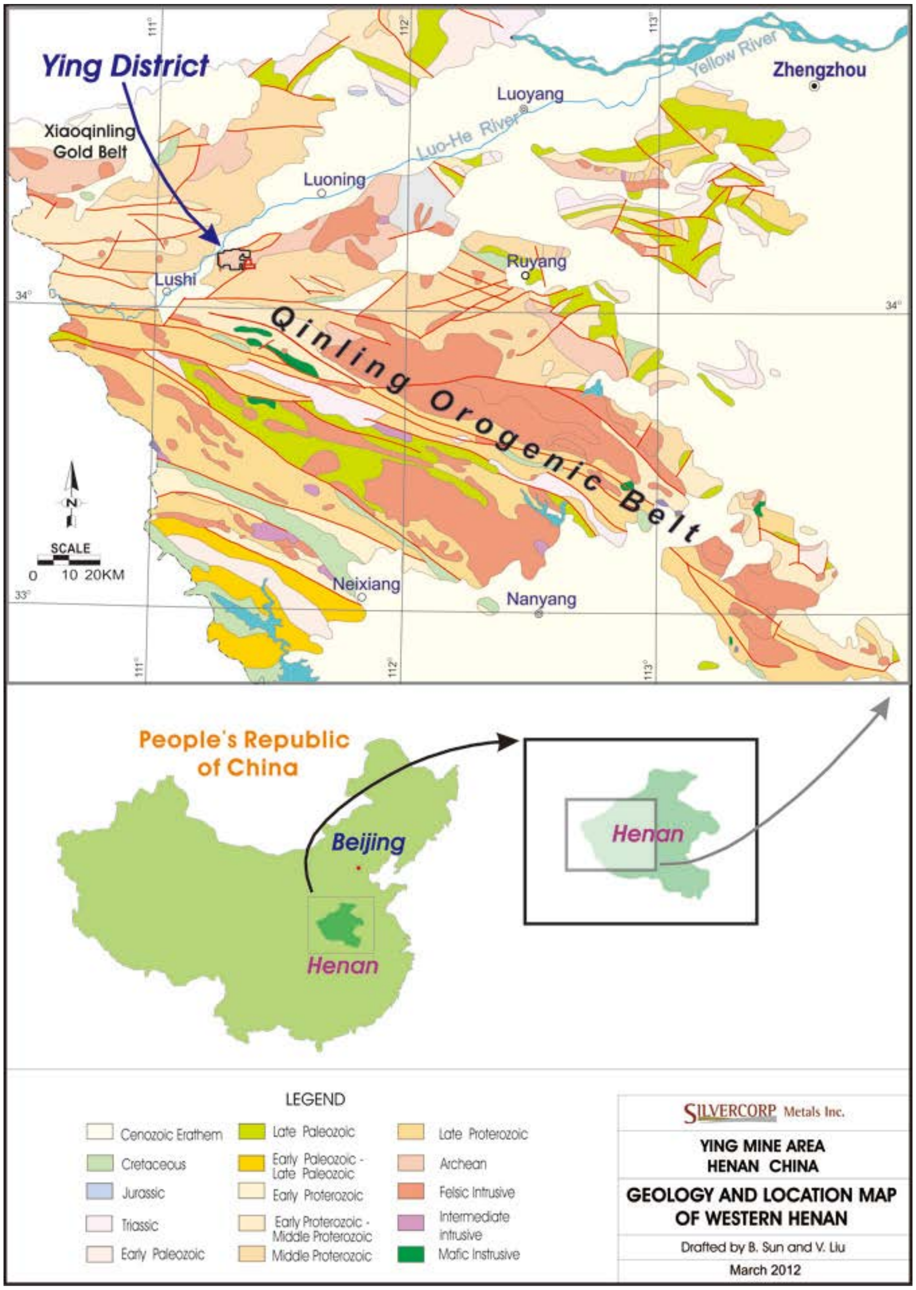
Portion of Technical Report to which disclaimer applies: Section 4.

4 Property description and location

4.1 Property location

The Ying Property is situated in central China in western Henan Province near the town of Luoning (Figure 4.1). The term "Ying District" is used to describe a 100 sq. km size rectangular area bounded by latitude 34°07'N to 34°12'N and longitude 111°14'E to 111°23'E. Within this district block, Silvercorp has three principal centres of operation, within which five mining projects are located.

Figure 4.1 Geology of Western Henan Province and location of Ying Property



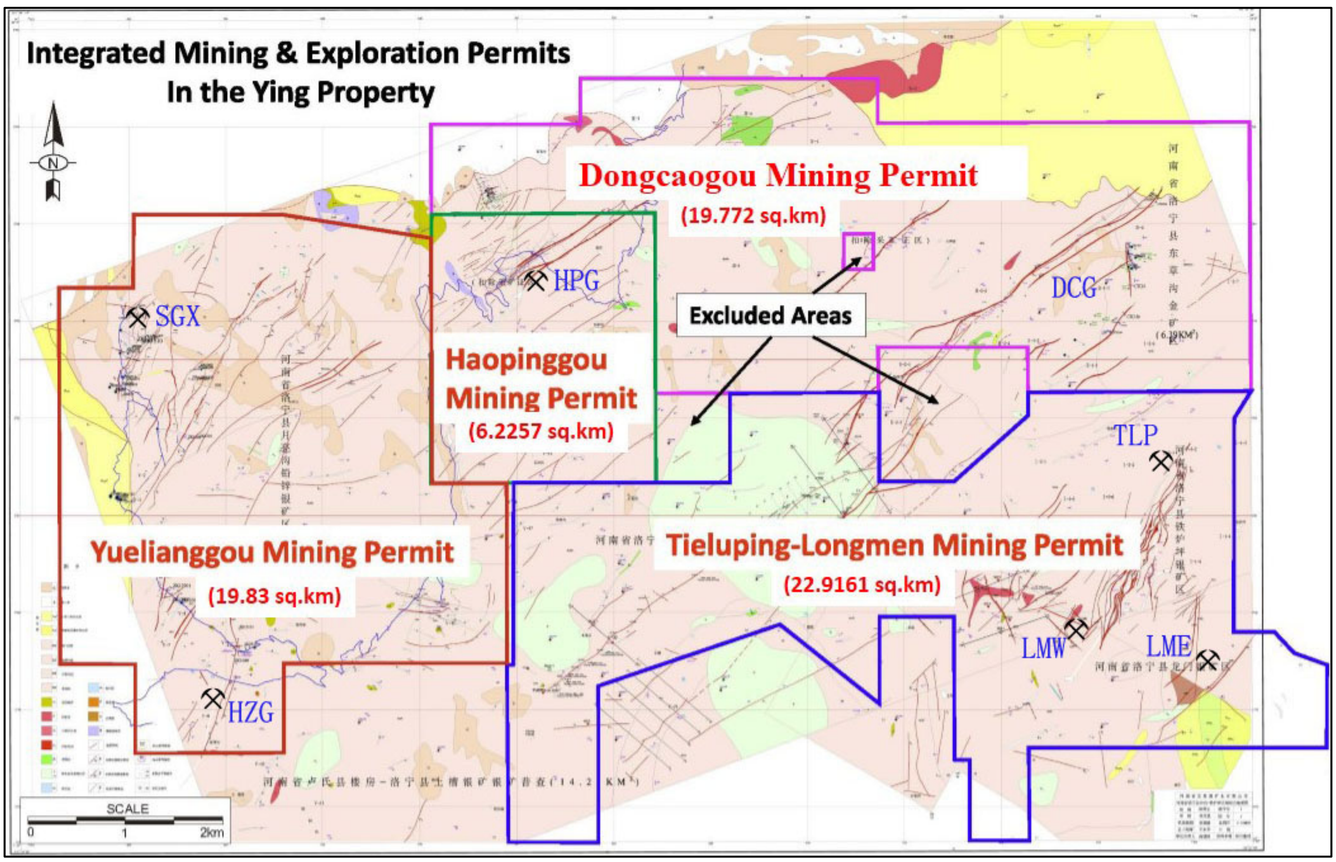
4.2 Ownership

Silvercorp, through its wholly owned subsidiary Victor Mining Ltd, is party to a cooperative joint venture agreement dated 12 April 2004 under which it earned a 77.5% interest in Henan Found Mining Co. Ltd (Henan Found), the Chinese company holding (with other assets) the Ying silver, lead and zinc project (the Ying Project), and the silver and lead project in Tieluping (the TLP Project). In addition Silvercorp, through its wholly owned subsidiary Victor Resources Ltd, is party to a cooperative agreement dated 31 March 2006 under which it initially obtained a 60% interest in Henan Huawei Mining Co. Ltd (Henan Huawei), the Chinese company holding the project in Houpinggou (the HPG Project) and the project in Longmeng (the LM Project). Since that time the Silvercorp's interest in Henan Huawei has increased to 80%.

4.3 Exploration and mining permits

After official approval of the integration of previous irregularly-distributed exploration and mining licences from the Department of Land and Resources of Henan Province in late 2012 and early 2013 (granting of the integrated mining permits by relevant government departments is still in progress), there are now four areas of tenure within the Ying District. These areas, which are termed mining permits in Figure 4.2, have been consolidated in terms of both mining and exploration licences, and in the named owner (Table 4.1). The information supporting Figure 4.2 and Tables 4.1 and 4.2 is contained in a letter provided to Silvercorp by Jun He Law Offices in Beijing and referenced in Section 3.

Figure 4.2 Location of the approved mining areas in the Ying Property



The main mines are located as following:

- the SGX area (also sometimes termed the Ying silver, lead and zinc project), consisting of the Shagouxi (SGX) and Houzhanggou (HZG) mines, is within the Yueliangou Mining Permit in the western part of the block;

- the HPG area, consisting of the HPG Lead mine and Haopinggou-Ximiao Silver Mine, are within the Haopinggou Mining Permit, in the central western part of the block; and
- the TLP/LM area, consisting of the TLP and LM mines, is within the Tieluping-Longmen Mining Permit, in the eastern part of the block.

There is currently no producing operation in the Doncaogau Mining Permit.

Table 4.1 lists the names, numbers and areas of the four consolidated mining permits as shown in Figure 4.2. The area of the total block will be 68.74 sq km when the consolidation is complete. In the table some of the totals do not add up as they are the sum of individual mining and exploration areas which may be modified slightly in the consolidation process.

Table 4.1 Exploration and mining permits

Area and licence name	Mining licence #	Sq km	Exploration licence #	Sq km	Total Sq km
Yuelianggou Area					
Yuelianggou Lead-zinc-silver Mine	C4100002009093210038549	19.83			19.83
Sub totals		19.83			**19.83**
Haopinggou Area					
Haopinggou Lead Mine	C4100002012063120126304	0.15			0.15
Haopinggou Ximiao Silver Mine	C4100002010124110093569	0.39			0.39
Haopinggou Silver Mine			T41520080502006711	5.86	5.86
Sub totals		0.53		5.86	**6.23**
Dongcaogou Area					
Dongcaogou Gold Mine			T41120080802013284	6.39	6.39
Ximiao-Leileishi Gold Mine			T01120090602030965	12.34	12.34
Sub totals				19.77	**19.77**
Tieluping-Longmen Area					
Lijiagou Silver Mine			T41120080102001028	19.42	19.42
Tieluping Silver-lead Mine	C4100002009103220041332	3.28			3.28
Longmen Silver Mine	C4100002009014120010157	2.95			2.95
Sub totals		6.23		19.42	**22.92**
Total					**68.74**

When the mining permits for the aforementioned integrated mining areas are granted, Henan Found will initiate applications to the relevant government departments so that exploration permits are reissued beneath the lower boundary of the mining permit areas in accordance with the “Mineral Resources Law of the People’s Republic of China” and the integration policy of mineral resource development issued by the Ministry of Land and Resources of China and the Henan Provincial Government. This will enable exploration to continue at depth.

The integration process is further discussed in Section 4.4.

4.4 Integration process of mining and exploration permits

According to the “official notification on further promoting the integrated development of mineral resources (2009-141)”, issued by the Ministry of Land and Resources of China, and the “official notification on promulgation of the general integration schedule for mineral resource development in Henan Province (2010-34)”, issued by the People’s Government of Henan Province, Henan Found applied for the status of main consolidator to integrate the silver-lead-zinc mineral resources in the Ying District. The Department of Land and

Resources of Henan Province, the People's Government of Luoyang City and the People's Government of Luoning County officially designated Henan Found as the main consolidator to integrate Henan Found's and Henan Huawei's exploration and mining permits, except for the Yuelianggou (SGX) Pb-Zn-Ag mining permit[2], in late 2011. As per requirements of the Department of Land and Resources of Henan Province, Henan Huawei's mining and exploration permits were first transferred to Henan Found before submission on an integration plan by Henan Found.

In December 2011, Henan Found commissioned the Henan Metallurgical Engineering Institute to prepare proposals for the three integrated mines, and submitted the applications to the Department of Land and Resources of Henan Province in late 2012. Upon receiving the official approvals of the mining areas for the integrated mining permits, Henan Found completed and submitted all the documents and exploration reports for the HPG and TLP-LM mines required by the Department of Land and Resources of Henan Province for issuing mining permits for the approved mining areas. Official approvals of the designated mining areas were received for the three new integrated mining permits; the new expiry date and extensions filed are as follows:

- Haopinggou Mining Area is a 6.23 km^2 area between the 955 m and the 365 m elevations for the integrated HPG Silver-Lead Mining Permit designated and approved by the Department of Land and Resources of Henan Province on 31 December 2012, with validity to 31 December 2013. An application for extension of the approval from Henan Found was received by the Department of Land and Resources on December 25, 2013.
- Dongcaogou Mining Area is a 19.77 km^2 area between the 1,087 m and the 605 m elevations for the integrated Dongcaogou (DCG) Gold-Silver Mining Permit designated and approved on 22 February 2013. The reserved term of the designated mining area is one year, till the end of February 2014. An application for extension of the approval from Henan Found was received by the Department of Land and Resources on April 1, 2014[3].
- Tieluping – Longmen Mining Area is a 22.92 km^2 area between the 1,250 m and the 700 m elevations for the integrated TLP-LM Silver-Lead Mining Permit designated and approved on 1 March 2013. The reserved term of the designated mining area is one year, till the end of March 2014. An application for extension of the approval from Henan Found was received by the Department of Land and Resources on April 1, 2014[3].

Table 4.2 lists the expiry dates for the licenses.

[2] As the SGX mining permit already forms an appropriately-sized mining area of about 20 km^2 there is no need for further integration.
[3] Received after the effective date and before the signing date of this Technical Report

Table 4.2 Expiry dates for licences

Area and licence name	Licence #	ML Expiry Date	App recd. [a]	Comments
Yueliangou Area[2]				
Yueliangou Lead-zinc-silver Mine	C4100002009093210038549	Sep-14		no action
Haopinggou Area			25-Dec-13	Extension for whole area
Haopinggou Lead Mine	C4100002012063120126304	Aug-15		Now all consolidated
Haopinggou Ximiao Silver Mine	C4100002010124110093569	Jun-17		
Haopinggou Silver Mine	T41520080502006711	May-09		Integrated with MLs above
Dongcaogou Area			28-Feb-14[3]	New mining area
Dongcaogou Gold Mine	T41120080802013284	Aug-09		To form one ML
Ximiao-Leileishi Gold Mine	T01120090602030965	Jun-12		To form one ML
Tieluping-Longmen Area			31-Mar-14[3]	
Lijiagou Silver Mine	T41120080102001028	Jan-13		Integrated with MLs above
Tieluping Silver-lead Mine	C4100002009103220041332	Oct-19		Now all consolidated
Longmen Silver Mine	C4100002009014120010157	Jan-16		

Note a: Refers to the date of the "reserved term of the designated mining area" according to the Approval Letter from the Department of Land and Resources. Extension applications are possible to give time for final consolidation.

The integrating process of the current exploration and mining permits has no material impact on Silvercorp's current exploration and production activities in the Ying Property.

4.5 Exploration and mining rights and taxes

The existing exploration and mining permits cover all the active exploration and mining areas discussed in this Technical Report. The exploration permits provide the right to carry out all contemplated exploration activities with no additional permitting required. Exploration permits are subject to exploration rights usage fees (a fixed annual charge), and applicable taxes. Mining permits are subject to mining-right usage fees (a fixed annual charge), mineral resource compensation fees, and applicable mineral resource taxes. The renewal of mining permits and extending mining depth and boundaries occur in the ordinary course of business as long as mineral resources exist, are defined, the required documentation is submitted, and the government resources royalties are paid. The mining permits give the right to carry out full mining and mineral processing operations in conjunction with safety and environmental certificates. The safety certificates for Silvercorp's mining activities have been issued by the Department of Safety, Production and Inspection of Henan Province. Environmental certificates have been issued by the Department of Environmental Protection of Henan Province.

Surface rights for mining purposes are not included in the permits but Silvercorp has acquired surface rights for mining and milling activities by effecting payment of a purchase fee based on the appraised value of the land. Subject to negotiation, some land use compensation fees may also be due to the local farmers if their agricultural land is disturbed by exploratory work.

China has an established Mining Code which defines the mining rights guaranteed by the government of China.

China has a 17% Value Added Tax (VAT) on sales of concentrates and on articles such as materials and supplies. The VAT paid on materials purchased for mining is returned to Silvercorp as an incentive to mine in China. There is no VAT on labour or services. According to China's mining law, a 2-4% resources compensation fee and $1.92 per milled tone resource tax are payable by companies as royalties to the government. Income tax rate is 25%. In addition Silvercorp pays a VAT surtax which amounts to approximately 1.6% of sales.

Other taxes such as Business, City Construction, and school taxes are exempted for Silvercorp.

There are no known or recognized environmental issues that might preclude or inhibit a mining operation in this area. Some major land purchases may be required in the future for mine infrastructure purposes (processing plant, waste disposal, offices and accommodations).There are no significant factors and risks that may affect access, title, or the right or ability to perform work on the property known at this time.

5 Accessibility, climate, local resources, infrastructure and physiography

The district lies within rugged, deeply dissected mountainous terrain of the Xionger Mountain Range. Elevations range from 300 m to 1,200 m above sea level. Hill slopes are steep, commonly exceeding 25°, and have good bedrock exposure.

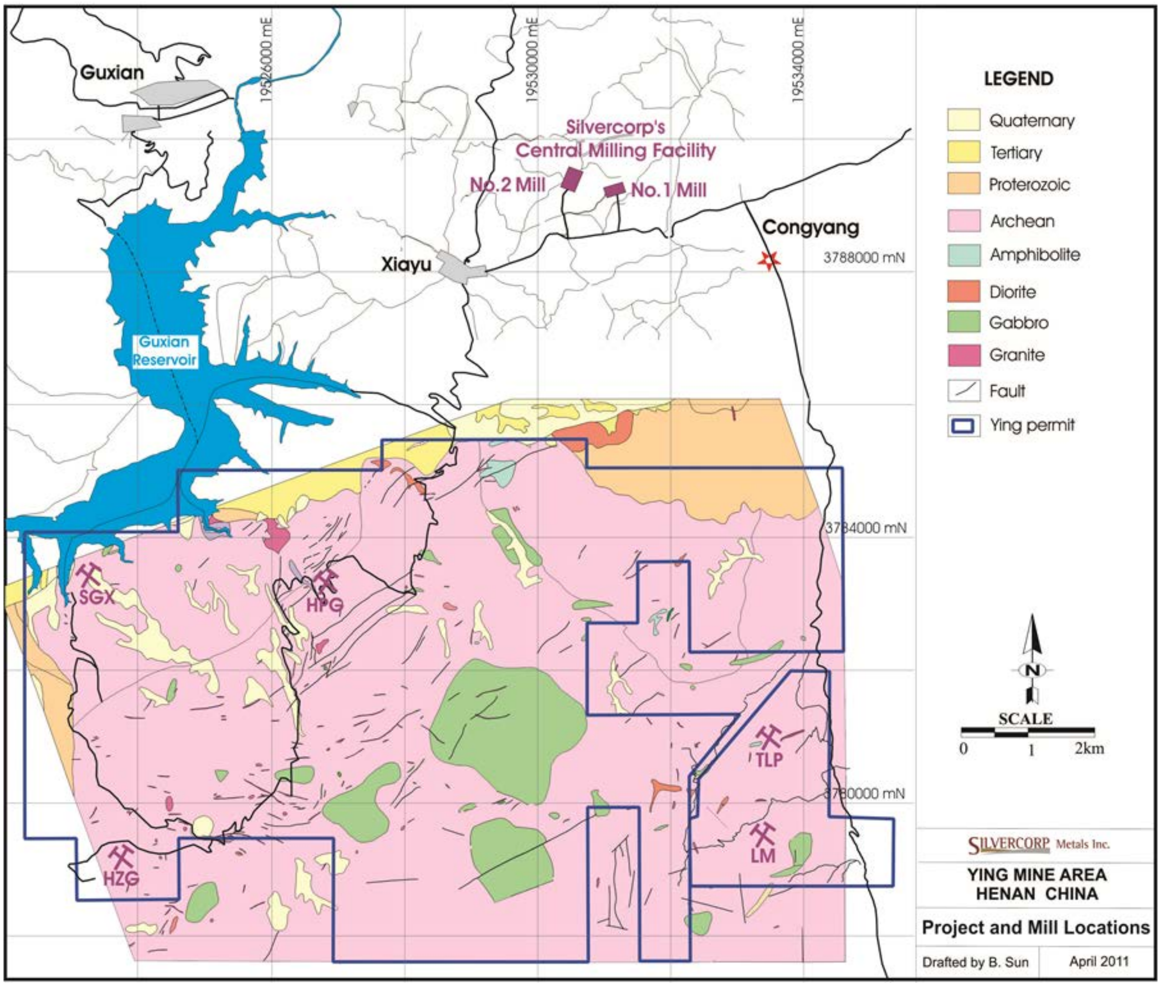
The area is sparsely vegetated, consisting mostly of bushes, shrubs, ferns and small trees. At higher elevations the vegetation is denser and the trees are larger. The local economy is based on agriculture (wheat, corn, tobacco, medicinal herbs) and mining. Agriculture is confined to the bottoms of the larger stream valleys and to the many terraced hillsides.

The Ying Property is about 240 km west-southwest of Zhengzhou (population 7.0 million), the capital city of Henan Province, and 145 km southwest of Luoyang (population 1.4 million), which is the nearest major city (Figure 5.1). Zhengzhou, the largest industrial city in the region, offers full service facilities and daily air flights to Beijing, the capital of China, as well as Shanghai and Hong Kong. The nearest small city to the project area is Luoning (population >80,000), about 56 km by paved roads from Silvercorp's Ying mill site which is located centrally to the projects. The mill site is about 15 km by paved road from the Guxian Reservoir (Figure 5.1). The SGX exploration-development camp is accessed via a 10 minute ferry ride across the Reservoir. The HPG, TLP and LM projects have good road access.

The area has a continental sub-tropical climate with four distinct seasons. Temperature changes are dependent on elevation, with an annual range of -10°C to 38°C and annual average of 15°C. The annual precipitation averages 900 mm, occurring mostly in the July to September rainy season and supplemented by snow and frost occurring from November to March. The projects operate year round.

Silvercorp has sufficient surface rights to operate the projects. There are major power grids adjacent to the properties, including a power line extending to the SGX Area. Adjacent to the Ying Property is a hydropower generating station at the dam that forms the Guxian Reservoir. This reservoir is on the Luo River, a tributary of the Yellow River. Sufficient manpower is available to serve most exploration or mining operations. The steep valleys form natural reservoirs for mine tailings and waste dumps. See Section 18 for further discussion of project infrastructure.

Figure 5.1 Mine and mill locations in the Ying Property



6 History

6.1 Introduction

Silver-lead-zinc mineralization in the Ying district has been known and intermittently mined for several hundred years. The first systematic geological prospecting and exploration was initiated in 1956 by the Chinese government. Detailed summaries of the district's historical activities from 1956 to 2004, when Silvercorp first acquired interests in the area, are described in previous NI 43-101 Technical Reports. The most recent was prepared by AMC dated 30 April 2013 and was a revised version of a Technical Report filed on 15 June 2012, with an effective date of 1 May 2012.

Silvercorp acquired an interest in the SGX Mine Project in 2004. Subsequently, Silvercorp acquired the HZG, HPG, TLP and LM mines, all of which were previously held and operated by private Chinese companies.

6.2 Ownership

See Section 4.

6.3 Drilling

Prior to Silvercorp obtaining the rights to the SGX mine in 2004, there was little drilling work completed on the Ying Property. Drilling programs conducted by previous operators include a 10,736 m surface drilling program in the TLP-LM area by the No. 6 Nonferrous Geological Exploration Team from 1991 to 1994 and a test drilling program of two holes in the SGX area by the Henan Nonferrous Geological Exploration Bureau in 2003.

6.4 Production

The underground mine at HPG was initially constructed in April 1995, with a mining license issued in June 1996 to Huatai #1 company. The mine was shut down during 1997 and 1998, and in 2001, new mining licenses were re-issued by the Henan Bureau of Land and Resources to Huatai #2 company (changing names on a mine license in China is difficult so the same name is used even though they are different companies). In 2004, Huatai #3 company acquired the mine, which reportedly produced 70,000 tonnes of ore per year from four principal underground levels. Ore was shipped to Guxian Ore Processing Plant, owned by Huatai. In 2006, Silvercorp reached an agreement with Huatai which included both the mine and the plant.

In 1998, a mining permit was issued for the TLP area to Tieluping Silver and Lead Mine of Luoning County. The mine produced 450 tpd of ore using shrinkage stoping methods. Ore was shipped to five small mills; lead concentrates were produced by conventional flotation methods. The government closed the mine in December 2006 due to health, safety and environment concerns. The operation is thought to have produced about 1.55 million tonnes of ore, although actual production and grades are unknown. Silvercorp acquired the TLP project from the owners in late 2007.

In 2002, a mining permit was issued for the LM area to Luoning Xinda Mineral Products Trade Co. Ltd which allowed Xinda to mine 30,000 tonnes of silver-lead ore using shrinkage stoping methods. Ore was mined mainly from the 990 m to 838 m levels and shipped to a local custom mill for processing by conventional flotation. Reported production for the operation is 120,206 tonnes of ore averaging 257.06 g/t Ag and 7.04 % Pb. Silvercorp acquired the LM project from the owners in late 2007.

6.5 Historical Resource and Reserve estimates

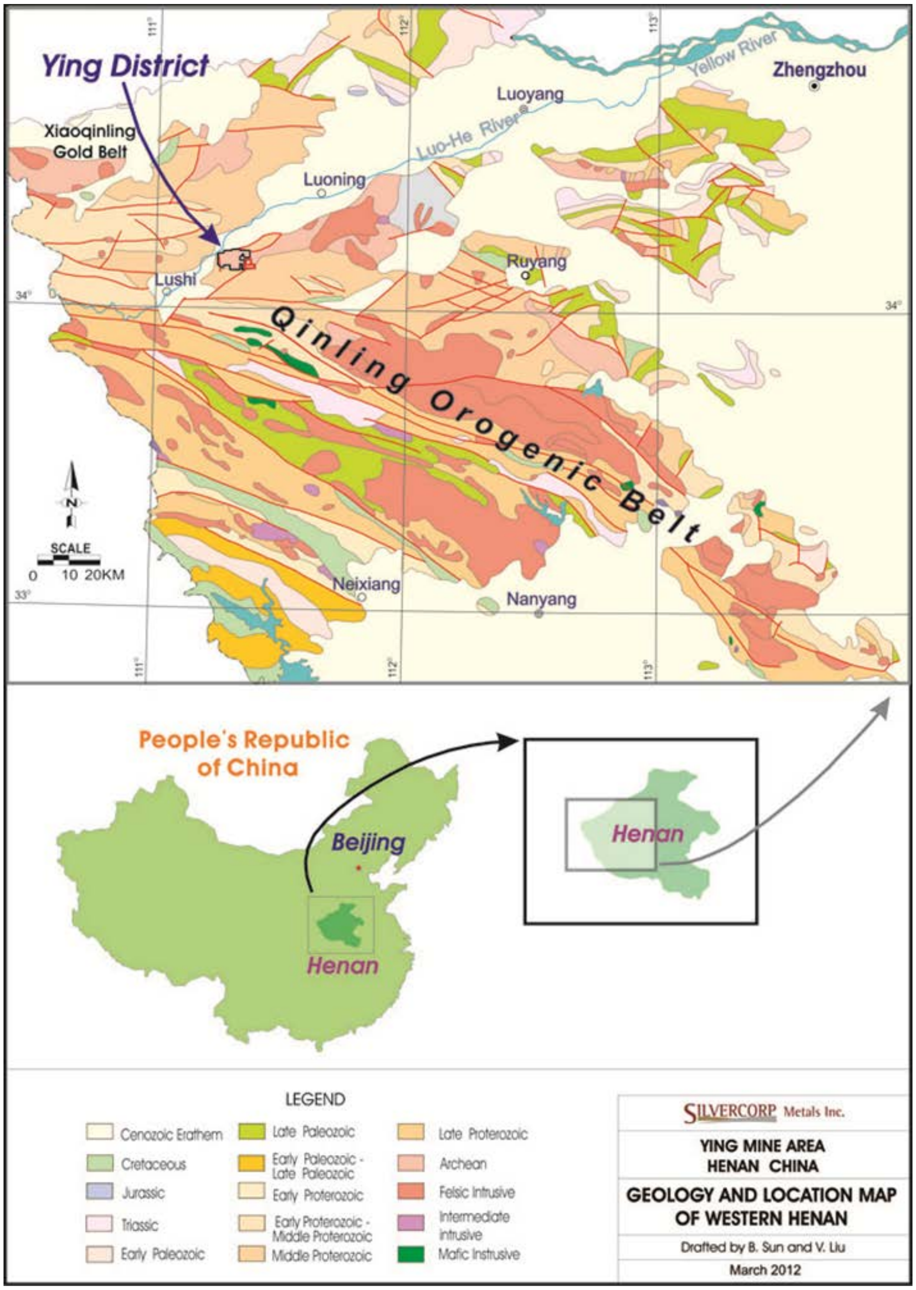
Silvercorp acquired its interests in the Ying Project between 2004 and 2007. Any Mineral Resource or Mineral Reserve estimates that pre-date Silvercorp's involvement are not considered by the Qualified Persons to be material.

7 Geological setting and mineralization

7.1 Regional geology

The Ying Property is situated in the 300 km-long west-northwest trending Qinling orogenic belt, a major structural belt formed by the collision of two large continental tectonic plates in Paleozoic time (Figure 7.1).

Figure 7.1 Geology of Western Henan Province and location of Ying Property



The northern continental plate, the North China Plate, covers all of Henan Province and most part of North China, while the southern plate, the Yangtze Plate, covers most part of South China. Rocks along the orogenic belt between the two major tectonic plates are severely folded and faulted, offering optimal structural conditions for the emplacement of a myriad of mineral deposits. Several operating silver-lead-zinc mines, including those in the Ying Property, occur along this belt.

The Qinling orogenic belt is comprised largely of Proterozoic- to Paleozoic-age rock sequences consisting of mafic to felsic volcanic rocks with variable amounts of interbedded clastic and carbonate sedimentary rocks. The rocks are weakly metamorphosed to lower greenschist facies, with local areas of strongly metamorphosed lower amphibolite facies. The basement of the belt is comprised of highly metamorphosed Archean-age rocks of the North China plate, dominantly felsic to mafic gneisses with minor amphibolites, intrusive gabbros and diabases. The metamorphosed Qinling belt sequence and the underlying Archean basement rocks are intruded by mafic to felsic dikes and stocks of Proterozoic and Mesozoic ages. They are overlain by non-metamorphosed sedimentary rock sequences of Mesozoic to Cenozoic age, primarily marls and carbonaceous argillites, which are in turn overlain locally by sandstone-conglomerate sequences.

The dominant structures in the Qinling orogenic belt are west-northwest trending folds and faults generated during the collision of the two major tectonic plates in Paleozoic time. The faults consist of numerous thrusts having a component of oblique movement with sets of conjugate shear structures trending either northwest or northeast. These conjugate shear zones, which display features of brittle fracturing such as fault gouge, brecciation and well-defined slickensides, are associated with all the important mineralization recognized along the 300 km-long orogenic belt. At least three important north-northeast trending mineralized fault zones are identified in the Ying Property:

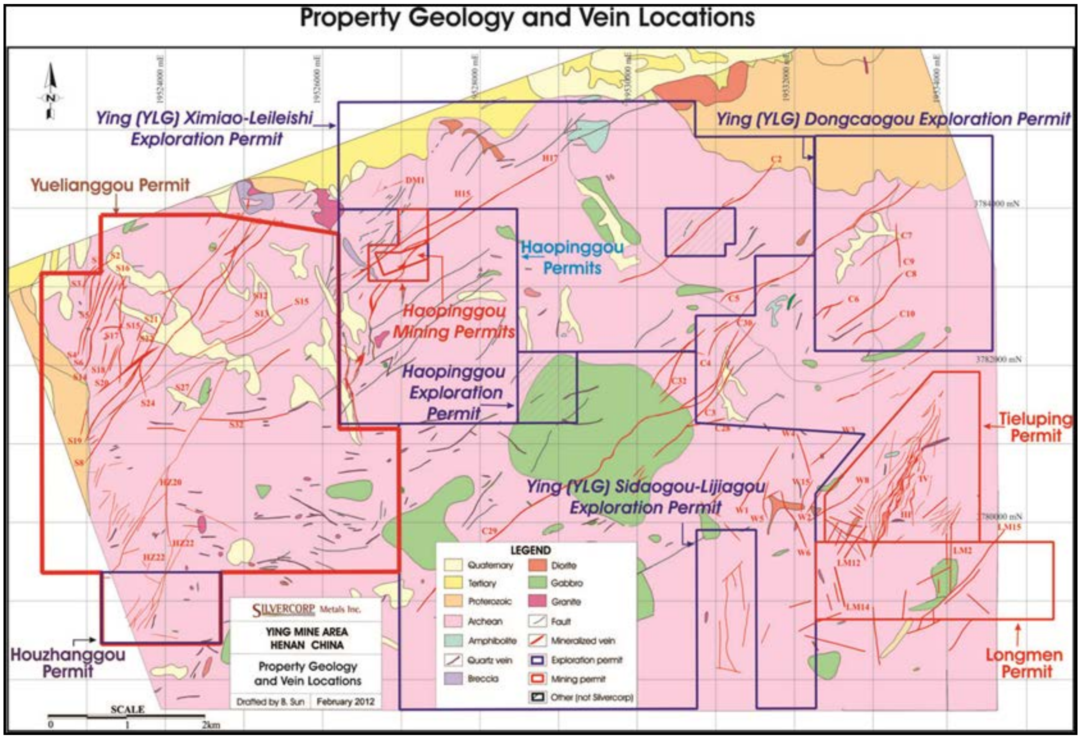
1 Heigou-Luan-Weimosi deep-seated fault zone
2 Waxuezi-Qiaoduan fault zone
3 Zhuyangguan-Xiaguan fault zone

7.2 Property geology

The Archean basement that underlies the district consists primarily of highly metamorphosed mafic to felsic gneisses derived from mafic to felsic volcanic and sedimentary rock units (Figure 7.2). The lowest part of the basement sequence is a 1 km thick mafic gneiss with local gabbroic dikes and sills that trend north-northeast and dip 30^o to 60^o southeast. This sequence is overlain by a much thicker sequence of thin-bedded quartz-feldspathic gneiss, which is bounded on the north and west by Proterozoic-age andesitic greenstones along a very high-angle (>70°) “detachment” fault-shear zone. The greenstones have been folded and dip steeply toward the northeast and southwest. The basement gneisses are commonly tightly-folded with boudins abundant near the mafic gneiss-feldspathic gneiss contact. Small granite porphyry stocks of Proterozoic to Paleozoic age locally intrude the gneisses.

All of these lithologies are extensively cut by high-angle, mostly west-dipping conjugate faults. These faults trend generally northeast, varying from mostly north to north-northeast on the west side of the district, to northeast with occasional north and rare northwest on the east side of the district. The faults are commonly near-vertical, with steep dips in either direction, and they are occasionally filled with swarms of younger andesitic to basaltic diabase dikes. Repeated movement on the faults has offered the openings which host all of the district’s important silver-lead-zinc veins.

Figure 7.2 Ying Exploration, mining permits and mineralization vein systems



7.3 Mineralization

The Ying Property contains multiple mesothermal silver-lead-zinc-rich quartz-carbonate veins in steeply-dipping fault-fissure zones which cut Archean gneiss and greenstone. To date, significant mineralization has been defined or developed in at least 167 discrete vein structures, and many other smaller veins have been found but not as yet well explored.

Structurally, the vein systems throughout the district are all somewhat similar in that they occur as sets of veins of generally similar orientation enclosed by fault-fissure zones which trend most commonly northeast-southwest, less commonly north-south, and rarely northwest-southeast. The structures extend for hundreds to a few thousand metres along strike. They are often filled by altered andesite or diabase dikes together with quartz-carbonate veins or as discrete zones of altered bedrock (mainly gneiss) associated with local selvages of quartz-carbonate veinlets. From one-third to one-half of the structures exposed at the surface are conspicuously mineralized as well as altered.

The vein systems consist of narrow, tabular or splayed veins, often occurring as sets of parallel and offset veins. The veins thin and thicken abruptly along the structures in classic “pinch-and-swell” fashion with widths varying from a few centimetres up to a few metres. “Swells” formed in structural dilatant zones along the veins often form mineralized “shoots”. At the SGX mine, these shoots range from 30 m to more than 60 m in vertical and horizontal dimensions over true vein widths of 0.4 m to 3.0 m. The vertical dimension of the SGX shoots is commonly twice or more the horizontal dimension. Longitudinal sections constructed along the veins indicate that many of the shoots have a steep, non-vertical rake.

The vein systems of the various mine areas in the district are also generally similar in mineralogy, with slight differences between some of the separate mine areas and between the different vein systems within each area. These differences have been attributed to district-scale mineral zonation at different levels of exposure. This subtle zonation is thought to be perhaps analogous to the broad-scale zonation patterns observed in the Coeur d’Alene District (U.S.A.) and characteristic of many other significant mesothermal silver-lead-zinc camps in the world (Broili et al., 2008, Broili et al., 2010).

7.3.1 SGX area

Currently defined Ag-Pb-Zn mineralization in the SGX area is carried by at least 30 veins which occur in eight major and two minor vein systems. Veins in the four largest veins systems (S7, S7-1, S8 and S2, listed in terms of presently defined Resources) account for about 45% of this mineralization (Figure 7.3, Figure 7.4, Table 7.1).

The SGX veins have been extensively mapped and sampled at various levels in the underground workings and by drilling. Results show that approximately 30% of the material filling the veins is strongly mineralized with massive, semi-massive, veinlet and disseminated galena and sphalerite over narrow widths ranging from 0.3 m to 5 m or more with a weighted average true width of 0.52 m. Other than galena and sphalerite, the most common metallic minerals are small amounts of pyrite, chalcopyrite, hematite, and very small amounts of wire silver, silver-bearing sulfosalts (mainly pyrargyrite), silver-bearing tetrahedrite (known as freibergite) and possibly acanthite (silver sulphide). The metallic minerals are confined to the veins where they occur as massive accumulations or disseminations. The galena often occurs as massive tabular lenses comprised of coarsely crystalline aggregates or fine-grained granular “steel galena” bodies, which can be up to 1.0 m thick and 100 m or more in vertical and horizontal dimensions. Sphalerite, in its dark-coloured, iron-rich variety often known as “blackjack”, occurs with the galena as coarse bands or aggregates. Alternating bands of galena, sphalerite, pyrite and quartz are common near the vein margins.

A detailed study on assay results of drillcore and tunnelling samples from major vein structures in 2012 revealed the existence of wide alteration and mineralization zones with lower but economic grades of silver adjacent to some high grade silver-lead-zinc vein structures, such as S7-1, S16W, S16E, S6, and S2. These lower-grade zones have mostly been neglected in previous sampling programs because of a lack of visible sulphides An improved understanding of the geology, alteration, and mineralization of major vein structures has indicated that contacts between mineralization and wall rocks can no longer based solely on visual geological mapping, but also requires consideration of sampling results because of the silver content in adjoining alteration zones. As a result, average widths of mineralized zones have been substantially increased.

Several shoots in some of the SGX veins are unusually rich in silver relative to lead, containing from 92 to 165 grams silver for each percent lead. This is a much greater amount of silver to lead than most other SGX veins. The silver in these shoots is thought to be carried mostly as a silver-rich, non-lead-bearing mineral such as freibergite, which is a dark-coloured metallic mineral that could easily be hidden within metallic granular masses of galena. Freibergite is also a copper-bearing mineral, so it is not surprising that these same shoots also contain up to several percent of potentially valuable copper. Very little gold has been found in the SGX veins to date, an exception being the short S7-2 vein in the eastern part of the target area which contains from 4.4 to 8.9 g/t gold but very little silver, lead or zinc. At present, neither gold nor copper is recovered from the SGX veins.

Gangue in the vein systems consists mostly of quartz-carbonate minerals with occasional inclusions of altered wall-rock. The carbonate gangue mineral is dominantly ankerite, whereas siderite is the most common carbonate gangue mineral in many other mesothermal silver-lead-zinc districts.

Wall rock alteration is commonly marked as a myriad of quartz veinlets which are accompanied by sericite, chlorite, silicification, and ankerite on fractures. Some retrograde alteration is present as epidote along fractures. Underground drilling suggests that many of the vein systems appear to either persist or strengthen at depth. Additionally, Broili et al. (2006) notes that many of the veins exposed in underground workings are often significantly richer in Ag-Pb-Zn than the same veins exposed at the surface.

Figure 7.3 Tunnels and veins at SGX area

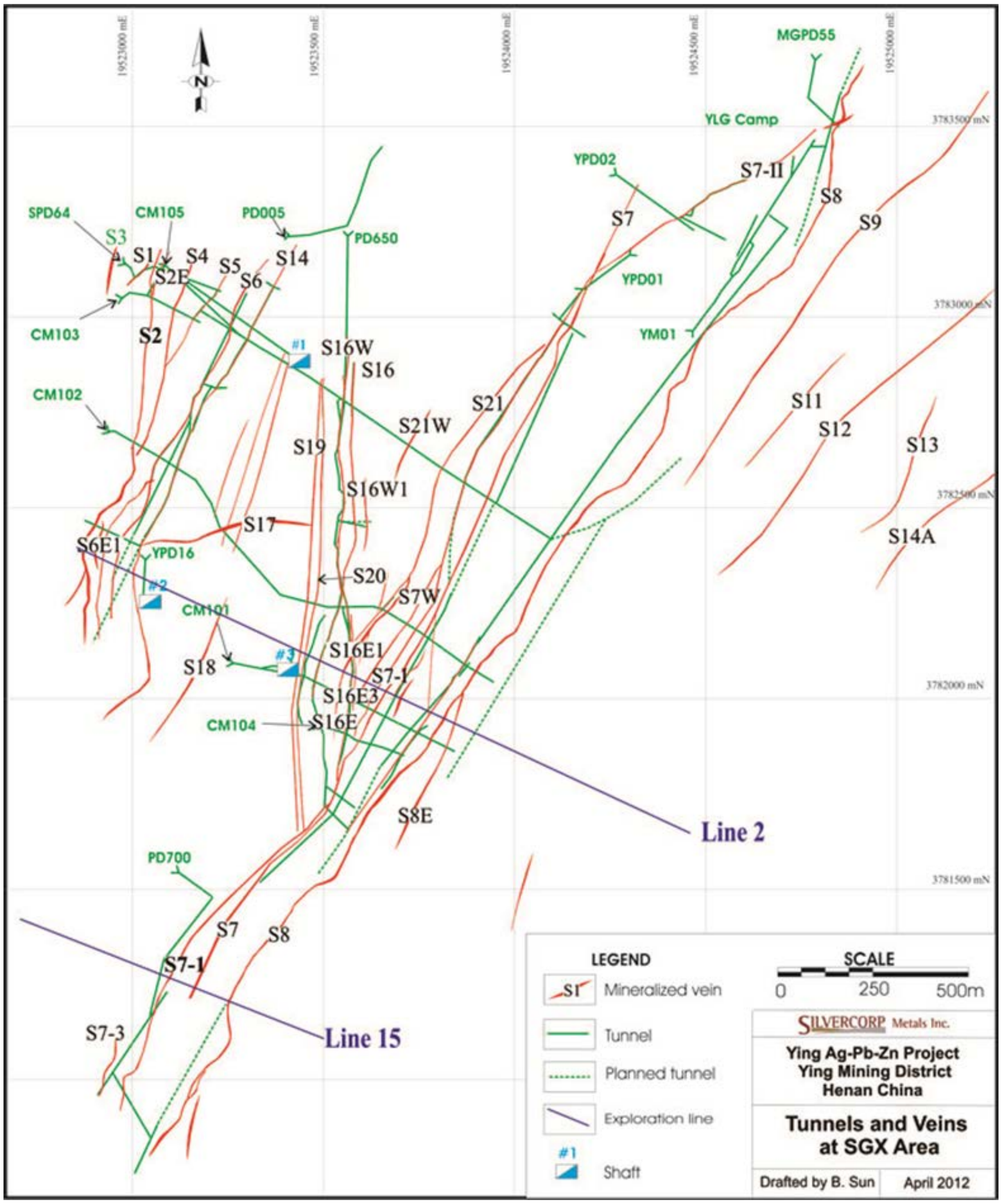


Figure 7.4 Cross section on Line 2, SGX

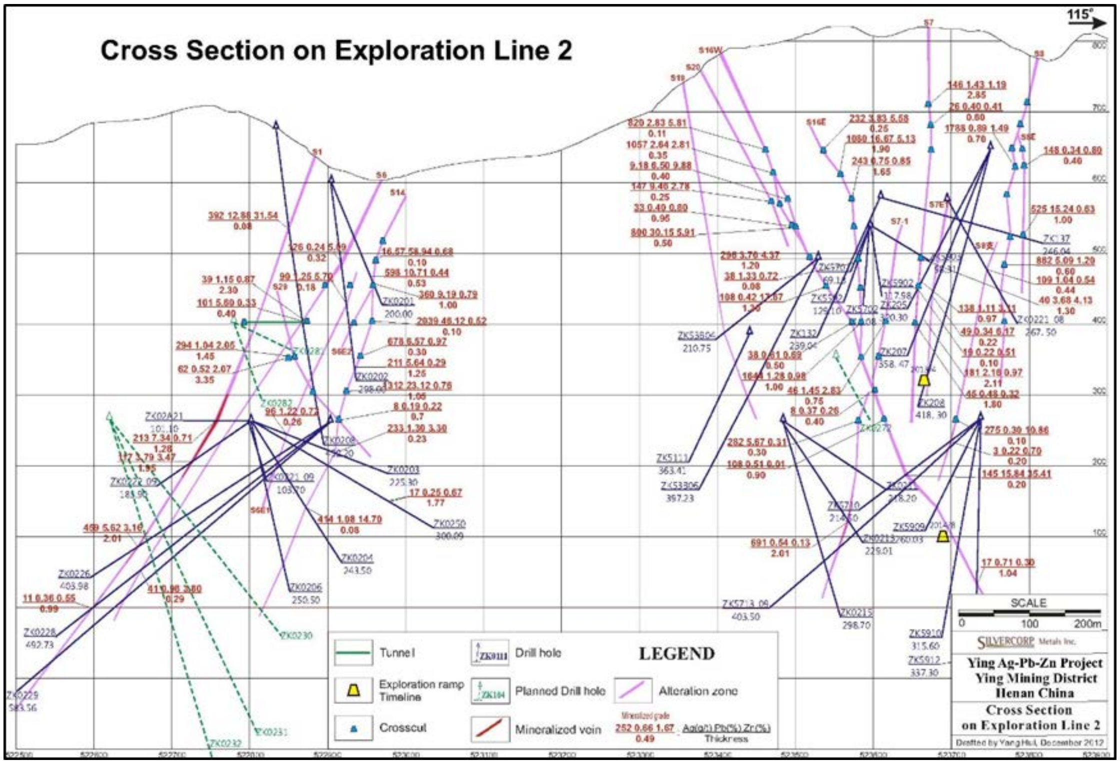


Table 7.1 presents a summary of the characteristics of the major mineralized veins in SGX area.

Table 7.1 Dimensions and occurrences of mineralized veins at SGX mine

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
S2	1100	806	660-(-140)	265-315°	75-88°	0.51 (0.30-2.07)
S2W	400	192	517-360	310°	80°	0.33 (0.30-0.91)
S4	700	602	516-(-50)	300-320°	55-85°	0.40 (0.30-0.84)
S6	1160	745	600-(-100)	280-305°	65-75°	0.37 (0.30-1.07)
S7	3000	1002	998-0	112-118°	85°	0.62 (0.30-2.37)
S7-1	2337	665	745-100	290-310°	67-85°	0.58 (0.30-5.06)
S8	3330	771	707-(-50)	295-305°	75-82°	0.54 (0.30-2.01)
S14	1300	758	625-(-100)	285-305°	73°	0.44 (0.30-0.96)
S16E	1200	442	661-230	80-115°	70-83°	0.38 (0.30-0.97)
S16W	1890	869	738-(-50)	85-110°	62-68°	0.69 (0.30-1.44)
S21	1300	642	770-150	295-310°	70-80°	0.46 (0.30-1.01)
S21W	1000	402	646-250	130-140°	80°	0.66 (0.30-1.53)
S21W1	200	207	600-400	110-120°	70-80°	0.52 (0.30-0.75)

7.3.2 HZG area

The HZG mine area, south of the SGX area, has six veins in which mineralization has been defined to date. Underground and surface sampling and drilling indicates that 14% to 23% of the vein-filling material in these veins is strongly mineralized over a true weighted average width of 0.50 m (ranging from 0.3 to 2.36 m). The veins contain distinctly more copper but lower zinc than the district's many other veins. The largest HZG vein defined to date, HZ20, contains an average of 0.6% copper, which occurs mostly in chalcopyrite and tetrahedrite. The tetrahedrite commonly forms massive lenses, probably filling tension gashes that are distributed in relay-like fashion near the vein margins and in ladder-like fashion near the centre of the veins. The chalcopyrite occurs as disseminated crystals in the gangue and in the tetrahedrite. Other sulphides include galena (up to several percent locally) and pyrite.

The contact of the HZG veins with the wall-rock is sharply marked by shearing and gouge. The gangue is predominantly quartz-ankerite with conspicuous amounts of bright green fuchsite, a chrome-bearing muscovite alteration product that is especially abundant near the HZG vein margins. Fuchsite apparently occurs nowhere else in the Ying Property, although it is a common alteration product in many greenstone-related mesothermal gold districts throughout the world.

The HZG veins mostly trend NE-SW, bending NNE-SSW toward the western margin, although there are a few vein systems that trend approximately N-S (Figure 7.5, Table 7.2). To date, mineralization of significance has been defined in six veins, HZ5, HZ10, HZ12, HZ20, HZ22 and HZ22E, of the many dozens of veins identified in the HZG area. The HZ20 vein is by far the largest.

Figure 7.5 Tunnels and veins at HZG area

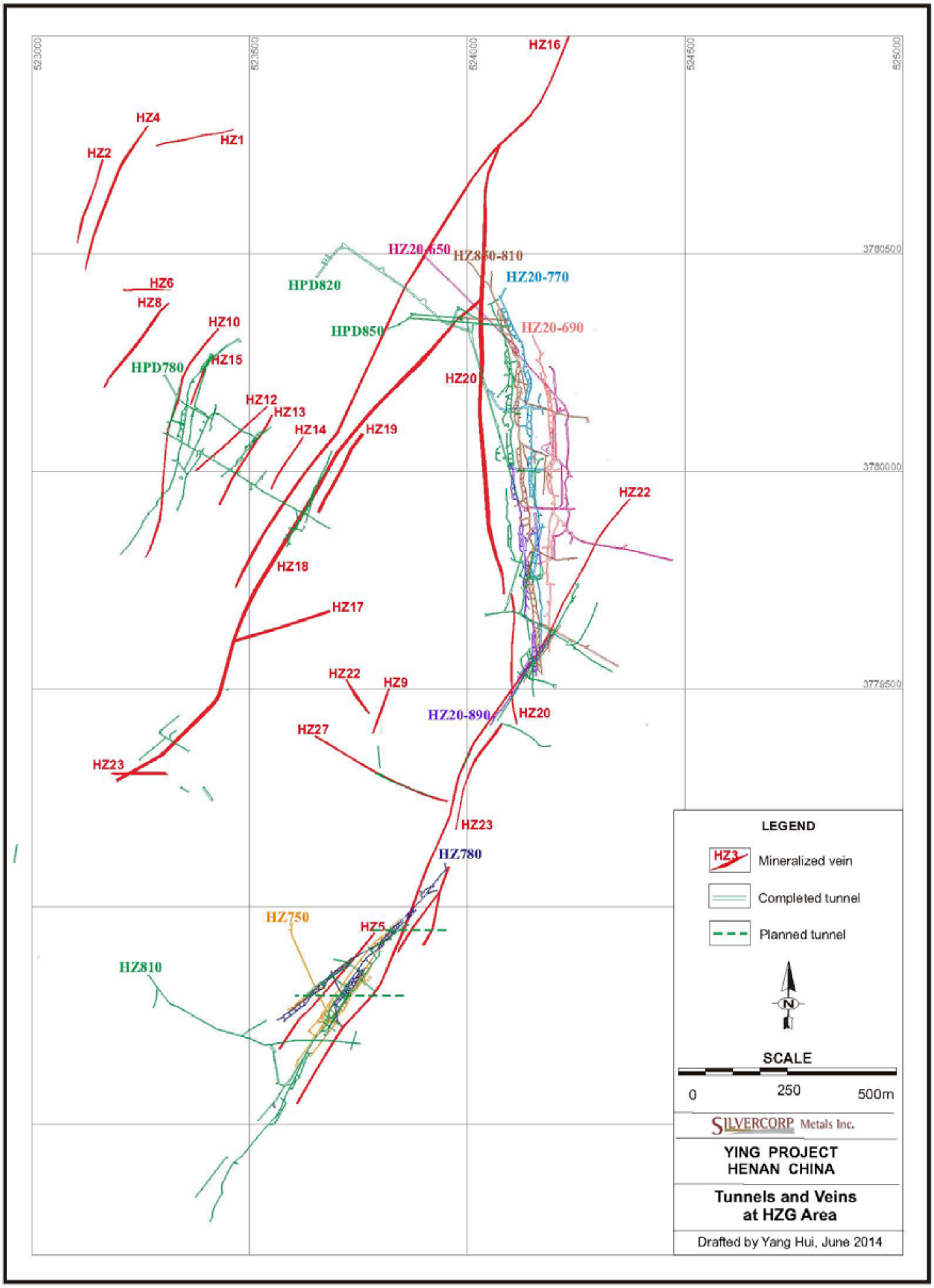


Table 7.2 presents a summary of dimensions and occurrences of major mineralized veins in the HZG area.

Table 7.2 Dimensions and occurrences of major mineralized veins in the HZG area

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
HZ5	400	128	804-680	120°	75°	0.39 (0.30-0.93)
HZ10	500	172	781-612	90-125°	80°	0.34 (0.30-0.49)
HZ12	260	96	755-664	108°	70°	0.33 (0.30-0.49)
HZ20	1800	493	916-442	100-110°	68-80°	0.48 (0.30-2.27)
HZ22	1800	384	898-550	100-120°	60-70°	0.59 (0.30-1.69)
HZ22E	500	106	800-700	120°	70°	0.32 (0.30-0.41)

7.3.3 HPG area

The HPG mine area is located in the central part of the district, immediately northeast of the SGX mine (Figure 7.6, Figure 7.7, Table 7.3). Mineralization is currently defined in at least 16 veins, with four major vein systems H17, H16, H15, and H11 containing about 72% of the Mineral Resources defined to date. Sampling at various levels in workings along these vein structures indicates that from 27% to 50% or more of the vein material is mineralized, ranging from 0.34 m to 2.64 m in width, averaging 0.57 m.

The veins occur in relatively permeable fault-fissure zones and are extensively oxidized from the surface to depths of about 80 m. Within this zone, the veins show many open spaces with conspicuous box-work lattice textures resulting from the leaching and oxidation of sulphide minerals. Secondary minerals present in varying amounts in this zone include cerussite (lead carbonate), malachite (copper carbonate) and limonite (hydrous iron oxide). Beneath this oxide zone, sulphide minerals are mixed with secondary oxide minerals in the vein, with sulphides becoming increasingly abundant downward to about 150 m depth, beyond which fresh sulphides are present with little or no oxidation.

The dominant sulphides are galena, typically comprising a few percent to 10% of the vein, together with a few percent sphalerite, pyrite, chalcopyrite and freibergite-tetrahedrite. Other metallic minerals in much smaller amounts include argentite, native silver, native gold, bornite and various sulfosalts. The minerals occur in narrow massive bands, veinlets or as disseminations in the gangue, which consists of quartz, sericite and carbonate, occurring as dolomite and calcite with some ankerite.

Figure 7.6 Tunnels and veins at HPG area

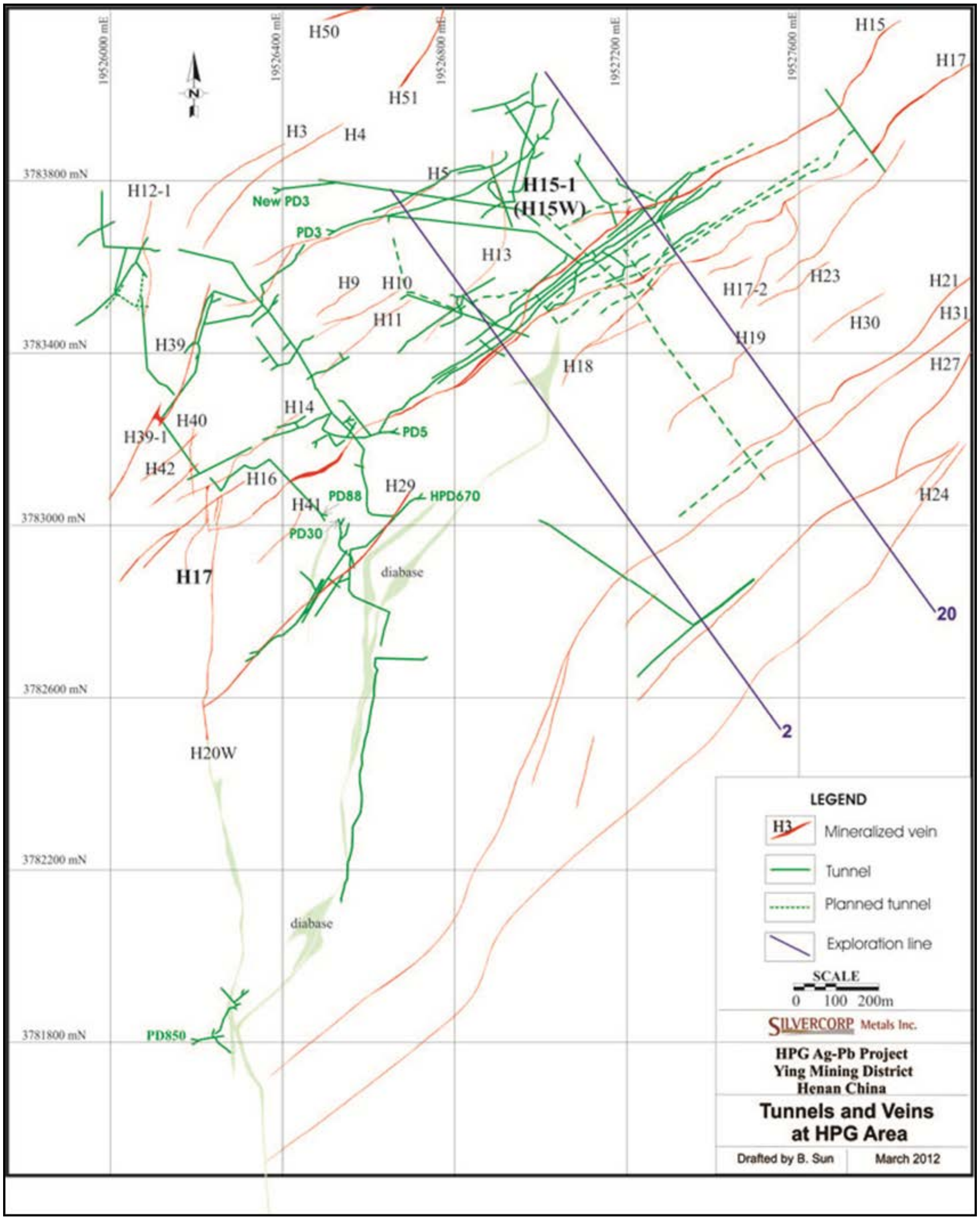


Figure 7.7 Cross section on Line 20, HPG

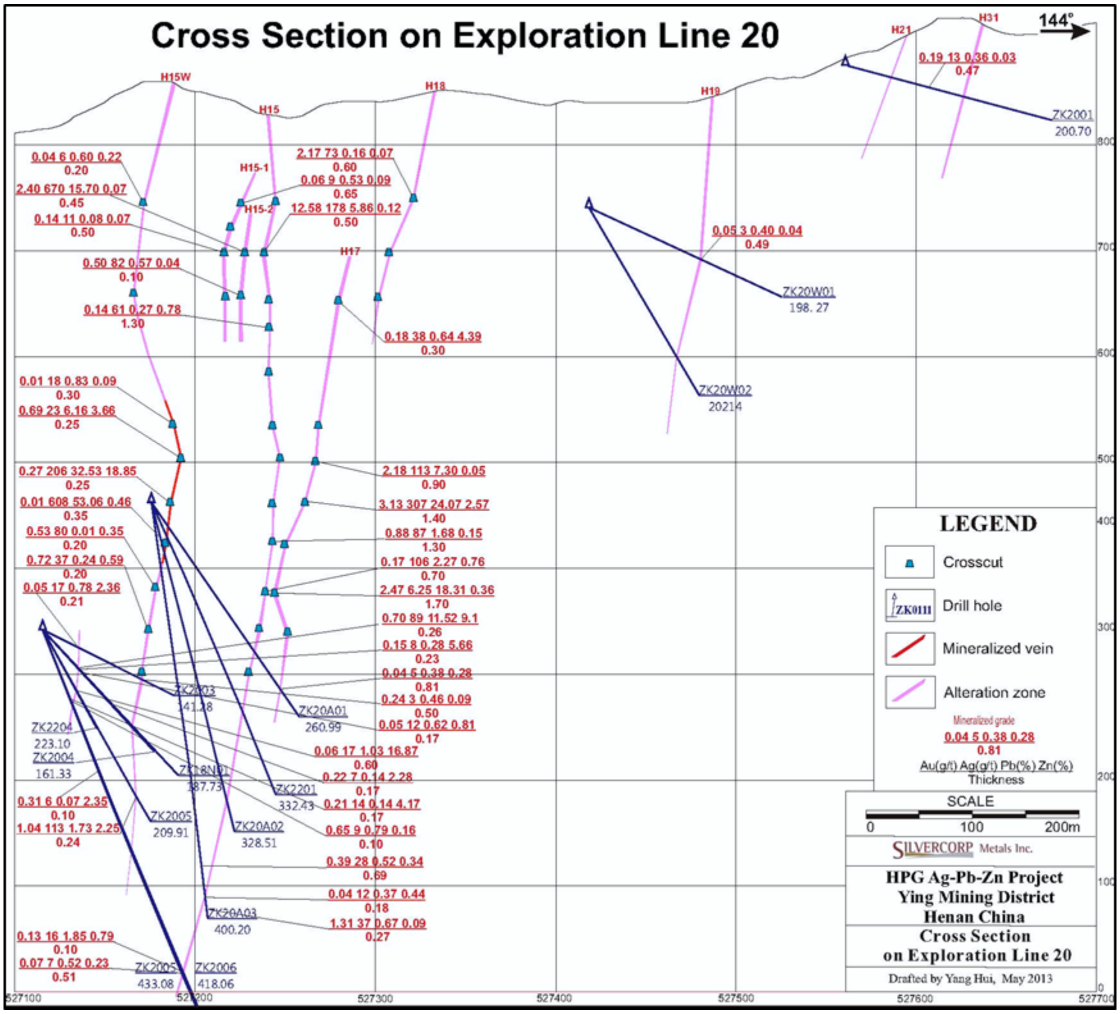


Table 7.3 summarizes features of major veins at the HPG mine.

Table 7.3 Dimensions and occurrences of major mineralized veins in the HPG mine

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
H5	550	418	650-250	315-345°	65-80°	0.44 (0.30-0.90)
H11	500	359	670-350	315-330°	68-85°	0.44 (0.30-0.98)
H12-1	280	233	675-450	260-280°	70-80°	0.76 (0.30-1.77)
H13	400	372	680-320	310-330°	65-85°	0.54 (0.30-0.89)
H15	1300	793	850-110	295-330°	60-82°	0.51 (0.30-1.81)
H15W	400	726	860-150	300-320°	70-85°	0.38 (0.30-58)
H16	600	511	780-280	320-335°	75-80°	0.92 (0.30-1.66)
H17	2000	855	780-(-50)	295-330°	65-87°	0.67 (0.30-2.72)
H18	350	528	780-275	305-330°	65-80°	0.58 (0.30-0.66)
H39-1	250	345	730-400	285-315°	65-80°	0.31 (0.30-0.44)

7.3.4 TLP and LM area

About one-third of the currently defined vein mineralization in the Ying Property occurs in veins of the TLP and LM mine areas, with 40 known veins at TLP and 75 (20 at LME and 55 at LMW) at LM (Figures 7.8 to 7.11, Tables 7.4 to 7.6). Extensive underground sampling at various levels along or across these veins indicates that a significant amount of the vein-filling material is strongly mineralized with massive, semi-massive and disseminated galena as well as minor amount of chalcopyrite and sphalerite over widths of 0.3 m to 10 m or more. Other metallic minerals present in much smaller amounts include pyrite, hematite and very sparse amounts of acanthite.

The veins at TLP mostly dip westward while those at LM dip steeply both east and west. Previous mining and stoping along the T1 and T2 vein structures at TLP indicate that the mineralization plunges shallowly to the north within structural zones extending hundreds of metres to a thousand metres or more along strike. The mineralization occurs as massive accumulations or disseminations in the veins. The galena often occurs as massive tabular lenses comprised of coarsely crystalline aggregates or fine-grained granular “steel galena” bodies, which can be up to 1.0 m thick and 100 m or more in vertical and horizontal dimensions.

Most of the silver in the TLP-LM veins is present as microscopic inclusions in the galena. It appears that Ag:Pb ratios are distinctly different between veins of the northern TLP area (North Zone) and the southern TLP and LM area (South Zone). Based upon 15 verification samples collected in a previous Technical Report (Broili, et al., 2008), veins in the South Zone appear to have much higher zinc contents and higher Ag:Pb ratios (90 to 130 grams silver for each percent lead) than veins from the North Zone (5 to 15 grams silver for each percent lead), as well as proportionally less gold. It is thought this difference is the result of zonation or reflects differences in the level of exposure.

Gangue in the TLP–LM vein systems is mostly fine-grained silica with zones of quartz-carbonate minerals and occasional inclusions of altered wall-rock. The carbonate is dominantly ankerite (calcium-iron-magnesium carbonate), in contrast to siderite (iron carbonate), which is the most common carbonate gangue mineral in many mesothermal silver-lead-zinc districts.

The veins occur in relatively permeable fault-fissure zones and are extensively oxidized from the surface to depths of about 80 m. Within this zone, the veins show many open spaces with conspicuous box-work lattice textures resulting from the leaching and oxidation of sulphide minerals. Secondary minerals present in varying amounts in this zone include cerussite, malachite and limonite. Beneath this oxide zone, sulphide minerals are mixed with secondary oxide minerals in the vein, with sulphides becoming increasingly abundant downward to about 150 m depth, beyond which fresh sulphides are present with little or no oxidation.

Wall rock alteration consists of numerous quartz veinlets accompanied by sericite, chlorite, silicification and ankerite on fractures. The vein systems appear to have better continuity and increasing mineralization at depth, and many veins exposed in the underground workings are often significantly richer in silver-lead-zinc than the same veins exposed at the surface. This suggests that the mineralization is either leached from the surface outcroppings or more likely becomes richer at depth due to primary mineral zoning (Broili, et. al., 2006).

The TLP system also contains some epithermal veins and veinlets. These veins contain abundant large vugs lined with carbonate and they either crosscut or follow some of the mesothermal filled structures.

Figure 7.8 Distribution of mineralized veins in the TLP-LM area

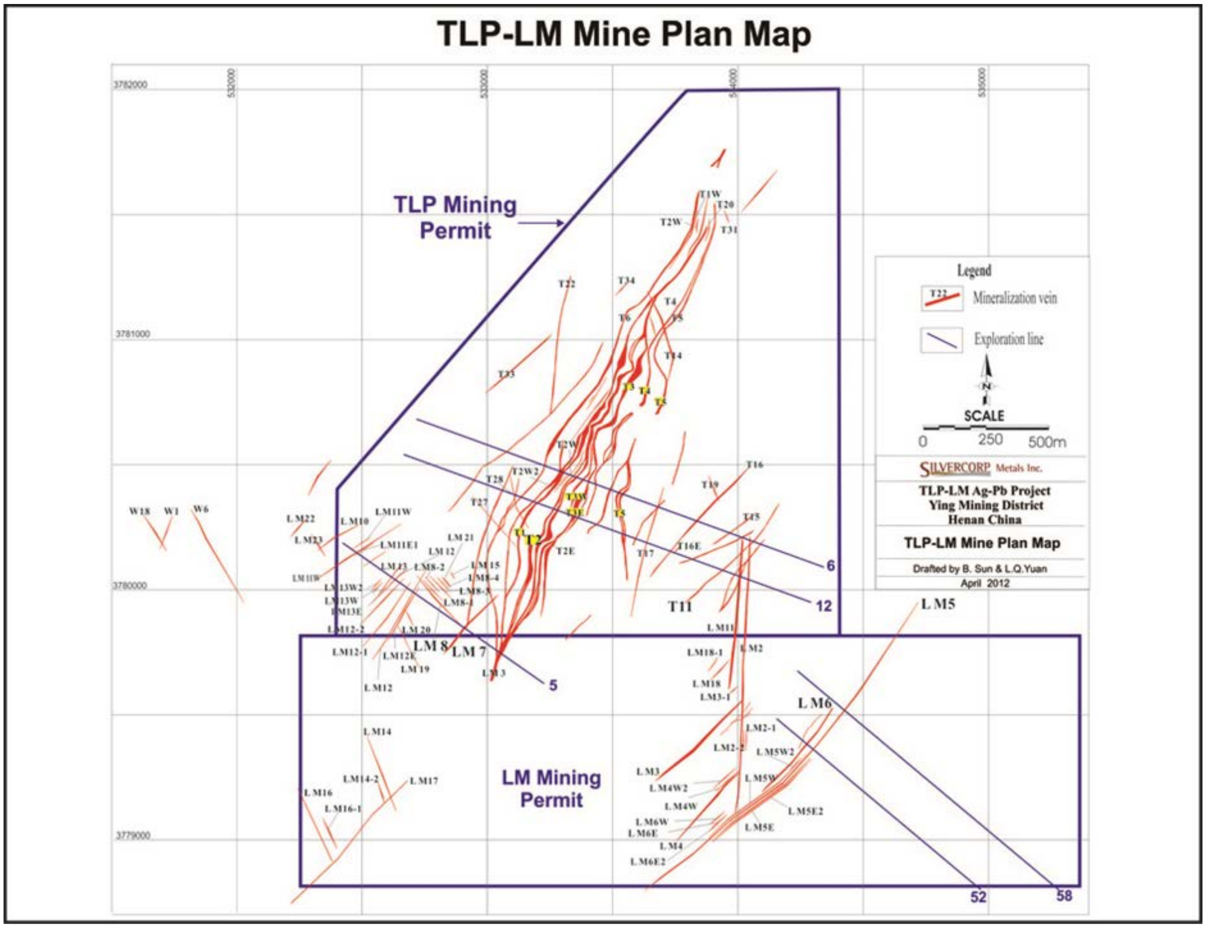


Figure 7.9 Cross section on exploration line 12, TLP

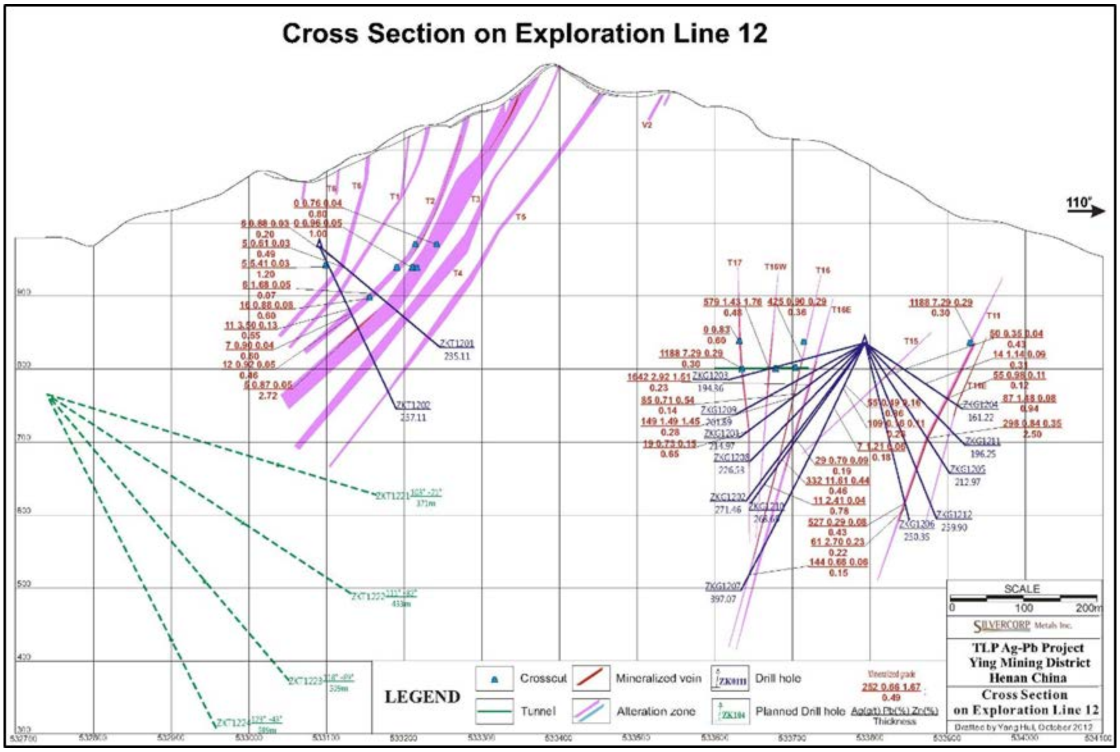


Figure 7.10 Cross section on exploration line 50, LM East

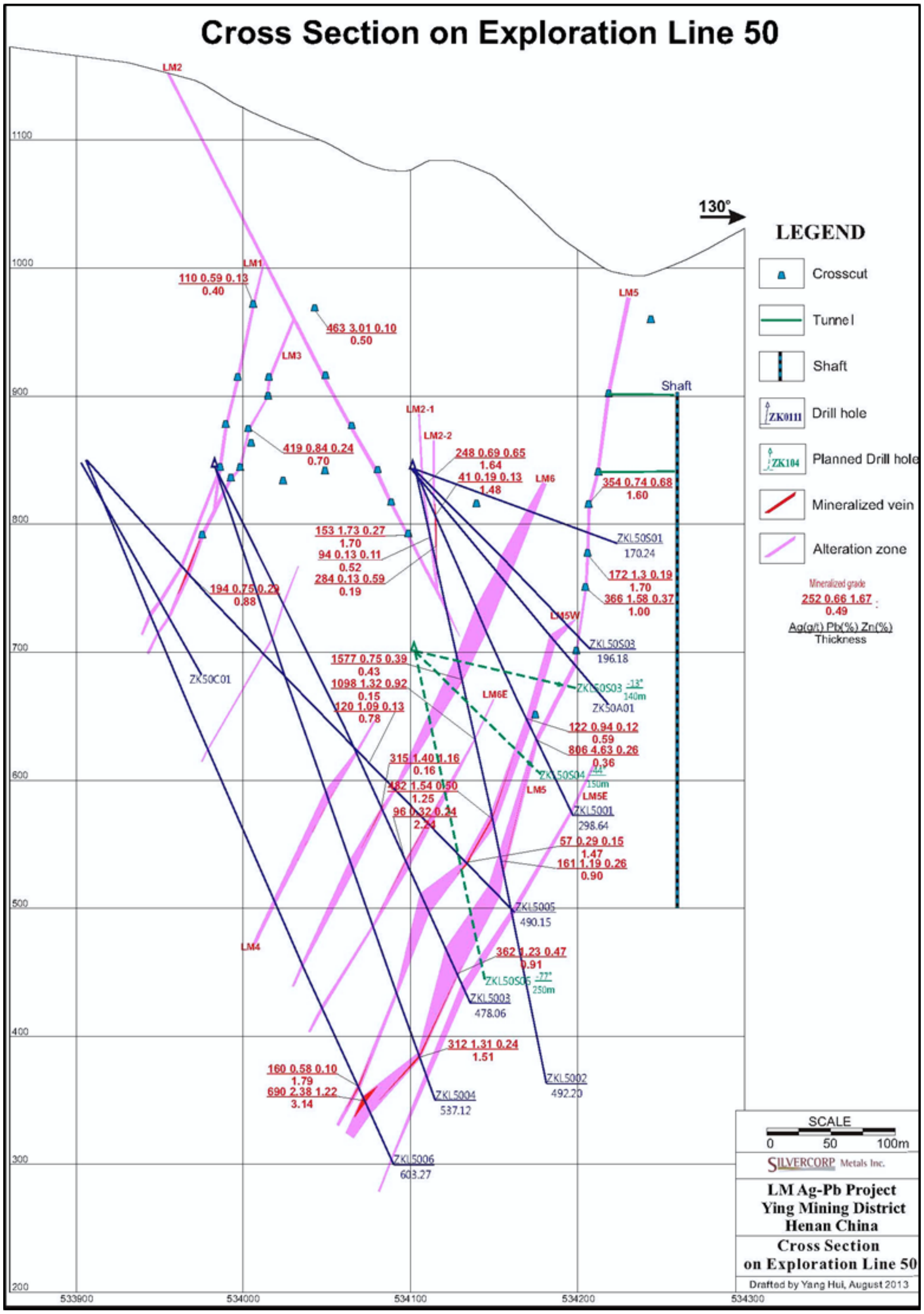
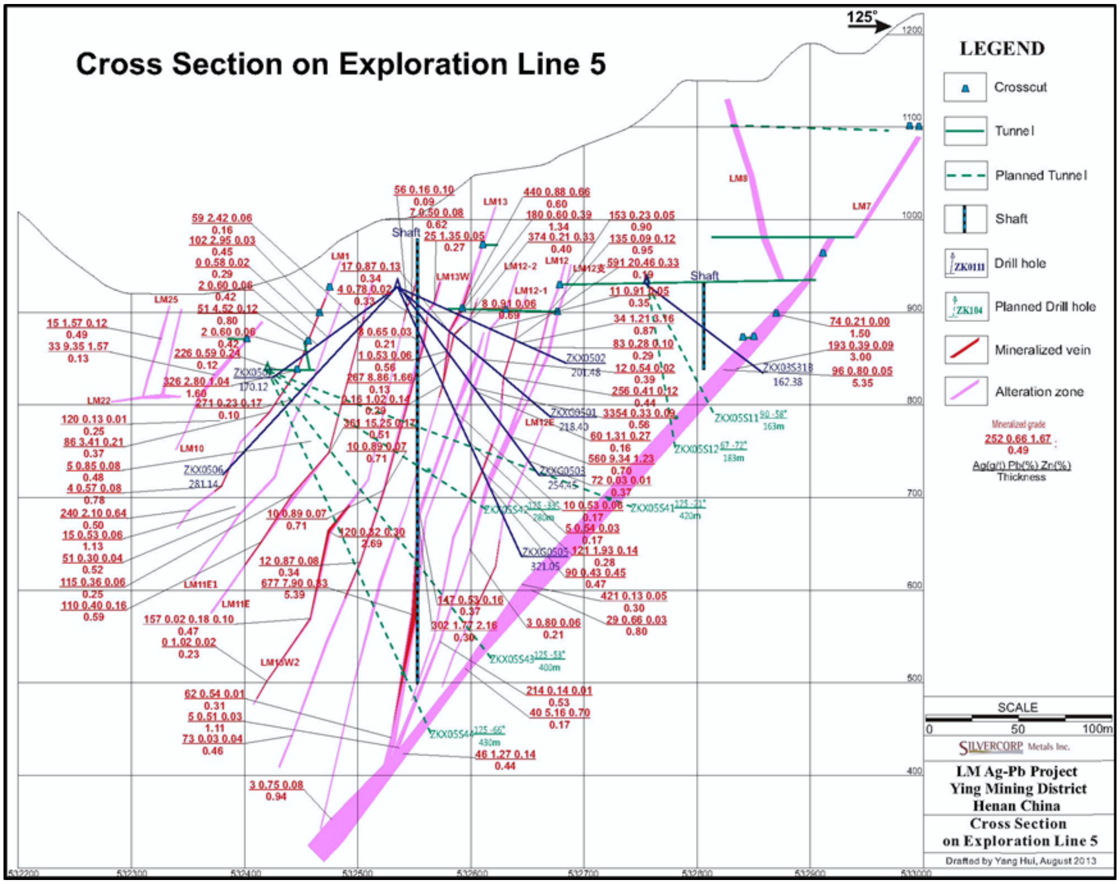


Figure 7.11 Cross section on exploration line 5, LM West



Dimensions and occurrences of major mineralized veins are summarized in Table 7.4.

Table 7.4 Dimensions and occurrences of major mineralized veins in the TLP area

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
T1	1,850	746	1170-511	285-295°	62°	1.10 (0.30-4.6)
T1W	1,400	766	1200-490	315°	65-71°	0.59 (0.30-2.25)
T1W1	650	399	950-580	300°	65-70°	1.32 (0.30-2.95)
T1W3	500	367	960-620	300°	65-70°	0.37 (0.30-0.95)
T2	2,200	883	1150-350	285-295°	50-80°	1.33 (0.30-12.55)
T3	2,400	1103	1200-200	290-295°	50-80°	1.07 (0.30-4.64)
T4	1,380	618	1100-540	285-295°	50-80°	0.93 (0.30-5.03)
T5	1,095	364	980-650	285-295°	50-80°	0.73 (0.30-2.05)
T11	450	640	980-400	310-325°	55-75°	0.47 (0.30-1.82)
T14	590	185	980-820	70°	60°	0.78 (0.30-1.12)
T16	460	349	850-513	310-315°	70-80°	0.43 (0.30-0.89)
T16W	200	253	838-600	310°	65-75°	0.41 (0.30-0.57)
T17	750	308	866-560	100°	84°	0.90 (0.30-1.21)
T20	147	164	816-680	92-115°	52-60°	0.40 (0.30-1.17)
T22	443	204	1020-820	80-85°	76-80°	0.70 (0.30-1.12)

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
T23	400	309	980-700	310°	60-70°	0.62 (0.30-4.09)
T30	200	191	790-630	92-121°	54-60°	0.75 (0.30-0.99)
T33	1,030	475	1000-560	310-315°	65-70°	0.62 (0.30-4.09)
T33W	720	275	910-652	320°	65-75°	0.35 (0.30-0.54)
T35	350	382	800-460	300-310°	55-70°	1.09 (0.30-1.55)

Table 7.5 Dimensions and occurrences of major mineralized veins in the LME subarea

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
LM2	800	623	985-400	90°	70°	0.51 (0.30-1.47)
LM3	500	356	1,030-700	310°	60-75°	0.61 (0.30-1.10)
LM4	400	479	980-530	310°	65-75°	0.37 (0.30-0.73)
LM5	1,530	723	980-310	310-315°	60-75°	0.97 (0.30-7.32)
LM5E	1,000	481	840-380	330°	70-75°	0.62 (0.30-2.10)
LM5W	1,000	716	940-255	330°	70-75°	0.80 (0.30-3.45)
LM6	900	596	870-300	310-330°	70-75°	0.69 (0.30-2.39)
LM6E	900	356	840-510	310-325°	60-75°	0.48 (0.30-1.11)
LM6E2	800	248	800-570	325°	60-75°	0.32 (0.30-0.43)
LM6W	900	314	850-550	325°	70-75°	0.37 (0.30-0.42)

Table 7.6 Dimensions and occurrences of major mineralized veins in the LMW subarea

Vein #	Length of Vein (m)	Defined Inclined Depth (m)	Elevation of Defined Depth (m)	Dips To	Dip Angle	Average True Thickness/Range (m)
LM7	800	802	900-333	310°	40-50°	1.22 (0.30-4.42)
LM8	400	586	1000-420	240-250°	78-85°	0.73 (0.30-1.55)
LM8-1	300	359	950-600	50°	77°	0.56 (0.30-1.38)
LM8-2	200	202	900-700	50°	80-85°	0.60 (0.30-1.53)
LM8-3	300	282	1000-720	50°	80-85°	0.59 (0.30-1.02)
LM8-4	200	292	1000-710	40-50°	80-85°	0.76 (0.30-1.15)
LM10	470	259	950-700	335°	75°	0.71 (0.30-1.36)
LM11	530	468	950-500	310°	58-70°	1.22 (0.30-2.19)
LM11E1	350	261	750-500	320°	70-75°	1.10 (0.30-2.21)
LM11E2	100	266	784-530	320°	70-75°	0.76 (0.30-1.71)
LM12	800	662	948-400	300°	65°	0.62 (0.30-2.28)
LM12-1	700	668	950-360	295-305°	57-67°	0.57 (0.30-1.10)
LM12-2	600	628	1000-410	320-325°	65-75°	0.68 (0.30-1.21)
LM12E	600	574	920-400	305°	60-70°	0.63 (0.30-1.62)
LM13	363	539	900-400	310°	65-70°	1.69 (0.30-6.73)
LM14	477	374	887-536	250°	70°	0.86 (0.30-1.68)
LM16	436	403	931-530	67°	83-85°	0.33 (0.30-0.70)
LM17	445	497	950-500	305-315°	55-75°	1.53 (0.30-4.43)
LM19	220	217	956-746	50°	70-80°	1.78 (0.30-3.62)
W6	500	305	917-630	60°	65-75°	0.63 (0.30-1.08)

8 Deposit types

The deposits of concern in this report are epigenetic vein deposits that have mesothermal characteristics. Mesothermal vein systems typically occur in rocks associated with orogenic belts, in the case of the Ying district, the Qinling orogenic belt. Mineralization is associated with deep-seated shear zones that cut the metamorphic rocks. The veins form in a temperature range of 200–300°C at pressure depths from 600 m to 5,000 m. The veins occur in sets with the major veins in the system tending to be continuous for over 1,000 m in lateral and vertical sense.

9 Exploration

From January 1, 2012 to June 30, 2013 (the reporting period), Silvercorp conducted an exploration program on the Ying property that included exploration-development activities in the SGX mine area including HZG (immediately south of SGX), the HPG mine area (northeast of SGX), the TLP and LM mine areas and the LJG area, an exploration area covered by the SDG-LJG exploration permit between the SGX-HZG mine area and the TLP-LM mine area. The past exploration activities, including surface activities, have been detailed in previous Technical Reports prepared for Ying Property projects.

Other than drilling, the projects have been explored primarily from underground workings. The workings follow the vein structures along strike, on levels spaced approximately 40 m apart. Silvercorp has found this method of underground exploration an effective and efficient way to define the geometry of the mineralized structures, in part due to the discontinuous character of the high-grade mineralization but also the relatively inexpensive development costs.

Channel samples across the structures are collected at 5 m intervals. Assay results of samples are documented on underground level maps and longitudinal sections. Details of the procedures and parameters relating to the underground channel sampling and discussion of the sample quality are given in Section 11.

During the reporting period, Silvercorp conducted an exploration program with the objective of upgrading confidence in the Indicated and Inferred Resources, to test the down-dip extension of the major mineralized vein structures, and to explore new target areas in the Ying property. The exploration program in this reporting period comprised 57,949 m tunnelling, including 34,090 m of drifting tunnels driven along mineralized structures. Drift and crosscut tunnels have been developed at 30 m to 50 m intervals vertically to delineate higher-category Resources. A total of 18,964 channel/chip samples were collected from different mine areas. Details of the exploration work completed at each project area are briefly summarized in Table 9.1. The new results of the 2012-2013 underground tunnelling program demonstrate good down-dip and along-strike consistency in relation to existing production veins in the Property.

Table 9.1 Tunnelling exploration work completed in 2012 and the first half of 2013

Area	Tunnelling	Total Metres	Channel Samples (pcs)
SGX	Drifting	7,442	3,654
	Crosscut	5,438	
	Raise	3,243	
	Total	16,123	
HZG	Drifting	2,802	1,971
	Crosscut	1,584	
	Raise	1,015	
	Total	5,437	
HPG	Drifting	5,496	1,646
	Crosscut	2,204	
	Raise	1,888	
	Total	9,588	
TLP	Drifting	11,168	7,541
	Crosscut	4,255	
	Raise	654	
	Total	16,077	
LME	Drifting	3,465	1,755
	Crosscut	1,210	
	Raise	489	

Area	Tunnelling	Total Metres	Channel Samples (pcs)
	Total	5,144	
LMW	Drifting	3,717	2,397
	Crosscut	1,333	
	Raise	600	
	Total	5,650	
TOTAL		58,019	18,964

The following sections summarize the results of the 2012 and first half of 2013 tunnelling exploration programs.

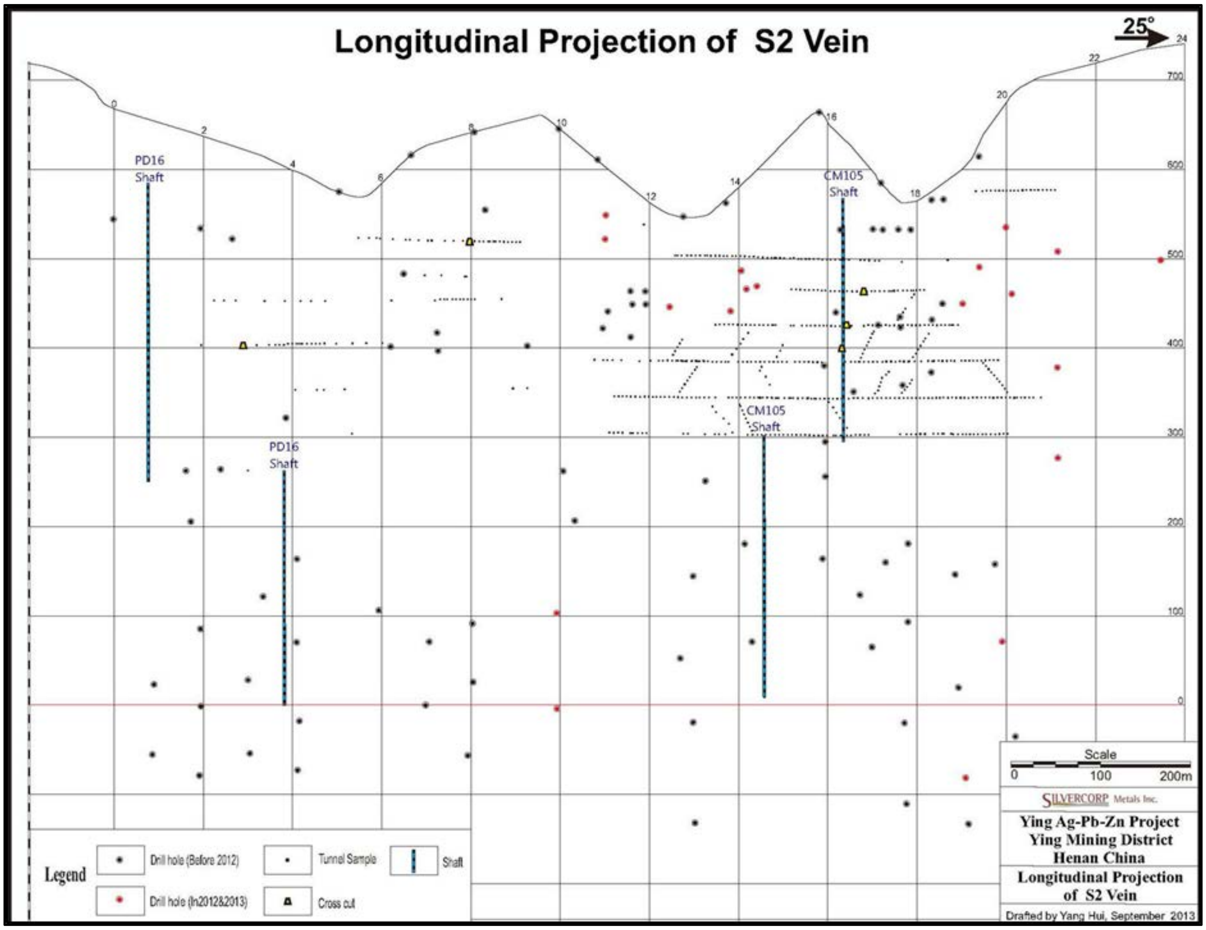
9.1 SGX area

A total of 16,123 m underground tunnelling was completed along and across major production vein structures S2, S4, S6, S7, S7-1, S7-2, S8, S14, S14-1, S16E, S16W, S21 and S29 between the 675 m and the 260 m elevations. Drift and crosscut tunnels have been developed at 30 m to 50 m intervals to upgrade and expand drill-defined Resource blocks. High grade mineralized zones have been exposed in tunnels on most levels at the SGX mine. The underground channel samples from selected mineralized zones collected during the reporting period are weighted by true thickness and reported in Table 9.2. Figure 9.1 gives an example of the channel sample density and location of drifts on one of the main veins at SGX.

Table 9.2 Significant mineralization defined by 2012 tunnelling in SGX area

Tunnel ID	Level (m)	Vein	Length of Mineralized Zone along strike (m)	True Width (m)	Weighted Average Grade		
					Ag g/t	Pb %	Zn %
PD700-S7-1-610-NYM2	610	S7-1	210	1.03	236	4.67	8.82
PD700-S7-1-570-NYM	570	S7-1	45	1.42	374	11.63	3.70
CM102-S6-518-SYN-WCM-SYM	518	S6	25	0.34	251	3.43	5.78
PD700-S7-1-490-NYM	490	S7-1	85	0.91	370	11.42	3.91
CM101-S7-1-450-SYM1	450	S7-1	55	1.04	317	9.40	3.45
CM101-S7-3-450-SYM	450	S7-3	35	0.49	218	3.98	8.66
CM105-S2-branch-420-NYM-TJ26-LD-SYM	430	S2W	48	0.63	587	14.62	4.43
CM105-1#-S16E-400-SYM	400	S16E	48	0.54	501	5.39	2.59
CM101-S21-400-NYM	400	S21	40	0.77	603	10.70	0.59
CM105-S2W-380-WCM-NYM	380	S2W	30	1.49	178	5.71	2.26
PD16-S14-1-350-SYM	350	S14-1	65	1.25	709	9.86	4.54
CM101-S21-350-SYM	350	S21	40	1.02	348	8.72	1.90
CM105-S2-340-SYM	340	S2	45	1.13	988	13.04	3.26
CM105-2#J-S2W-340-NYM-35m-QGX-SYM	340	S2	35	0.51	212	1.67	1.82
CM105-S2W-340-SYM	340	S2W	41	1.04	319	8.00	2.87
CM105-S2-300-SYM	300	S2	59	1.01	734	11.92	2.46
CM105-1#-S14-260-NYM	260	S14	100	0.48	176	5.74	1.77
CM105-1#-S14-1-260-SYM	260	S14-1	30	0.23	292	6.34	8.36
CM105-1#-S21-260-SYM	260	S21	35	0.73	198	3.11	2.70
CM105-1#-S14-1-260-SYM	260	S14-1	30	0.77	247	6.39	1.39

Figure 9.1 Longitudinal projection of S2 vein, SGX



A detailed underground tunnel mapping and sampling program and drill core interval assay study in mid-2012 revealed the existence of wide alteration zones with lower-grade silver and visually unrecognizable sulphides outside the high grade massive and semi-massive galena-dominated veins within SGX's major vein structures, such as S7-1, S16W, S16E, S6, and S2 veins. The renewed understanding of geology, alteration and mineralization has led to the delineation of much wider mineralized zones in the 2012 and 2013 exploration and drilling programs at SGX, as seen in cross cut tunnel CM101-S7-1-450-SYM-ECM and drill hole ZK0508. This has implications for mining, with a possible change in the dominant mining method from resuing to shrinkage stoping or another bulk mining method.

9.2 HZG area

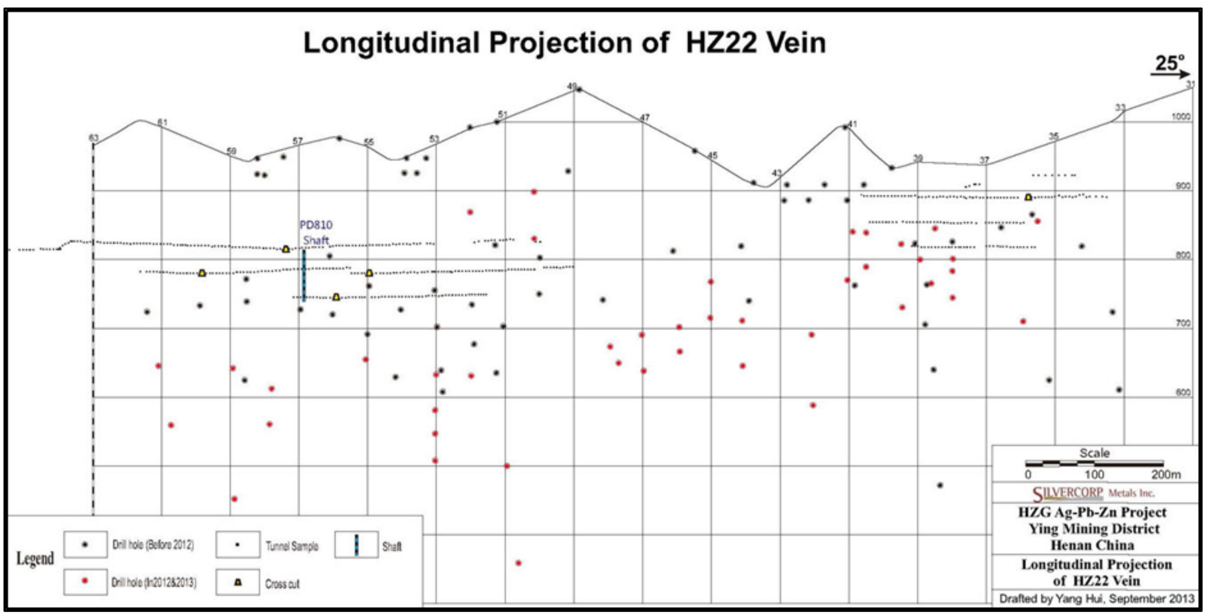
The purpose of the underground tunnelling program (consisting of 2,802 m of drifts, 1,584 m of cross-cuts, and 1,015 m of raises) was to delineate and upgrade the previous drill-defined Resource blocks within the major vein structures HZ20, HZ22 and HZ5 between the 650 m and the 850 m elevations. Drift and crosscut tunnels have been developed at 40 m to 50 m intervals and are connected with raises, declines, and shafts through different levels. A total of 1,790 chip samples were collected during the 2012 underground tunnelling program. Zones of mineralization were exposed in tunnels on different levels along major mineralized vein structures HZ20, HZ20W, HZ22 and HZ5.

The underground channel samples from selected mineralized zones collected during the reporting period are weighted by true thickness and reported in Table 9.3. Figure 9.2 gives an example of the channel sample density and location of drifts on one of the main veins at HZG.

Table 9.3 Significant mineralization defined by 2012 tunnelling in HZG area

Tunnel ID	Level (m)	Vein	Length of Mineralized Zone along strike (m)	True Width (m)	Weighted Average Grades		
					Ag g/t	Pb%	Zn%
PD810-HZ5-780-SYM	780	HZ5	85	0.54	540	0.88	0.10
PD810-H740-HZ5-SYM	740	HZ5	75	0.50	669	0.79	0.11
PD810-H780-HZ22-SYM	780	HZ22	65	0.58	230	0.60	0.06
PD810-H780-HZ22-NYM	780	HZ22	35	0.65	650	0.76	0.14
PD890-HZ22-850-NYM	850	HZ22	30	0.50	339	0.75	0.15
PD850-HZ22-810-SYM	810	HZ22	60	0.51	423	0.60	0.12
PD850-HZ20-810-SYM	810	HZ20	55	0.60	606	4.59	0.31
PD820-HZ20-770-SYM	770	HZ20	45	0.75	392	3.54	0.23
PD820-HZ20-730-SYM-WCM1-SYM	730	HZ20	35	0.43	322	1.43	0.35
PD820-HZ20-730-SYM-WCM1-NYM	730	HZ20	40	0.59	366	1.13	0.36
PD820-HZ20-690-ECM3-NYM	690	HZ20	30	0.47	535	0.08	0.21
PD820-HZ20-690-SYM-ECM3-SYM	690	HZ20	130	0.72	599	3.29	0.35
PD820-HZ20W-650-PD700Main-NYM	650	HZ20W	45	1.25	1409	0.30	0.85

Figure 9.2 Longitudinal projection of Vein HZ22



9.3 HPG area

Compared with mineralized vein systems in other areas, mineralization in the HPG area is characterized by significant higher gold grade and lower grades for silver, lead and zinc.

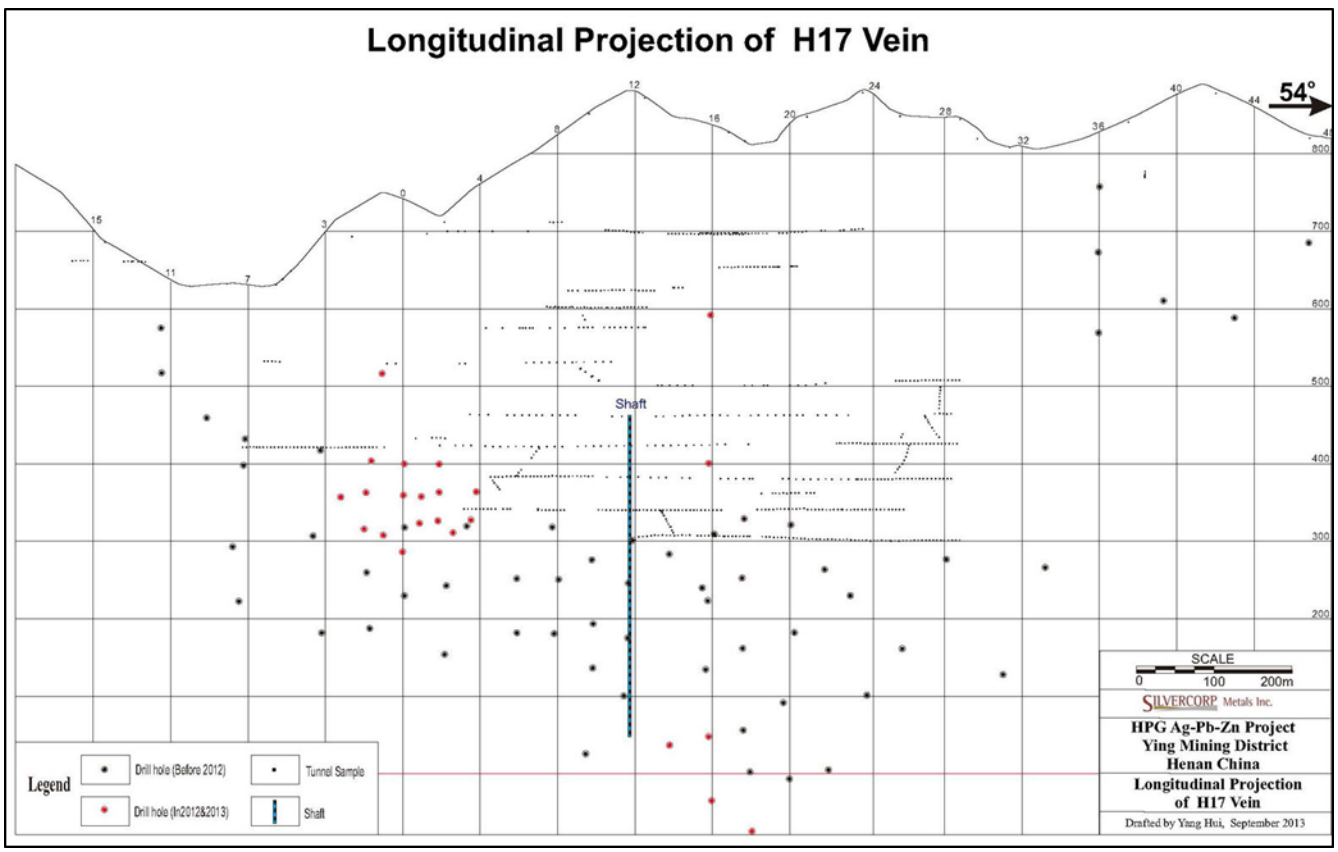
The purpose of the 9,588 m underground tunnelling program was to further delineate and upgrade the previous drill-defined Resource blocks within major vein structures H4, H5, H11, H13, H15, H16, H17, and H18 between the 340 m and the 766 m elevations. Drift and crosscut tunnels have been developed at 30 m to 50 m intervals. A total of 1,646 chip samples were collected. Significant mineralization zones with a total length of 1,542 m were exposed in drift tunnels on different levels along the major vein structures.

The underground channel samples from selected mineralized zones collected during the reporting period are weighted by true thickness and reported in Table 9.4. Figure 9.3 gives an example of the channel sample density and location of drifts on one of the main veins at HPG.

Table 9.4 Significant mineralization defined by 2012 tunnelling in HPG area

Tunnel ID	Level (m)	Vein	Length of Mineralized Zone along strike (m)	True Width (m)	Weighted Average Grades			
					Au（g/t）	Ag（g/t）	Pb（%）	Zn（%）
PD640-640-H11-SYM	640	H11	38	0.47	2.55	22	3.02	0.87
PD640-H16-640-SYM	640	H16	38	0.90	2.87	19	0.78	1.19
PD600-H5W-600-NYM	600	H5W	100	0.85	0.15	154	6.53	0.70
PD5-H16-570-SYM	570	H16	50	0.92	5.96	119	0.67	0.96
PD2-530-H16-NYM1	530	H16	50	1.06	4.13	94	5.14	3.12
PD2-530-H16-SYM1	530	H16	120	0.67	2.47	19	1.41	1.62
PD2-530-H16-SYM	530	H16	65	0.60	5.52	27	1.35	1.61
PD2-H16-490-SYM	490	H16	65	1.18	3.99	38	1.23	1.01
PD3-H15W-420-SYM2	420	H15W	30	0.18	0.18	185	20.65	0.36
PD3-H15-380-SYM2	380	H15	45	0.60	0.95	186	5.75	7.15

Figure 9.3 Longitudinal projection of vein H17



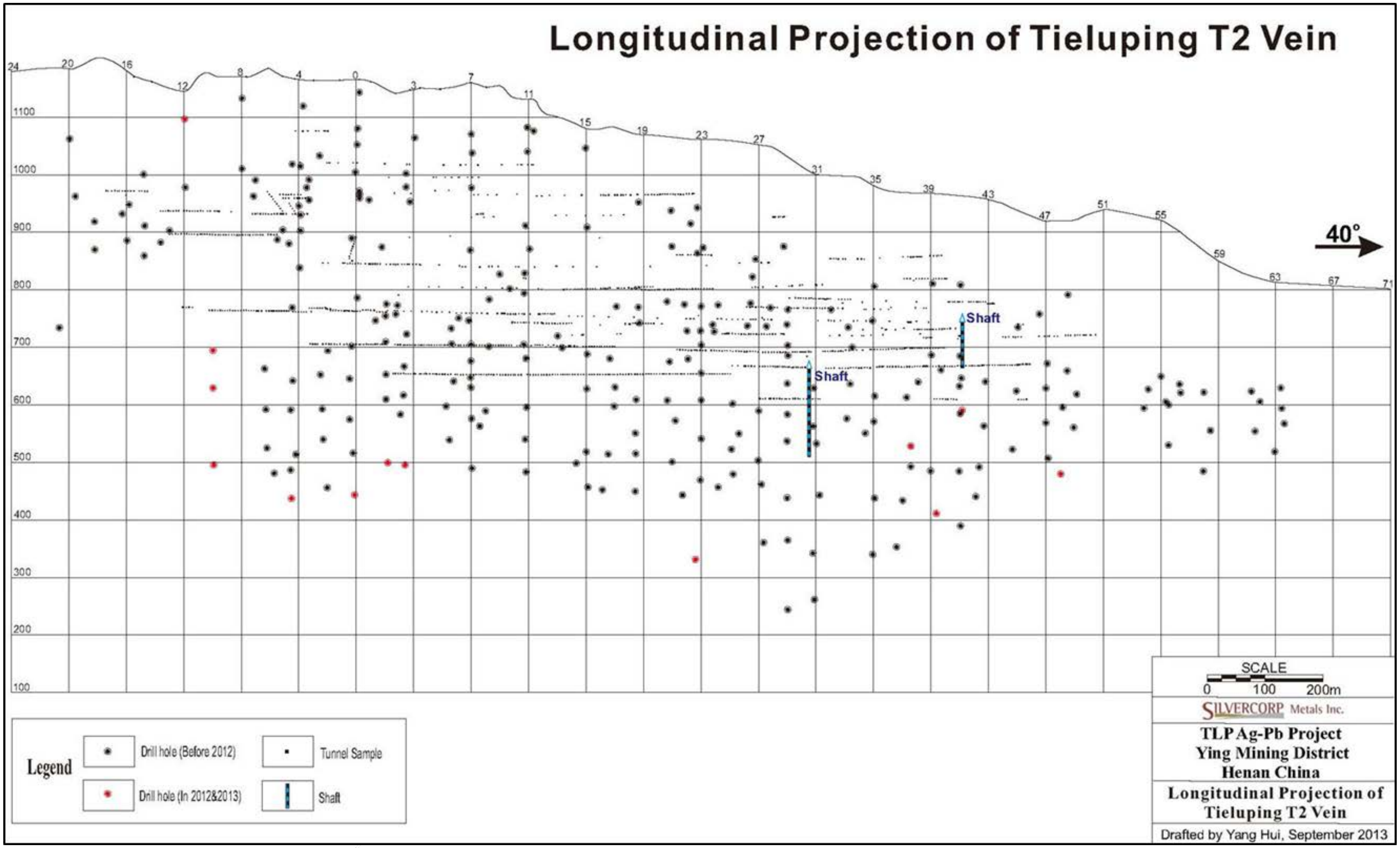
9.4 TLP area

The purpose of the 16,076 m underground tunnelling program in 2012 was to further delineate and upgrade the previous drill-defined Resource blocks within major vein structures T1, T1W, T1W1, T1W3, T2, T3, T16, T16W, T22, T33 and T34 between the 510 m and the 990 m elevations. Drift and crosscut tunnels have been developed at 30 m to 50 m intervals. A total of 7,541 chip samples were collected. Mineralized zones were exposed in drift tunnels on different levels along the major vein structures and three new mineralized vein structures were discovered by the 2012 underground tunnelling program. The underground channel samples from selected mineralized zones collected during the reporting period are weighted by true thickness and reported in Table 9.5. Figure 9.4 gives an example of the channel sample density and location of drifts on one of the main veins at TLP.

Table 9.5 Significant mineralization defined by 2012 tunnelling in TLP area

Tunnel ID	Elevation (m)	Length of Mineralized Zone along strike (m)	Vein	True Width (m)	Weighted Average Grade		
					Ag (g/t)	Pb (%)	Zn (%)
PD840-840-T1W3-7SYM	840	40	T1W3	0.48	451	1.36	0.03
PD820-798-T16W-12NYM&12SYM	798	55	T16W	0.56	216	0.71	0.39
PD730-730-T34-23NYM	730	65	T34	0.54	147	4.42	0.27
PD840-874-T14-21TJ-NYM&SYM	874	55	T14	0.55	201	1.84	0.32
PD820-820-T16-10SYM	820	60	T16	0.42	176	1.41	0.30
PD960-960-T22-0SYM	960	49	T22	0.84	211	4.95	0.12
PD930-930- I W3-5SYM&NYM	930	80	T23	0.46	184	2.03	0.22
PD890-890-T23-11SYM	890	145	T23	0.68	264	5.04	0.11
PD840-840-T23-7NYM	840	64	T23	0.62	214	4.80	0.22
PD930-930-T33-13SYM	930	245	T33	0.73	338	1.80	0.28
PD930-930-T33Branch-11SYM&NYM	930	189	T33	0.84	567	0.67	0.15
PD800-800-T33W3-19SYM&NYM	800	105	T33W3	0.41	295	2.67	0.56
PD820-691-T16-6SYM	691	65	T16	0.61	253	3.40	0.13

Figure 9.4 Longitudinal projection of vein T2



9.5 LM area

The LM area is divided into two subareas, the LM West and the LM East (the LM mine), according to the distribution of known mineralized veins.

9.5.1 LME (East) subarea

A total of 5,144 m of underground tunnelling was completed in 2012 at the LM Mine. The purpose of the 2012 drifting program was to upgrade existing drill-defined Resource blocks along mineralized vein structures. Drift and crosscut tunnels were developed at 40 m to 50 m intervals between the 600 m and the 852 m elevations through shaft PD900 and access tunnel PD838 respectively. A total of 2,169 chip samples were also collected during the 2012 underground tunnelling program. Drifting was mainly focused on the LM5 vein and has successfully extended the strike lengths of known mineralized zones between the 850 m and the 600m elevations within the major production vein. The underground channel samples from selected mineralized zones collected during the reporting period are weighted by true thickness and reported in Table 9.6. Figure 9.5 gives an example of the channel sample density and location of drifts on one of the main veins at LME.

Table 9.6 Selected mineralization zones defined by 2012 tunnelling at LME

Tunnel ID	Level (m)	Vein	Length of Mineralized Zone along strike (m)	True Width (m)	Weighted Average Grades		
					Ag (g/t)	Pb (%)	Zn (%)
PD838_LM5_852_51SYM	852	LM5	90	0.47	295	1.93	0.37
PD838_LM5_775_52SYM&NYM	775	LM5	180	0.93	490	1.88	0.64
PD900_LM5_750_51YM&SYM	750	LM5	35	0.52	394	2.67	0.41
PD900_LM5_750_51(S30)SYM	750	LM5	40	1.17	1,006	2.77	0.49
PD900_LM5_750_54NYM&SYM	750	LM5	147	0.84	858	2.11	0.43
PD900_LM5_700_54NYM&SYM	700	LM5	135	0.84	810	1.87	0.50
PD900_LM5_650_54NYM&SYM	650	LM5	90	0.71	285	1.01	0.31
PD900_LM5_650_51(S43)SYM	650	LM5	60	0.82	286	2.69	0.24
PD838_LM3-Branch_790_0NYM	790	LM3_1	32	0.45	266	0.45	0.12
PD900-600-LM5-50SYM&NYM	600	LM5	40	1.12	475	2.18	0.24

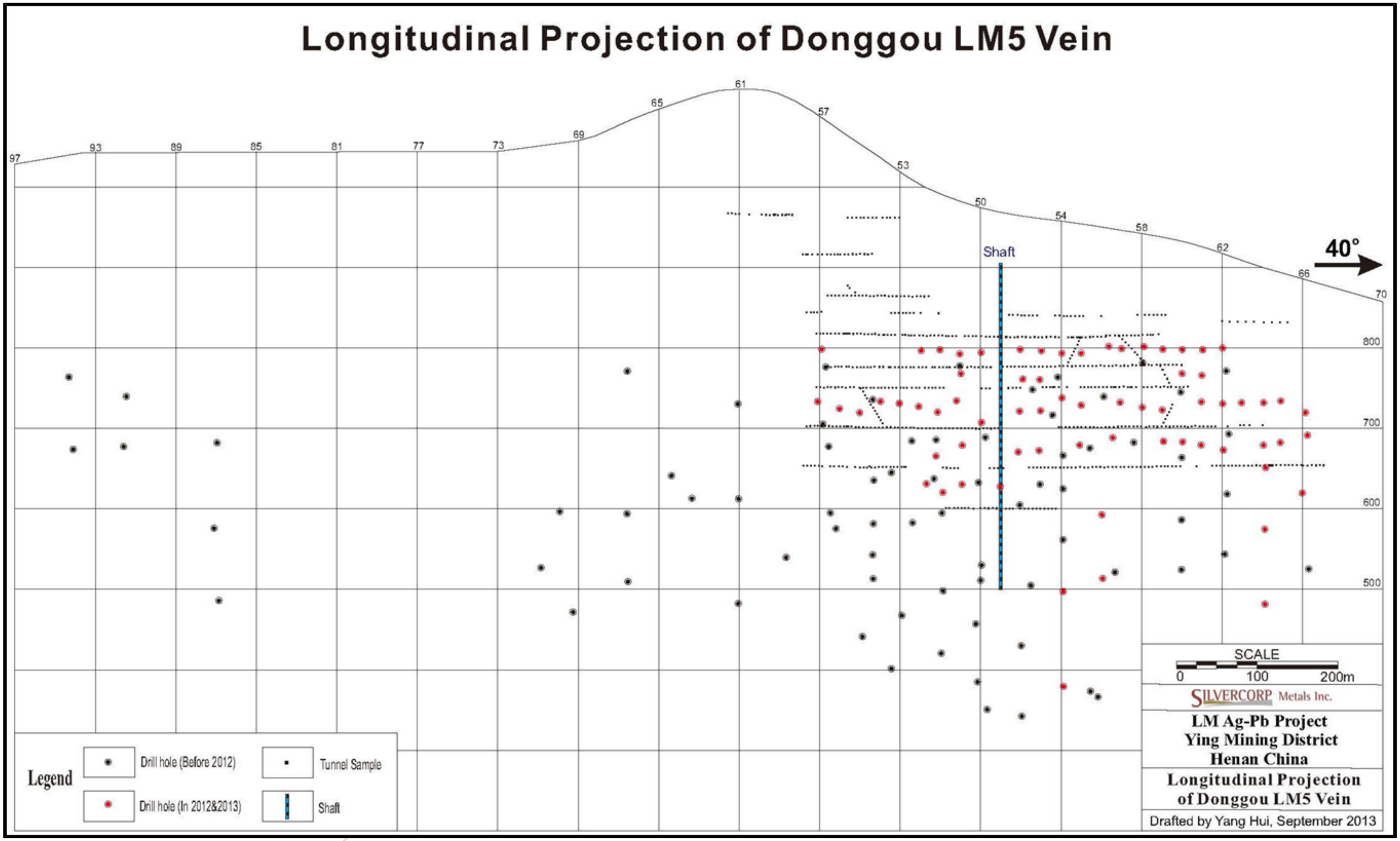
9.5.2 LMW subarea

The 5,650 m underground tunnelling in 2012 and the first half of 2013 was focused on vein structures LM7, LM8, LM11 and LM12 as well as the parallel zones spatially associated with these major structures. Underground tunnelling was conducted on levels between the 800 m and the 991 m elevations through three access tunnels PD969, PD924 and PD991. A total of 2,388 chip samples were collected. The underground channel samples from selected mineralized zones collected during the reporting period are weighted by true thickness and reported in Table 9.7.

Table 9.7 Selected mineralization zones defined by 2012 tunnelling program at LMW

Tunnel ID	Level (m)	Vein	Length of Mineralized Zone along strike (m)	True Width (m)	Weighted Average Grades		
					Ag (g/t)	Pb (%)	Zn (%)
PD924-LM7-835-5SYM	835	LM7	70	0.99	181	1.26	0.10
PD924-LM8-805-104NYM	805	LM8	115	0.56	258	1.41	0.16
PD924-LM8-1-900-104SYM	900	LM8-1	35	0.40	1481	0.80	0.17
PD924-LM8-1-924-104SYM	924	LM8-1	50	1.01	1,210	3.04	0.26
PD924-LM11-834-5SYM&NYM	834	LM11	140	0.71	379	3.36	0.46
PD5-LM12-969-2NYM	969	LM12	80	0.79	673	4.34	0.27
PD969(5)-LM12-969-2SYM	969	LM12	30	0.73	126	5.52	0.47
PD924-LM12-1-850-1SYM	850	LM12-1	22	0.98	1171	11.05	0.51
PD969—LM12-2-969-4SYM	969	LM12-2	53	1.09	255	4.12	0.23

Figure 9.5 Longitudinal projection of vein LM5



10 Drilling

Since acquiring the Ying projects, Silvercorp has initiated systematic drilling programs to test the strike and down-dip extensions of the major mineralized vein structures. Details of the procedures and parameters relating to the drilling and discussion of the sample quality are given in Section 11. Drill plans and representative examples of drill sections are provided in Sections 7 and 9. Table 10.1 summarizes drilling programs conducted by Silvercorp from 2004 to 2011.

Table 10.1 Drilling programs completed by Silvercorp, 2004 to 2011

Mine	Period	Number of Holes		Meterage (m)	Major Targets
		Underground	Surface		
SGX	2004-Mar 2005	15		1,376	
	Mar 2005-Apr 2006	79	12	17,697	S2, S6, S14, S16E, S16W
	May 2006-Jun 2007	134	18	52,403	
	Jul 2007-2009	223	26	82,343	
	2010	93		32,573	
	2011	159		61,066	S2, S4, S6, S6-Branch, S7, S7E, S7-1, S8, S14, S14-1,S19 and S21
HZG	May 2006-Jun 2007	2	18	6,346	HZ10, HZ12, HZ20, and HZ22.
	Jul 2007-Nov 2009	40	41	24,227	
HPG	May 2006-Jun 2007		2	760	H15, H17
	Jul 2007-Nov 2009	96	67	38,853	H13, H15, H5, H12-1, H29
	2010	30		6,623	
	2011	58		16352	H3, H5, H5W, H17, H39-1 and H39-2
TLP	2008-2009	138	18	40,612	Veins T1, T2, T3, T4 and T5
	2010	219		38,748	
	2011	123		36,638	T1, T1W, T1W3, T2, T3, T11, T16, T17 and T33
LM	2008-2009	125	11	33,701	LM2, LM5, LM8, LM12, and LM14.
	2010	86		30,743	
	2011	113		50,014	LME: LM2, LM5, LM5E, LM6, LM6E and LM6W LMW: LM10, LM12-1, LM12-2, LM12-3, LM13, LM13W and LM17
Reconnaissance Drilling					
RHW	2006		7	1,981	RHW
XM	2006		2	479	XM
SDG-LJG	Jul 2007-Nov 2009	11		2,205	
	2010		9	2,884	
	2011		9	3275	SL1, SL1-1, SL2E, and SL3
DCG	2010		8	2,284	
	2011		17	6742	C4, C4E and W16
Total, 2004-2011		**1,744**	**265**	**590,925**	

A major drilling program was conducted across the Ying Property in 2012 and first half of 2013. Underground and surface drilling was carried out in mining areas to test the down-dip extension of major mineralized vein structures, extend the Indicated and Measured Resource at or above the current mining depth, and infill the Inferred Resource blocks defined in previous drilling programs below the current mining depth. Most of the holes were designed as inclined holes to test multiple vein structures. A total of 267,186 m in 1,037 diamond holes was completed with 34 underground drill rigs and four surface drill rigs. The result of the underground drill program was the down-dip and striking extension of some major mineralized veins and the discovery of a number of new high-grade veins in the current mine areas. Table 10.2 summarizes the total number of holes drilled and total meterage of core drilling completed in the reporting period from 1 January 2012 to 30 June 2013.

Table 10.2 Summary of the 2012-2013 drilling program on the Ying Property

Mine Area	Exploration		Rigs Operated	Drill Holes Completed	Total Metres Completed	Total Core Samples
SGX	Surface Drilling		2	7	1,804	5,609
	Underground Drilling		12	372	85,151	
HZG	Surface Drilling		2	17	7,768	2,047
	Underground Drilling		4	87	21,236	
HPG	Surface Drilling			-	-	1,628
	Underground Drilling		4	130	27,015	
TLP	Surface Drilling			-	-	4,194
	Underground Drilling		3	98	32,001	
LM	Surface Drilling	LME		-	-	
		LMW		-	-	
	Underground Drilling	LME	4	90	21,975	2,131
		LMW	6	211	61,449	5,991
EXPLORATION AREAS	SDG-LJG	Surface Drilling				142
		Underground Drilling	1	25	8,787	
	DCG	Surface Drilling				
		Underground Drilling		-	-	
TOTAL			**38**	**1,037**	**267,186**	**21,742**

10.1 SGX

The underground drilling was focused on expanding the known Resource of major production veins S2, S7, S7-1 and S8. Limited drilling was also conducted on veins S14, S14-1, S16W and their branch veins. The results from the program added and extended high-grade mineralized zones within vein structures S2, S2W, S6, S8, S7-1, S7-3, S7-4, S14-1, S16W and S28 between the 610 m and the 260 m elevations. The 2012-2013 SGX drilling program is summarized in Table 10.3. Significant drilling results were reported to the Toronto stock exchange (TSX) via news releases on 1 August 2012, 26 November 2012 and 4 June 2013 respectively, and they are therefore not repeated here.

Table 10.3 Summary of the SGX 2012-2013 drilling program

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Detected Depth (Elevation m)
S1	2	0	0
S2	23	7	71
S6	18	9	21
S7	67	15	-89
S7-1	112	46	179
S7-2	17	10	267
S7-3	44	18	335
S-8	65	11	-10
S10	5	1	125

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Detected Depth (Elevation m)
S14	8	5	5
S14-1	8	4	220
S16	3	0	605
S16W	41	2	-35
S16E	23	4	366
S19	6	2	200
S21	20	3	41
S28	9	2	291

10.2 HZG Area

The diamond drilling program in 2012 and the first half of 2013 was designed to test the along-strike and down-dip extension of the major mineralized vein structures HZ20, HZ22 and HZ5 between the 750 m and the 400 m elevations. The 2012 – 2013 diamond drilling program delineated a mineralized zone that extends 400 m along strike and from the 800 m to 550 m elevation down-dip between exploration lines 41 and 51 within vein structure HZ22, and four new mineralized vein structures HZ22W, HZ23, HZ23E and HZ23E1. The 2012-2013 HZG drilling program is summarized in Table 10.4. Significant drilling results were reported to the TSX via news release on 7 February 2013 and are therefore not repeated here.

Table 10.4 Summary of the HZG 2012-2013 drilling program

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Detected Depth (Elevation m)
HZ5	13	4	558
HZ20	27	8	759
HZ22	53	12	451
HZ22E	14	2	586
HZ22W	5	3	655
HZ23	17	6	497
HZ23E	5	1	427
HZ23E1	2	2	389

10.3 HPG area

The underground diamond drilling program was designed to test the along-strike and down-dip extension of the major mineralized vein structures between the 200 m and the 700 m elevations. The drilling strategy was adjusted in the second half of 2012 to focus on the upper portions of the major vein structures close to the existing mining facilities. The 2012 – 2013 HPG drilling program is summarized in Table 10.5. Significant drilling results were reported to the TSX via news release on 11 June 2013 and are therefore not repeated here.

Table 10.5 Summary of HPG 2012-2013 drilling program

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Detected Depth (Elevation m)
H4	23	8	345
H5 & Parallel Veins	13	3	157
H5W	18	12	548
H10-2	9	5	454
H11	11	3	463
H12	3	1	502
H15	12	1	110
H15W	4	3	135
H16	28	10	315
H17	23	9	48
H39-1	13	4	419

10.4 TLP area

The 2012 – 2013 underground diamond drilling program was designed to test along-strike and down-dip extensions of the major mineralized vein structures and to explore for new vein structures. In the second half of 2012, Silvercorp revised its underground drilling strategy. Instead of focusing on step out drilling at depths below the current mining depth, Silvercorp tested the lateral extensions by conducting in-fill and step-out drilling at shallow depth on the upper portions of the major production vein structures at or above the 700 m elevation. The 2012 – 2013 drilling program is summarized in Table 10.6. Significant mineralized intercepts from the program were reported to the TSX by Silvercorp via news release on 27 August 2012 and 15 April 2013 respectively and are therefore not repeated here.

Table 10.6 Summary of TLP 2012-2013 drilling program

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Detected Depth (Elevation m)
T1	11	2	411
T1W	13	1	460
T1W1	16	4	467
T2	16	1	355
T3	31	10	157
T5-branch	2	1	860
T11	29	8	454
T11E	21	6	503
T15	24	6	625
T16	16	1	610
T16W	12	4	628
T16E	14	9	759
T16E1	8	2	765
T16E2	9	3	734
T17	24	5	601
T17W	13	1	651
T33	15	1	804
T33W	6	2	870
T33E	5	2	742
T35	6	3	495

10.5 LM area

10.5.1 LME subarea (LM Mine)

The drilling program in 2012 and the first half of 2013 was focused on vein structures LM2, LM5, LM6, LM7, LM8, LM10, LM11, LM12, LM13, LM14, LM16, and LM17. The purpose of the drilling program was to extend known mineralized zones along-strike and down-dip, and explore for new veins at or above the current mining depth. The 2012 – 2013 drilling program is summarized in Table 10.7. Significant mineralized intercepts from the program were reported to the TSX by Silvercorp via news release on 20 August 2012 and 6 June 2013 respectively and are therefore not repeated here.

Table 10.7 Summary of LME 2012-2013 drilling program

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Down-dip Extension (m)
LM1	10	2	608
LM2	7	1	740
LM5	25	10	383
LM5W	7	2	572
LM5-branch	2	2	484
LM6	26	6	538
LM6W	2	2	567

10.5.2 LMW subarea (LM West Mine)

The 41 diamond drilling holes completed in the first half of 2012 were designed to extend and expand the known mineralization zones previously defined at depths below the 600 m elevation in the major vein structures LM7, LM8, LM10, LM11, LM12, LM13, LM14, LM16, LM17, W5 and W6 as well as their parallel structures. The drilling strategy in the second half of 2012 and the first half of 2013 was revised. Instead of focusing on step out drilling at depths below the 600 m elevation, Silvercorp began testing the lateral extensions of the mineralization zones and in-fill drilling at shallow depth or the upper portions (i.e. above the 600 m elevation) of the major vein structures to test for mineralization that is more accessible to the existing mining development. The 2012 – 2013 drilling program is summarized in Table 10.8. Significant mineralized intercepts from the program were reported to the TSX by Silvercorp via news releases on 20 August 2012 and 13 January 2013 and are therefore not repeated here.

Table 10.8 Summary of LMW 2012-2013 drilling program

Target Vein	Number of Holes Drilled	Holes Intercepting Mineralization (≧100 g/t Ag equivalent)	Detected Depth (Elevation m)
LM7	38	10	307
LM7W	10	4	785
LM8	15	9	455
LM8-1	11	2	618
LM8-2	10	3	673
LM8-3	9	4	753
LM8-4	5	2	836
LM10	8	2	689
LM11	16	1	543
LM12	22	10	419
LM12-1	7	5	394
LM12-2	12	2	445
LM12E	15	4	649
LM13	16	4	419
LM14	7	3	941
LM16	12	5	517
LM16-1	5	2	696
LM17	35	6	492
LM19	6	4	758
LM19E	6	3	817
LM19-branch	2	2	805
LM20	8	4	858
LM20E	2	1	916
LM20W	2	2	855
W1	3	1	783
W5	15	6	615
W6	9	5	668
W6E	4	3	608
W6W	2	1	889

10.6 Exploration drilling in areas covered by exploration permits

The northeast trending vein structure C29 is a major vein system that has been traced for more than 4,000 m at surface across the LJG and the SDG exploration permit areas. Silver and lead mineralization was discovered in previous surface trenches and artisan tunnels near surface along the vein system. The objective of the exploration drilling program in 2012 and 2013 was to test the depth potential of vein C29 and explore for parallel mineralized vein structures over the untested north section of the vein structure in the SDG Exploration Permit area.

As of 30 June 2013, Silvercorp drilled 6,109 m in 23 holes with an underground rig to trace the down-dip extension of vein structure C29 and collected 249 core samples. The underground drilling program was successful in tracing the down-dip extension of the mineralized structure and discovering evidence of new parallel zones over the investigated area. Eight holes intercepted significant mineralization (Table 10.9). The other holes intercepted the vein structure but no significant mineralization.

Table 10.9 Summarized results of 2012-2013 drilling program in SDG Area

Drill Hole	Vein	From (m)	To (m)	Horizontal Width (m)	True Width (m)	Ag (g/t)	Pb (%)	Zn (%)
ZKS2001	C29	256.47	256.75	0.13	0.11	12	1.36	0.05
ZKS2201	C29	242.66	245.44	3.13	2.57	203	0.28	0.05
	New Zone	248.99	249.66	0.75	0.62	41	3.69	0.01
ZKS1801	C29	285.64	286.51	0.56	0.46	28	1.66	4.94
ZKS0601	C29	281.85	283.65	1.06	0.87	84	1.99	0.53
ZKS0201	C29	224.68	226.30	1.47	1.44	299	1.04	0.37
ZKS0002	C29	265.21	266.61	1.44	1.18	603	0.94	0.75
ZKS0401	C29	278.08	280.04	1.62	1.58	247	0.13	0.33
ZKS0003	C29	287.70	289.10	1.08	0.94	849	11.03	4.84

11 Sample preparation, analyses and security

11.1 Sampling

The numerous fault-fissure structures that cut the gneissic bedrock of the Ying Property are not continuously mineralized. Veins occur intermittently along these structures, appearing and disappearing along-strike and down-dip. Silvercorp's exploration consists of horizontal tunnelling along and across the veins, in addition to driving raises or declines to access the veins at other levels. Core drilling is designed to intersect the veins in other locations both laterally and vertically. Channel samples are collected from underground tunnels and other workings, and core samples are collected from altered and mineralized drill cores. The sample collection and preparation follows accepted industry practice.

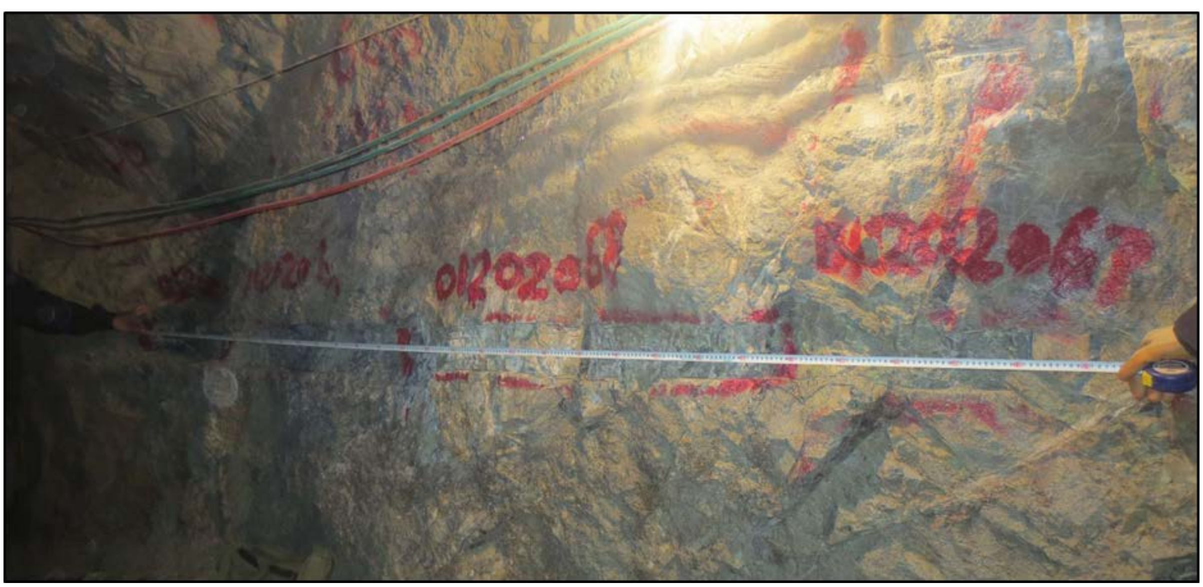
11.1.1 Core Samples

NQ-sized drill cores (48 mm in diameter) are recovered from the mineralized zones. Drill core recoveries are influenced by lithology and average 98 – 99%. Drill core is moved from drill site to the surface core shack located at the mine camp on daily basis and is logged, photographed and sampled in detail there. Samples are prepared by cutting the core in half with a diamond saw. One half of the core is marked with a sample number and sample boundary and then returned to the core box for archival storage. The other half is placed in a labeled cotton cloth bag with sample number marked on the bag. A pre-numbered ticket book is used to assign the sample numbers. A ticket from the book is inserted in the bag and the stub of the ticket book is retained for reference. The bagged sample is then shipped to the laboratory for assaying.

11.1.2 Channel Samples

Channel samples are collected from the roofs of drift tunnels along sample lines perpendicular to the mineralized vein structure and from the walls of crosscut tunnels across the mineralized vein structure. Spacing between sampling lines is typically 5 m along strike in drift tunnels. Both the mineralized vein and the altered wall rocks are cut approximately 5 cm deep and 10 cm wide with continuous chisel chipping. Sample boundaries follow lithological or structural boundaries unless the resulting sample length is less than 0.40 m. In these cases, sampling crosses lithological or structural boundaries to meet the minimum sample length requirement of 0.40 m. Sample length ranges from 0.40 m to more than 1 m, depending on the width of the mineralized vein and the mineralization type. An example of a channel sample line is shown in Figure 11.1. The sample is placed in a labeled cotton cloth bag with sample number marked on the bag. A pre-numbered ticket book is used to assign the sample numbers. A ticket from the book is inserted in the bag and the stub of the ticket book is retained for reference. The bagged sample is then shipped to the laboratory for assaying.

Figure 11.1 Channel sample cut from crosscut tunnel PD900-600-LM5-50WCMat LM Mine



11.2 Sample preparation and analysis

Core samples are shipped or couriered in securely sealed bags to one of the following four reputable commercial laboratories.

- The Analytical Laboratory of Henan Geological Exploration Bureau (Zhengzhou Geo-Laboratory) in Zhengzhou, Henan Province,
- The Analytical Laboratory of the Institute of Geophysical and Geochemical Exploration of the Chinese Academy of Geosciences (IGGE Laboratory) in Langfang, Hebei Province,
- The Chengde Huakan 514 Geology and Mineral Testing and Research Institute (Chengde Laboratory) in Chengde, Hebei Province,
- The Analytical Laboratory of the Inner Mongolia Geological Exploration Bureau (Inner Mongolia Laboratory) in Hohhot, Inner Mongolia.

All four laboratories are accredited and certified as first class laboratories by the Chinese government. The procedures for sample preparation and quality management in these laboratories are established in accordance with the official Chinese technical standard DZ/T 0130-2006 (The Specification of Testing Quality Management for Geological Laboratories), which is a combination of the basic principles and methodologies of ISO 9000:2000 and ISO/IEC 17025:1999. Their sample preparation procedures consist of drying, crushing, splitting and weighing of a 200-gram sample, followed by pulverizing to 200-mesh size. The 200-mesh sample split is split again with a 100-gram split used for final assay. Two-acid digestion and AAS finish are utilized on a 0.5 g sample for lead and zinc assay. Titration is utilized as a modified process for higher grade materials. Silver is also analyzed using a two-acid digestion on a 0.5 g sample and AAS finish.

Channel samples are prepared and assayed with AAS at Silvercorp's mine laboratory (Ying Laboratory) located at the mill complex in Luoning County and referred to in Section 11.3. Samples are dried at 100° to 105° C in an oven and are then crushed and pulverized through three procedures, preliminary crushing, intermediate crushing and final pulverizing. Sample splitting is conducted at each procedure. A 200 g sample of minus 160 mesh (0.1 mm) is prepared for assay. A duplicate sample of minus 1 mm is made and kept at the laboratory archives. A 0.5 g pulp sample is treated with two-acid digestion and assayed for silver, lead, zinc and copper with AAS at the laboratory.

11.3 Ying assay laboratory

A brief examination of the Ying assay laboratory was made by AMC Qualified Persons P Stephenson and A Fowler in September 2013. The assay laboratory is officially accredited by the Quality and Technology Monitoring Bureau of Henan Province and has been used to analyze both channel samples taken from underground workings for Resource estimation purposes, and concentrate produced from the processing plants. Most of the processes for the analysis of channel samples and concentrate is completed within separate buildings, rooms and instruments.

11.4 Quality assurance & quality control

Silvercorp's QA / QC program and results prior to January 2012 have been described in previous Technical Reports.

Silvercorp's QA / QC program in the period from January 2012 to June 2013 comprised the following:

- Regular insertion of Certified Reference Material (CRM) samples, blanks and duplicates at a rate of one CRM, one blank and one duplicate per 40 sample batch;
- Randomly selected rejects of the mineralized samples for rechecking (internal check) at the same laboratory;
- Randomly selected pulp of the mineralized samples for external check at other laboratories;
- Regular review of results, with additional review by independent Qualified Persons.

Silvercorp geologists at each mine and the Exploration Management Department in Silvercorp's Beijing Office review QA/QC data on a regular basis. Any batch that reaches warning threshold or fails the QA/QC program is automatically notified for investigation or re-assayed, and only approved assay results are used for Mineral Resource estimation.

In Silvercorp's QA/QC program at the Ying Property, a total of 477 CRMs, 531 blanks and 447 duplicates were inserted with the 17,369 core samples, and 648 CRMs, 390 blanks and 330 duplicates were inserted with the 17,938 channel samples. A total of 684 core and channel samples were selected for internal check and 519 core and channel samples were selected for external check.

11.4.1 Assay results of reference materials

Seven CRMs purchased from the CDN Resource Laboratories Ltd in Langley, BC, Canada were used in the 2012 and 2013 QA/QC program, comprising CDN-ME-5, CDN-ME-8, CDN-FCM-6, CDN-FCM-7, CDN-ME-1206, CDN-ME-16, and CDN-ME-14. The recommended values and the two standard deviations for each CRM are listed in Table 11.1.

Table 11.1 Recommended values and two standard deviations of CRMs

CRM	Element	Recommended Value	Two Standard Deviation
CDN-ME-5	Ag	206.1g/t	13.1g/t
	Pb	2.13%	0.12%
	Zn	0.579%	0.020%
CDN-ME-8	Ag	61.7g/t	4.7g/t
	Pb	1.94%	0.08%
	Zn	1.92%	0.08%
CDN-ME-1206	Ag	274g/t	14g/t
	Pb	0.801%	0.044%
	Zn	2.38%	0.15%
CDN-ME-16	Ag	30.8g/t	2.2g/t
	Pb	0.879%	0.040%
	Zn	0.807%	0.040%
CDN-ME-14	Ag	42.3g/t	4.2g/t
	Pb	0.495%	0.030%
	Zn	3.10	0.28%
CDN-FCM-6	Ag	156.8g/t	7.9g/t
	Pb	1.52%	0.06%
	Zn	9.27%	0.44%
CDN-FCM-7	Ag	64.7g/t	4.1g/t
	Pb	0.629%	0.042%
	Zn	3.85%	0.19%

Most of the assay results for silver, lead and zinc in CRMs are within the acceptable range of recommended value plus or minus two standard deviations. Except for a few samples, relative errors between the recommended values and assay results of the RMSs are less than 10%, which AMC considers acceptable.

Quality of assay data is visually reviewed on quality control charts. Assay results of a CRM within ± 2 standard deviations (SD) of the recommended value is considered acceptable, and assay data outside the ±3SD control lines are deemed failed assays. When two or more consecutive assays of CRMs occur outside the control lines in a sample batch, Silvercorp will notify the laboratory immediately to check their internal QA/QC procedures and reassay samples of the batch with failed CRM assays. Figures 11.2 and 11.3 show results of 54 assays of reference material CDN-ME-1206 and 65 assays of reference material CDN-FCM-7 respectively by different laboratories in 2012 and the first half of 2013. AMC considers that assay results from CRMs for silver, lead and zinc fall into the acceptable ranges. AMC also notes that the silver results for CDN-ME-1206 show a high bias, while the zinc results for CDN-FCM-7 show a low-bias for the reporting period.

AMC recommends that Silvercorp investigate the bias issue in preparation for its next Mineral Resource estimate.

Figure 11.2 Results of 54 assays for silver, lead and zinc in reference material CDN-ME-1206

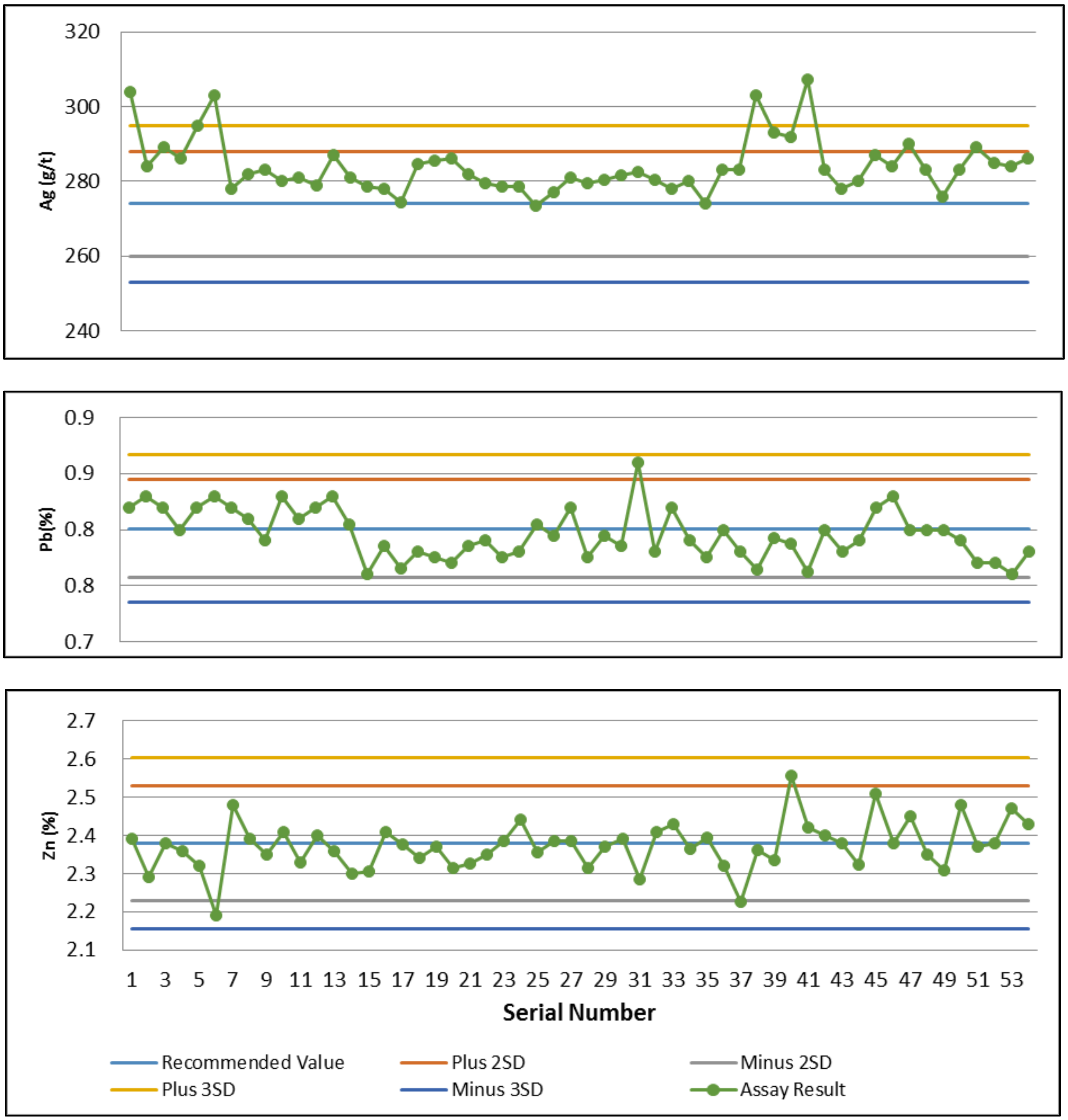
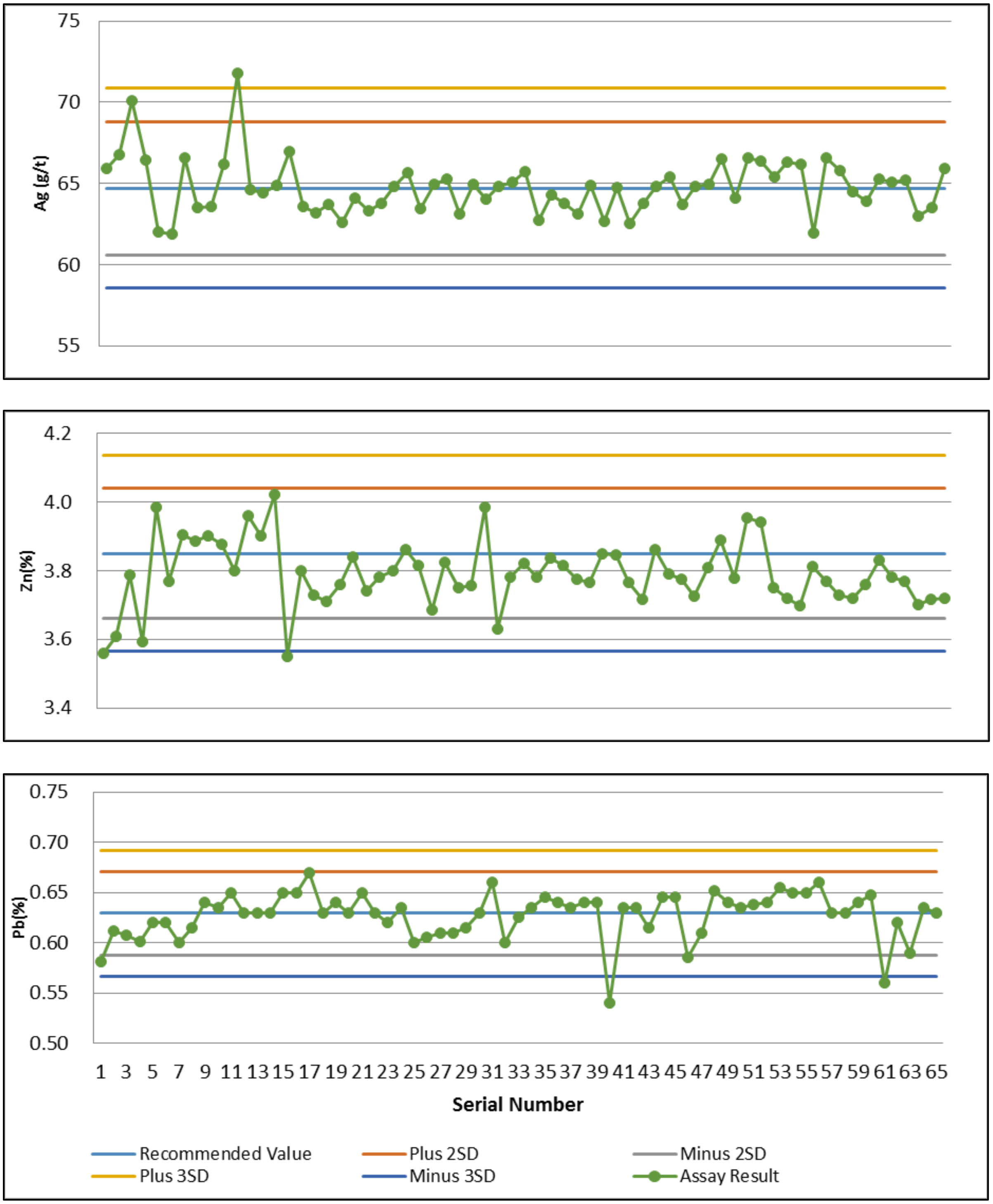


Figure 11.3 Results of 65 assays for silver, lead and zinc in reference material CDN-FCM-7



11.4.2 Assay results of blank samples

Blank samples were made of barren rocks from the Ying Property. 531 blank samples were inserted into core sample batches and 390 blank samples were inserted into channel sample batches in 2012 and the first half of 2013 to monitor possible contamination problems in sample preparation procedures. In the 531 blanks in core samples, only one sample was detected with anomalous silver of more than 30 g/t and lead of more than 0.3%.

In the 390 blanks in channel samples, six were detected with anomalous silver of more than 30 g/t, 15 were detected with anomalous lead of more than 0.3% and six were detected with anomalous zinc of more than 0.2%. The Mine Laboratory was notified of possible contamination in sample preparation procedures, in February 2013 and since then, much fewer anomalous values have been detected. Overall, AMC considers that the assay results for the blank materials are acceptable.

11.4.3 Results of internal check assays

684 pulp duplicates were assayed as internal checks to evaluate precision of the adopted assay methods in laboratories.

Figure 11.4 and Figure 11.5 show the reproducibility of the internal checks on 210 samples from the Zhengzhou Geo-laboratory, Zhengzhou Nonferrous Laboratory and Chengde Laboratory and 474 samples from the Mine Laboratory. AMC considers that the reproducibility for silver, lead and zinc of the original assays by the internal checks is acceptable.

Figure 11.4 Results of internal check assays for core samples

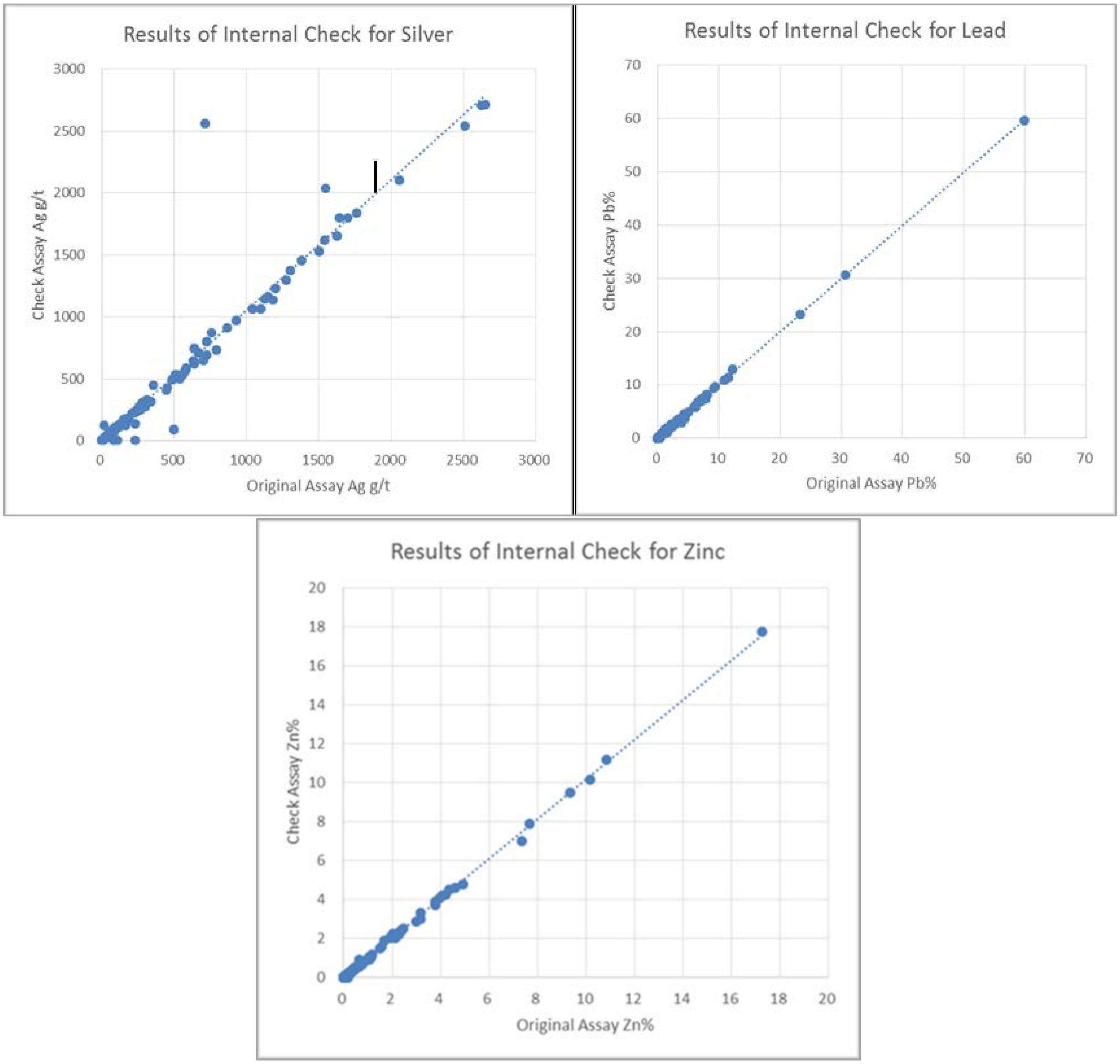
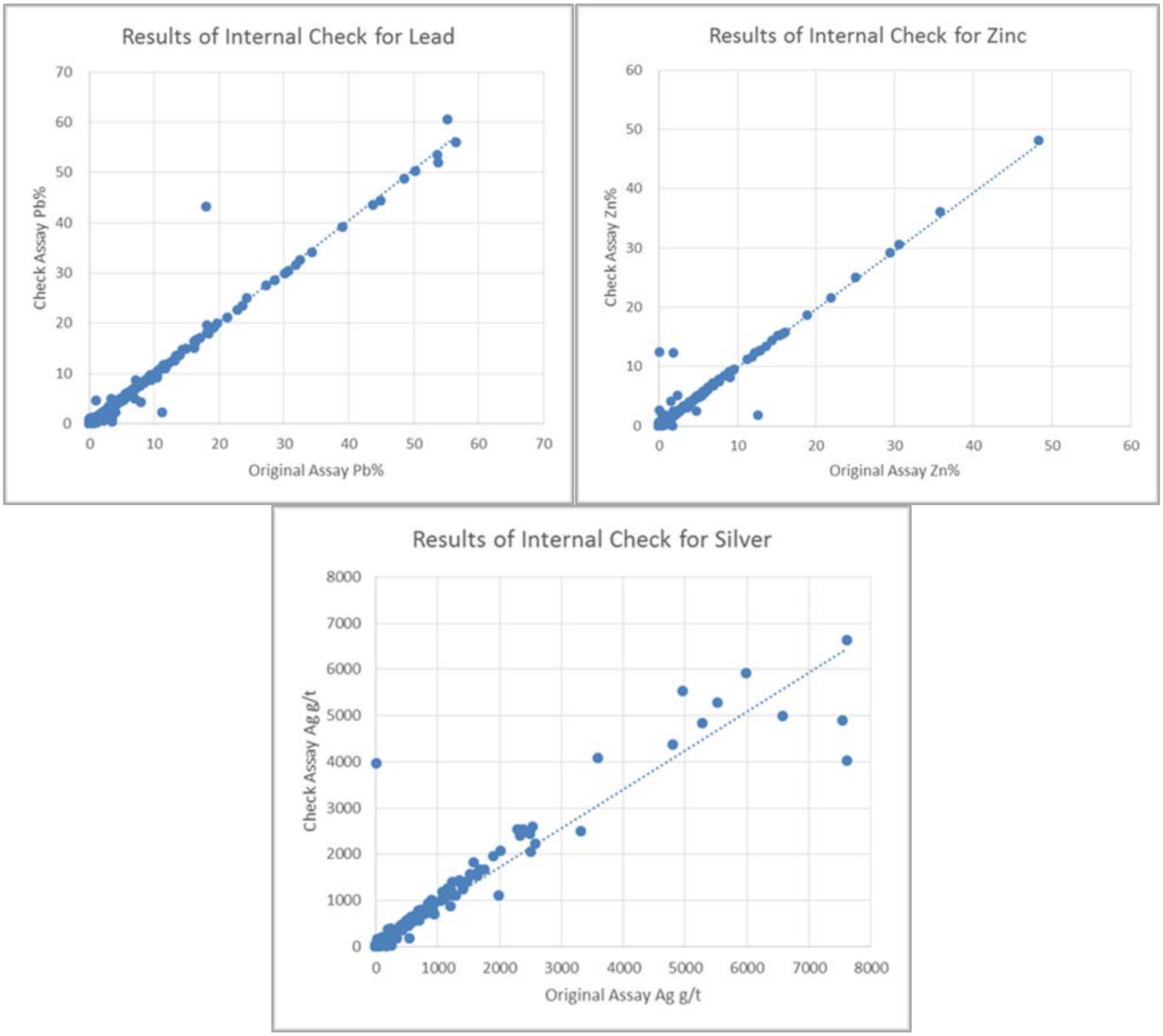


Figure 11.5 Results of internal check assays for channel samples



11.4.4 Results of external check assays

519 external check samples, comprising 172 randomly selected pulps of mineralized core samples and 347 pulps of mineralized channel samples, were re-assayed at laboratories different from the original laboratory. Figure 11.6 shows the results of the external check assays for silver, lead and zinc in core samples. AMC considers that the reproducibility for silver, lead and zinc of the original assays by the external checks is acceptable.

Figure 11.6 Results of external check assay for core samples

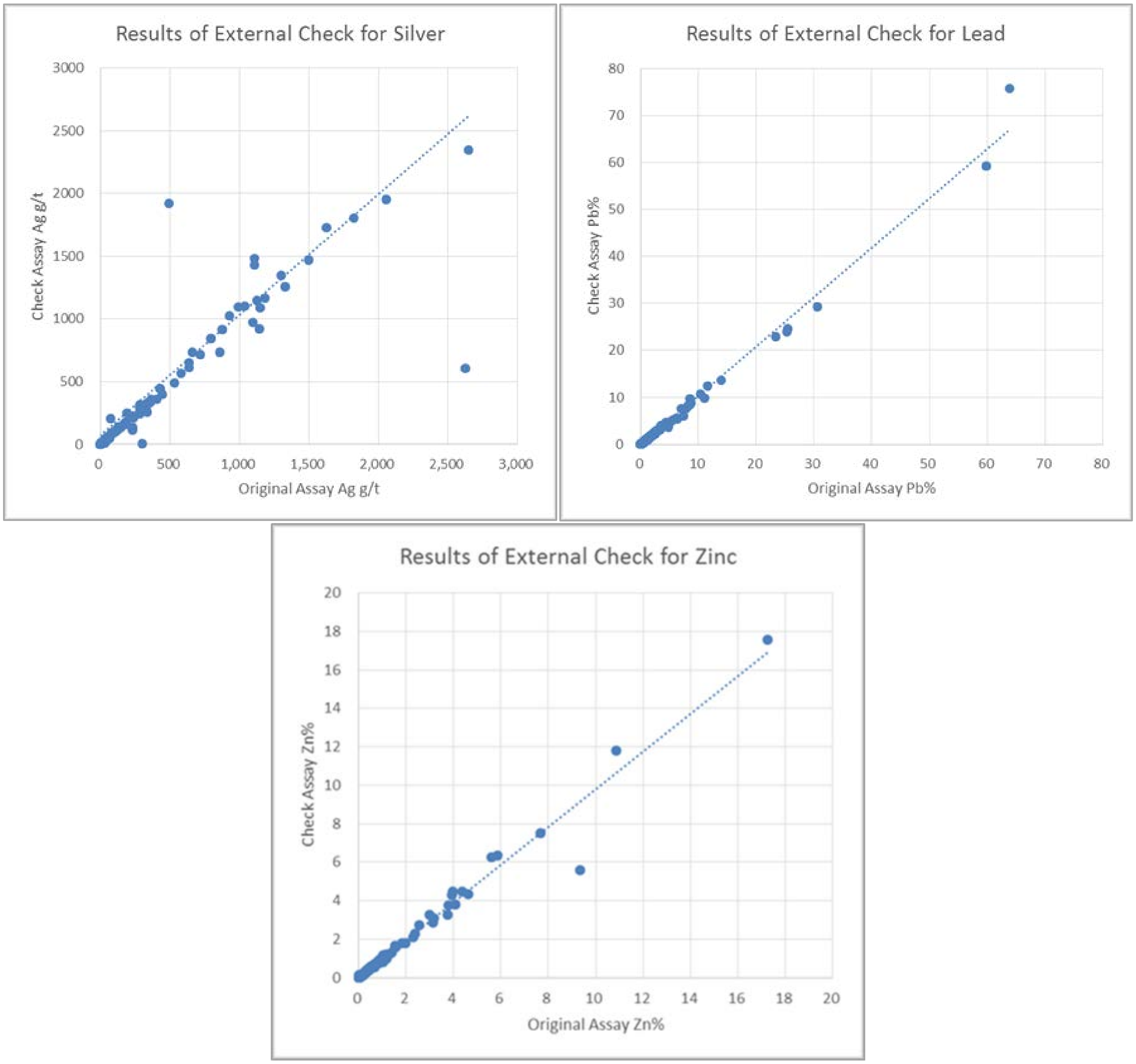
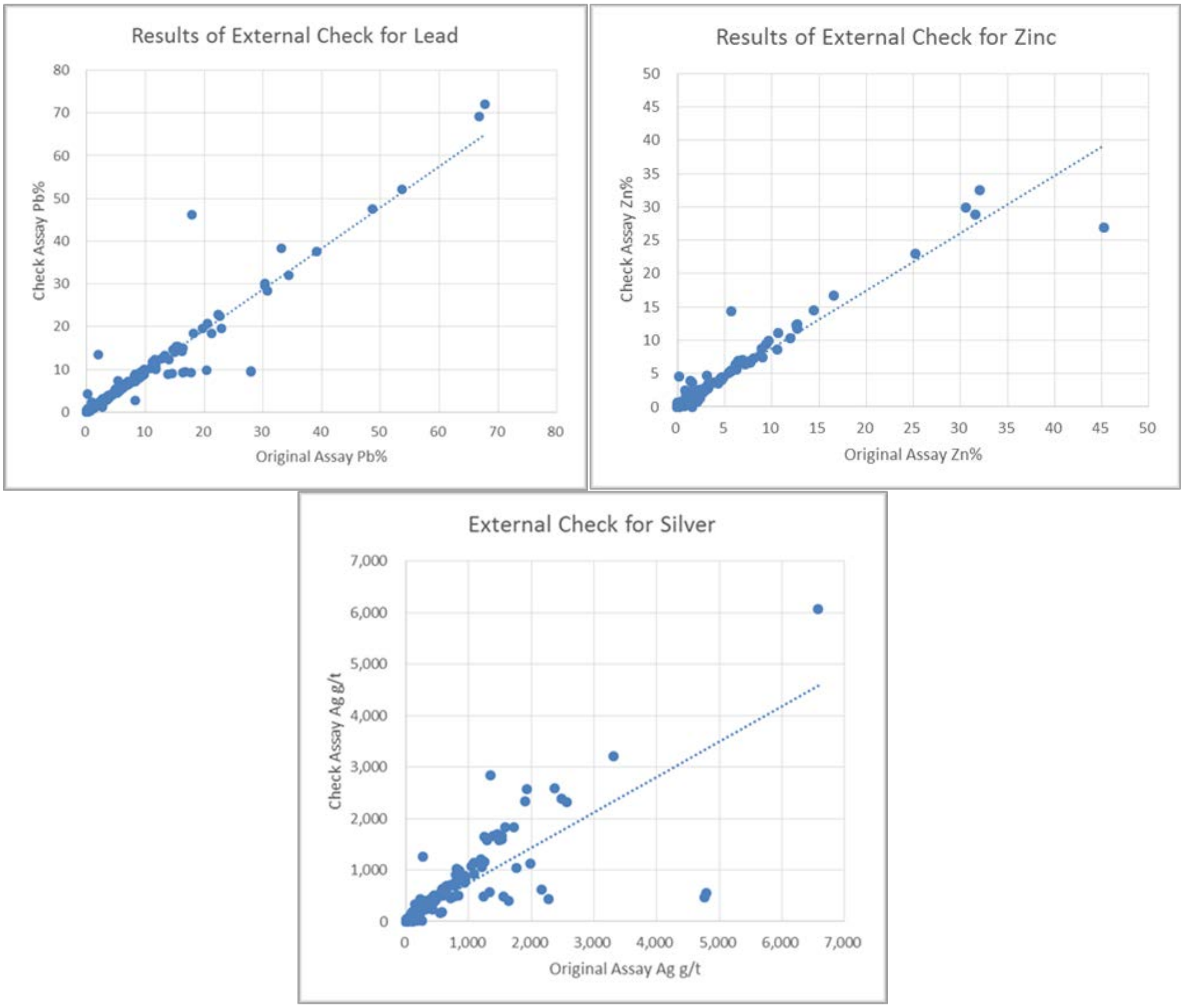


Figure 11.7 shows results of external check assays for silver, lead and zinc in channel samples. AMC considers that the reproducibility for silver, lead and zinc of the original assays by the external checks is acceptable. However, AMC also notes that the check laboratory is returning lower silver, lead and zinc grades than the original laboratory.

AMC recommends that the cause for the disagreement between the two laboratories is understood before the next Mineral Resource estimate.

Figure 11.7 Results of external check for channel samples



11.5 Bulk density measurements and results

306 samples for bulk density measurement were collected by Silvercorp from different mine areas in the Ying Property. Samples were cut as an individual block of about 1 kg from different mineralization types at each mine area. A small amount of altered wall rock samples were also collected for comparison purpose. The bulk density was measured using the wax-immersion method by the Inner Mongolia Mineral Experiment Research Institute located in Hohhot, Inner Mongolia.

Note that additional bulk density samples were quoted from government reports in the 2012 AMC NI 43-101 Technical Report, but as these samples did not have associated assay data, they were not used in the regression formula below.

A relationship between measured bulk density and the weighted combination of lead and zinc grade was developed using multivariate linear least squares regression. Samples with a relative error > 20 % between the measured and calculated bulk density were removed from the dataset before calculation of the final relationship that was used in the Mineral Resource estimate. Figure 11.8 shows the relationship using all data, while Figure 11.9 shows only the data with < 20 % relative error. Using this formula the Ying deposit bulk density measurements range from about 2.64 t/m^3 to 5.97 t/m^3 with a mean of 2.74 t/m^3. The relationship between bulk density and grade is:

$$\text{Bulk Density}=2.643339 + 0.047932 \times \text{Pb \%} + 0.011367 \times \text{Zn \%}$$

Figure 11.8 Combined lead and zinc vs measured bulk density: all data

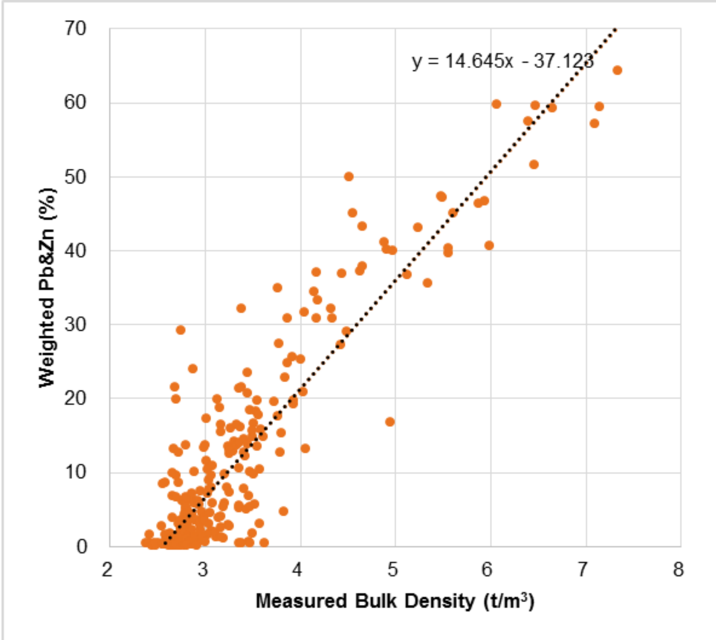
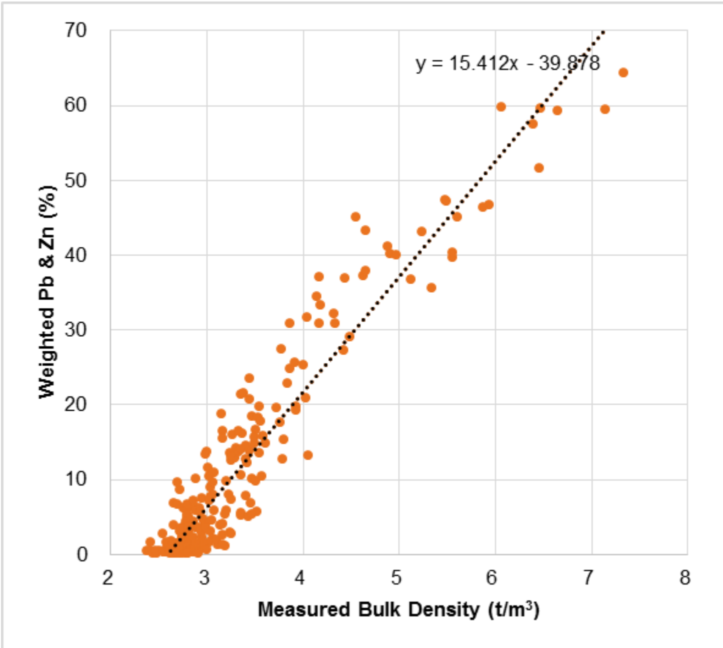


Figure 11.9 Combined lead and zinc vs measured bulk density: < 20 % relative error



In AMC's opinion, the sampling procedures and QA/QC measurements adopted by Silvercorp for its 2012 and first half of 2013 exploration programs at the Ying Property meet accepted industry standards, and the assay data is suitable for Mineral Resource estimation.

12 Data verification

Between the 3rd and 6th of September 2013, AMC full-time employees and QPs P R Stephenson, H A Smith and A P Fowler visited the Ying Property to undertake the following data verification steps:

- Discussions with site geologists regarding:
  - Sample collection
  - Sample preparation
  - Sample storage
  - QA/QC
  - Data validation procedures
  - Underground mapping procedures
  - Survey procedures
  - Geological interpretation
  - Exploration strategy
- A review of underground tunnel roof mapping.
- An inspection of the core sheds and some recent drill core intersections from the property.
- Inspection of underground workings at the SGX, HPG, HZG, LM and TLP mines including active resue and shrinkage stopes.
- Inspection of the mineral processing and tailings facilities.
- Random cross-checks of 15% of the mineralized assay results in the database with original assay results from the reporting period.
- Collection and independent assay of randomly selected mineralized drillhole intersections.

The results of the drillhole intersection checks are given in Table 12.1.

AMC makes the following observations based on the data verification undertaken:

- Site geologists are appropriately trained and are conscious of the specific sampling requirements of narrow-vein, high-grade deposits.
- Cross-checking the database with the original assay results did not uncover any errors.
- The drillhole intersection checks for lead and zinc showed reasonable agreement between the original half core sample and the re-assayed quarter core sample. Silver and gold assays showed significant differences, however this is expected in high grade, precious metal mineralization.

Silver and gold are expected to show naturally higher variability at short distances than lead and zinc, because precious metals are orders of magnitude more scarce than base metals and because precious metals tend to be distributed erratically rather than be evenly distributed throughout the rock. In addition, AMC does not consider that the sample size (NQ half and quarter core) is adequate to properly assess the reproducibility of the precious metal assay results. Therefore, AMC does not believe the differences observed in the drillhole intersection checks are material for the Mineral Resource estimate.

In AMC's opinion, the geological data used to inform the Ying property block model estimates were collected in line with industry good practice as defined in the Canadian Institute of Mining and Metallurgy and Petroleum (CIM) Exploration Best Practice Guidelines and the CIM Mineral Resource, Mineral Reserve Best Practice Guidelines. As such, the data are suitable for use in the estimation of Mineral Resources.

Table 12.1 Results of AMC re-assay of randomly selected mineralized drillhole intersections

					Original half core				Re-assay quarter core				Percent difference (%)			
Mine	**Vein**	**Hole ID**	**From**	**To**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**Au (g/t)**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**Au (g/t)**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**	**Au (g/t)**
SGX	S7-1	ZK05S7-102	246.87	247.63	1315	0.42	4.22		2080	0.829	4.03		37%	49%	-5%	
	S7-1	ZK9S7-123	31.97	33.46	2497	30.58	4.58		2620	37.47	4.34		5%	18%	-6%	
	S7-1	ZK9S7-124	37.60	39.10	783	5.18	8.88		1300	3.32	10.60		40%	-56%	16%	
	S7_1	ZK0110	282.12	282.79	1186	59.86	0.87		1240	51.28	1.250		4%	-17%	30%	
	S7_1E1	ZK0108	259.28	261.83	151	0.04	0.01		78	0.021	0.006		-94%	-90%	-67%	
	S7	ZKY22A04	465.77	467.02	1551	5.27	0.11		653	9.20	0.175		-138%	43%	37%	
	S8	ZKY2212	350.59	351.45	754	15.30	1.81		561	10.65	2.69		-34%	-44%	33%	
	S7_2	ZK0504	117.67	118.60	238	0.15	0.32		122	0.352	0.566		-95%	57%	43%	
	New Zone	ZK5116	226.89	227.49	312	2.04	1.19		72	1.340	1.240		-333%	-52%	4%	
	S28	ZK8303	289.83	290.50	927	12.45	13.90		898	>20.0	14.20		-3%		2%	
HPG	H16	ZK25+2501	112.39	113.79	9	0.22	0.06	2.38	10	0.201	0.047	1.815	7%	-11%	-30%	-31%
		ZK00+2501	75.05	76.65	262	0.18	0.17	1.19	666	0.327	0.209	0.698	61%	44%	18%	-71%
	H5W	ZK0012	19.84	20.15	1625	7.44	17.28	1.75	3480	11.30	15.90	2.16	53%	34%	-9%	19%
	H4	ZK0014	272.7	273.6	929	4.26	9.36	1.47	1180	3.98	9.38	1.505	21%	-7%	0%	2%
LME	LM6	ZKL56S32	97.46	99.06	743	0.91	0.22		1000	0.915	0.262		26%	1%	16%	
	N	ZKL60S02	18.71	19.64	229	0.60	0.25		910	1.170	0.443		75%	49%	44%	
	LM6	ZKL53S01	88.9	90.43	692	0.33	0.28		1100	1.120	0.548		37%	71%	49%	
	LM6	ZKL6602	223.91	224.31	795	1.19	0.28		558	1.460	0.369		-42%	18%	25%	
TLP	T15W	ZKG0221	153.68	154.85	535	2.50	0.45		322	3.46	0.832		-66%	28%	46%	
	T14	ZKT0521	211.94	213.04	158	3.05	0.21		49	2.46	0.159		-222%	-24%	-32%	
	T15W1	ZKG0622	84.27	85.86	348	4.02	0.19		291	3.64	0.198		-20%	-10%	7%	
	T15W1	ZKG0621	75.08	75.89	221	0.98	0.13		95	0.421	0.071		-133%	-133%	-83%	
Average													**-37%**	**-2%**	**6%**	**-20%**

13 Mineral processing and metallurgical testing

13.1 Introduction

The lab scale mineral processing and metallurgical tests for the Ying Property deposits were done by three laboratories in China:

- Hunan Nonferrous Metal Research Institute (HNMRI) using SGX mineralization in 2005
- Tongling Nonferrous Metals Design Institute (TNMDI) using HZG mineralization in 2006
- Changsha Design and Research Institute (CDRI) using TLP mineralization in 1994

The objectives of the lab mineral processing testwork were:

- To maximize silver recovery to the lead concentrate.
- To develop a process flow sheet with appropriate operating parameters as a basis for the industrial scale implementation of lead, zinc and silver recovery.
- To determine the product quality characteristics relative to the relevant national standards.

The metallurgical testing consisted of mineralogical assessment, flotation tests and specific gravity measurements of the mineralized veins.

SGX is the main deposit and the HNMRI work is the most comprehensive; therefore the lab test results from HNMRI's study (2005) on SGX mineralization were used for both mill Plant 1 (2005) and Plant 2 (2008) design.

AMC is not aware of any subsequent external Design Institute metallurgical testwork having been carried out, although continual on-site "plant-tuning" occurs.

13.2 Mineralogy

Silvercorp has three principal mining operations on the Ying Property:

- SGX, consisting of the SGX and HZG mines in the western part of the block.
- HPG, consisting of the HPG mine, also in the western part of the block.
- TLP/LM, consisting of the TLP and LM mines in the eastern part of the block.

The mineralization in the SGX-HZG deposits and other deposits in the Ying district occurs as relatively narrow tabular veins that pinch-and-swell along fault-fissure structures.

The mineralogy generally consists of galena and sphalerite plus a variety of silver minerals from native silver to silver sulphides and sulphosalts, some rare, and in the case of TLP/LM mine some silver halides in the upper zones.

The mineralogy specific to each deposit is described below.

13.2.1 SGX Mineralization

In 2005, HNMRI performed petrographic analysis on samples collected for metallurgical test work from veins S14, S16E, and S16W in adit CM102. HNMRI's study identified the following main mineral occurrences:

- Polymetallic sulphide minerals: galena, sphalerite with trace amounts of chalcopyrite, pyrrhotite, hematite, magnetite and arsenopyrite.
- Silver minerals: native-silver, B-argentite, and the antimonial sulphosalts: pyrargyrite and stephanite.

Table 13.1 summarizes the mineralogical compositions of blended cores, as feed for flotation tests.

Table 13.1 Mineral composition of the SGX mineralization

Sulphides Minerals	%	Gangue Minerals	%
Pyrite, pyrrhotite	2.54	Quartz	40
Galena	6.8	Chlorite and sericite	22.5
Sphalerite	7.8	Kaolin and clay minerals	15
Arsenopyrite	0.06	Hornblende and feldspars	4
Chalcopyrite etc.	0.2	Iron oxides, others	1.1

The mineralogical study results show that:

- Galena is fine to coarse-grained (0.05 to 0.5 mm) and commonly occurs as a replacement of pyrite. The galena is distributed along the fractures of quartz or other gangue minerals and commonly interlocked with sphalerite and pyrite.
- Sphalerite is commonly coarse-grained and ranges from 0.2 to 2.0 mm in size. It is formed by replacing pyrite and enclosed in a skeleton of remaining pyrite.

Table 13.2 summarizes the distribution of silver minerals. Silver appears in two forms:

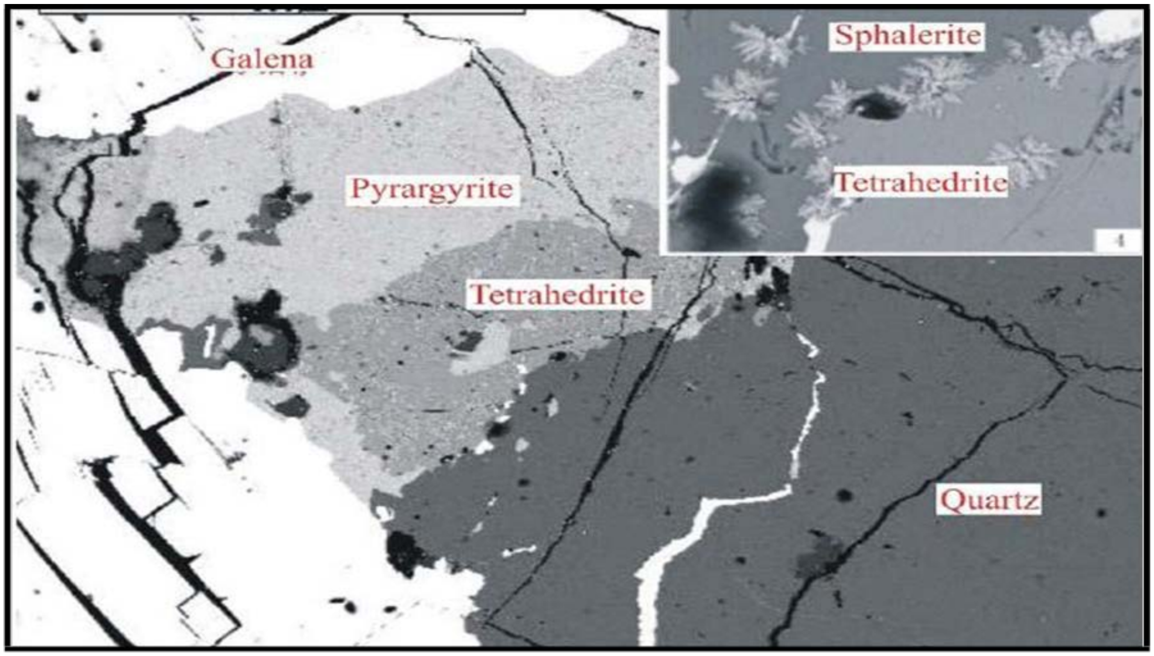
- As silver minerals, including native silver, electrum, tetrahedrite, polybasite, pyrargyrite, and argentite
- As electro-replacement in galena, pyrite, and other sulphides. Native sulphides usually range from 0.01 to 0.07 mm in size
- Only 4.6% of the silver is associated with gangue minerals.

Table 13.2 Phase distribution of silver (SGX mineralization)

Occurrence	g/t	%	Comments
Native Silver	89.45	23.32	Free silver
Silver Sulphides	136.32	35.54	In tetrahedrite, polybasite, pyrargyrite, and argentite
Silver in Sulphides	140.04	36.51	In galena, sphalerite, pyrite, and chalcopyrite
Enclosed in gangue minerals	17.76	4.63	In quartz etc.
Total		100	

An example of the distribution of silver minerals and silver bearing minerals is shown in Figure 13.1.

Figure 13.1 Distribution of silver minerals and silver-bearing minerals



13.2.2 TLP Mineralization

The mineralogical assessment was carried out by the No. 6 Brigade, a China-based Exploration Company, and the main mineral occurrences are:

- Metallic sulphide minerals: galena, sphalerite, pyrite and chalcopyrite.
- Silver minerals: native silver, argentite-acanthite, freibergite, polybasite, cerargyrite-bromochlorargyrite and canfieldite (a rare silver tin sulphide).
- Gangue minerals: quartz, sericite, chlorite, hornblende, feldspars and others.

The composition of the minerals in the blended sample is listed in Table 13.3.

Table 13.3 Mineral composition of the TLP-LM mineralization

Sulphides & Iron Minerals	%	Gangue Minerals	%
Galena	2.1	Carbonate	42.5
Cerusite	0.5	Quartz	30
Anglesite	0.2	Biotite	4.5
Sphalerite	0.2	Chlorite	4.5
Chalcopyrite	0.1	Sericite	2.5
Covellite	0.1	Hornblende	2
Pyrite	0.1	Isiganeite	1.5
Hematite Limonite	6.0	Feldspars	1.4
		Clay	2.1

A detailed phase distribution of silver is listed in Table 13.4. Although only 12.7% of the silver is associated with oxides and gangue minerals, 30.9% is as halides; thus only 56.4% is as free silver or associated with sulphide minerals — much lower than was found for SGX.

AMC considers that this could result in lower recoveries for TLP mineralization, although the occurrence of halides is related to surface oxidation and would be expected to decrease at depth.

Table 13.4 Phase distribution of silver (TLP-LM mineralization)

Occurrence	g/t	%	Comments
Native Silver	18.7	13.61	Free silver
Silver Sulphides	42.9	31.22	In freibergite, argentite-acanthite, polybasite
Silver in Sulphides	15.9	11.57	In galena
Absorbed by Fe and Mn Oxides	15.5	11.28	N/A
Silver in Halides	42.4	30.86	In bromochlorargyrite
Enclosed in gangue minerals	2	1.46	N/A
Total		100.00	

13.2.3 HPG mineralization

Mineralogical analysis of HPG mineralization shows that:

- Common sulphide minerals are galena, sphalerite and tetrahedrite, with lesser amounts of chalcopyrite, pyrargyrite, and other sulfosalts.
- Small amounts of acanthite and native silver may occur, but most silver in the veins is present as inclusions in galena or tetrahedrite (silver-bearing tetrahedrite is also known as freibergite).
- Copper and gold may increase at depth.
- Common gangue minerals are quartz, pyrite, and carbonate, usually siderite or ankerite with distal calcite

13.3 Metallurgical samples

Samples sent for metallurgical tests are as follows.

13.3.1 SGX mineralization

Blends of the core samples from veins S14, S16E, and S16W in adit CM102 at the SGX mine were used. Compositions of these core samples are listed in Table 13.5.

Table 13.5 Core samples used for ore blending test

Sample	Ag (g/t)	Pb (%)	Zn (%)
No. 1	436.45	0.72	0.87
No. 3	659.75	2.66	13.34
No. 5	314.65	9.67	4.20

In order to better understand the metallurgical characteristics of the SGX mineralization, HNMRI blended these core samples based on the following ratios of No.1: No.3: No.5 of 2.5: 2: 5.55. It was assumed that this blend would be representative of the SGX mineralization and it would represent the expected mill grade. The head grade result of this blended sample is provided in Table 13.6.

Table 13.6 Head grade of blended sample

Pb (%)	Zn (%)	Cu (%)	S (%)	As (%)	Total Fe (%)
5.88	5.21	0.063	4.02	0.001	2.83
Au (g/t)	**Ag (g/t)**	**CaO (%)**	**MgO (%)**	**SiO (%)**	**Al2O3 (%)**
5.88	386.5	0.063	4.02	0.001	2.83

13.3.2 TLP mineralization

CDRI did some metallurgical work for silver and lead materials on the TLP project in 1994. Two representative bulk samples (Table 13.7) consisting of 110 kg of high-grade mineralization, 111 kg of wall rocks and 304.5 kg of medium grade mineralization, totalling 525.5 kilograms, were collected from several crosscuts and undercut drifts for metallurgical testing. The samples consisted of mainly transition mineralization but also included a small amount of oxide and sulphide materials. Sample No.1 contained more carbonate rock than Sample No.2, which had higher silicate content.

Table 13.7 TLP mineralization samples for metallurgical tests

Samples	Ag Grade (g/t)	Pb Grade (%)
Sample 1	187.1	2.37
Sample 2	204.9	2.66

13.4 Metallurgical testwork

Prior to operation of the mines and the construction of Silvercorp's mills, metallurgical tests by HNMRI and other labs were conducted to address the recoveries of the different types of mineralization (Broili, et al, 2006, Xu et al, 2006, Broili & Klohn, 2007, Broili et al 2008):

- TLP mineralization was tested by the CDRI in 1994.
- SGX mineralization was tested by HNMRI in May 2005.
- HZG mineralization was tested by TNMDI in 2006.
- HPG mineralization: No test was done.

Some initial size by size analysis work is summarized in Table 13.8 which shows the grade and distribution of Pb, Zn and Ag vs size fractions for a ball mill stream of 70% -200 mesh. The results indicate that liberation of Pb, Zn and Ag at the grinding target of 70% -200 mesh are sufficient for desired flotation recovery.

Table 13.8 Liberation of Pb, Zn and Ag vs size fractions (70% -200 mesh)

Size (mm)	Yield (%)	Grade			Distribution (%)		
		Pb (%)	Zn (%)	Ag(g/t)	Pb	Zn	Ag
+0.150	5.59	1.80	4.21	151	1.71	4.45	2.19
-0.150+0.100	12.22	3.99	5.94	278	8.31	13.72	8.78
-0.100+0.074	12.01	5.14	5.95	384	10.51	13.50	11.91
-0.074+0.037	22.43	5.76	6.60	387	22.01	27.98	22.45
-0.037+0.019	21.65	8.93	5.24	511	32.94	21.45	28.56
-0.019+0.010	14.29	7.05	4.03	441	17.16	10.89	16.28
-0.010	11.81	3.66	3.59	322	7.36	8.01	9.83
Total	100.00	5.87	5.29	387	100.00	100.00	100.00

HNMRI's evaluation did not find any difficulty with gangue minerals associated with the base and precious metal mineralization, but they did find a small fraction of encapsulation of the barren sulphide minerals (pyrite, etc.) with silver, lead, and zinc sulphide minerals. Due to the coarseness of these minerals, it is expected that adequate liberation during processing will occur to maintain high recoveries.

Thereafter, the main focus was on flotation testwork to maximize lead and, therefore, silver recovery. Both open circuit and closed circuit flotation tests were conducted to derive the final metallurgical performance predictions in line with normal practice.

13.4.1 SGX mineralization

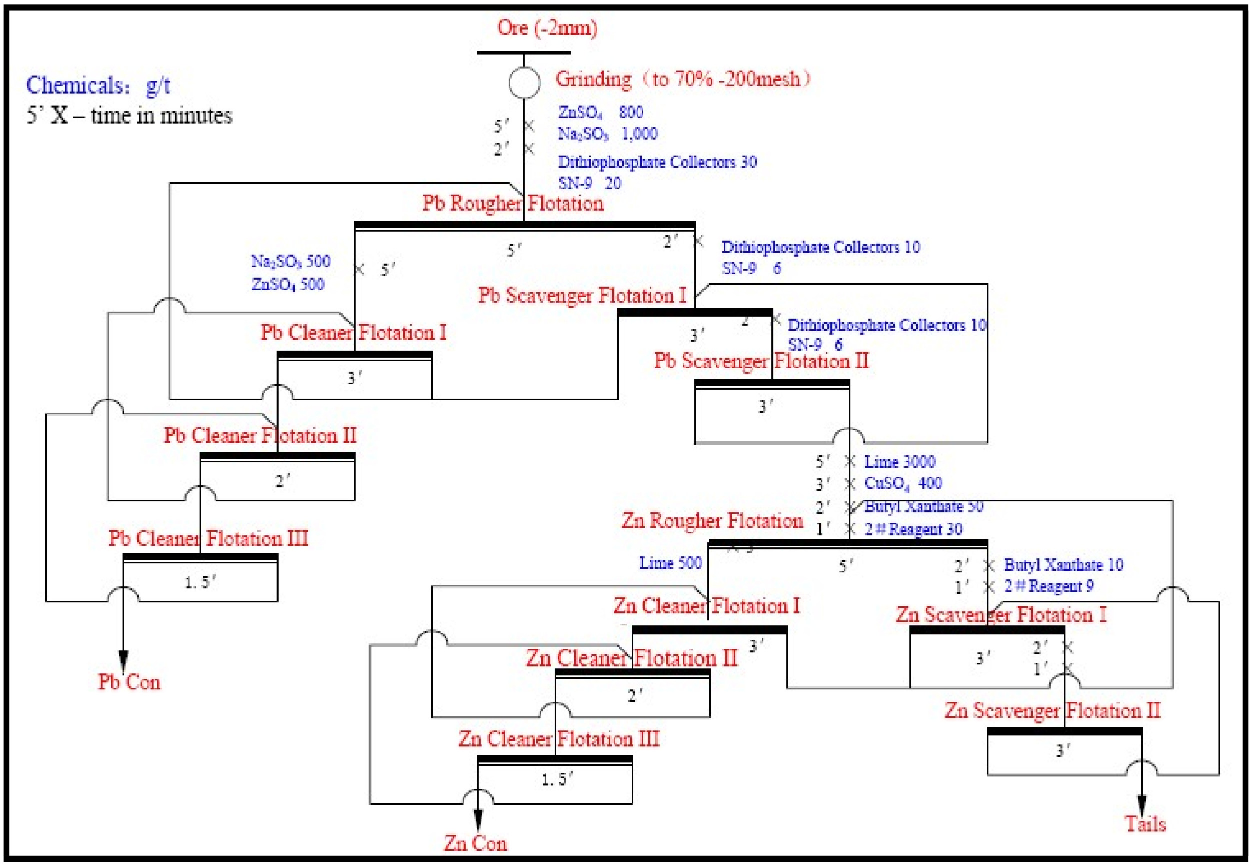
As summarized in previous SGX technical reports, the test work concluded that:

- A conventional Pb/Zn separation process by differential flotation (Figure 13.2, closed loop) was developed.
- The optimum grinding target for the ore was 70% passing 200 mesh.
- The optimum reagent dosage at different addition locations (as shown in Figure 13.2), gives the best metal recovery (refer to Table 13.9) under recommended operating conditions.

Table 13.9 Mass balance for locked cycle test (SGX mineralization)

			Grade			Recovery	
Product	Mass Yield (%)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
Head		5.88	5.21	386.5			
Lead Con.	7.84	68.18	6.24	4,197	90.89	9.39	85.12
Zinc Con.	7.49	2.10	59.61	453.8	2.67	85.67	8.79
Tails	84.67	0.45	0.30	27.8	6.44	4.94	6.09
Total	100				100	100	100

Figure 13.2 Locked cycle flotation flow sheet (SGX mineralization)



13.4.2 TLP mineralization

Under closed conditions and using an 80% -200 mesh feed the CDRI's lab performed conventional flotation tests and reported the following results (Table 13.10). The test work demonstrates that silver and lead can be easily extracted from the mineralized vein material using a conventional flotation process. AMC notes that silver recovery did not in fact appear to be impacted by the presence of halides.

Table 13.10 Mass balance for locked cycle test (TLP mineralization)

Samples		Ag Grade (g/t)	Pb Grade (%)	Ag Recovery (%)	Pb Recovery (%)
Sample 1	Head	187.1	2.37		
	Conc	5274	66.94	94.71	94.96
	Tails	10.25	0.124	5.29	5.04
	Total			**100**	**100**
Sample 2	Head	204.89	2.66		
	Conc	5432	61.65	94.12	82.24
	Tails	12.5	0.49	5.88	17.76
	Total			**100**	**100**

13.4.3 HPG mineralization

No mineral processing and metallurgical tests were conducted for the HPG deposit. Silvercorp submitted a development plan to the relevant authority applying for a mining license by using the metallurgical testing results from the TLP silver-lead deposit.

13.4.4 HZG mineralization

TNMDI tested the HZG mineralization which contains low level of copper and zinc. The mass balance is summarized in Table 13.11.

Table 13.11 Mass balance for locked cycle test (HZG mineralization)

Product	Mass Yield (%)	Grade				Recovery (%)			
		Ag (g/t)	Pb (%)	Cu (%)	Au (%)	Ag (%)	Pb (%)	Cu (%)	Au (%)
Copper Conc	1.53	22026	16.4	19.44	0.29	85.82	9.67	89.98	3.12
Lead Conc	4.39	895.2	50.23	0.433	0.14	10.01	85.03	5.75	4.32
Tailings	94.08	17.4	0.146	0.015	0.14	4.14	5.3	4.27	92.56
Total	100	392.7	2.59	0.33	0.14	100	100	100	100

13.4.5 Grind size optimization

Table 13.12 shows the grade and distribution of Pb, Zn and Ag vs size fractions for a ball mill stream under different grinding targets. The results indicate that:

- The minimum grinding target of 65% -200 mesh gave sufficient liberation of Pb, Zn and Ag
- The grade recovery performance was relatively insensitive to grind size in the 65 – 75% -200 mesh range, although some small (1%) improvement in silver recovery could be expected at the fine end of this range.

Table 13.12 Grind size optimization test results

Product	Yield	Grade (%)			Recovery (%)			-200 mesh
	(%)	Pb	Zn	Ag(g/t)	Pb	Zn	Ag	(%)
Lead Conc	11.84	43.1	8.61	2,726.8	86.75	19.42	84.65	60
Lead Tails	88.16	0.88	4.80	66.41	13.25	80.58	15.35	
Feed Ore	100.00	5.88	5.25	381.4	100.00	100.00	100.00	
Lead Conc	11.72	44.19	7.89	2,876.4	88.68	17.65	86.55	65
Lead Tails	88.28	0.75	4.89	59.34	11.32	82.35	13.45	
Feed Ore	100.00	5.84	5.24	389.5	100.00	100.00	100.00	
Lead Conc	11.3	45.99	7.01	2,965.2	88.69	15.21	87.19	70
Lead Tails	88.7	0.75	4.98	55.5	11.31	84.79	12.81	
Feed Ore	100.00	5.86	5.21	384.3	100.00	100.00	100.00	
Lead Conc	11.15	46.55	7.15	2,986.0	88.1	15.21	87.5	75
Lead Tails	88.85	0.79	5.00	53.53	11.9	84.79	12.5	
Feed Ore	100.00	5.89	5.24	380.5	100.00	100.00	100.00	

13.5 Concentrate quality considerations

Table 13.13 shows the product quality expected from both plants.

Table 13.13 Product quality (blends of plants 1 & 2)

Product	**Content (% unless stated otherwise)**					
	Cu	**Pb**	**Zn**	**As**	**Total Fe**	
Lead Conc	0.36	68.1	6.24	0.015	-	
Zinc Conc	0.33	2.10	50.00	0.010	1.61	
	Au (g/t)	**Ag (g/t)**	**MgO**	**Al2O3**	**SiO2**	**F**
Lead Conc	0.20	4196	0.13	1.13	-	-
Zinc Conc	0.10	454	-	-	2.87	0.10

Table 13.13 shows the product chemical composition which indicates that:

- The PbS concentrate product is high grade (68-70%Pb). Copper (0.36%) and zinc (6.24%) levels in the lead concentrate are acceptable.
- Arsenic levels in the zinc concentrate (0.01% As) are well below the 0.4% As level for a clean grade 3 concentrate.
- The product moisture (8%) will be low due to the coarse grind (65% -200 mesh) and, therefore, efficient filtration.
- Both lead and zinc concentrate quality are acceptable for the commercial market.

13.6 Summary of testwork outcomes

The mineralogy predicts a metallurgically amenable ore with clean lead-zinc separation by differential flotation and, with the possible exception of silver halides in the upper zones of the TLP deposit, high silver recoveries.

This is confirmed by the metallurgical testwork, and expected performance indices would be:

- >90% lead recovery to a high grade (>65%Pb) lead concentrate with >85% silver recoveries.
- 85% zinc recovery to an acceptable (>50%Zn) zinc concentrate.
- Low Cu and acceptable Zn impurity levels in lead concentrates and very low As impurity levels in both concentrates.

No grindability testwork has been carried out but mill throughput has been within or exceeding expectations (see Section 17).

14 Mineral Resource estimates

14.1 Introduction

The Mineral Resource estimates for the Ying property were carried out by independent Qualified Person, Dr Andrew Fowler MAusIMM (CP) using Datamine software. As a result of a recommendation in AMC's 2012 Technical Report, the June 2013 Resources were estimated using a block modelling approach, with 3D ordinary kriging and Datamine's™ dynamic anisotropy application[4]. Because of the numerous veins for which Resource estimates were prepared, this proved to be an extremely time-consuming process.

The Mineral Resources include material (approximately 25% of the Indicated Resource) below the lower limit of Silvercorp's current mining permits. However, because of the nature of Chinese regulations governing applications for new or extended mining permits, and because Mineral Resources have been shown to extend below the current lower limit, AMC is satisfied that there is no material risk of Silvercorp not being granted approval to extend the lower depth limit of its permits to develop these resources as and when required.

Table 14.1 shows the Mineral Resources and metal content for the property as of 30 June 2013. The Mineral Resources are reported above cut-offs after applying a minimum practical mining width of 0.3 m. Diluted grades were estimated for blocks with mineralization widths less than 0.3 m by adding a waste envelope with zero grade. Cut-off grades are based on in situ values in silver equivalent (AgEq) terms in grams per tonne and incorporate mining, processing and G & A costs provided by Silvercorp for each mine and reviewed by AMC.

Table 14.1 Mineral Resources and metal content for silver, lead, zinc and gold as of June 2013

Mine	Resource Category	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Metal Contained in Resource			
							Au (koz)	Ag (Moz)	Pb (kt)	Zn (kt)
SGX	Measured	2.74		304	5.81	3.01		26.77	159.0	82.4
	Indicated	2.33		244	4.42	2.36		18.29	103.1	55.0
	Measured + Indicated	**5.07**		**276**	**5.17**	**2.71**		**45.06**	**262.1**	**137.4**
	Inferred	2.80		282	4.55	2.01		25.42	127.5	56.2
HZG	Measured	0.29		417	1.56	0.25		3.83	4.5	0.7
	Indicated	0.38		336	1.46	0.17		4.11	5.5	0.6
	Measured + Indicated	**0.67**		**371**	**1.50**	**0.20**		**7.94**	**10.0**	**1.4**
	Inferred	0.17		374	1.01	0.19		2.02	1.7	0.3
HPG	Measured	0.66	1.12	118	5.45	1.09	23.9	2.50	36.0	7.2
	Indicated	0.50	1.25	93	3.72	1.43	20.0	1.50	18.6	7.2
	Measured + Indicated	**1.16**	**1.18**	**107**	**4.71**	**1.24**	**43.8**	**4.00**	**54.6**	**14.3**
	Inferred	0.43	1.07	77	3.88	1.55	14.6	1.05	16.5	6.6
LME	Measured	0.28		343	1.63	0.29		3.09	4.6	0.8
	Indicated	0.87		322	1.39	0.37		9.02	12.1	3.2
	Measured + Indicated	**1.15**		**327**	**1.45**	**0.35**		**12.11**	**16.7**	**4.0**
	Inferred	0.60		294	1.46	0.45		5.67	8.8	2.7
LMW	Measured	0.30		321	2.49	0.21		3.05	7.4	0.6
	Indicated	1.79		244	2.59	0.28		14.05	46.3	5.0
	Measured + Indicated	**2.08**		**255**	**2.58**	**0.27**		**17.10**	**53.7**	**5.7**
	Inferred	1.44		313	2.15	0.31		14.46	30.9	4.5

[4] Dynamic anisotropy re-orientates the search ellipsoid for each estimated block based on the local orientation of the mineralization

TLP	Measured	1.30		157	3.23	0.22		6.58	42.0	2.8
	Indicated	2.57		175	2.84	0.27		14.52	73.1	7.0
	Measured + Indicated	**3.88**		**169**	**2.97**	**0.25**		**21.10**	**115.1**	**9.8**
	Inferred	2.09		176	2.87	0.22		11.88	60.1	4.6
Total	Measured	5.56	0.13	253	4.53	1.67	23.9	45.81	253.4	94.6
	Indicated	8.45	0.07	226	3.05	0.92	20.0	61.49	258.8	78.1
	Measured + Indicated	**14.01**	**0.10**	**237**	**3.64**	**1.22**	**43.8**	**107.30**	**512.2**	**172.6**
	Inferred	7.53	0.06	251	3.26	0.99	14.6	60.50	245.5	74.9

Notes:
1. Measured and Indicated Resources are inclusive of Resources from which Mineral Reserves are estimated
2. Metal prices: gold US$1250/troy oz, silver US$19/troy oz, lead US$1.00/lb, zinc US$0.82/lb
3. Exchange rate: 6.20RMB : US$1.00
4. Veins factored to minimum extraction width of 0.3 m
5. Cut-off grades: SGX 140 g/t AgEq; HZG 155 g/t AgEq; HPG 160 g/t AgEq; LM 135 g/t AgEq; TLP 120 g/t AgEq
6. Exclusive of mine production to 30 June 2013
7. Rounding of some figures may lead to minor discrepancies in totals

14.2 Data used

14.2.1 Drillholes and underground channel samples

The drillholes and underground channel sample data were provided as Access databases on the 9 September 2013. The tables comprise collar coordinates, downhole surveys, and assays, and were imported and verified in Datamine software. Table 14.2 is a summary of the data used in the Resource estimation.

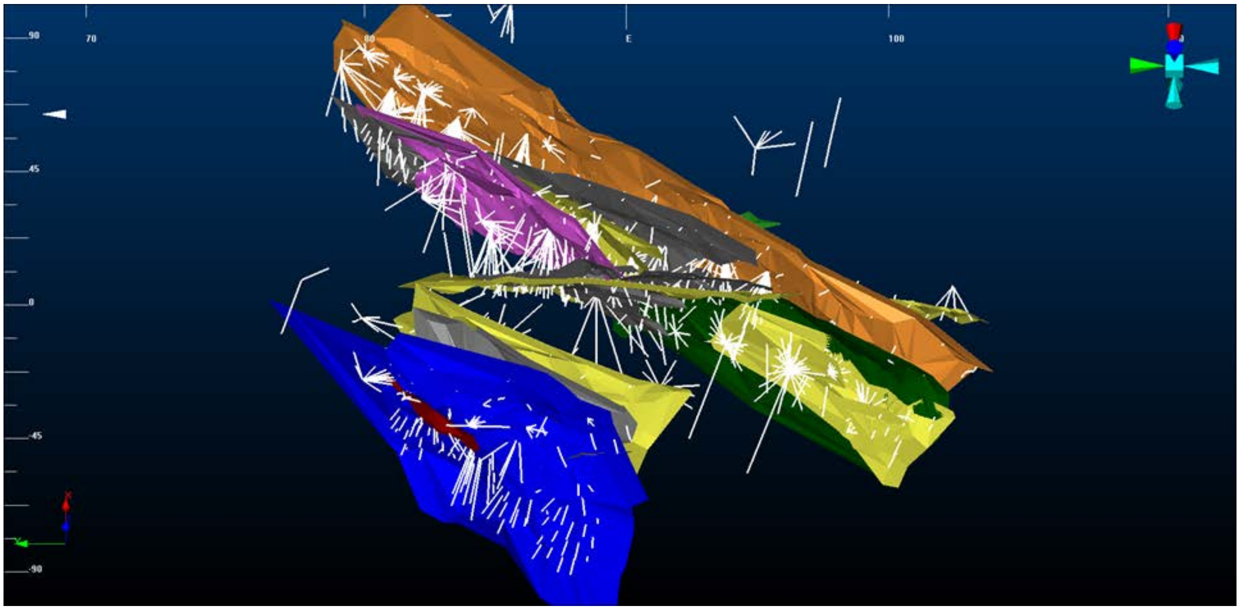
Table 14.2 Summary of data used

Mine	No. of channel samples	No. of drillholes	Metres of channel samples	Metres of drillcore samples
SGX	14,563	1,148	15,905	327,129
HPG	4,951	368	3,646	90,839
HZG	2,453	211	2,066	62,273
LMW	2,398	430	2,723	140,151
LME	2,475	223	2,430	64,397
TLP	8,467	655	14,243	163,958
Total	**35,307**	**3,035**	**41,014**	**848,747**

14.3 Geological interpretation

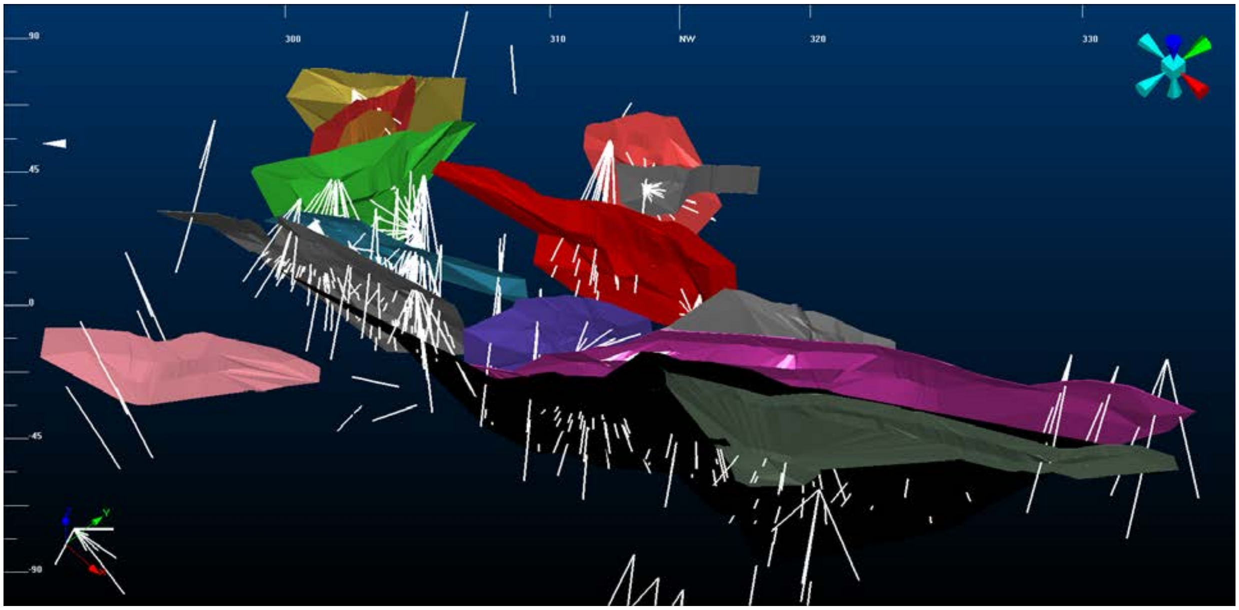
The interpretation of the mineralized domains was provided by Silvercorp. Silver/lead/zinc mineralization was interpreted on cross section and then linked to form 3D closed solids. The nominal threshold for the mineralization was > 80 g/t Ag, or > 0.7 % Pb, or > 1.0 % Zn, which are levels prescribed by the Chinese government. However, drillhole intersections with zero grade were commonly included to aid interpretation. AMC verified the 3D solids provided by Silvercorp. The 3D solids for each mine are shown in Figures 14.1 to 14.6.

Figure 14.1 3D view of the SGX mineralization wireframes



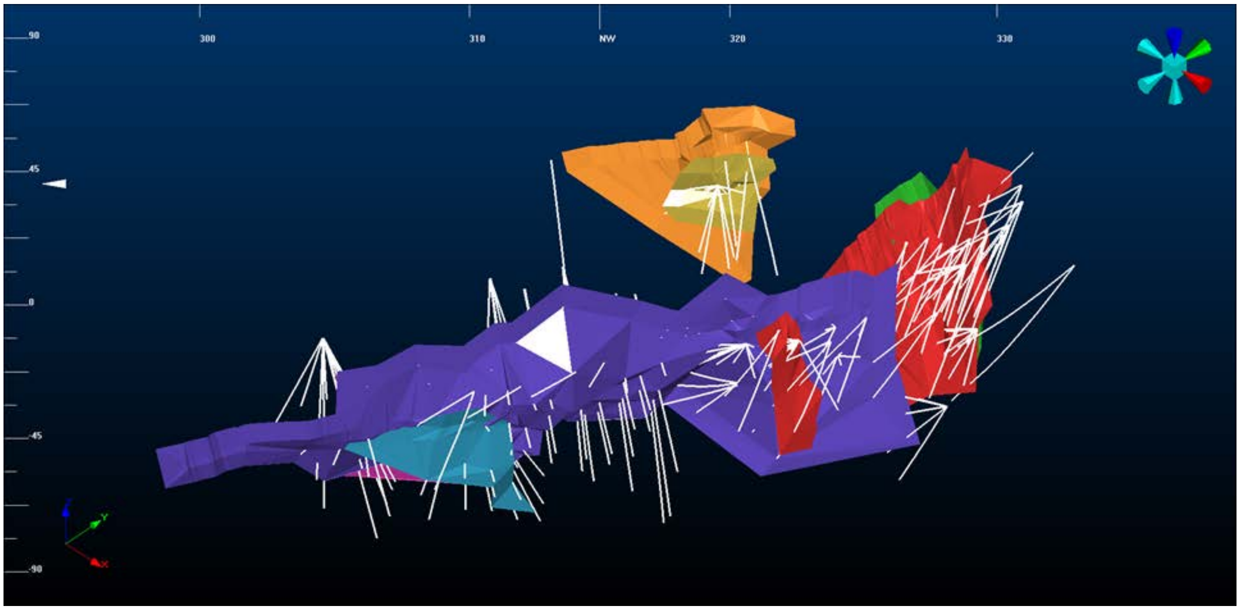
Note: Drillhole traces (white). Individual veins are given unique colours to aid visualization. View is towards the east. Not to scale.

Figure 14.2 3D view of the HPG mineralization wireframes



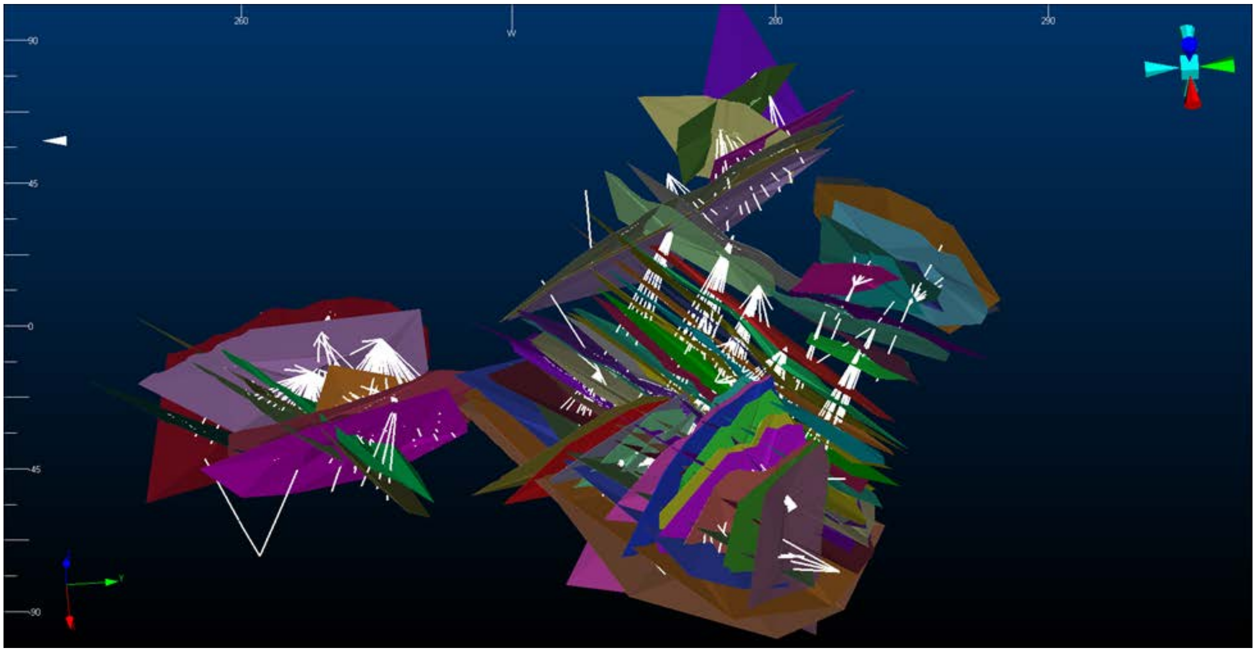
Note: Drillhole traces (white). View is towards the northwest. Not to scale.

Figure 14.3 3D view of the HZG mineralization wireframes



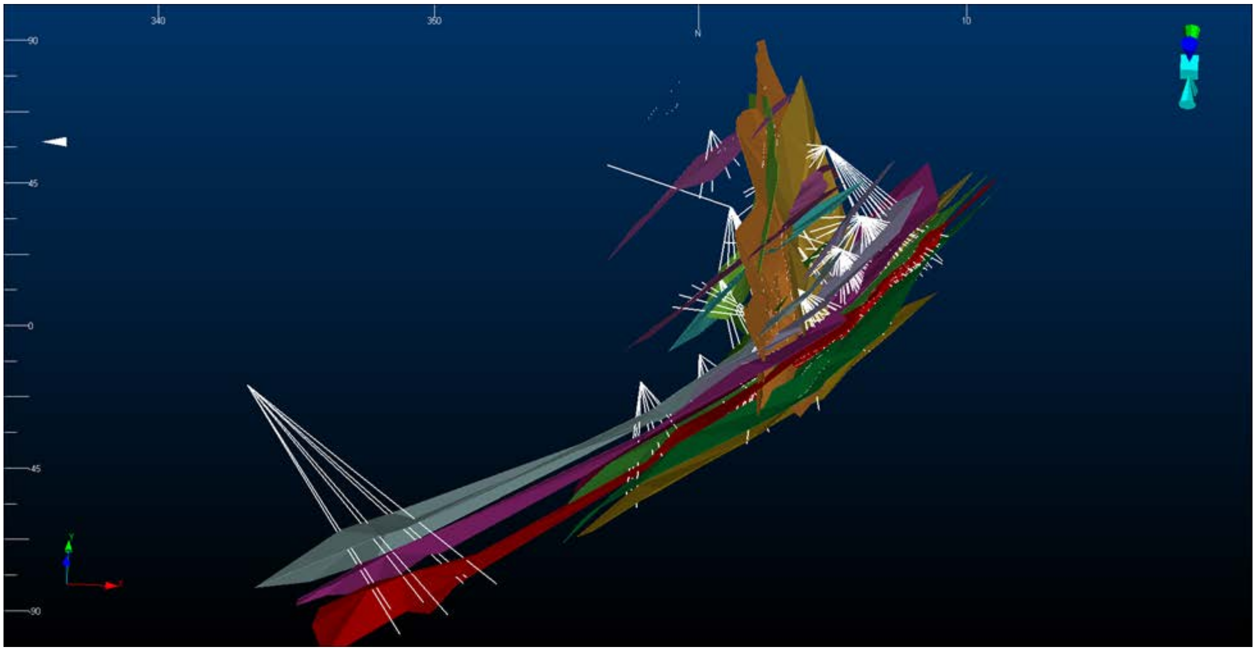
Note: Drillhole traces (white). Individual veins are given unique colours to aid visualization. View is towards the northwest. Not to scale.

Figure 14.4 3D view of the LMW mineralization wireframes



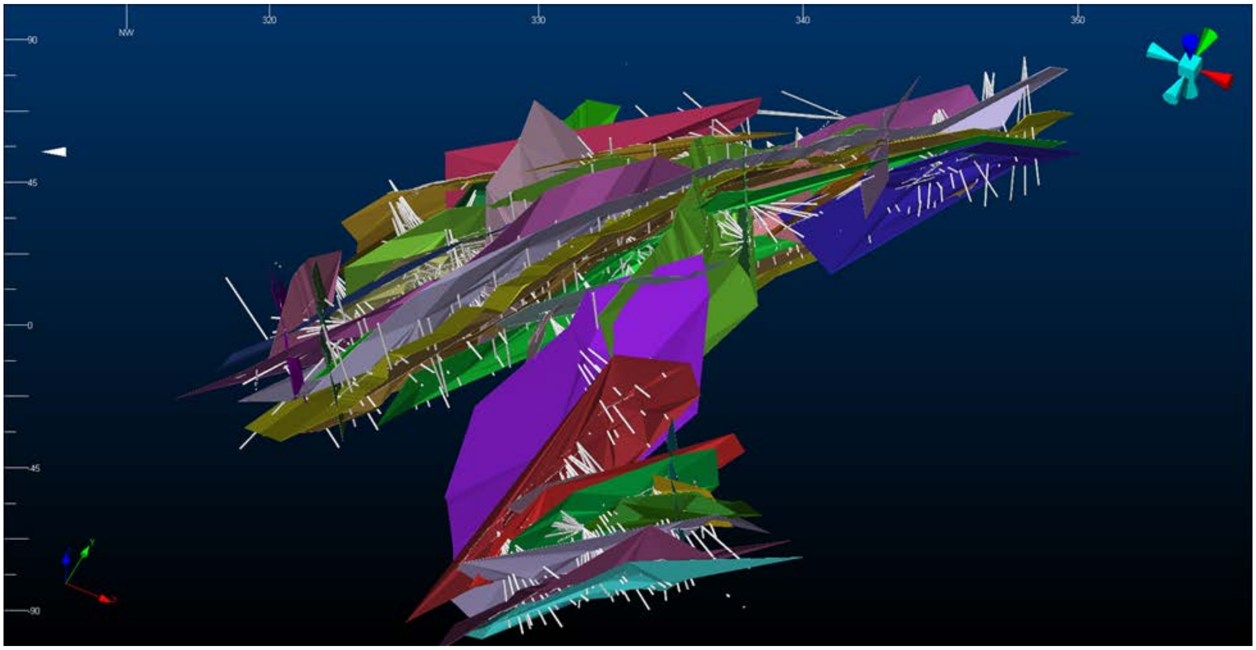
Note: Drillhole traces (white). Individual veins are given unique colours to aid visualization. View is towards the west. Not to scale.

Figure 14.5 3D view of the LME mineralization wireframes



Note: Drillhole traces (white). Individual veins are given unique colours to aid visualization. View is towards the north. Not to scale.

Figure 14.6 3D view of the TLP mineralization wireframes



Note: Drillhole traces (white). Individual veins are given unique colours to aid visualization. View is towards the northwest. Not to scale.

14.4 Data preparation

14.4.1 Statistics and compositing

Drillhole sample intervals were selected by the 3D solid wireframes and assigned to individual veins for each of the six mines.

AMC selected a compositing interval by reviewing sample length histograms and by comparing length-weighted raw grade statistics with composited grade statistics for a series of different composite lengths. Examples of mineralized sample length histograms from the SGX mine are displayed in Figures 14.7 and 14.8 for channel and drillhole samples respectively. A composite length of 0.3 m was chosen as it does not distort the grade distribution when compared to the length-weighted raw grade statistics and because it is also the minimum mining width.

Figure 14.7 SGX mineralized channel sample length histogram

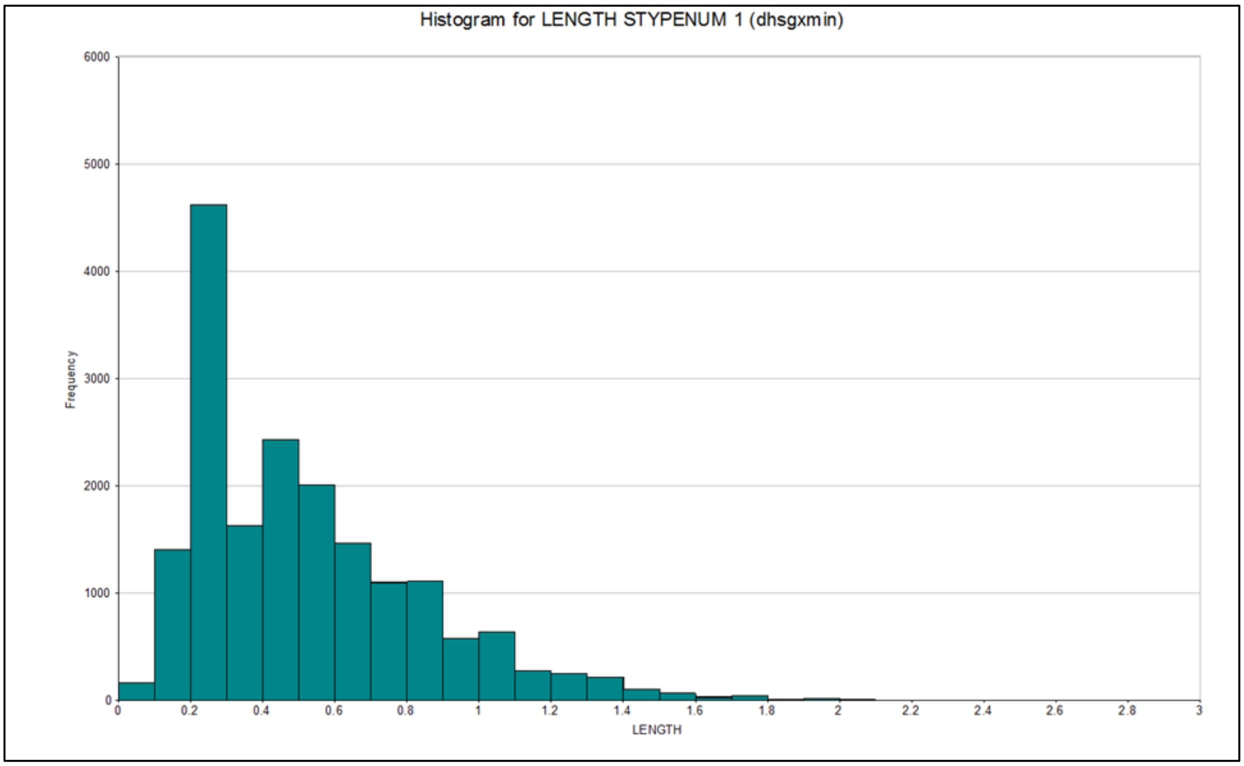
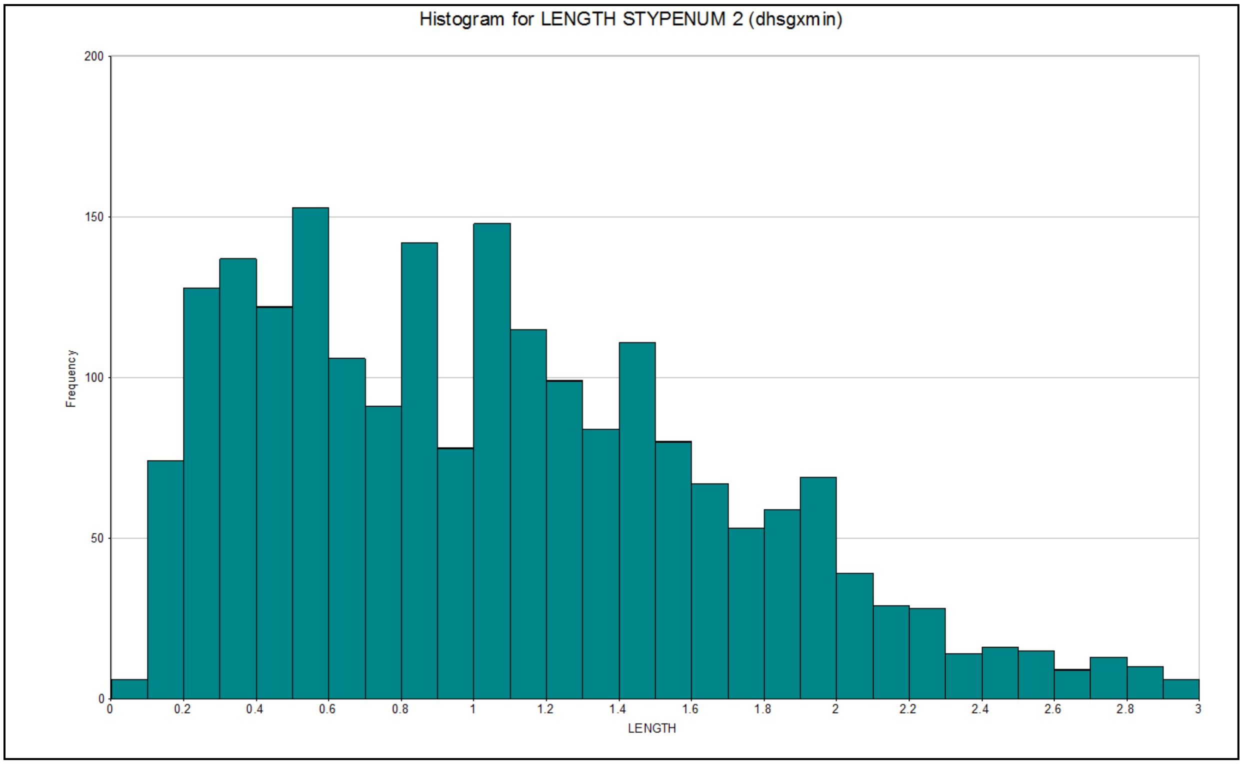


Figure 14.8 SGX mineralized drillhole sample length histogram



14.4.2 Grade capping

Grade capping is the process of reducing the grade of an outlier sample to a value that is considered to be more representative of the surrounding grade distribution, thereby minimizing the overestimation of adjacent blocks in the vicinity of the outlier.

A capped grade value should not result in an excessively large number of values being capped; typically this should be less than 5% of the total database. The impact of this capping varies depending on the grade distribution, value of the outliers, and the number of samples in the grade domain.

In order to determine the optimal grade capping strategy, the following steps were undertaken for each grade cap exercise:

- The skewness of the grade distribution was evaluated by looking at the grade log probability plot and the coefficient of variation statistic. An example of a log probability plot of silver from the SGX mine is presented in Figure 14.9.
- The spatial location of the outlier values were visually evaluated in Datamine to determine if they are clustered (suggesting the existence of a high grade zone within the domain), or randomly distributed (suggesting the presence of outliers that may need to be capped).
- An appropriate capped grade was interpreted based on the above criteria and in keeping with the surrounding grade distribution.

A summary of the capping grade for the outliers is presented in Table 14.3.

The final step before grade estimation was to manually eliminate samples from drillholes that were drilled approximately parallel with a vein. These samples were predominantly zero grade samples, so removing them led to a slight increase in the mean grade.

The raw, uncapped and final statistics are presented in Tables 14.4 and 14.5 for the 16 most significant veins from the six mines. Table 14.4 summarizes the channel sample data, while Table 14.5 summarizes the drillhole data. For both tables, values shown in red are capped values.

Figure 14.9 Probability plot for silver grades in composites for SGX mine

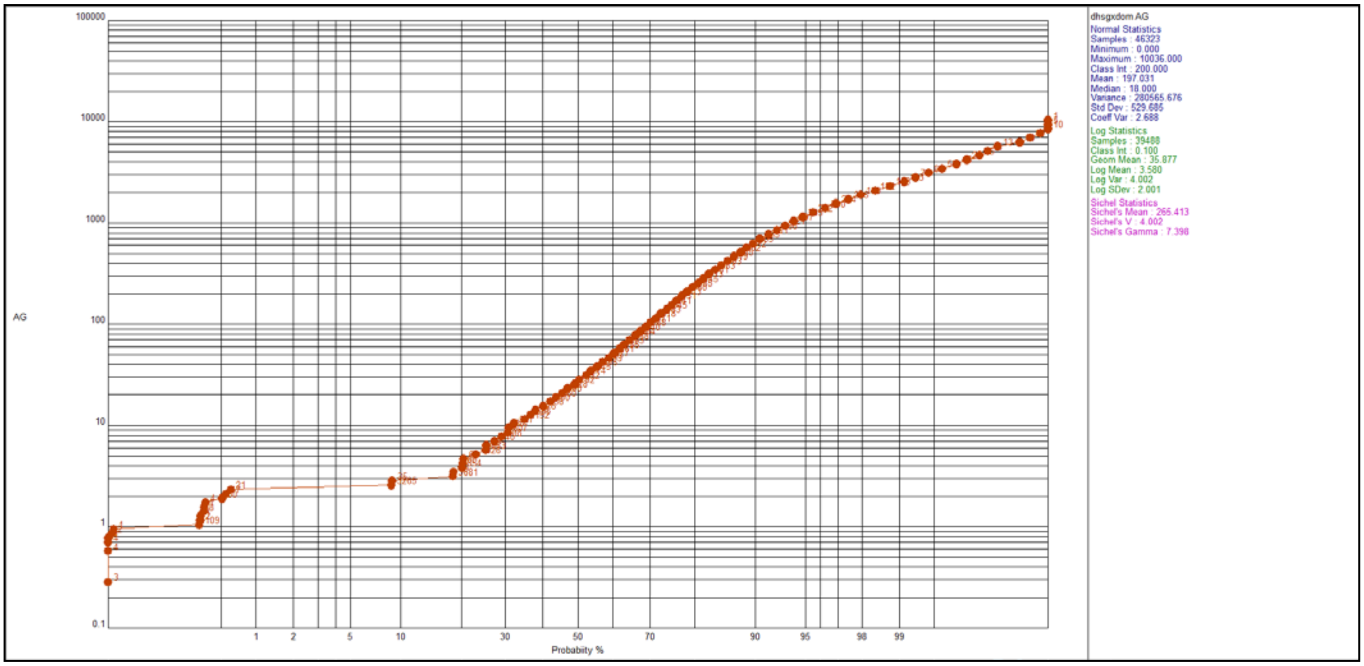


Table 14.3 Grade capping summary

	Ag (g/t)		Pb (%)		Zn (%)		Au (g/t)	
	Area 1	Area2	Area 1	Area2	Area 1	Area2	Area 1	Area2
SGX	8,000	8,000	60	60	40	4		
HPG	2,000	2,000	60	60	20	20	2	30
HZG	5,000	5,000	30	30	3	3		
LMW	3,000	2,000	30	30	7	3		
LME	3,000	2,000	10	10	3	1		
TLP	2,000	2,000	20	20	2	2		

Note: The veins of each mine were grouped into two areas on the basis of vein orientation in preparation for variography. Grade caps were determined for each area

Table 14.4 Channel sample summary statistics

Mine	Vein	Statistic	Ag (g/t)			Pb (%)			Zn (%)		
			Raw	Comp	Final	Raw	Comp	Final	Raw	Comp	Final
SGX	S2	No. Samples	799	1,560	1,560	799	1,560	1,560	799	1,560	1,560
		Minimum	0	2.5	2.5	0	0	0	0	0	0
		Maximum	8,566	8,566	8,000	79.37	79.37	60.00	44.99	44.99	40.00
		Mean	**383**	**383**	**382**	**6.14**	**6.06**	**6.01**	**2.86**	**2.85**	**2.85**
		Coeff. Var	2.07	2.02	2.00	2.02	1.93	1.90	1.67	1.59	1.58
	S14	No. Samples	2,325	3,326	3,326	2,325	3,326	3,326	2,325	3,326	3,326
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	10,036	10,036	8,000	81.85	81.85	60.00	52.96	52.96	40.00
		Mean	**485**	**488**	**488**	**8.55**	**8.67**	**8.54**	**1.83**	**1.83**	**1.82**
		Coeff. Var	1.98	1.84	1.83	1.92	1.79	1.76	1.97	1.89	1.87
	S7	No. Samples	1,459	3,030	3,030	1,459	3,030	3,030	1,459	3,030	3,030
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	4,377	4,377	4,377	70.12	70.12	60.00	34.77	34.77	34.77
		Mean	**178**	**175**	**175**	**3.87**	**3.82**	**3.81**	**1.89**	**1.90**	**1.90**
		Coeff. Var	2.09	1.95	1.95	2.29	2.12	2.11	1.85	1.73	1.73
	S7_1	No. Samples	1,422	2,496	2,496	1,422	2,496	2,496	1,422	2,496	2,496
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	6,514	6,514	6,514	73.74	73.74	60.00	56.54	56.54	40.00
		Mean	**174**	**169**	**169**	**3.20**	**3.12**	**3.11**	**4.11**	**4.07**	**4.05**
		Coeff. Var	2.44	2.39	2.39	2.74	2.65	2.62	1.80	1.73	1.71
	S8	No. Samples	2,297	4,536	4,536	2,297	4,536	4,536	2,297	4,536	4,536
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	7,668	7,668	7,668	78.14	78.14	60.00	36.38	36.38	36.38
		Mean	**154**	**151**	**151**	**3.30**	**3.27**	**3.25**	**1.35**	**1.33**	**1.33**
		Coeff. Var	3.76	3.74	3.74	2.57	2.44	2.42	2.25	2.15	2.15
	S16W	No. Samples	2,885	6,359	6,359	2,885	6,359	6,359	2,885	6,359	6,359
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	11,017	9,278	8,000	83.90	83.90	60.00	46.48	46.48	40.00
		Mean	**255**	**255**	**254**	**5.50**	**5.51**	**5.44**	**2.56**	**2.61**	**2.60**
		Coeff. Var	2.27	2.18	2.15	2.29	2.18	2.15	1.96	1.90	1.88
	S19	No. Samples	185	338	338	185	338	338	185	338	338
		Minimum	3	3	3	0.01	0.01	0.01	0.01	0.01	0.01
		Maximum	6,824	6,824	6,824	72.55	61.06	60.00	14.96	14.96	14.96
		Mean	**298**	**288**	**288**	**5.48**	**5.44**	**5.44**	**0.81**	**0.77**	**0.77**
		Coeff. Var	2.43	2.28	2.28	1.91	1.76	1.75	2.46	2.27	2.27
	S21	No. Samples	2,192	3,787	3,787	2,192	3,787	3,787	2,192	3,787	3,787
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	10,630	8,190	8,000	80.20	80.20	60.00	52.15	41.47	40.00
		Mean	**210**	**209**	**209**	**3.33**	**3.32**	**3.30**	**2.45**	**2.48**	**2.48**
		Coeff. Var	2.66	2.49	2.49	2.71	2.59	2.55	2.01	1.90	1.90

Mine	Vein	Statistic	Ag (g/t)			Pb (%)			Zn (%)		
			Raw	Comp	Final	Raw	Comp	Final	Raw	Comp	Final
HPG	H17	No. Samples	2,119	2,020	2,020	2,119	2,020	2,020	2,119	2,020	2,020
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	14,212	4,894	2,000	58.58	58.58	58.58	27.19	25.11	20.00
		Mean	**78**	**77**	**74**	**3.49**	**3.47**	**3.47**	**0.74**	**0.73**	**0.73**
		Coeff. Var	4.03	2.88	2.30	2.08	2.05	2.05	3.00	2.98	2.95
HZG	HZ22	No. Samples	599	961	961	599	961	961	599	961	961
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	5,674	5,674	5,000	48.60	48.60	30.00	3.12	2.95	2.95
		Mean	**181**	**186**	**185**	**0.75**	**0.79**	**0.75**	**0.12**	**0.12**	**0.12**
		Coeff. Var	2.75	2.71	2.69	3.54	3.59	3.00	1.94	1.89	1.89
LMW	LM7	No. Samples	160	483	483	160	483	483	160	483	483
		Minimum	2	2	2	0.01	0.01	0.01	0.01	0.01	0.01
		Maximum	1,270	1,270	1,270	4.91	4.91	4.91	0.27	0.27	0.27
		Mean	**74**	**75**	**75**	**0.68**	**0.68**	**0.68**	**0.06**	**0.06**	**0.06**
		Coeff. Var	2.12	2.04	2.04	1.14	1.11	1.11	0.82	0.80	0.80
	LM12_1	No. Samples	100	163	163	100	163	163	100	163	163
		Minimum	2.5	2.5	2.5	0.005	0.005	0.005	0.005	0.005	0.005
		Maximum	6,032	6,032	3,000	29.07	29.07	29.07	7.04	7.04	7.00
		Mean	**594**	**590**	**523**	**3.73**	**3.72**	**3.72**	**0.29**	**0.30**	**0.30**
		Coeff. Var	1.90	1.79	1.50	1.71	1.66	1.66	2.04	2.12	2.11
LME	LM5	No. Samples	830	1,967	1,967	830	1,967	1,967	830	1,967	1,967
		Minimum	1	1	1	0	0	0	0	0	0
		Maximum	14,613	14,613	3,000	37.17	33.77	10.00	7.53	7.53	3.00
		Mean	**330**	**323**	**287**	**1.44**	**1.42**	**1.33**	**0.30**	**0.30**	**0.29**
		Coeff. Var	2.78	2.72	2.02	1.94	1.86	1.57	1.82	1.78	1.59
TLP	T1	No. Samples	543	1,167	1,167	543	1,167	1,167	543	1,167	1,167
		Minimum	1	1	1	0.005	0.005	0.005	0	0	0
		Maximum	4,874	4,874	2,000	38.30	38.30	20.00	9.30	9.30	2.00
		Mean	**73**	**74**	**70**	**1.49**	**1.53**	**1.48**	**0.13**	**0.13**	**0.10**
		Coeff. Var	3.64	3.48	2.89	2.18	2.07	1.88	4.51	4.52	2.33
	T2	No. Samples	2,393	5,479	5,479	2,393	5,479	5,479	2,393	5,479	5,479
		Minimum	1	1	1	0	0	0	0	0	0
		Maximum	6,093	6,093	2,000	69.67	46.74	20.00	17.50	17.50	2.00
		Mean	**61**	**62**	**58**	**1.97**	**1.99**	**1.92**	**0.14**	**0.15**	**0.13**
		Coeff. Var	3.87	3.77	2.85	2.00	1.93	1.73	3.75	3.58	2.07
	T3	No. Samples	2,769	6,720	6,720	2,769	6,720	6,720	2,769	6,720	6,720
		Minimum	2	2	2	0	0	0	0	0	0
		Maximum	2,941	1,801	1,801	71.44	71.44	20.00	3.14	3.14	2.00
		Mean	**42**	**42**	**42**	**1.63**	**1.63**	**1.54**	**0.09**	**0.09**	**0.09**
		Coeff. Var	2.75	2.65	2.65	2.36	2.28	1.82	2.00	1.94	1.89

Table 14.5 Drillhole sample summary statistics

Mine	Vein	Statistic	Ag (g/t)			Pb (%)			Zn (%)		
			Raw	Comp	Final	Raw	Comp	Final	Raw	Comp	Final
SGX	S2	No. Samples	281	971	872	281	971	872	281	971	872
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	3,725	3,725	3,725	62.24	55.11	55.11	15.99	15.42	15.42
		Mean	**59**	**60**	**66**	**1.02**	**1.07**	**1.18**	**0.58**	**0.61**	**0.62**
		Coeff. Var	4.73	4.52	4.34	3.95	3.52	3.36	2.85	2.73	2.67
	S14	No. Samples	183	429	386	183	429	386	183	429	386
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	8,205	8,205	8,000	61.24	58.52	58.52	29.73	29.73	29.73
		Mean	**213**	**217**	**240**	**2.84**	**2.89**	**3.21**	**0.81**	**0.81**	**0.90**
		Coeff. Var	3.45	3.27	3.07	3.15	3.01	2.84	2.68	2.42	2.28
	S7	No. Samples	705	1,684	1,189	705	1,684	1,189	705	1,684	1,189
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	1,938	1,938	1,938	60.08	60.08	60.00	44.92	30.03	30.03
		Mean	**42**	**43**	**57**	**0.88**	**0.86**	**1.14**	**0.49**	**0.49**	**0.58**
		Coeff. Var	3.75	3.61	3.16	4.25	4.00	3.51	3.59	3.16	2.71
	S7_1	No. Samples	335	1,322	1,147	335	1,322	1,147	335	1,322	1,147
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	3,479	3,479	3,479	81.45	81.45	60.00	30.00	30.00	30.00
		Mean	**150**	**151**	**131**	**2.26**	**2.25**	**2.09**	**1.78**	**1.79**	**1.74**
		Coeff. Var	2.57	2.51	2.74	3.53	3.42	3.56	2.37	2.31	2.31
	S8	No. Samples	387	1,480	1,339	387	1,480	1,339	387	1,480	1,339
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	2,058	2,058	2,058	62.87	62.87	60.00	24.30	24.30	13.12
		Mean	**81**	**80**	**83**	**2.00**	**1.99**	**2.13**	**0.51**	**0.51**	**0.44**
		Coeff. Var	2.86	2.83	2.78	2.70	2.65	2.55	4.11	3.95	3.26
	S16W	No. Samples	285	1,029	937	285	1,029	937	285	1,029	937
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	7,399	7,399	7,399	50.77	45.98	45.98	35.41	35.41	35.41
		Mean	**84**	**88**	**96**	**1.07**	**1.10**	**1.20**	**0.68**	**0.70**	**0.76**
		Coeff. Var	4.61	4.78	4.56	4.15	4.05	3.88	3.30	3.26	3.13
	S19	No. Samples	49	155	155	49	155	155	49	155	155
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	1,405	1,405	1,405	36.18	36.18	36.18	3.45	3.39	3.39
		Mean	**66**	**70**	**70**	**1.01**	**1.05**	**1.05**	**0.15**	**0.15**	**0.15**
		Coeff. Var	3.33	3.21	3.21	4.39	4.02	4.02	2.84	2.90	2.90
	S21	No. Samples	287	749	578	287	749	578	287	749	578
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	5,936	5,936	1,899	71.86	65.61	51.11	19.97	18.21	18.21
		Mean	**105**	**105**	**41**	**1.58**	**1.57**	**0.86**	**0.64**	**0.64**	**0.55**
		Coeff. Var	4.86	4.71	3.82	5.12	4.87	4.90	2.83	2.69	2.54

Mine	Vein	Statistic	Ag (g/t)			Pb (%)			Zn (%)		
			Raw	Comp	Final	Raw	Comp	Final	Raw	Comp	Final
HPG	H17	No. Samples	871	774	751	871	774	751	871	774	751
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	315	315	315	26.75	26.75	26.75	10.39	10.39	10.39
		Mean	**20**	**20**	**20**	**0.71**	**0.73**	**0.75**	**0.43**	**0.43**	**0.44**
		Coeff. Var	2.58	2.54	2.51	3.15	3.15	3.14	2.96	2.93	2.92
HZG	HZ22	No. Samples	368	771	771	368	771	771	368	771	771
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	3,339	3,339	3,339	24.64	24.64	24.64	16.06	16.06	3.00
		Mean	**69**	**74**	**74**	**0.37**	**0.38**	**0.38**	**0.09**	**0.08**	**0.07**
		Coeff. Var	3.18	3.24	3.24	4.03	3.76	3.76	7.56	7.00	2.59
LMW	LM7	No. Samples	265	1,020	1,020	265	1,020	1,020	265	1,020	1,020
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	2,260	1,539	1,539	14.52	14.52	14.52	7.24	7.24	7.00
		Mean	**60**	**60**	**60**	**0.87**	**0.87**	**0.87**	**0.13**	**0.13**	**0.13**
		Coeff. Var	2.89	2.78	2.78	1.78	1.73	1.73	4.47	4.50	4.41
	LM12_1	No. Samples	158	318	318	158	318	318	158	318	318
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	2,250	2,250	2,250	21.28	21.28	21.28	2.64	2.64	2.64
		Mean	**184**	**184**	**184**	**1.70**	**1.67**	**1.67**	**0.17**	**0.17**	**0.17**
		Coeff. Var	2.31	2.28	2.28	2.57	2.53	2.53	2.46	2.42	2.42
LME	LM5	No. Samples	286	885	885	286	885	885	286	885	885
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	2,649	2,649	2,649	22.98	22.98	10.00	9.03	4.86	3.00
		Mean	**136**	**136**	**136**	**0.78**	**0.77**	**0.67**	**0.17**	**0.17**	**0.17**
		Coeff. Var	2.57	2.50	2.50	3.13	3.02	2.33	2.29	2.01	1.89
TLP	T1	No. Samples	1,052	1,388	1,330	1,052	1,388	1,330	1,052	1,388	1,330
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	1,149	1,149	1,149	52.85	47.23	20.00	4.19	4.19	2.00
		Mean	**31**	**30**	**32**	**0.69**	**0.67**	**0.62**	**0.06**	**0.06**	**0.06**
		Coeff. Var	3.46	3.37	3.31	4.56	4.30	3.14	4.06	4.11	3.50
	T2	No. Samples	1,247	2,546	2,353	1,247	2,546	2,353	1,247	2,546	2,353
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	42,667	42,667	2,000	56.09	56.09	20.00	8.02	7.62	2.00
		Mean	**120**	**118**	**68**	**1.22**	**1.22**	**1.14**	**0.11**	**0.11**	**0.09**
		Coeff. Var	12.97	12.18	3.25	3.31	3.23	2.22	4.30	4.23	3.21
	T3	No. Samples	1,126	2,769	2,563	1,126	2,769	2,563	1,126	2,769	2,563
		Minimum	0	0	0	0	0	0	0	0	0
		Maximum	1,860	1,860	1,860	45.59	45.59	20.00	10.36	10.36	2.00
		Mean	**76**	**75**	**80**	**1.79**	**1.78**	**1.71**	**0.11**	**0.11**	**0.09**
		Coeff. Var	3.00	2.96	2.86	2.51	2.43	2.02	4.95	4.78	2.83

14.5 Block model

14.5.1 Block model parameters

The block models were horizontally rotated to align parallel with the strike of the veins. Two distinct groups of vein orientations are present in each mine and so two different models with different rotations were produced for each mine (Areas 1 and 2 in the following tables). Parent cell dimensions were determined by the average sample spacing in longitudinal projection. The block models were also regularized for output to Micromine™ mining software after grade estimation. The block model parameters are shown in Tables 14.6, 14.7 and 14.8 for the closer spaced sample model, base model and regularized block models respectively.

Table 14.6 Closer spaced sample block model parameters

		SGX		HPG		HZG		LME		LMW		TLP	
	Parameter	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**
	Rotation	23	30	18	54	35	19	40	0	70	-40	32	0
Origin (m)	Easting	522,250	522,350	525,780	525,500	523,055	523,245	532,851	533,870	530,945	532,580	532,295	532,770
	Northing	3,782,330	3,781,240	3,783,280	3,783,400	3,779,795	3,778,285	3,778,710	3,778,990	3,779,830	3,778,575	3,780,260	3,779,725
	RL	-360	-290	205	-500	335	330	144.306	285	70	310	-50	500
Parent cell dimension (m)	Easting	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Northing	10	10	10	10	10	10	10	10	10	10	10	10
	RL	10	10	10	10	10	10	10	10	10	10	10	10
Number of cells	Easting	184	247	87	333	54	130	178	103	445	331	370	290
	Northing	185	339	60	300	55	260	195	114	177	213	279	213
	RL	118	126	60	171	60	90	99	93	114	90	138	66

Table 14.7 Base block model parameters

		SGX		HPG		HZG		LME		LMW		TLP	
	Parameter	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**
	Rotation	23	30	18	54	35	19	40	0	70	-40	32	0
Origin (m)	Easting	522,250	522,350	525,780	525,500	523,055	523,245	532,851	533,870	530,945	532,580	532,295	532,770
	Northing	3,782,330	3,781,240	3,783,280	3,783,400	3,779,795	3,778,285	3,778,710	3,778,990	3,779,830	3,778,575	3,780,260	3,779,725
	RL	-360	-290	205	-500	335	330	144.306	285	70	310	-50	500
Parent cell dimension (m)	Easting	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Northing	30	30	30	30	30	30	30	30	30	30	30	30
	RL	30	30	30	30	30	30	30	30	30	30	30	30
Number of cells	Easting	61	82	29	111	18	43	59	34	148	110	123	97
	Northing	62	113	20	100	18	87	65	38	59	71	93	71
	RL	39	42	20	57	20	30	33	31	38	30	46	22

Table 14.8 Regularized block model parameters

		SGX		HPG		HZG		LME		LMW		TLP	
	Parameter	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**
	Rotation	23	30	18	54	35	19	40	0	70	-40	32	0
Origin (m)	Easting	522,250	522,350	525,780	525,500	523,055	523,245	532,851	533,870	530,945	532,580	532,295	532,770
	Northing	3,782,330	3,781,240	3,783,280	3,783,400	3,779,795	3,778,285	3,778,710	3,778,990	3,779,830	3,778,575	3,780,260	3,779,725
	RL	-360	-290	205	-500	335	330	144.306	285	70	310	-50	500
Parent cell dimension (m)	Easting	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Northing	2	2	2	2	2	2	2	2	2	2	2	2
	RL	2	2	2	2	2	2	2	2	2	2	2	2
Number of cells	Easting	921	1237	434	1667	272	650	889	515	2225	1653	1850	1450
	Northing	925	1695	300	1500	275	1300	975	570	885	1065	1395	1065
	RL	590	630	300	855	300	450	495	465	570	450	690	330

Table 14.9 lists the block model fields for the regularized block model, which was the final output block model.

Table 14.9 Regularized block model fields

Field	Description
XC	Centroid X coordinate
YC	Centroid Y coordinate
ZC	Centroid Z coordinate
XINC	Cell size on X
YINC	Cell size on Y
ZINC	Cell size on Z
IJK	Identification number
ESTDOM	Unique code for each vein
VOL	Volume of the cell containing mineralized vein
TONNES	Tonnes of mineralization
RESCAT	Classification (1-Measured, 2-Indicated, 3-Inferred)
DENSITY	Bulk density calculated from formula
AGOK	Estimated grade for silver (g/t)
PBOK	Estimated grade for lead (%)
ZNOK	Estimated grade for zinc (%)
AUOK	Estimated grade for gold (g/t) (HPG only)
MINPROP	Proportion of the cell containing mineralized vein
AGEQ	Silver equivalent grade (g/t)

14.6 Variography and grade estimation

14.6.1 Variography

Variographic analysis characterizes the average spatial continuity for a spatially located variable. An experimental variogram displays the grade continuity in a specified direction and variogram models are manually fitted to the experimental variograms in three orthogonal directions (3D). The 3D variogram models are then used to assign the appropriate kriging weights in the estimation process, taking into account the average spatial characteristics of the underlying grade distribution.

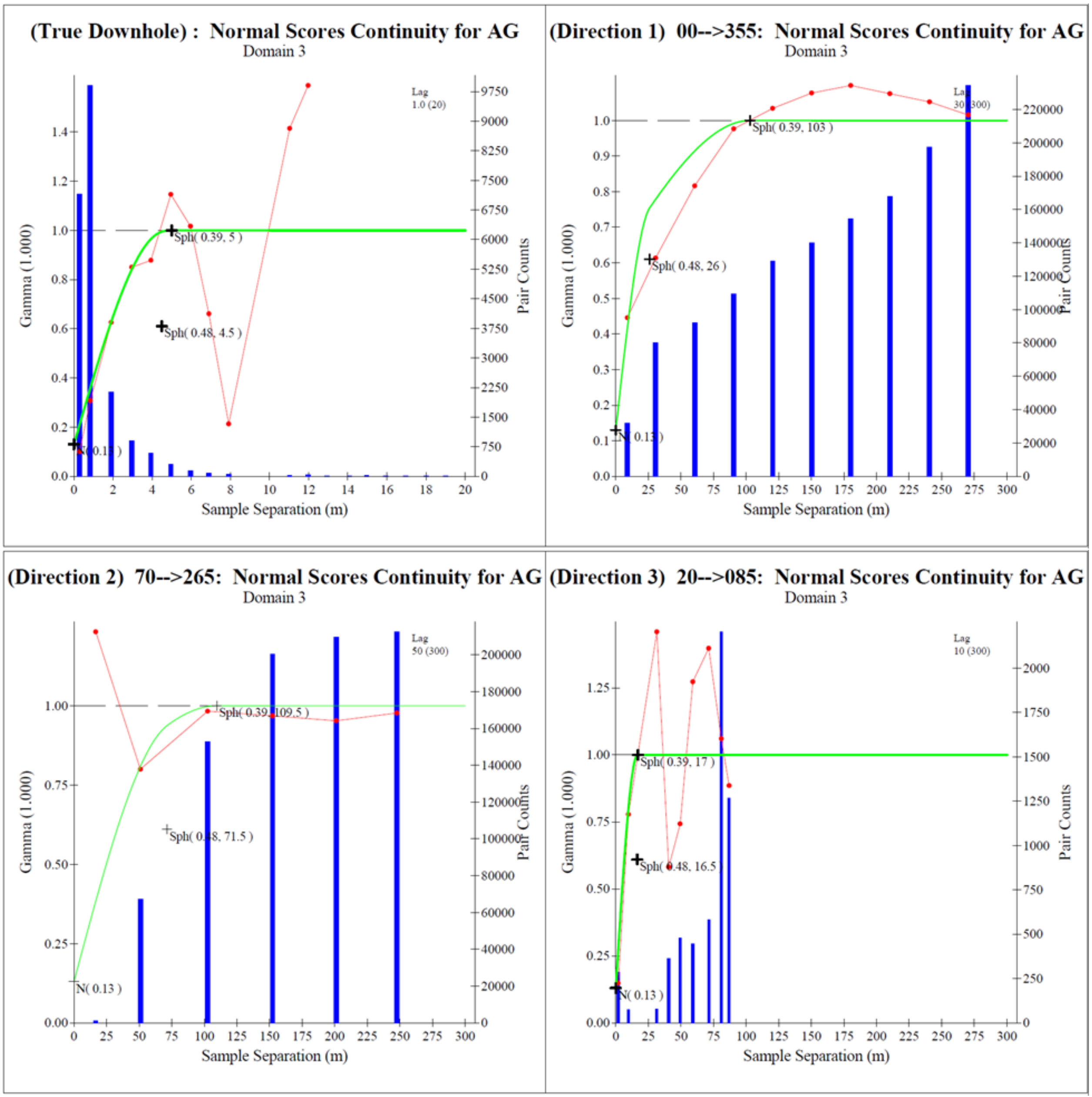
14.6.2 Variography methodology

3D normal score variograms were modelled in Supervisor™ geostatistical software as they were found to give better variogram structures than a traditional variogram. A normal score transform converts the approximately log-normal distribution of the original sample data to a normal distribution with a mean of zero. Original values and their equivalent transformed values are stored in a table to allow the results to be back-transformed after variographic analysis. The following method was applied to all mines:

1. Veins were grouped according to their dip and strike.
2. Experimental variograms were produced in a plane aligned with the mean dip and strike of the vein group for each vein group and each grade variable.
3. Double spherical variogram models were manually fitted to the experimental variograms. The across-strike dimension was sometimes not modelled due to a lack of sample pairs at the appropriate distance. In these cases, reasonable variographic parameters were applied.
4. The normal score variograms were back-transformed to reproduce the raw variogram model for input into Datamine™.

An example of modelled variograms from the SGX mine is displayed in Figure 14.10.

Figure 14.10 Silver variograms: SGX variography domain 3



14.6.3 Estimation method

Silver, lead, and zinc grades were estimated into the block models using 3D ordinary kriging and Datamine's™ dynamic anisotropy application. Dynamic anisotropy re-orientates the search ellipsoid for each estimated block based on the local orientation of the mineralization. Gold was also estimated for HPG. The following summarizes the estimation method:

- Each vein was estimated independently of the other veins.
- Two estimates were run for each vein with different parent cell dimensions.
  - A closer spaced sample estimate using only channel samples was run with parent cell dimensions of 0.9 mE × 10 mN × 10 mRL.

- A base model estimate using both drillhole and channel samples was run with parent cell dimensions of 0.9mE × 30 mN × 30 mRL.
- After the estimate was complete, the closer spaced sample block model overprinted the base model.

- Subcells were used to fill the mineralization wireframes with minimum dimensions of 0.075 mE × 2 mN × 2 mRL.
- The base model estimate used octant searching in the first two passes but not in the third pass, while the closer spaced sample estimate did not use octant searching.
- Discretisation was set to 3 × 3 × 3 (XYZ).

Search parameters are detailed in Tables 14.10 and 14.11 for the closer spaced sample model and base model respectively.

Table 14.10 Search parameters channel sample block model

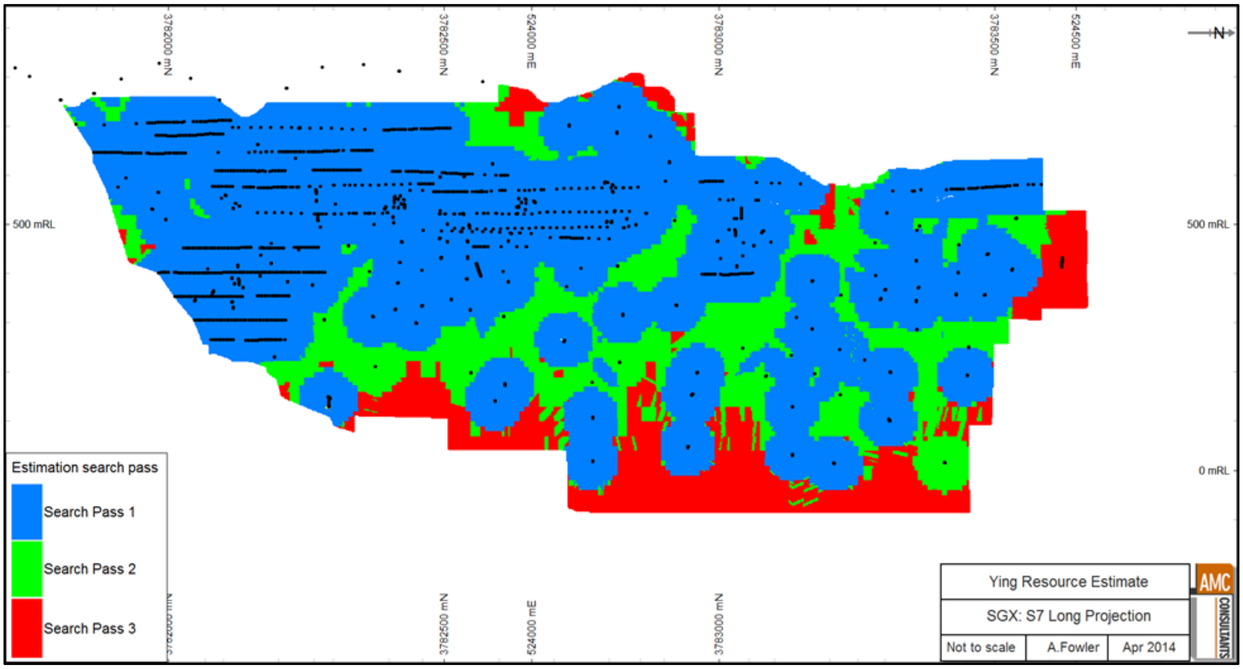
Pass	Search distance down-dip	Search distance along-strike	Search distance across-strike	Minimum number of samples	Maximum number of samples	Octant search	Minimum number of octants	Minimum samples per octant	Maximum samples per octant	Maximum samples per drillhole
1	60	60	60	6	16	No	-	-	-	2
2	60	60	60	2	16	No	-	-	-	2

Table 14.11 Search parameters drillhole and channel sample block model

Pass	Search distance down-dip	Search distance along-strike	Search distance across strike	Minimum number of samples	Maximum number of samples	Octant search	Minimum number of octants	Minimum samples per octant	Maximum samples per octant	Maximum samples per drillhole
1	50	75	50	6	16	Yes	3	2	2	2
2	100	150	100	6	16	Yes	3	2	2	2
3	100	150	100	1	16	No	-	-	-	2

An example of the estimation pass is displayed for the S7 vein of the SGX mine in Figure 14.11.

Figure 14.11 Estimation pass longitudinal projection SGX mine: vein S7

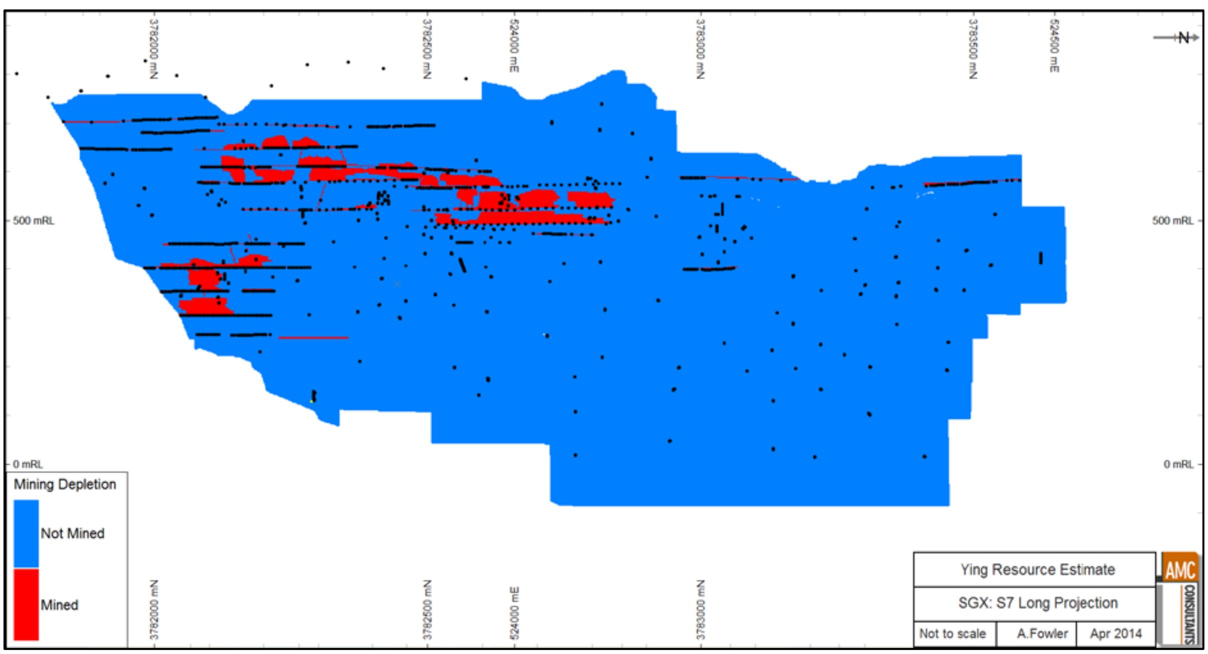


Note: Samples shown as black dots. Model coloured by estimation pass (legend displayed).

14.6.4 Mining depletion

Mining depletion was coded into the block models using wireframes prepared by Silvercorp, which were based on survey information to 30 June 2013. An example of the mining depletion coding is displayed for the S7 vein of the SGX mine in Figure 14.12.

Figure 14.12 Mining depletion longitudinal projection SGX mine: vein S7



Note: Samples shown as black dots. Model coloured by mining depletion code (legend displayed).

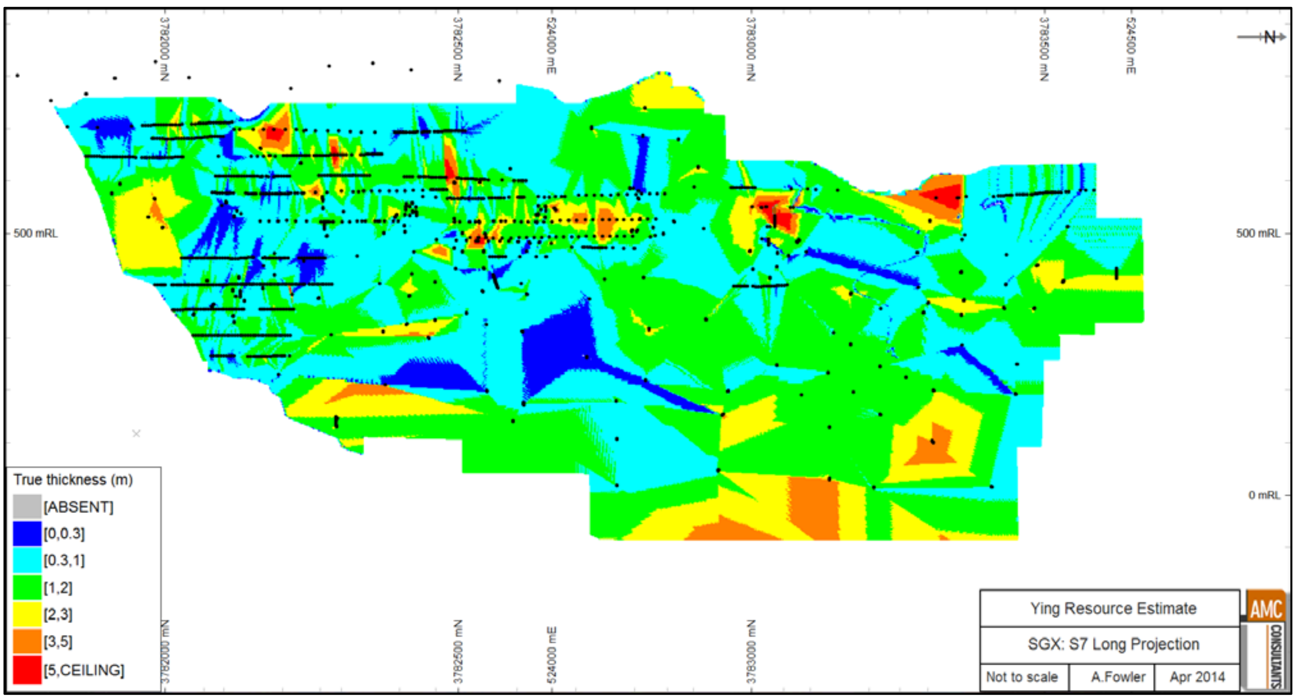
14.6.5 Minimum mining width

A minimum mining width of 0.3 m was coded into the model before applying the cut-off grade and reporting the Mineral Resource to assist in defining reasonable prospects of economic extraction. This was accomplished using the following method:

- Blocks were accumulated in the block model filling direction, which was approximately the across-strike direction of the vein
- True thickness of the vein was found by applying angular corrections that accounted for the differences between the block filling direction and the vein orientation.
- Waste with zero grade was added where the true thickness was <0.3 m to make up the difference, and the diluted grade was calculated.

An example of true thickness coding in the model is shown in Figure 14.13.

Figure 14.13 True thickness longitudinal projection SGX mine: vein S7



Note: Samples shown as black dots. Model coloured by true thickness (legend displayed).

14.7 Resource classification

AMC classified the Mineral Resources with consideration of the narrow-vein style of mineralization, the observed grade continuity, and the sample spacing in longitudinal projection. Smoothing was implemented to remove isolated blocks of one category that were surrounded by blocks of another category. An example of the Mineral Resource classification is displayed in Figure 14.14. The following set of parameters was used as a guide to ensure the construction of Mineral Resource category wireframes was consistent across the 167 veins that currently comprise the Mineral Resource:

1. Measured Resource
   a) Measured Resources are defined by exploration tunneling. The boundary of Measured Resources is determined by extrapolating 20-25 m up and down dip from the exploration tunnels.
   b) No Measured Resources are extrapolated along strike from the ends of an exploration tunnel.
2. Indicated Resource

a) Indicated Resources are defined by either exploration drilling or exploration tunneling.

b) A basic drilling grid of 50 m (along strike) × 100 m (up and down dip) is used to delineate Indicated Resources. A minimum of three holes is required to define an Indicated Resource block. Boundaries of drill-defined Indicated Resource Blocks are determined by extrapolating 25 m along strike and 50 m up and down dip from the hole closest to the boundary.

c) Boundaries of tunnel-defined Indicated Resources are defined by extrapolating 40-50 m up and down dip from the exploration tunnel. No Indicated Resources are extrapolated along strike from the ends of exploration tunnel

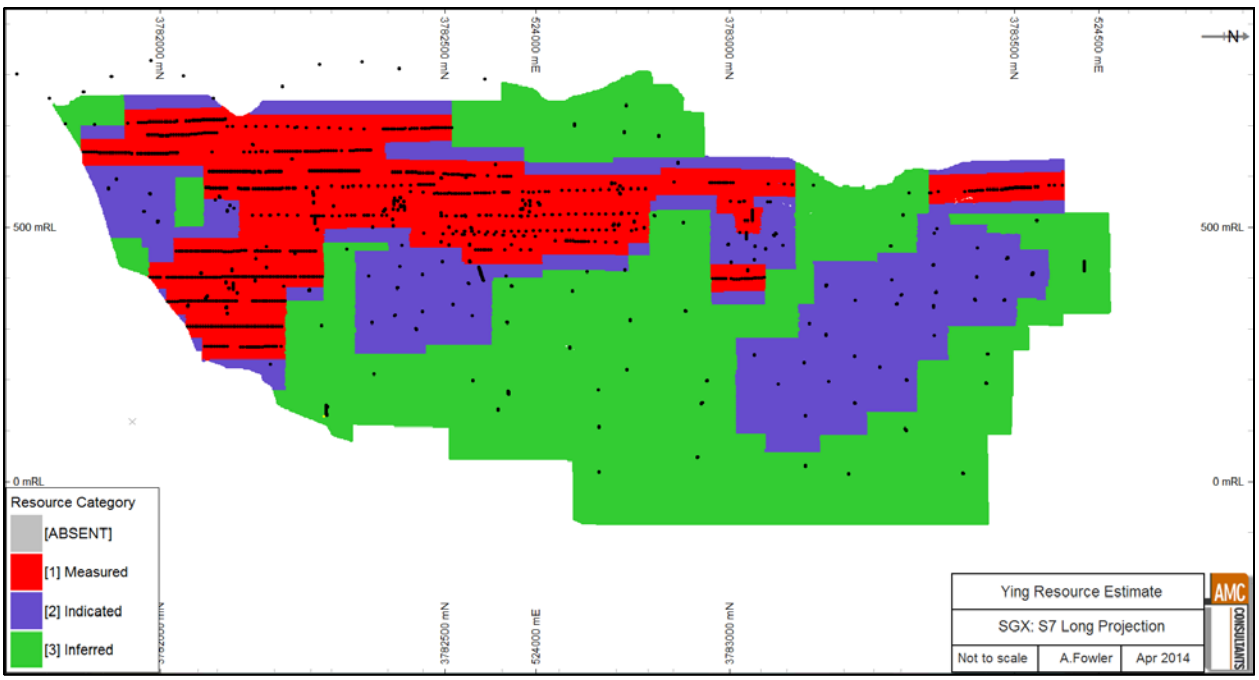
3. Inferred Resource

a) Inferred Resources are either defined by low-density holes or extrapolated from drill-defined Indicated Resource blocks.

b) Boundaries of Inferred Resource are determined by extrapolating 50 m along strike and 100 m up and down dip from the hole closest to the boundary.

c) No Inferred Resources are extrapolated from exploration tunnels.

Figure 14.14 Mineral Resource classification longitudinal projection SGX mine: vein S7



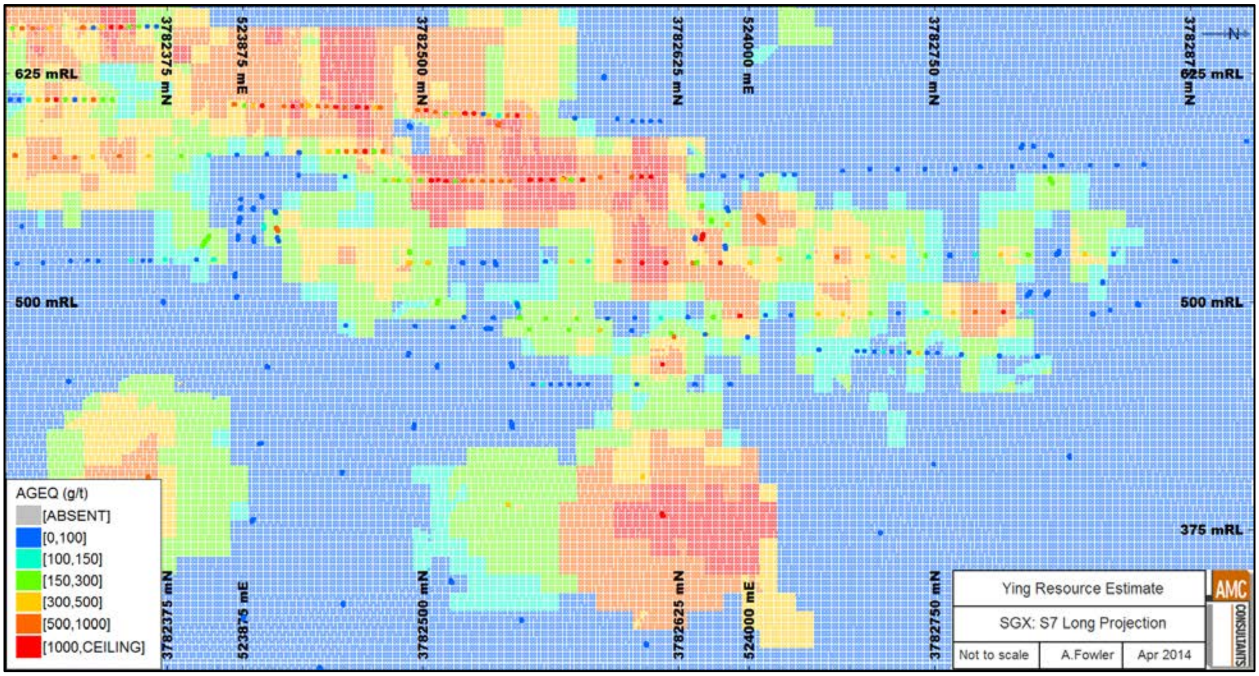
Note: Samples shown as black dots. Model coloured by Mineral Resource category (legend displayed).

14.8 Block model validation

The block models were validated by visual checks, statistics and swath plots.

Visual checks were carried out to ensure that the estimated grades were consistent with the drillhole grades and to check that the estimated grade distribution was consistent with the style of mineralization. Figure 14.15 shows an example of the drillhole composite grades compared to the block model estimated grades for part of the S7 vein of the SGX mine. Drillholes are displaying the length-weighted mean silver equivalent grade over the intersection width, while the blocks are displaying the tonnes-weighted mean silver equivalent grade accumulated in the across-strike direction. The figure shows good agreement between the drillhole composite grades and the estimated block model grades.

Figure 14.15 Silver equivalent grade longitudinal projection SGX mine: vein S7



Note: Drillhole composites: coloured dots, Model: coloured open squares. Drillhole composites and model coloured by silver equivalent grade (legend displayed).

Tables 14.12 and 14.13 show the statistical comparison of the declustered composites versus the block models for silver, lead and zinc in the 16 largest veins. The tables show that the mean grades in the block models are significantly lower than the composites that were used to inform them in some cases, which suggests that the grade in the models has been underestimated. AMC considers that this apparent underestimation is a reflection of the severe clustering issues that are typical of estimates informed by both closely spaced channel samples and sparse drillhole samples, and is not a reflection of the true situation. The channel samples tend to be located in the higher grade parts of the vein, as these parts of the vein have been mined and were therefore presumably economic. The drillhole samples, however, sample all parts of the vein. The net result is that the higher grade parts of the veins are disproportionately and heavily sampled relative to the lower grade parts. The composite samples were declustered before running the statistics using grid declustering, but this has not entirely resolved the clustering issue.

Table 14.12 SGX statistics for block model vs composites: eight largest veins

Mine	Vein	Statistic	Ag (g/t)		Pb (%)		Zn (%)	
			Comp	BM	Comp	BM	Comp	BM
SGX	S2	No. Samples	2,432	221,006	2,432	221,006	2,432	221,006
		Minimum	0	0	0	0	0	0
		Maximum	8,000	3,581	60.00	42.07	40.00	15.42
		Mean	**272**	**141**	**4.36**	**2.49**	**2.14**	**1.05**
		Coeff. Var	2.38	1.89	2.25	1.62	1.77	1.72
	S14	No. Samples	3,712	199,190	3,712	199,190	3,712	199,190
		Minimum	0	0	0	0	0	0
		Maximum	8,000	3,274	60.00	57.34	40.00	15.48
		Mean	**482**	**326**	**8.26**	**5.83**	**1.77**	**1.21**
		Coeff. Var	1.90	1.50	1.80	1.55	1.85	1.31
	S7	No. Samples	4,219	302,364	4,219	302,364	4,219	302,364
		Minimum	0	0	0	0	0	0
		Maximum	4,377	1,551	60.00	31.97	34.77	15.22
		Mean	**140**	**104**	**3.02**	**1.53**	**1.47**	**0.76**
		Coeff. Var	2.15	1.97	2.34	1.81	1.99	1.72
	S7_1	No. Samples	3,643	188,389	3,643	188,389	3,643	188,389
		Minimum	0	0	0	0	0	0
		Maximum	6,514	2,094	60.00	60.00	40.00	40.00
		Mean	**140**	**124**	**2.59**	**2.44**	**3.15**	**2.03**
		Coeff. Var	2.61	1.74	2.97	2.58	1.95	1.52
	S8	No. Samples	5,875	440,626	5,875	440,626	5,875	440,626
		Minimum	0	0	0	0	0	0
		Maximum	7,668	4,407	60.00	45.72	36.38	12.97
		Mean	**121**	**96**	**2.85**	**2.49**	**1.10**	**0.63**
		Coeff. Var	3.73	2.46	2.57	2.03	2.37	1.80
	S16W	No. Samples	7,296	213,544	7,296	213,544	7,296	213,544
		Minimum	0	0	0	0	0	0
		Maximum	8,000	5,235	60.00	52.06	40.00	27.99
		Mean	**229**	**157**	**4.64**	**3.25**	**2.60**	**1.76**
		Coeff. Var	2.35	2.02	2.37	1.93	1.98	1.61
	S19	No. Samples	493	66,454	493	66,454	493	66,454
		Minimum	0	0	0	0	0	0
		Maximum	6,824	1,595	60.00	31.93	14.96	8.31
		Mean	**221**	**119**	**4.07**	**1.59**	**0.58**	**0.83**
		Coeff. Var	2.53	1.86	2.09	1.84	2.77	1.55
	S21	No. Samples	4,365	195,867	4,365	195,867	4,365	195,867
		Minimum	0	0	0	0	0	0
		Maximum	8,000	5,338	60.00	46.83	40.00	21.75
		Mean	**188**	**101**	**2.91**	**1.83**	**2.31**	**1.30**
		Coeff. Var	2.70	1.74	2.67	1.84	1.96	1.58

Table 14.13 Statistics for block model vs composites: other mines' largest veins

Mine	Vein	Statistic	Ag (g/t)		Pb (%)		Zn (%)	
			Raw	Comp	Raw	Comp	Raw	Comp
HPG	H17	No. Samples	2,771	204,403	2,771	204,403	2,771	204,403
		Minimum	0	0	0	0	0	0
		Maximum	2,000	1,315	58.58	43.53	20.00	15.67
		Mean	**61**	**34**	**2.78**	**1.75**	**0.60**	**0.49**
		Coeff. Var	2.58	2.05	2.30	2.16	3.10	2.14
HZG	HZ22	No. Samples	1,732	163,813	1,732	163,813	1,732	163,813
		Minimum	0	0	0	0	0	0
		Maximum	5,000	2,596	30.00	11.92	3.00	1.62
		Mean	**183**	**94**	**0.75**	**0.53**	**0.12**	**0.08**
		Coeff. Var	2.84	1.91	3.03	2.06	1.95	1.62
LMW	LM7	No. Samples	1,503	137,939	1,503	137,939	1,503	137,939
		Minimum	0	0	0	0	0	0
		Maximum	1,539	1,128	14.52	14.52	7.00	6.02
		Mean	**50**	**49**	**0.74**	**0.93**	**0.12**	**0.10**
		Coeff. Var	2.60	2.27	1.79	1.31	4.69	2.56
	LM12_1	No. Samples	481	111,758	481	111,758	481	111,758
		Minimum	0	0	0	0	0	0
		Maximum	3,000	2,006	29.07	24.17	7.00	4.38
		Mean	**245**	**119**	**2.25**	**1.06**	**0.20**	**0.13**
		Coeff. Var	2.22	2.19	2.24	2.02	2.29	1.90
LME	LM5	No. Samples	2,852	165,609	2,852	165,609	2,852	165,609
		Minimum	0	0	0	0	0	0
		Maximum	3,000	2,273	10.00	6.67	3.00	1.75
		Mean	**219**	**127**	**1.10**	**0.68**	**0.25**	**0.18**
		Coeff. Var	2.25	1.66	1.71	1.30	1.66	1.02
TLP	T1	No. Samples	2,497	266,341	2,497	266,341	2,497	266,341
		Minimum	0	0	0	0	0	0
		Maximum	2,000	1,038	20.00	15.79	2.00	2.00
		Mean	**52**	**40**	**1.09**	**0.75**	**0.08**	**0.07**
		Coeff. Var	3.26	2.11	2.30	1.61	2.70	2.41
	T2	No. Samples	7,832	337,009	7,832	337,009	7,832	337,009
		Minimum	0	0	0	0	0	0
		Maximum	2,000	1,405	20.00	20.00	2.00	2.00
		Mean	**54**	**46**	**1.65**	**1.26**	**0.12**	**0.11**
		Coeff. Var	3.15	2.04	1.87	1.36	2.31	1.84
	T3	No. Samples	9,283	386,878	9,283	386,878	9,283	386,878
		Minimum	0	0	0	0	0	0
		Maximum	1,860	1,052	20.00	13.49	2.00	2.00
		Mean	**43**	**42**	**1.45**	**1.41**	**0.09**	**0.11**
		Coeff. Var	2.85	1.75	1.93	1.21	2.15	1.44

Swath plots were generated to visually compare the composite and block model statistics. Composite grades are grade capped and weighted by declustered weights, block model grades were weighted by tonnes. Examples of the swath plots for S7 from the SGX mine and T3 from the TLP mine are displayed in Figures 14.16 to 14.26. AMC makes the following observations from the swath plots:

- There is generally good agreement between the composite grades and estimated block model grades.
- Some swath plots suggest the grade has been underestimated in places; however AMC considers this is a clustering effect as noted above.
- The trends in the grade distribution displayed by the composites are generally reproduced by the block models.

Figure 14.16 S7 silver swath plot by northing

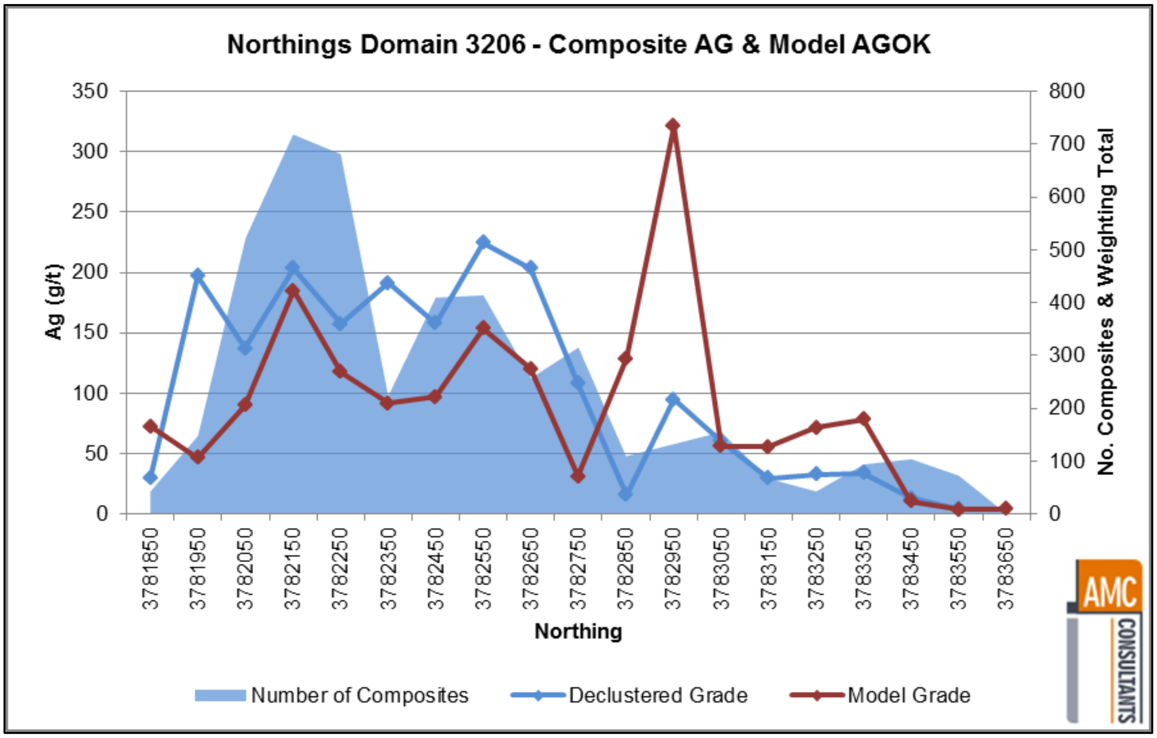


Figure 14.17 S7 silver swath plot by elevation

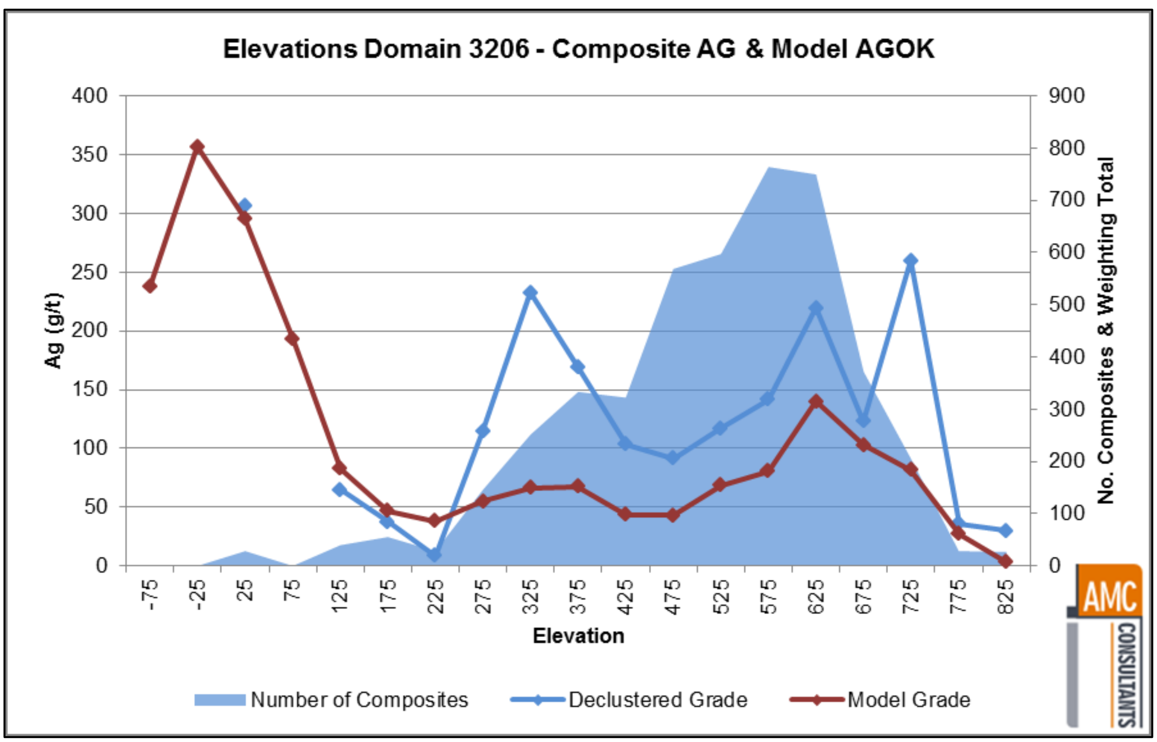


Figure 14.18 S7 lead swath plot by northing

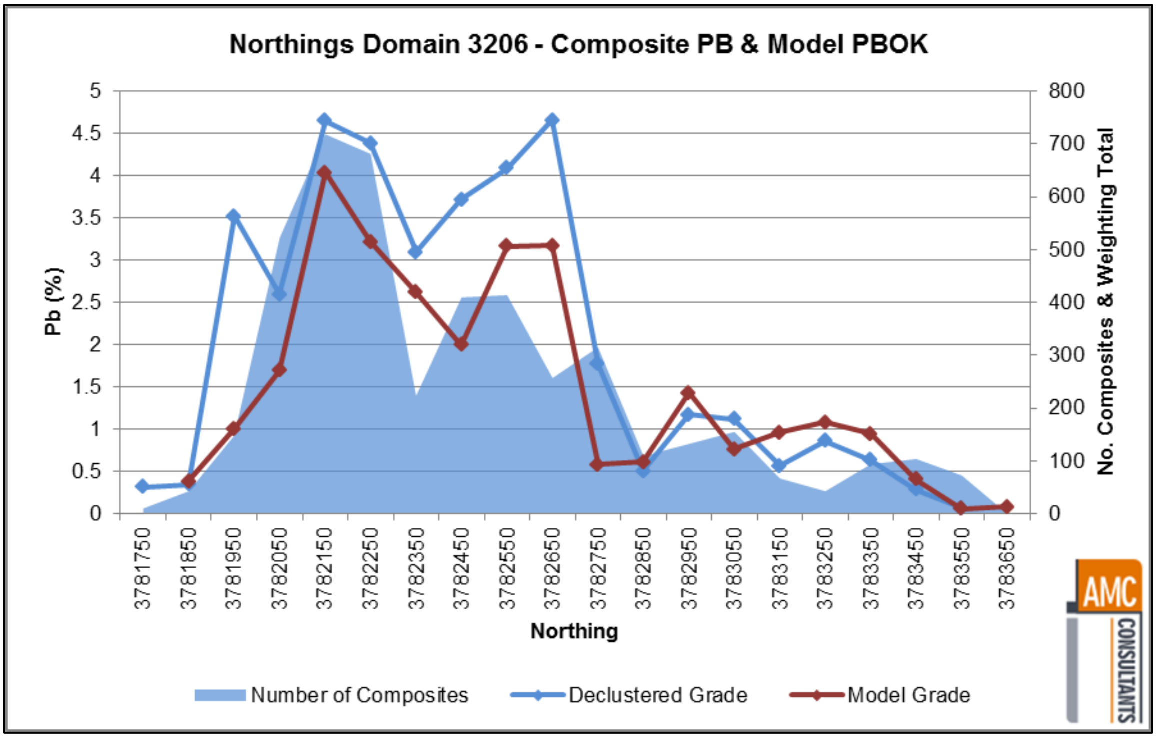


Figure 14.19 S7 lead swath plot by elevation

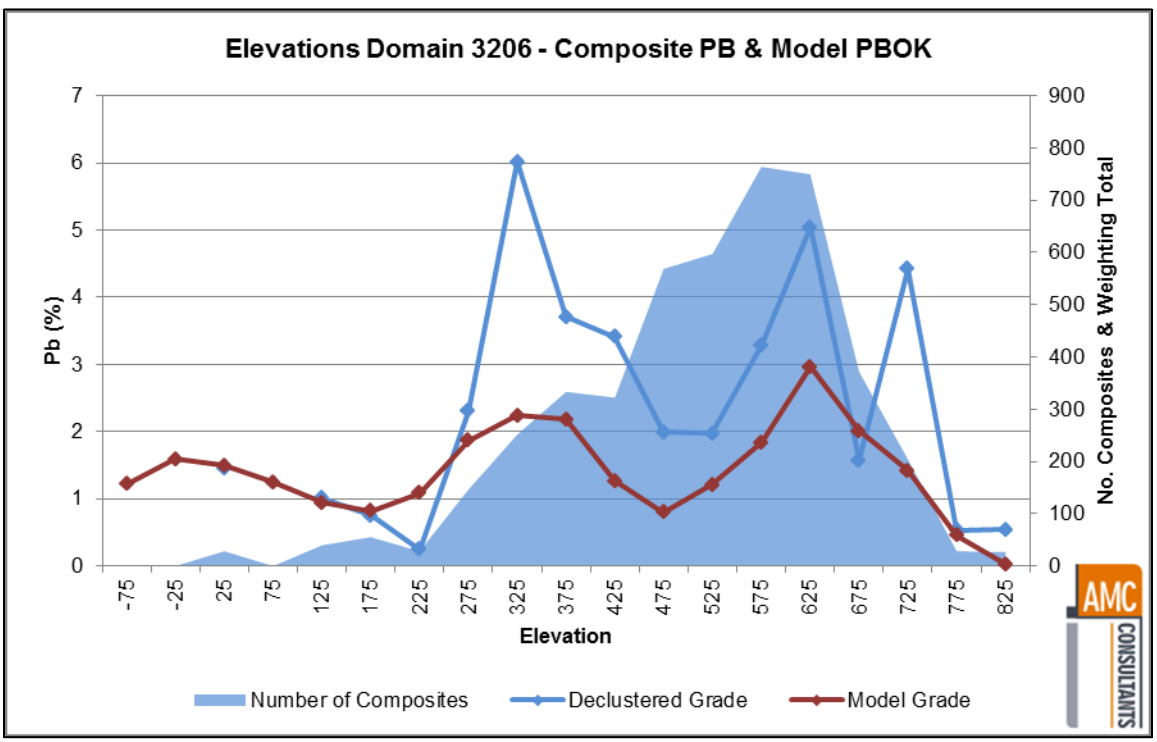


Figure 14.20 S7 zinc swath plot by northing

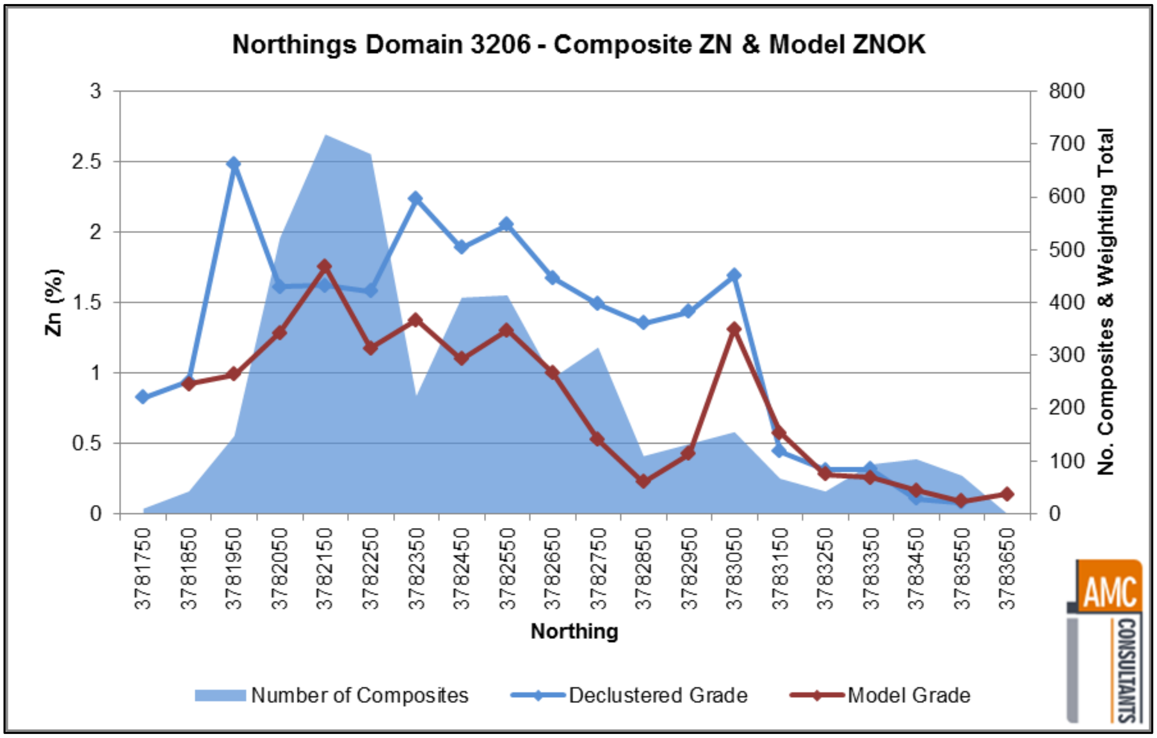


Figure 14.21 S7 zinc swath plot by elevation

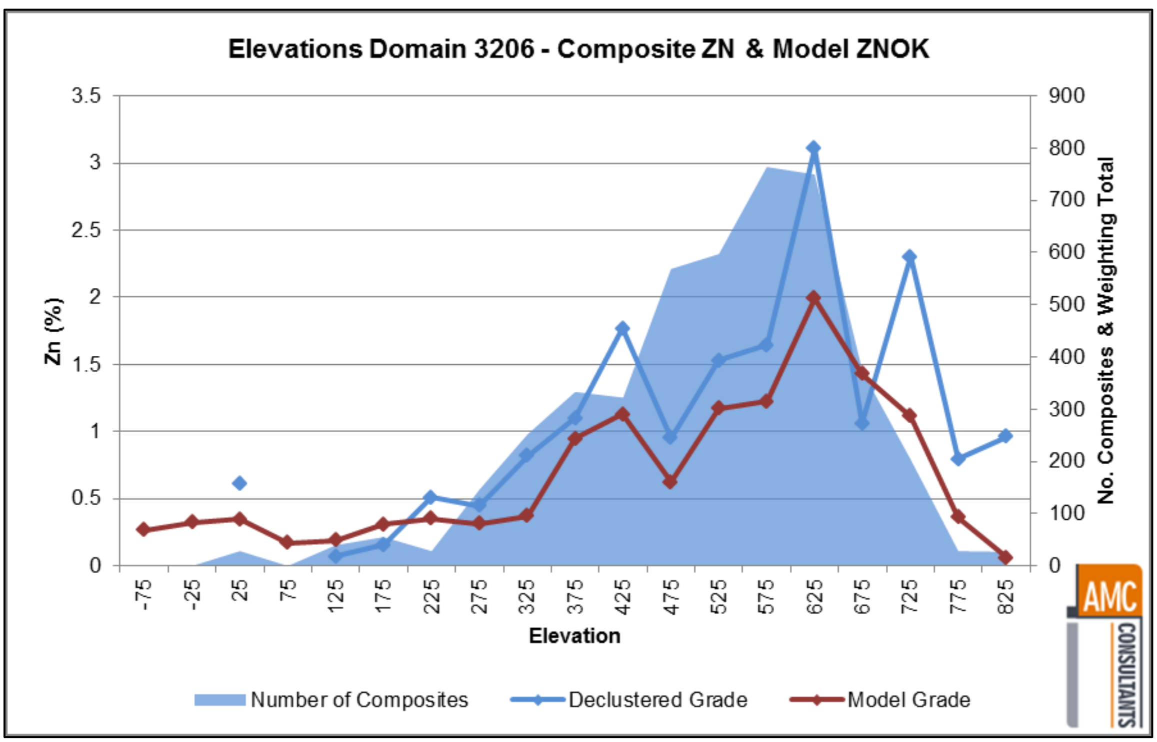


Figure 14.22 T3 silver swath plot by northing

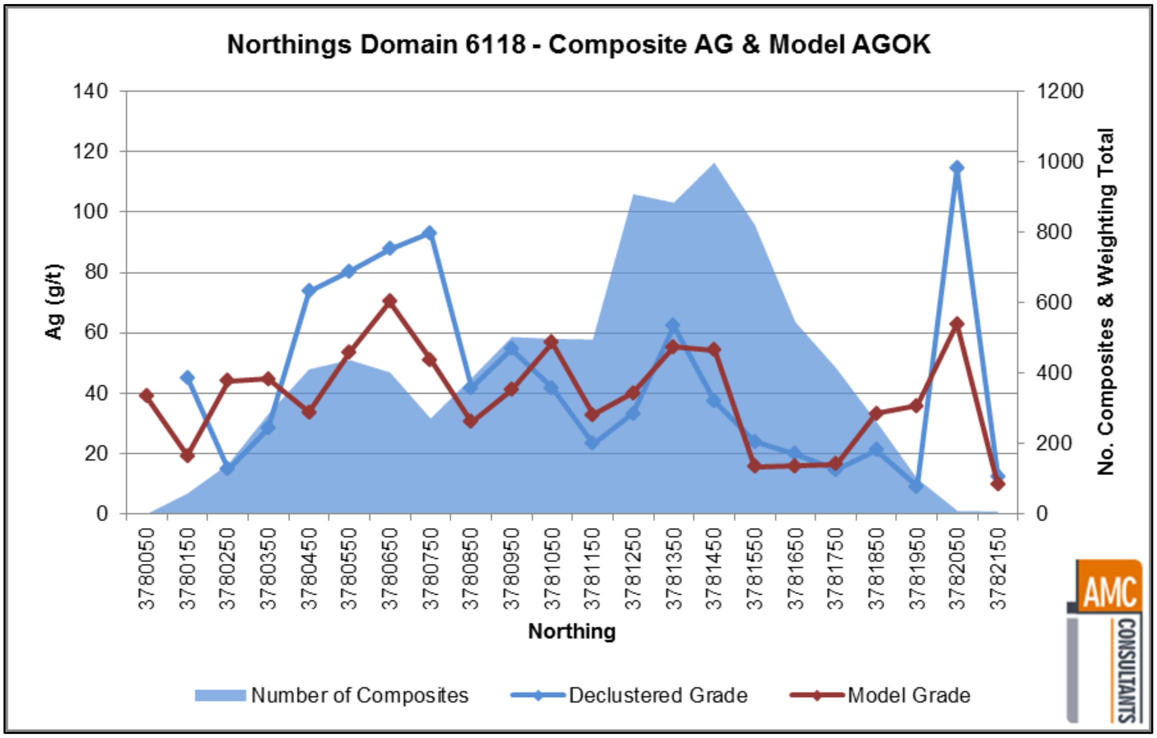


Figure 14.23 T3 silver swath plot by elevation

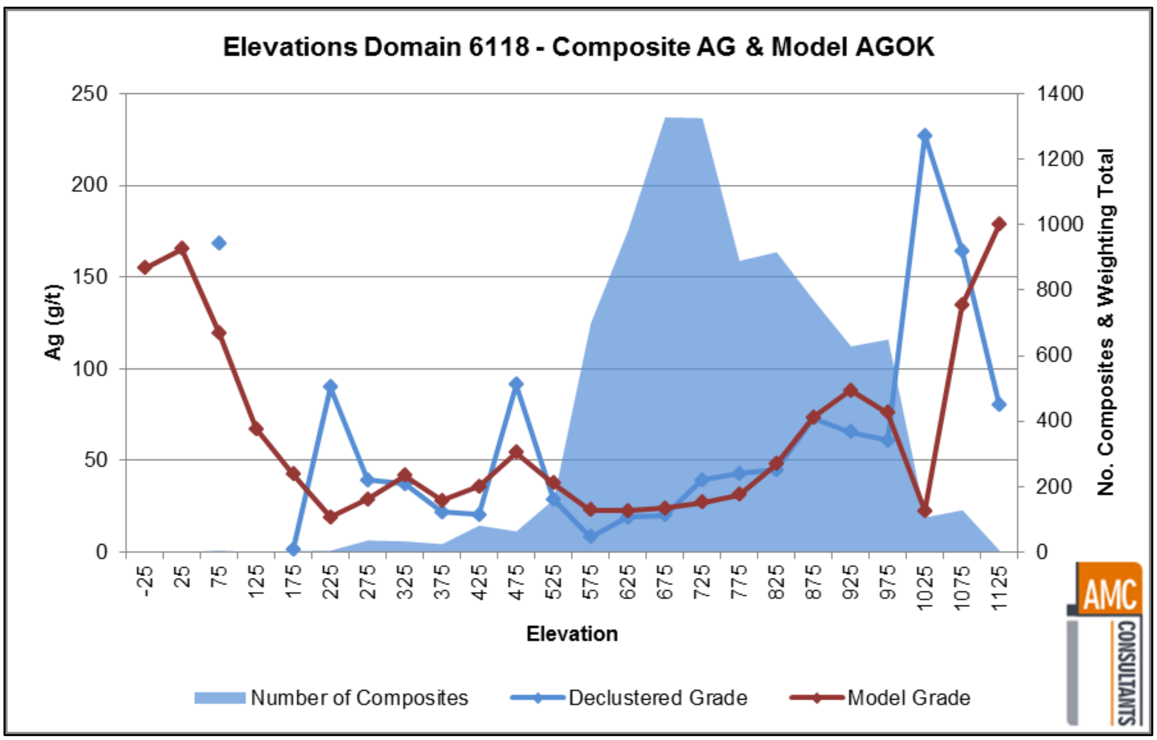


Figure 14.24 T3 lead swath plot by northing

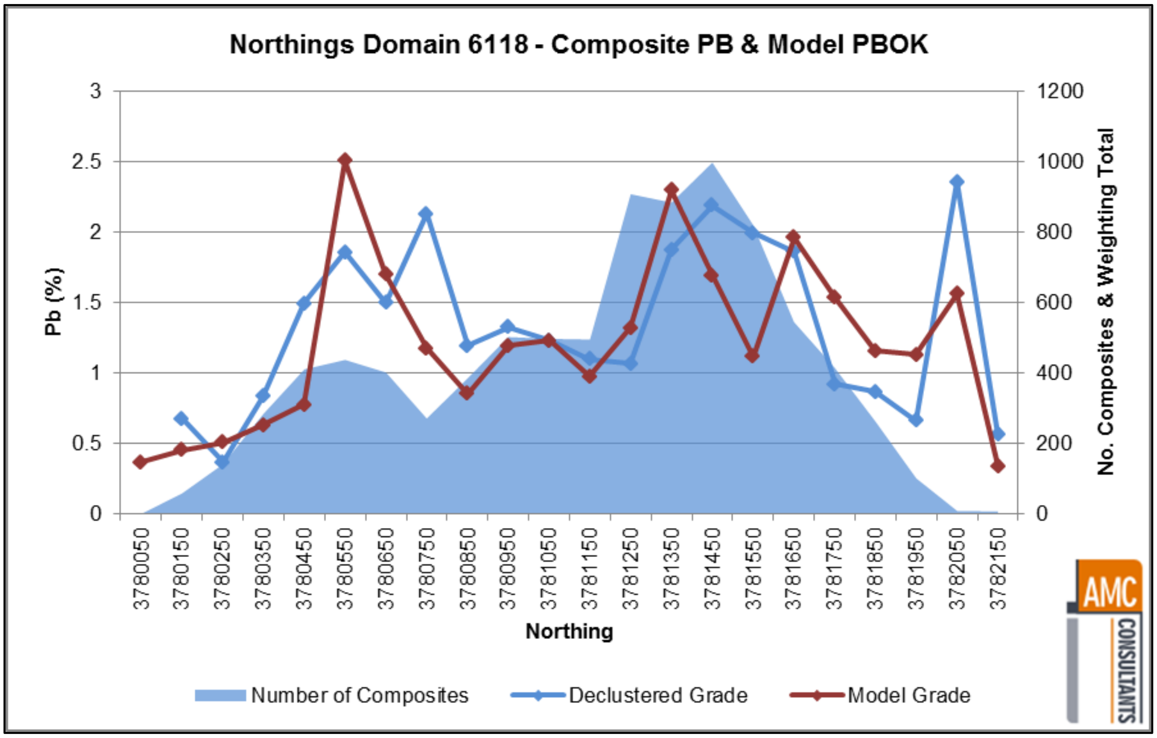


Figure 14.25 T3 lead swath plot by elevation

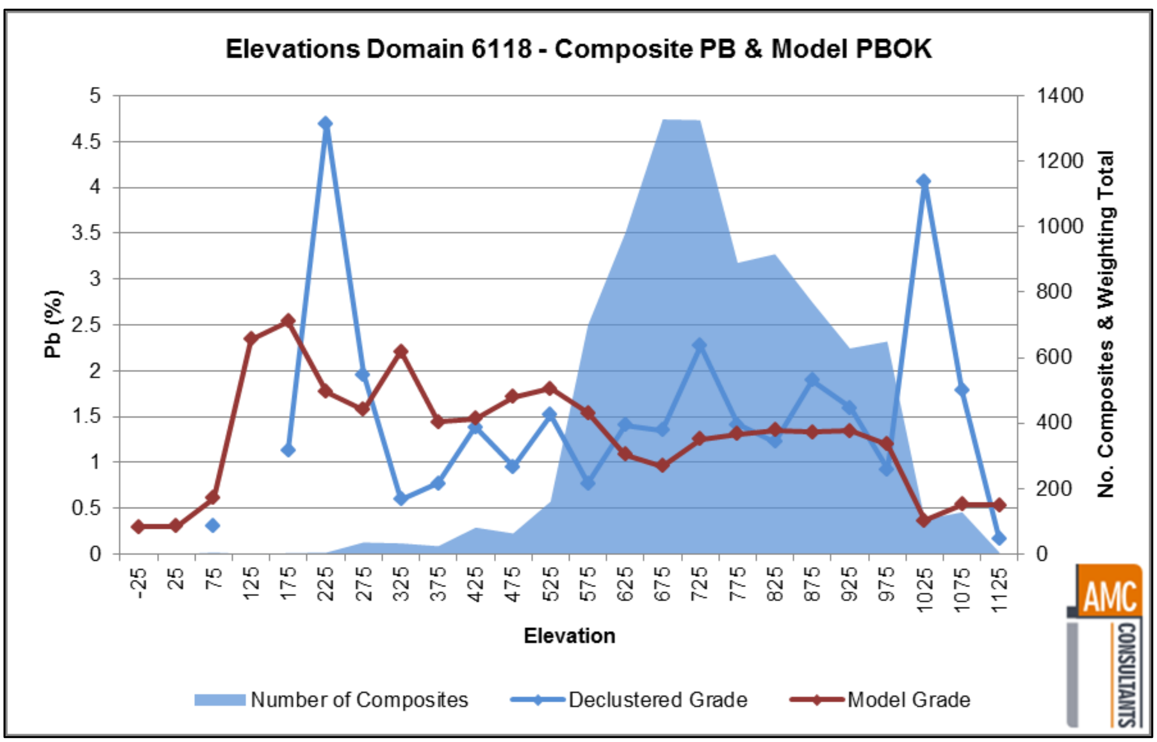


Figure 14.26 T3 zinc swath plot by northing

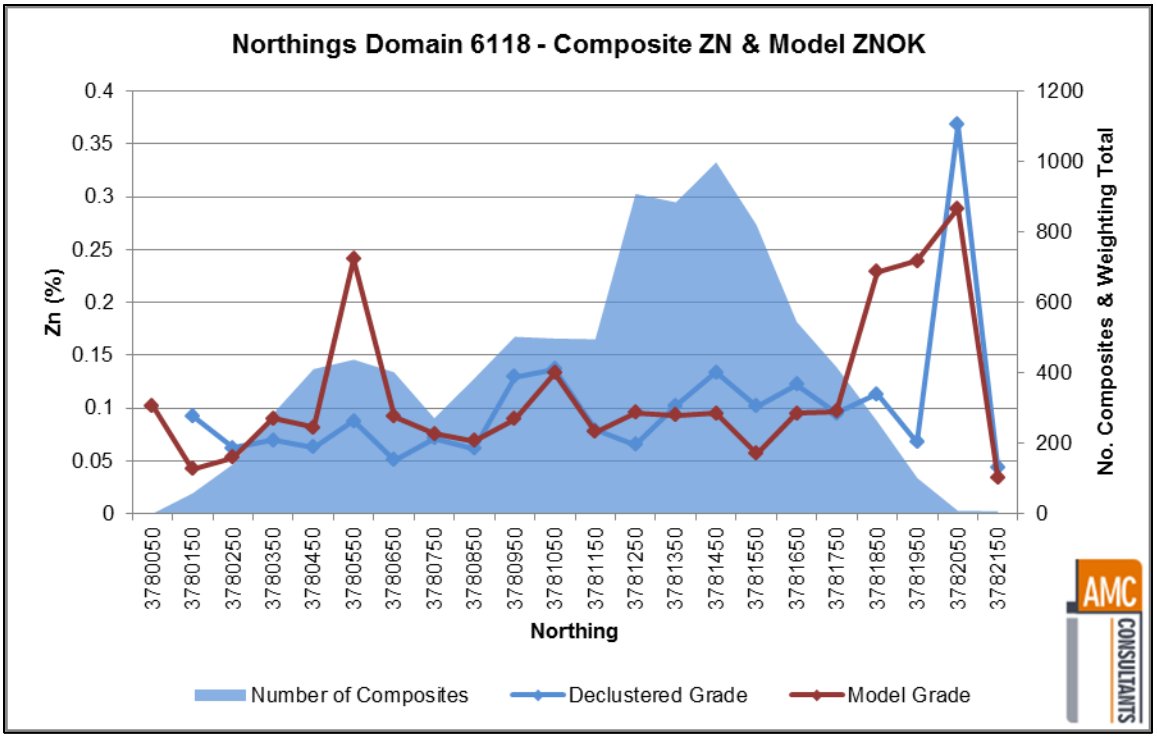
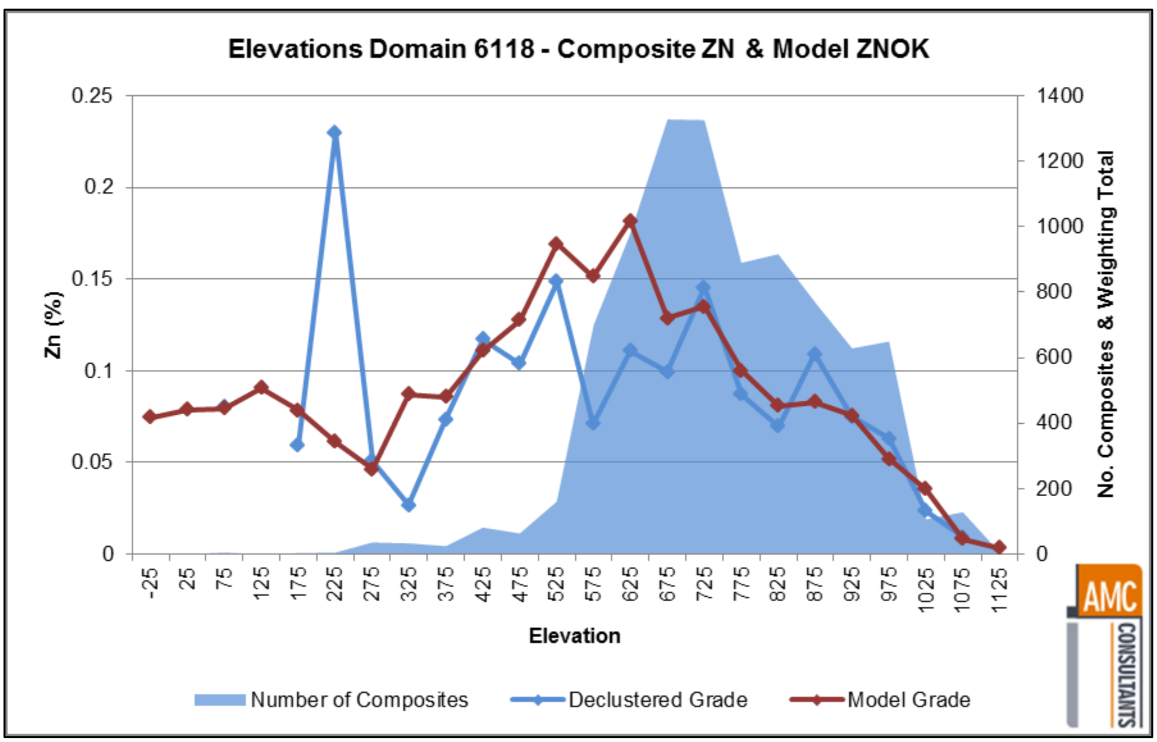


Figure 14.27 T3 zinc swath plot by elevation



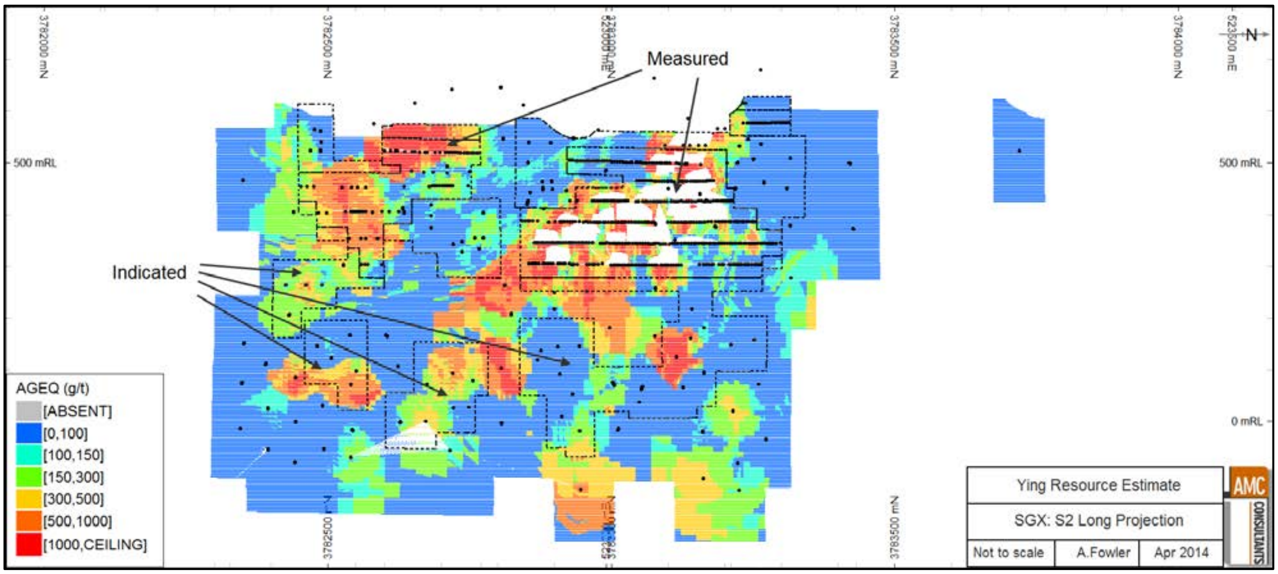
14.9 Mineral Resource estimates

The Mineral Resource estimates for the Ying property as at 30 June 2013 are shown in Table 14.1 at the beginning of this section.

Long projections showing the depleted Mineral Resource for some of the largest veins on the Ying property are displayed in Figures 14.28 to 14.41.

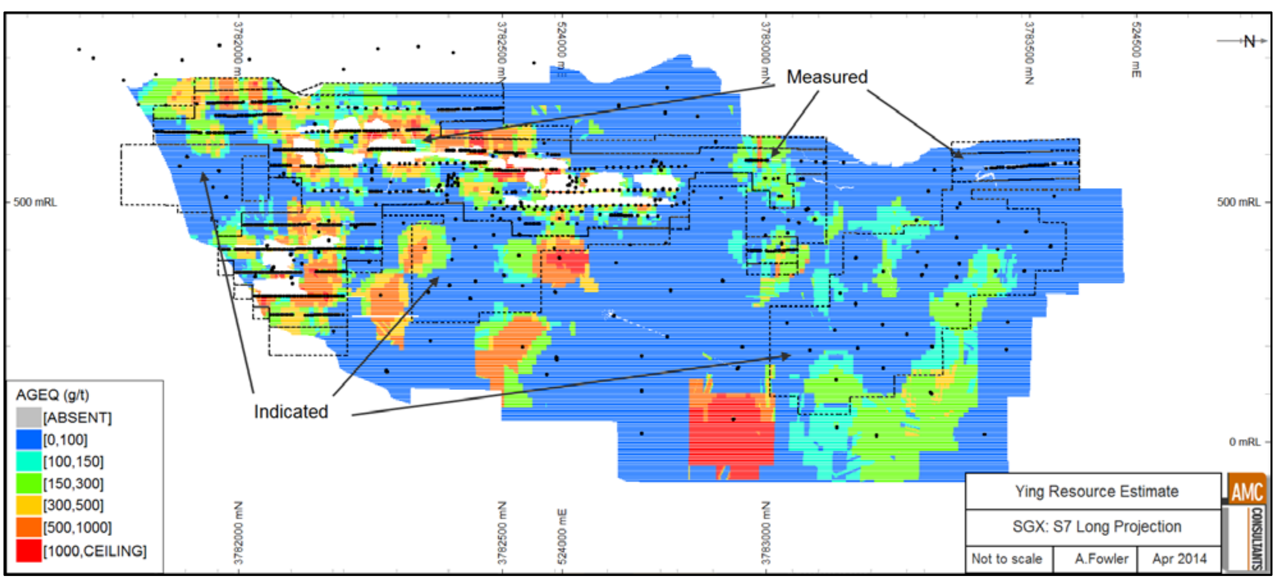
AMC is not aware of any known environmental, permitting, legal, title, taxation, socio economic, marketing, political, or other similar factors which could materially affect the stated Mineral Resource estimates.

Figure 14.28 S2 long projection Mineral Resource



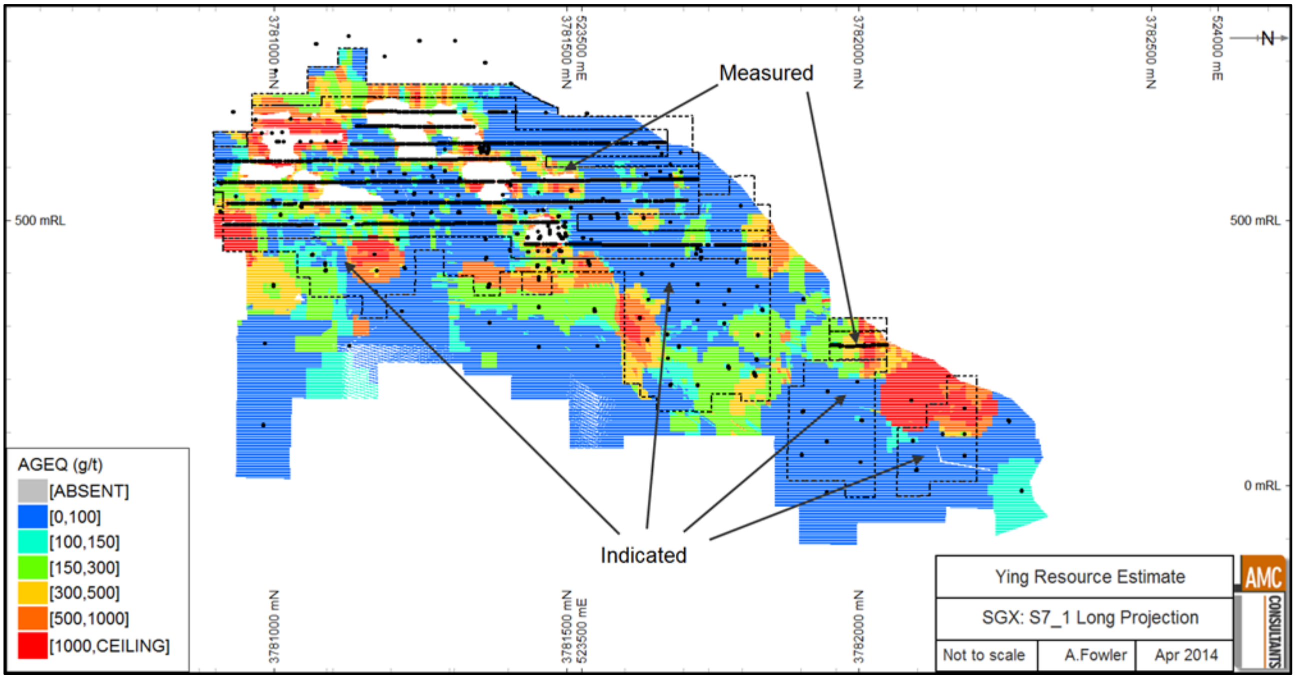
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.29 S7 long projection Mineral Resource



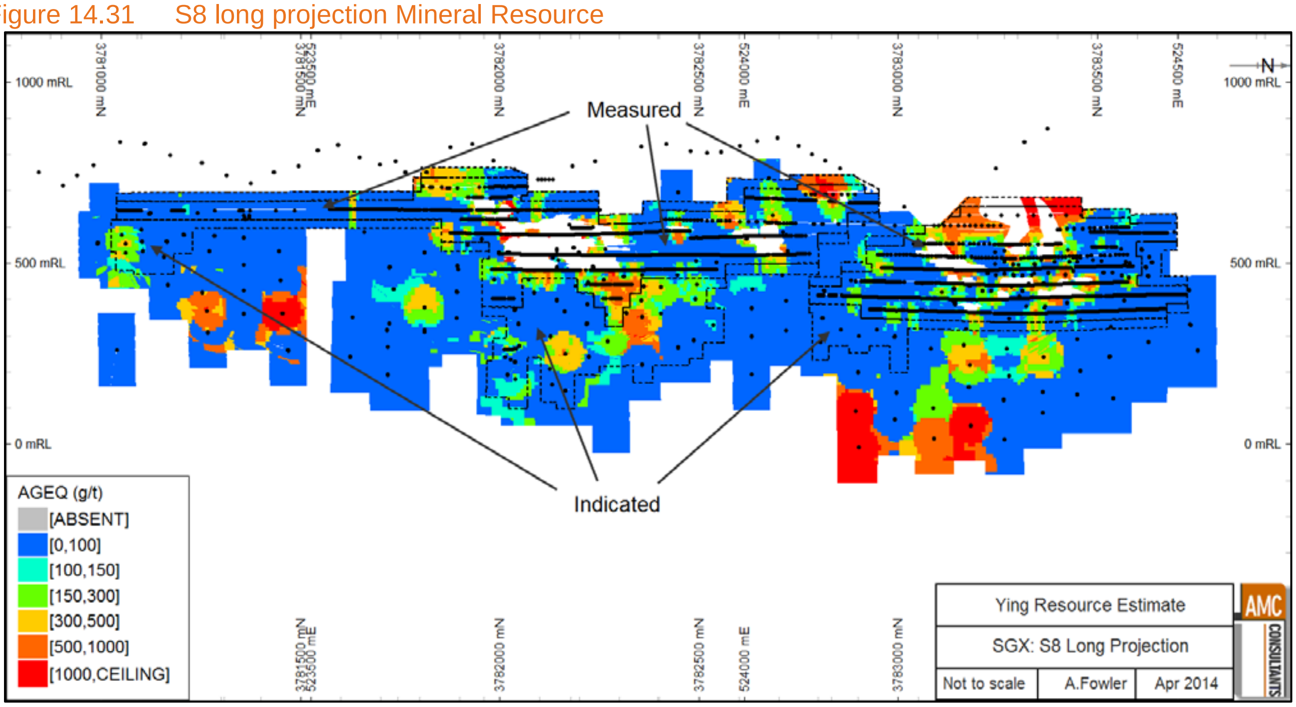
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.30 S7_1 long projection Mineral Resource



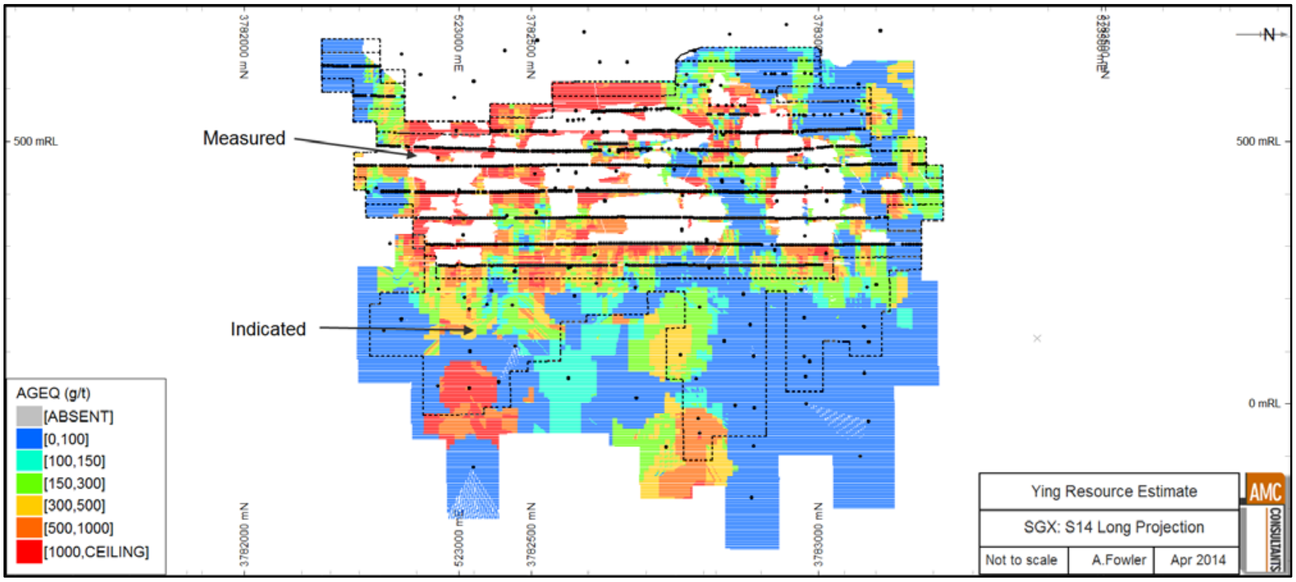
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.31 S8 long projection Mineral Resource



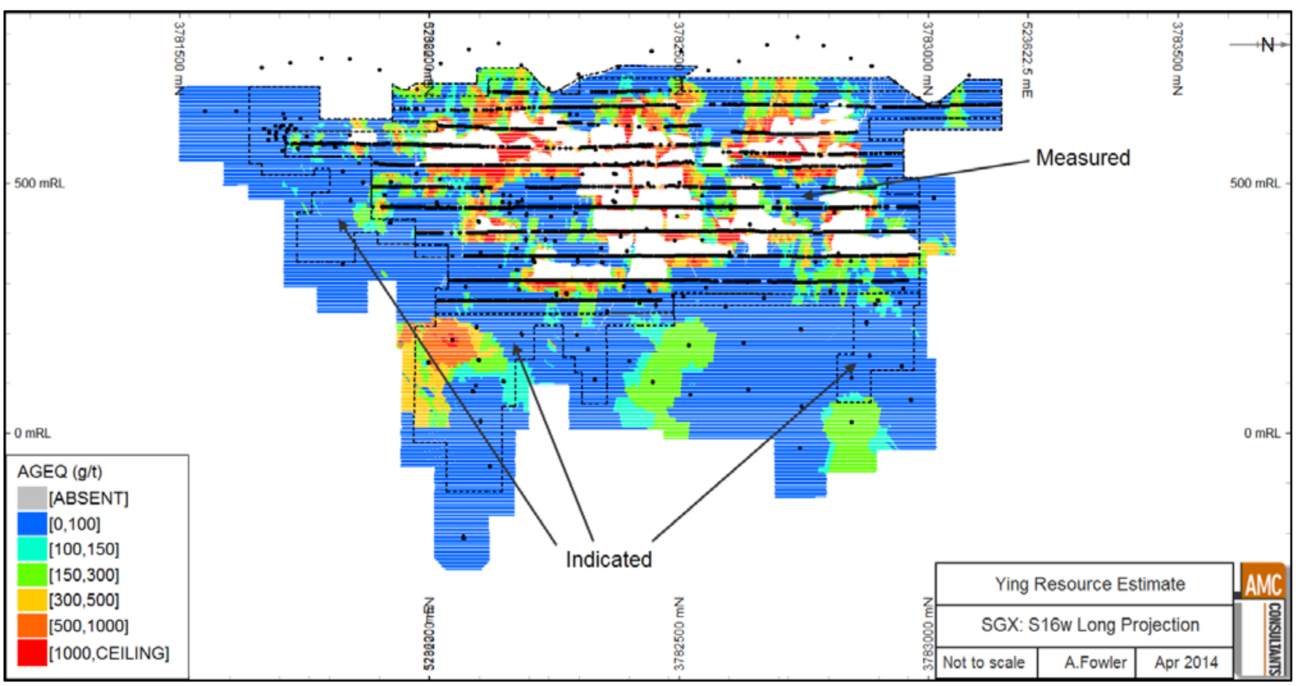
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.32 S14 long projection Mineral Resource



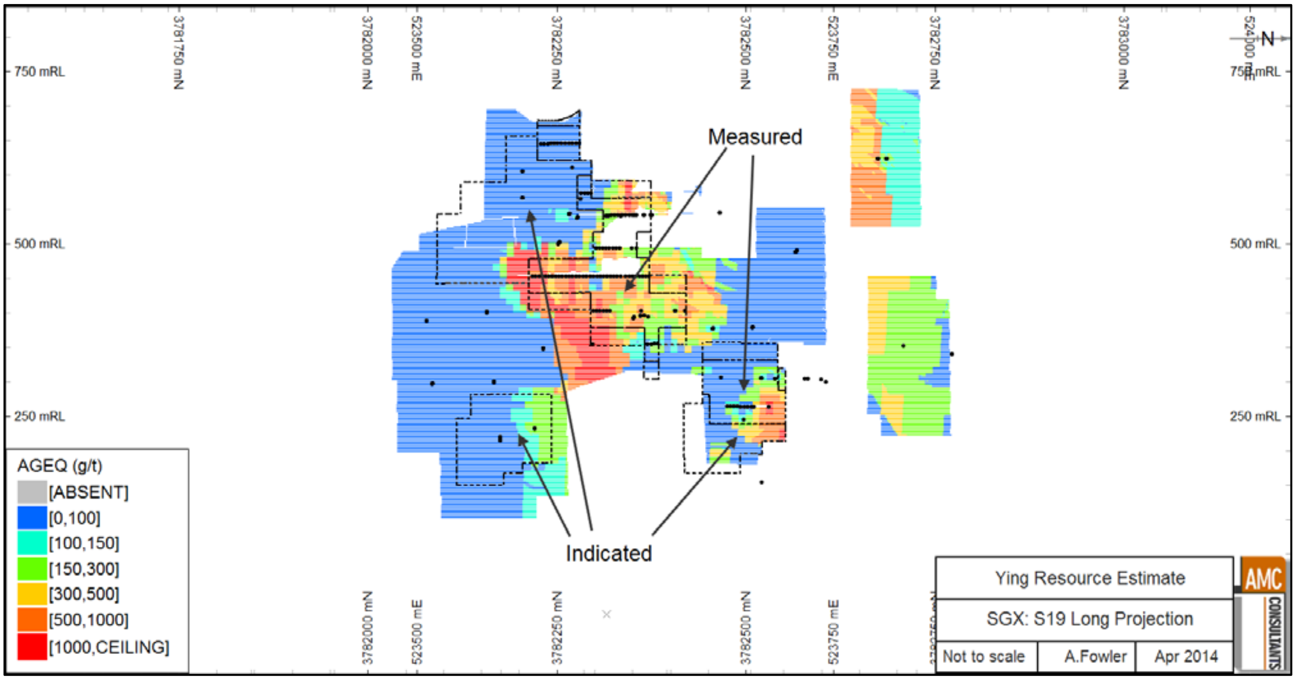
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.33 S16W long projection Mineral Resource



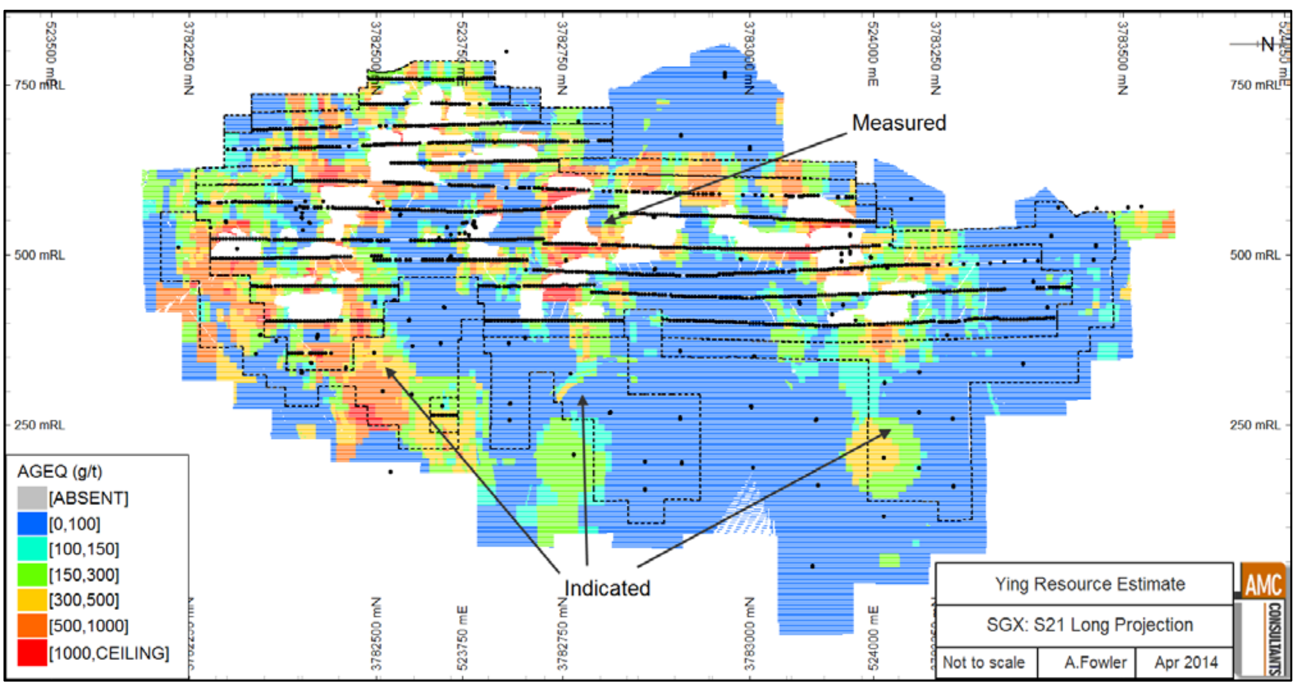
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.34 S19 long projection Mineral Resource



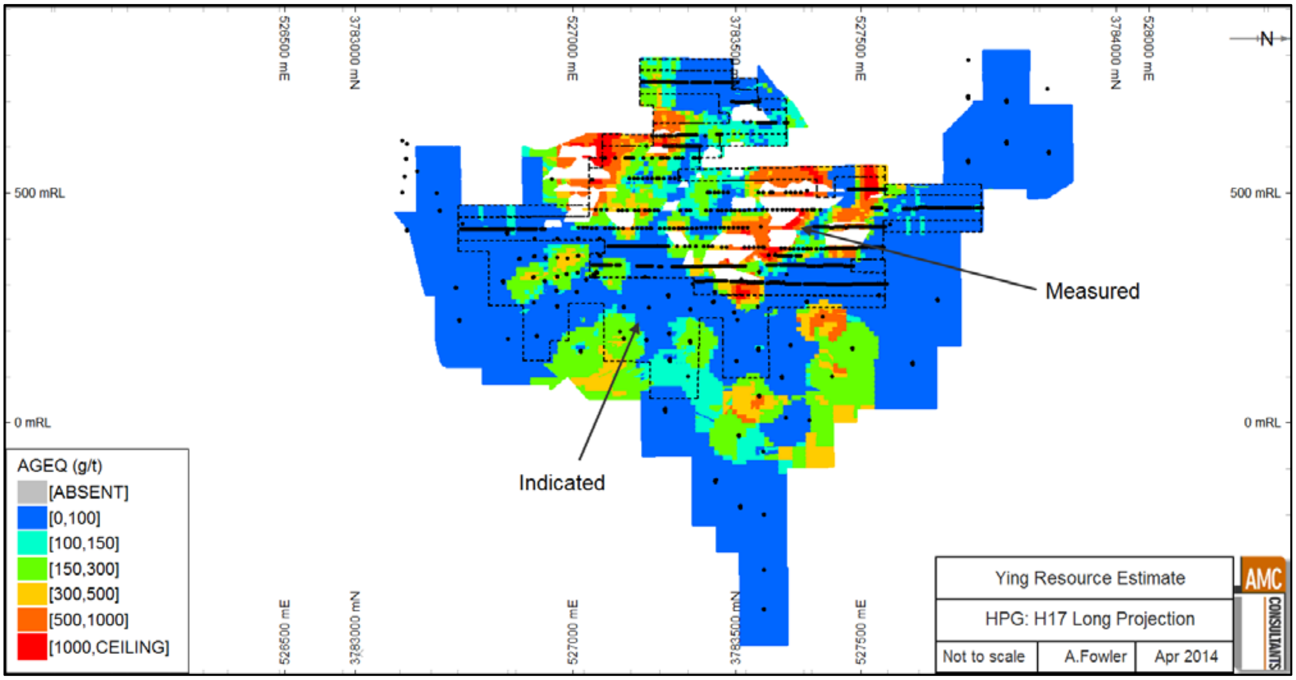
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.35 S21 long projection Mineral Resource



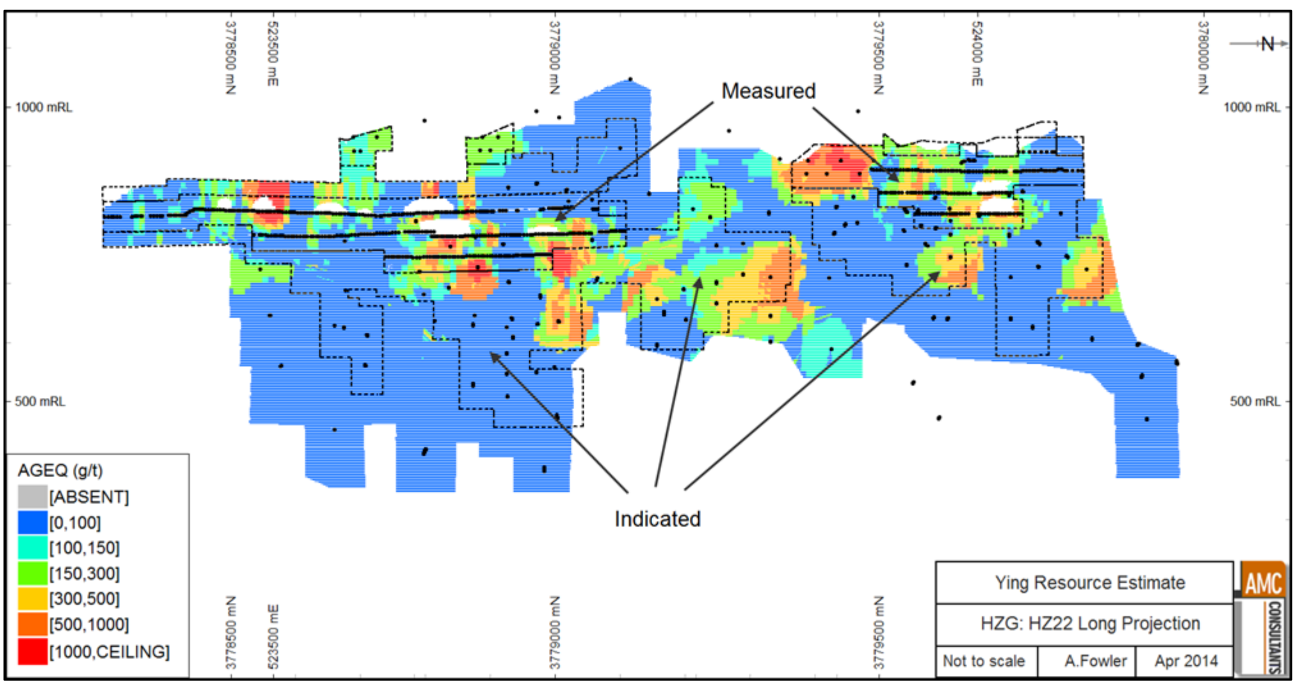
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.36 H17 long projection Mineral Resource



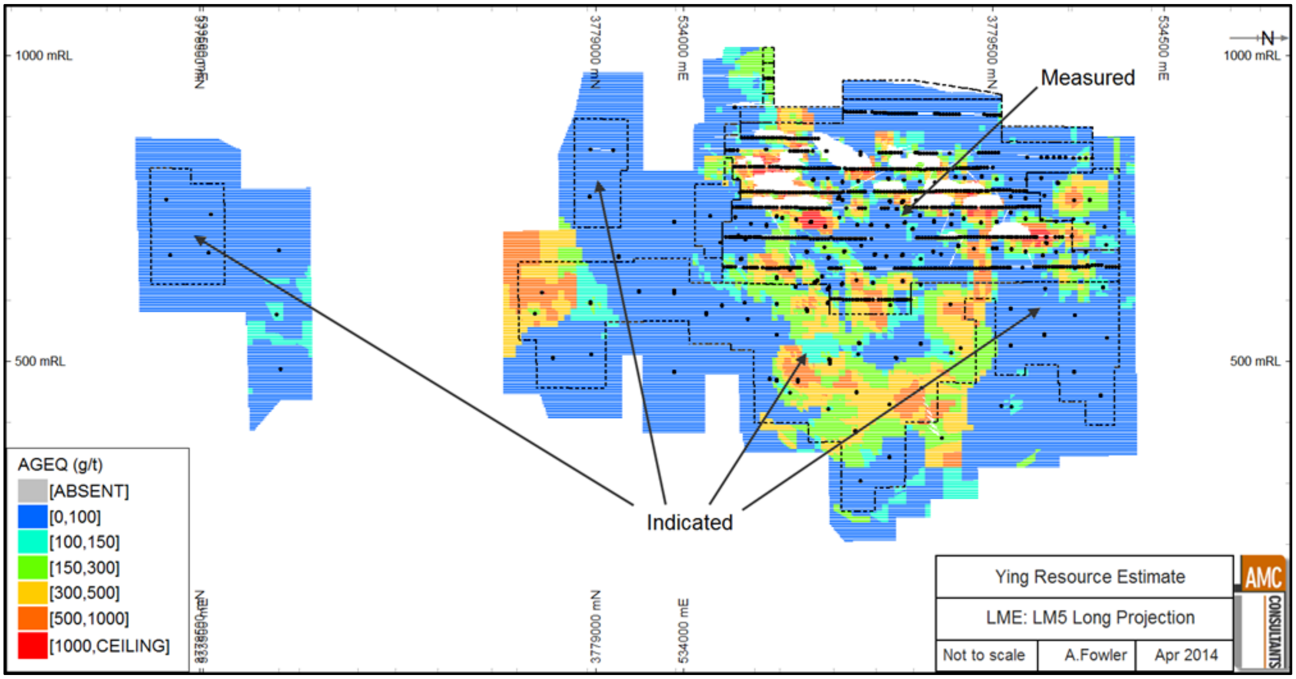
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.37 HZ22 long projection Mineral Resource



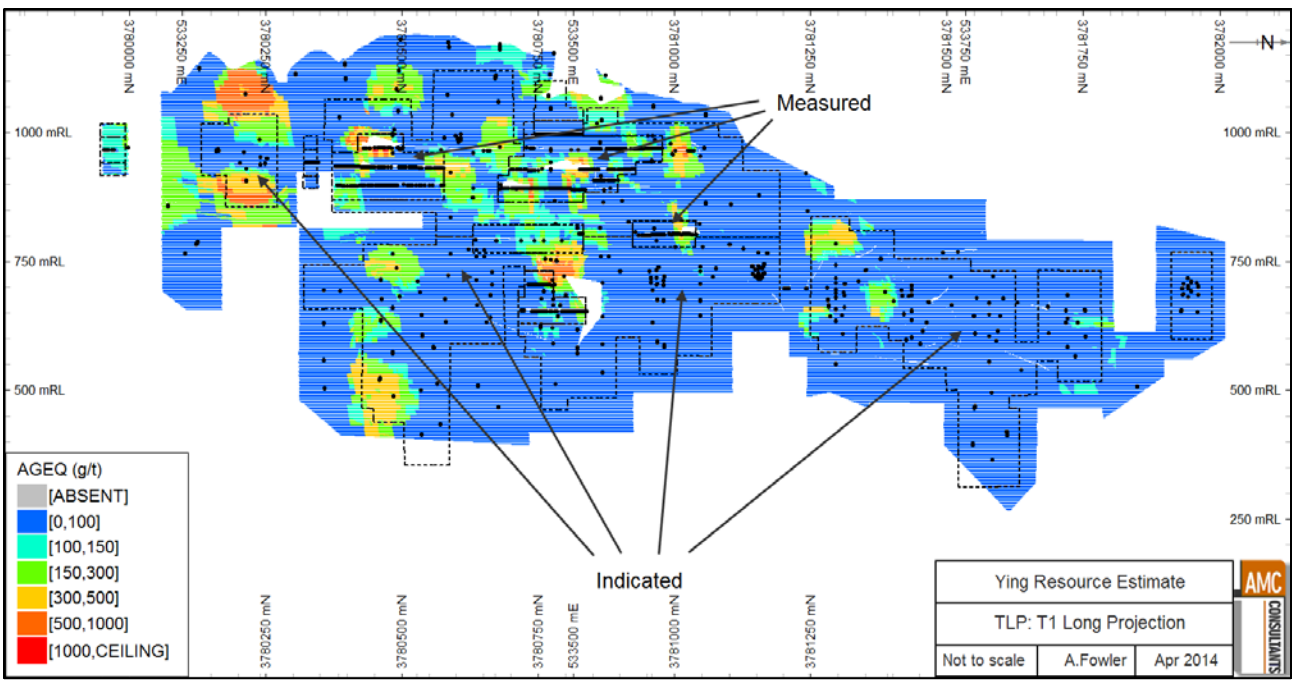
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.38 LM5 long projection Mineral Resource



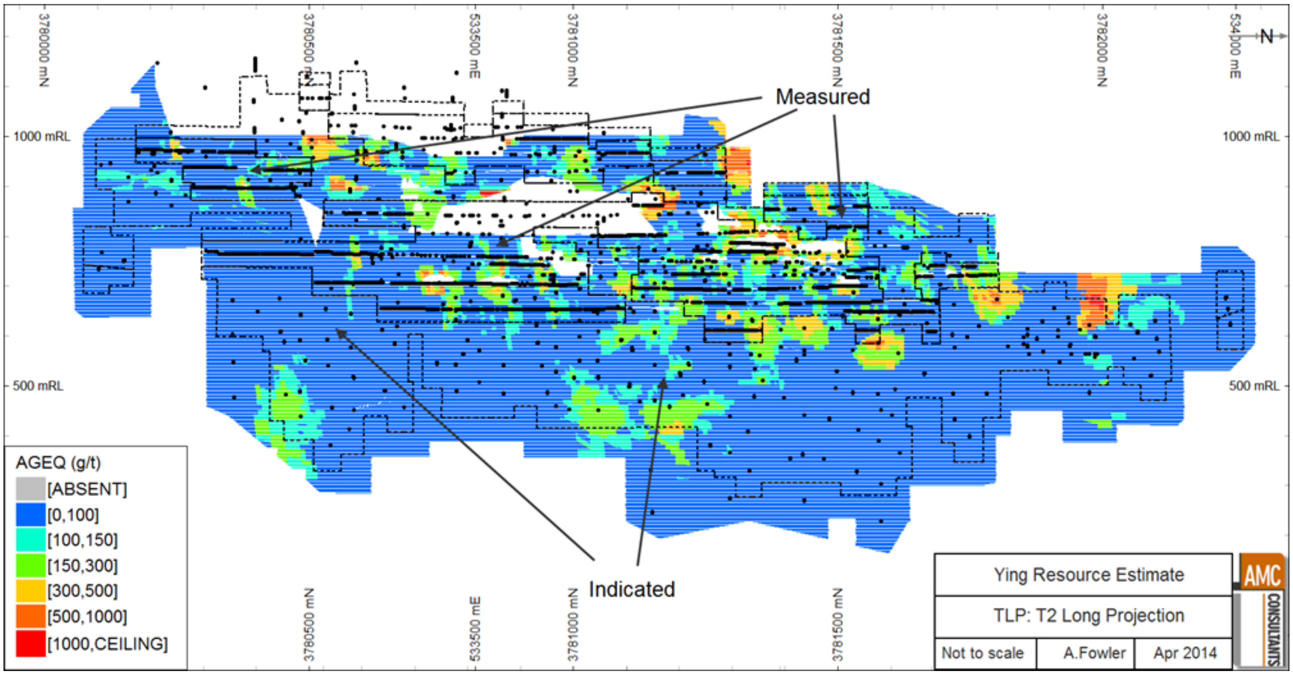
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.39 T1 long projection Mineral Resource



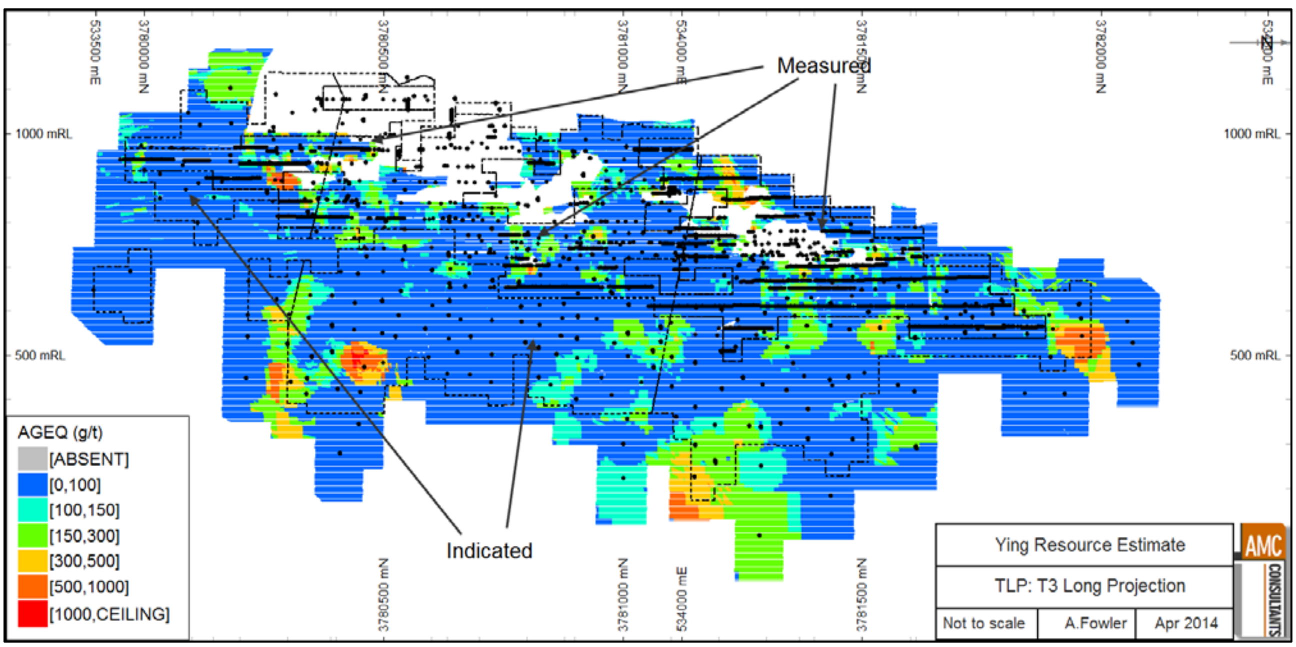
Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.40 T2 long projection Mineral Resource



Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

Figure 14.41 T3 long projection Mineral Resource



Note: Samples shown as black dots. Model coloured by silver equivalent grade (legend displayed). Resource category outlines displayed as black dashed lines and annotated.

14.10 Comparison with Resource Estimate as at 31 December 2011

The most recently published Resource estimate on the Property is contained in the June 2012 Technical Report, with Mineral Resources estimated in that report to 31 December 2011. Changes since the last estimate include:

- 267,186 m additional Resource definition drilling.
- 57,949 m additional level development on mineralization.
- Change in interpretation of mineralization to include lower grade samples and widen the mineralization.
- Change in the definition of the Mineral Resource categories.
- Change in the estimation method from polygonal to block modelling / ordinary kriging.
- Change in the samples and method of applying bulk density.
- Ongoing depletion and sterilization due to mining.

Table 14.14 Comparison of 2012 and 2013 Mineral Resource estimates

Mine	Resource category	Tonnes (Mt)	Ag		Pb		Zn		Au	
			g/t	Metal (Moz)	%	Metal (kt)	%	Metal (kt)	g/t	Metal (koz)
SGX	2013 MS+ID	5.07	276	45.06	5.17	262.1	2.71	137.4		
	2013 IF	2.80	282	25.42	4.55	127.5	2.01	56.2		
	2012 MS+ID	3.56	425	48.59	7.78	276.5	3.93	139.9		
	2012 IF	1.51	328	15.88	6.76	101.8	3.78	57.0		
	Difference MS+ID (%)	42%	-35%	-7%	-34%	-5%	-31%	-2%		
	Difference IF (%)	85%	-14%	60%	-33%	25%	-47%	-1%		
HZG	2013 MS+ID	0.67	371	7.94	1.50	10.0	0.20	1.4		
	2013 IF	0.17	374	2.02	1.01	1.7	0.19	0.3		
	2012 MS+ID	0.41	388	5.16	1.17	4.8	0.26	1.1		
	2012 IF	0.17	282	1.57	1.26	2.2	0.28	0.5		
	Difference MS+ID (%)	63%	-4%	546%	28%	108%	-23%	27%		
	Difference IF (%)	0%	33%	29%	-20%	-23%	-32%	-40%		
HPG	2013 MS+ID	1.16	107	4.00	4.71	54.6	1.24	14.3	1.17	43.8
	2013 IF	0.43	77	1.05	3.88	16.5	1.55	6.6	1.07	14.6
	2012 MS+ID	0.57	101	1.84	4.51	25.7	1.92	11.0	1.25	23.0
	2012 IF	0.14	105	0.49	3.79	5.5	1.15	1.7	1.10	5.1
	Difference MS+ID (%)	104%	6%	117%	4%	112%	-36%	31%	-6%	92%
	Difference IF (%)	207%	-27%	114%	2%	211%	35%	313%	-3%	192%
LME	2013 MS+ID	1.15	327	12.11	1.45	16.7	0.35	4.0		
	2013 IF	0.60	294	5.67	1.46	8.8	0.45	2.7		
	2012 MS+ID	0.69	441	9.77	2.63	18.1	0.57	3.9		
	2012 IF	0.57	486	8.96	1.92	11.0	0.82	4.7		
	Difference MS+ID (%)	67%	-26%	24%	-45%	-8%	-39%	3%		
	Difference IF (%)	5%	-40%	-37%	-24%	-20%	-45%	-43%		
LMW	2013 MS+ID	2.08	255	17.10	2.58	53.7	0.27	5.7		
	2013 IF	1.44	313	14.46	2.15	30.9	0.31	4.5		
	2012 MS+ID	1.34	335	14.47	3.48	46.8	0.40	5.3		

Mine	Resource category	Tonnes (Mt)	Ag		Pb		Zn		Au	
			g/t	Metal (Moz)	%	Metal (kt)	%	Metal (kt)	g/t	Metal (koz)
	2012 IF	0.91	288	8.46	2.56	23.4	0.33	3.0		
	Difference MS+ID (%)	55%	-24%	18%	-26%	15%	-33%	8%		
	Difference IF (%)	58%	9%	71%	-16%	32%	-6%	50%		
TLP	2013 MS+ID	3.88	169	21.10	2.97	115.1	0.25	9.8		
	2013 IF	2.09	176	11.88	2.87	60.1	0.22	4.6		
	2012 MS+ID	2.62	190	16.05	3.86	101.2	0.29	7.6		
	2012 IF	1.43	207	9.53	3.24	46.5	0.45	6.5		
	Difference MS+ID (%)	48%	-11%	31%	-23%	14%	-14%	29%		
	Difference IF (%)	46%	-15%	25%	-11%	29%	-51%	-29%		
Total	2013 MS+ID	14.01	237	107.30	3.64	512.2	1.22	172.6	0.10	43.8
	2013 IF	7.53	251	60.50	3.26	245.5	0.99	74.9	0.05	14.6
	2012 MS+ID	9.21	324	95.89	5.14	473.2	1.83	168.8	0.16	46.3
	2012 IF	4.74	295	44.88	4.01	190.3	1.55	73.3	0.03	5.1
	Difference MS+ID (%)	52%	-27%	12%	-29%	8%	-33%	2%	-38%	-5%
	Difference IF (%)	59%	-15%	35%	-19%	29%	-36%	2%	67%	186%

AMC makes the following observations from the comparison table:

- Measured plus Indicated tonnes have increased by 52% overall, while the Inferred tonnes have increased by 59% overall between the two estimates.
- Measured plus Indicated grades have decreased overall by between 27% and 33%, while Inferred grades have decreased by between 15% and 36% overall between the two estimates (both comparisons excluding gold as it is a very minor contributor).
- The net result in the Measured plus Indicated categories has been an increase in the contained silver metal of 12% and an increase in the contained lead metal of 8%. The increase in zinc content was insignificant.
- The net result in the Inferred category has been a significant increase in the contained silver metal of 35% and a significant increase in the contained lead metal of 29%. The increase in zinc content was insignificant.

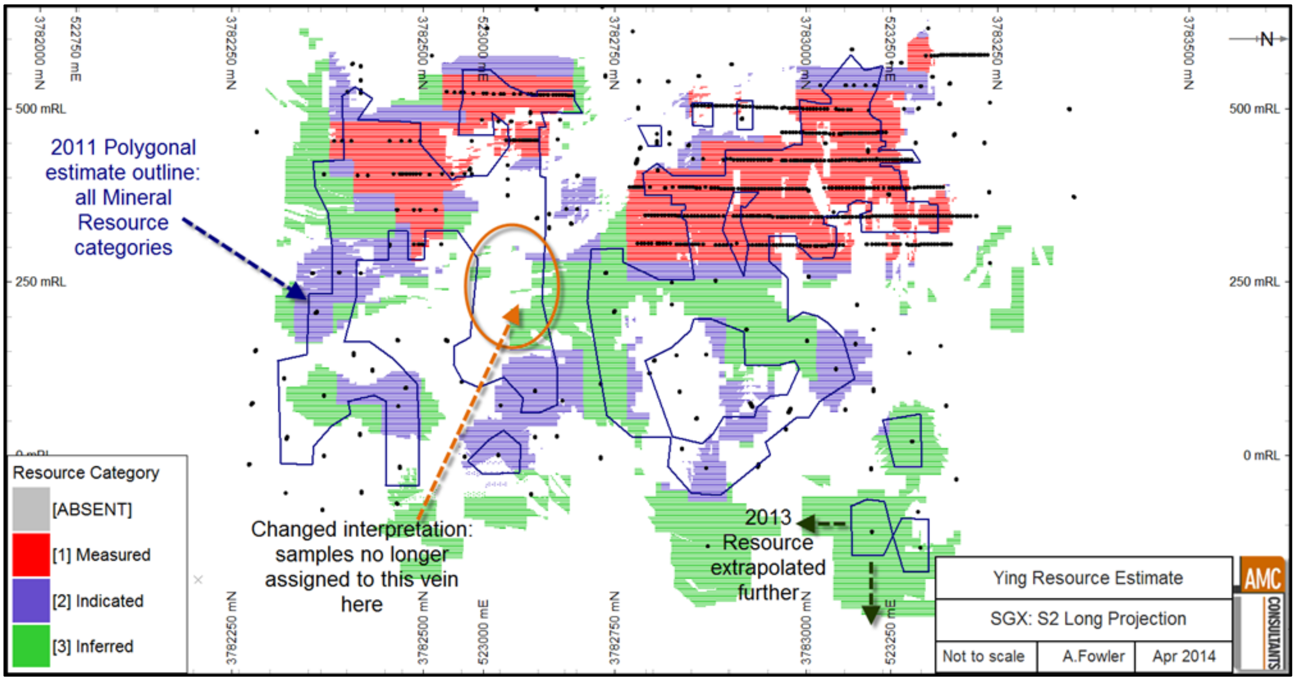
The decrease in grades is believed to be mainly due to two factors: (1) the addition of more lower grade, wall rock mineralization in the 2013 wireframes than was included in the 2012 polygonal Resource estimate (this is also part of the explanation for the significantly increased tonnages); (2) the use of ordinary kriging in 2013 as opposed to the polygonal method in 2012 (polygonal estimation can result in grade over-estimation). In addition, the 2013 Resource estimate includes more lower grade drillhole intercepts than the 2012 Resource estimate.

Other reasons for the differences in grade, tonnes and contained metal include Resource addition and conversion to higher categories arising from drilling and level development, increased extrapolation distance away from the nearest drillhole in the 2013 Inferred Resource estimate compared with the 2012 estimate, and depletion due to mining.

Some of the differences between the two estimates are illustrated in the long projection of the S2 vein of the SGX mine (Figure 14.42). The 2012 polygonal Mineral Resource estimate is displayed as a blue outline defined at a AgEq cutoff grade of 150 g/t. The 2013 Mineral Resource is displayed as blocks >150 g/t AgEq for comparison purposes. From the comparison AMC makes the following observations:

- Additional channel and drillhole samples became available between the two estimates to extend the Mineral Resource along-strike and down-dip.
- Changed interpretation meant that some parts of the vein were assigned to a different vein (orange annotation) between the two estimates.
- The Inferred Mineral Resource was extrapolated further in 2013 compared with 2012 (green annotation).

Figure 14.42 S2 long projection Mineral Resource > 150 g/t AgEq



Note: 2013 Samples shown as black dots. 2013 Model >150 AgEq coloured by Mineral Resource category (legend displayed). 2011 Resource category outlines in the 2012 NI43-101 Technical Report displayed as blue lines and annotated.

15 Mineral Reserve estimates

15.1 Introduction and Mineral Resources base

The Mineral Resources upon which the Ying Mineral Reserves are based have been discussed in detail in Section 14. The Mineral Resources are located in, or adjacent to, areas where Silvercorp has mining permits. The permitting issue has also been discussed in Section 14. AMC considers that it is reasonable to include all of the current Mineral Resources, including those located below the current lower limit of Silvercorp's mining permits, in the Mineral Reserve estimation.

To convert Mineral Resources to Mineral Reserves, mining cut-off grades have been applied, mining dilution has been added and mining recovery factors assessed on an individual vein mining block basis. Only Measured and Indicated Resources have been used for Mineral Reserves estimation.

15.2 Mineral Reserve estimation methodology

The Mineral Reserve estimation is based on the assumption that current stoping practices will continue to be predominant at the Ying property, namely cut and fill resuing and shrinkage stoping, using hand-held drills and hand-mucking within stopes, and loading to mine cars by rocker-shovel or by hand. The largely sub-vertical veins, generally competent ground, reasonably regular vein width, and hand-mining techniques using short rounds, allows a significant degree of selectivity and control in the stoping process. Minimum extraction widths of 0.3 m for resuing and 0.8 m for shrinkage are assumed, with both methods requiring a minimum mining width of 0.8 m. AMC has observed the mining methods at the Ying property and considers the minimum extraction and mining width assumptions to be reasonable. Dilution assumptions are 0.10 m of overbreak on each wall of a resuing cut and 0.15 m of overbreak on each wall of a shrinkage stope. Dilution is discussed further in Section 15.4.

For the total tonnage estimated as Ying Mineral Reserves, 37% is associated with resuing and 63% with shrinkage.

15.3 Cut-off grades

Mineral Reserves have been estimated using breakeven cut-off values for shrinkage and resuing at each site as appropriate. The cut-off grade basis is summarized below and in Table 15.1.

Cut-off grade AgEq (g/t) = (mining cost + sustaining capital + milling cost + hauling cost + G&A cost + selling cost + mineral resources tax) / (processing recovery x mining recovery x Ag price).

Table 15.1 Mineral Reserve cut-off grades and key estimation parameters

Item	SGX		HZG		HPG		LM		TLP	
Foreign Exchange Rate (RMB:US$)	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29	6.29
	Resuing	Shrinkage	Resuing	Shrinkage	Resuing	Shrinkage	Resuing	Shrinkage	Resuing	Shrinkage
Operating Costs										
Sustaining Capital ($/t)	7.65	7.65	8.40	N/A	8.54	8.54	13.65	13.65	4.69	4.69
Mining Cost ($/t)	60.77	28.67	59.47	N/A	80.90	33.09	47.51	21.75	53.30	26.82
Hauling cost ($/t)	4.06	4.06	4.23	N/A	4.13	4.13	3.04	3.04	3.20	3.20
Milling cost ($/t)	11.31	11.31	10.67	N/A	11.30	11.30	11.64	11.64	12.95	12.95
G&A and Product Selling Cost ($/t)	9.28	9.28	9.28	N/A	9.28	9.28	9.28	9.28	9.28	9.28
Mineral Resources Tax ($/t)	1.92	1.92	1.92	N/A	1.92	1.92	1.92	1.92	1.92	1.92
Total Operating Costs (US$/t)*	94.99	62.89	93.97	N/A	116.07	68.26	87.04	61.28	85.34	58.86
Mining Recovery (%)	95	92	95	N/A	95	92	95	92	95	92
Mill Recoveries										
Ag (%)	93.1		95.3		87.5		93.4		90.0	
Pb (%)	96.4		92.4		91.2		94.6		89.1	
Zn (%)	67.2				65.6					
Breakeven COG (AgEq g/t) = opex $/t / (mining recovery% x processing recovery% x Ag $ value per g*)	176	120	170	N/A	229	139	161	117	163	116

*Metal price assumptions: Ag $19/oz; Pb $1/lb; Zn $0.82/lb.
*Opex costs and exchange rate from Fiscal 2013 averages

Lower cut-off grade values have been used for vein development operations where, effectively, the cost of this development is sunk and the value of the material mined has only to bear the cost of hauling, milling, G&A, selling and tax. These values are shown in Table 15.2.

Table 15.2 Vein development cut-off grades

Vein Development Cut-off Estimates	SGX	HZG	HPG	LM	TLP
AgEq Cut-off g/t	50.00	50.00	50.00	50.00	50.00

Costs and metal price assumptions as per Table 15.1 above.

15.3.1 AMC comment on cut-off grades

AMC considers that the Mineral Reserve cut-off grades and their supporting parameters are reasonable. AMC recommends that Silvercorp consider removing sustaining capital from the cut-off grade calculation but notes that the Ying resources have limited sensitivity to variation in cut-off grade as discussed in Section 15.5 below.

15.4 Dilution and recovery factors

15.4.1 Dilution

As indicated above, minimum stoping extraction widths are assumed as 0.3 m and 0.8 m respectively for resuing and shrinkage; minimum mining widths are assumed to be 0.8 m for both methods. Unplanned dilution has been applied to the actual extraction width for resuing (Resource grades already factored to 0.3 m minimum mining width) and to the greater of 0.8 m or actual mining width for shrinkage.

AMC has calculated unplanned dilution based on 0.1 m of waste break on each wall of a resue vein, and 0.15 m of waste break outside the design mining width of a shrinkage stope. A key strategy used at Ying for minimizing floor dilution is the placement of rubber mats and/or conveyor belting over the waste fill floor in resuing stopes immediately before each resuing blast. This effectively serves as a barrier between ore and waste.

The dilution calculation process used for the Mineral Reserves assumes that the resulting figures represent the overall tonnes and grade delivered to surface. There is a small degree of waste hand sorting, and therefore upgrading, that occurs underground, depending on the mine and mining method. AMC considers that the resulting impact of this hand-sorting on the delivered product is not significant enough to be material.

Table 15.3 summarizes average dilution from the Mineral Reserve calculations for each of the Ying mines. The lower percentages for shrinkage stoping are a reflection of mining wider veins.

Table 15.3 Average dilution by mine and method

Mine	Dilution %	
	Resuing	Shrinkage
SGX	41	25
HZG	39	26
HPG	39	26
LM-E	44	24
LM-W	37	21
TLP	39	23
Total Ying	**40**	**24**

15.4.2 Mining Recovery Factors

Mining recovery estimates used in the Mineral Reserve calculations are based on experience at each of the Ying operations and for each mining method. For resuing stopes, 95% total recovery is assumed; for shrinkage stopes, 92% total recovery is assumed. Minimal pillars are anticipated to remain between adjacent mining blocks in the same vein, and partial recovery in sill pillars is allowed for in the respective recovery factors.

15.5 Mineral Reserve Estimate

To convert Mineral Resources to Mineral Reserves, Silvercorp uses the following procedures:

- Selection of Measured and Indicated Resource areas (potential stope blocks) for which the average AgEq grade is greater than the mine cut-off AgEq grade
- Application of minimum extraction and mining width criteria and calculation of dilution at zero grade
- Estimation of Mineral Reserve potential by applying relevant mining loss factors
- Reconfirmation that diluted AgEq grade is greater than mine cut-off
- Confirmation as Mineral Reserves by considering any other significant cost factors such as additional waste development required to gain access to the block in question

Table 15.4 summarizes the Mineral Reserve estimates for each Ying mine and for the Ying operation as a whole. Approximately 41% of the Mineral Reserve tonnage is categorized as Proven and approximately 59% is categorized as Probable.

Table 15.4 Ying Mines Mineral Reserve estimates

Mines	Categories	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Metal Contained in Reserves			
							Au (koz)	Ag (Moz)	Pb (kt)	Zn (kt)
SGX	Proven	2.66		230	4.41	2.33		19.64	117.3	61.9
	Probable	2.20		206	3.75	1.90		14.56	82.5	41.9
Total Proven & Probable		4.86		219	4.11	2.14		34.20	199.8	103.8
HZG	Proven	0.30		344	1.16	0.19		3.32	3.5	0.6
	Probable	0.39		279	1.12	0.13		3.49	4.4	0.5
Total Proven & Probable		0.69		307	1.14	0.16		6.82	7.8	1.1
HPG	Proven	0.56	0.94	100	4.54	0.81	16.9	1.80	25.4	4.5
	Probable	0.36	1.05	84	3.33	1.14	12.2	0.97	12.1	4.1
Total Proven & Probable		0.92	0.98	94	4.06	0.94	29.2	2.77	37.4	8.7
TLP	Proven	1.18		135	2.67	0.18		5.13	31.4	2.1
	Probable	2.10		160	2.45	0.22		10.80	51.3	4.7
Total Proven & Probable		3.28		151	2.52	0.21		15.94	82.8	6.8
LM-E	Proven	0.25		289	1.24	0.24		2.32	3.1	0.6
	Probable	0.79		271	1.10	0.29		6.86	8.7	2.3
Total Proven & Probable		1.04		275	1.14	0.28		9.17	11.8	2.9
LM-W	Proven	0.29		276	2.04	0.17		2.60	6.0	0.5
	Probable	1.56		219	2.22	0.22		11.03	34.8	3.5
Total Proven & Probable		1.86		228	2.19	0.21		13.62	40.7	4.0
Ying Mine	**Proven**	**5.24**	**0.10**	**207**	**3.56**	**1.34**	**16.9**	**34.81**	**186.7**	**70.2**
	Probable	**7.40**	**0.05**	**200**	**2.62**	**0.77**	**12.2**	**47.71**	**193.7**	**57.0**
Total Proven & Probable		**12.64**	**0.07**	**203**	**3.01**	**1.01**	**29.2**	**82.52**	**380.4**	**127.2**

Notes to Mineral Reserve Statement:
1. Stope Cut-off grades (Ag/Eq g/t): SGX – 176 Resuing, 120 Shrinkage; HZG – 170 Resuing; HPG – 229 Resuing, 139 Shrinkage; LM - 161 Resuing, 117 Shrinkage; TLP: 163 Resuing, 116 Shrinkage.
2. Vein development cut-off grades of 50 g/t AgEq for all mines.
3. Unplanned dilution (zero grade) assumed as 0.1m on each wall of a resuing stope and 0.15m on each wall of a shrinkage stope.
4. Mining recovery factors assumed as 95% for resuing and 92% for shrinkage.
5. Metal prices assumed are Ag - US$19 troy ounce, Au - US$1250 per troy ounce, Pb - US$1 per pound, Zn - $US0.82 per pound.
6. Processing recovery factors: SGX – 93.1% Ag, 96.4% Pb, 67.2% Zn; HZG – 96.3% Ag, 92.4% Pb; HPG – 87.5% Ag, 91.2% Pb, 65.6% Zn; LM – 93.4% Ag, 94.6% Pb; TLP – 90.0% Ag, 89.1% Pb.
7. Exclusive of mine production to 30 June 2013.
8. Exchange rate assumed is 6.29 RMB : US$1.00.
9. Rounding of some figures may lead to minor discrepancies in totals.

AMC notes that the average silver and lead grades for the total combined Ying Mines Mineral Reserves are about 14% and 19% respectively lower than reported mined grades for 2012 alone, and about 24% and 33% respectively lower than reported mined grades for the period January 2010 to June 2013. This is consistent with the mining plan generally moving into lower grade areas, particularly at the SGX mine; however, AMC notes that the grade distribution of the Mineral Reserves allows opportunity to mine at above-overall-average grades in the first part of the projected remaining LOM. AMC advises that best mining practices and tight dilution control will be key to optimizing grade throughout the extraction of the Ying Mineral Reserves.

15.6 Reserves sensitivity to cut-off grade

AMC has tested the sensitivity of the Ying Mineral Reserves to variation in cut-off grade by applying a 20% increase in COG to Mineral Resources at each of the Ying mines. The approximate percentage differences in contained AgEq ounces for each of the Ying mines and for the property as a whole are shown in Table 15.5.

Table 15.5 Estimated reduction in Contained AgEq Oz in Mineral Reserves for COG increase of 20%

	SGX	HZG	HPG	TLP	LME	LMW
Mine AgEq oz reduction	2.1%	4.2%	9.5%	9.6%	3.3%	5.5%
Ying Total AgEq oz reduction	4.7%					

The lowest sensitivity is seen at SGX, with an estimated 2.1% reduction in contained AgEq ounces when the COG is increased by 20%. The highest reductions of 9.5% and 9.6% are noted at HPG and TLP respectively. For Ying as a whole, a 4.7% reduction demonstrates low overall COG sensitivity.

15.7 Conversion of Mineral Resources to Reserves

Table 15.6 compares the respective sums of Measured plus Indicated Resources and Proven plus Probable Reserves for each of the Ying mines and the entire Ying operation.

Table 15.6 Resources and Reserves comparison

Mine		Tonnes Mt	Au g/t	Ag g/t	Pb %	Zn %	Au koz	Ag Moz	Pb kt	Zn kt
SGX	Resource	5.07		276	5.17	2.71		45.06	262.1	137.4
	Reserve	4.86		219	4.11	2.14		34.20	199.8	103.8
Conversion percentage		96		79	79	79		76	76	76
HZG	Resource	0.67		371	1.50	0.20		7.94	10.0	1.4
	Reserve	0.69		307	1.14	0.16		6.82	7.8	1.1
Conversion percentage		103		83	76	80		86	78	79
HPG	Resource	1.16	1.18	107	4.71	1.24	43.8	4.00	54.6	14.3
	Reserve	0.92	0.98	94	4.06	0.94	29.2	2.77	37.4	8.7
Conversion percentage		79	83	88	86	76	67	69	68	61
TLP	Resource	3.88		169	2.97	0.25		21.10	115.1	9.8
	Reserve	3.28		151	2.52	0.21		15.94	82.8	6.8
Conversion percentage		85		89	85	84		76	72	69
LM-E	Resource	1.15		327	1.45	0.35		12.11	16.7	4.0
	Reserve	1.04		275	1.14	0.28		9.17	11.8	2.9

Mine		Tonnes Mt	Au g/t	Ag g/t	Pb %	Zn %	Au koz	Ag Moz	Pb kt	Zn kt
Conversion percentage		90		84	79	80		76	71	73
LM-W	Resource	2.08		255	2.58	0.27		17.10	53.7	5.7
	Reserve	1.86		228	2.19	0.21		13.62	40.7	4.0
Conversion percentage		89		89	85	78		80	76	70
Total	Resource	14.01	0.10	237	3.64	1.22	43.8	107.30	512.2	172.6
	Reserve	12.64	0.07	203	3.01	1.01	29.2	82.52	380.4	127.2
Conversion percentage		90		86	83	83	50	76	73	74

For the property as a whole, total Mineral Reserve tonnes are noted to be 90% of Mineral Resource tonnes. Silver, lead and zinc grades show a conversion percentage between 83% and 86%. Metal content conversion for silver, lead and zinc is between 73% and 76%.

15.8 Comparison of Mineral Reserves, end-2011 to mid-2013

Table 15.7 shows Ying Mineral Reserves as of end-2011 (previous Technical Report) and as of mid-2013 (this Technical Report). The 2013 data is exclusive of ore mined since end-2011.

Table 15.7 Change in Mineral Reserves, end-2011 to mid-2013

Mines	Categories	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Metal Contained in Reserves			
							Au (oz)	Ag (Moz)	Pb (kt)	Zn (kt)
SGX 2013	Proven	2.66		230	4.41	2.33		19.64	117.3	61.9
	Probable	2.20		206	3.75	1.9		14.56	82.5	41.9
Total Proven & Probable		4.86		219	4.11	2.14		34.2	199.8	103.8
SGX 2012	Proven	1.56		331	6.33	3.34		16.61	98.8	52.1
	Probable	2.16		352	6.22	2.74		24.47	134.4	59.1
Total Proven & Probable		3.72		343	6.27	2.99		41.08	233.3	111.2
SGX % Change	Proven	71%		-31%	-30%	-30%		18%	19%	19%
	Probable	2%		-41%	-40%	-31%		-40%	-39%	-29%
Total Proven & Probable		31%		-36%	-34%	-28%		-17%	-14%	-7%
HZG 2013	Proven	0.30		344	1.16	0.19		3.32	3.5	0.6
	Probable	0.39		279	1.12	0.13		3.49	4.4	0.5
Total Proven & Probable		0.69		307	1.14	0.16		6.82	7.8	1.1
HZG 2012	Proven	0.13		384	0.96	0.27		1.66	1.3	0.4
	Probable	0.25		297	0.95	0.19		2.37	2.4	0.5
Total Proven & Probable		0.38		327	0.96	0.22		4.02	3.7	0.8
HZG % Change	Proven	131%		-10%	21%	-30%		100%	169%	46%
	Probable	56%		-6%	18%	-32%		47%	81%	4%
Total Proven & Probable		82%		-6%	19%	-27%		70%	112%	38%
HPG 2013	Proven	0.56	0.94	100	4.54	0.81	16,931	1.8	25.4	4.5
	Probable	0.36	1.05	84	3.33	1.14	12,230	0.97	12.1	4.1
Total Proven & Probable		0.92	0.98	94	4.06	0.94	29,160	2.77	37.4	8.7
HPG 2012	Proven	0.24	0.63	90	5.05	1.11	4,900	0.69	12.1	2.7
	Probable	0.39	1.14	73	2.83	1.87	14,300	0.92	11.0	7.3
Total Proven & Probable		0.63	0.95	79	3.67	1.58	19,200	1.6	23.1	10.0
HPG % Change	Proven	133%		11%	-10%	-27%		161%	110%	67%
	Probable	-8%		15%	18%	-39%		5%	10%	-43%
Total Proven & Probable		46%		19%	11%	-41%		73%	62%	-13%
TLP 2013	Proven	1.18		135	2.67	0.18		5.13	31.5	2.1
	Probable	2.10		160	2.45	0.22		10.8	51.3	4.7
Total Proven & Probable		3.28		151	2.52	0.21		15.94	82.8	6.8
TLP 2012	Proven	0.45		135	3.48	0.23		1.97	15.8	1.0
	Probable	2.10		124	2.87	0.25		8.37	60.3	5.3
Total Proven & Probable		2.55		126	2.98	0.25		10.35	76.1	6.4
TLP % Change	Proven	162%		0%	-23%	-22%		160%	99%	111%
	Probable	0%		29%	-15%	-12%		29%	-15%	-11%
Total Proven & Probable		29%		20%	-15%	-16%		54%	9%	6%
LM 2013	Proven	0.54		282	1.67	0.20		4.92	9.1	1.1
	Probable	2.35		236	1.84	0.24		17.89	43.4	5.8
Total Proven & Probable		2.89		245	1.81	0.24		22.81	52.5	6.9
LM 2012	Proven	0.23		283	1.96	0.23		2.09	4.5	0.5
	Probable	2.27		268	2.39	0.35		19.59	54.3	8.0
Total Proven & Probable		2.50		269	2.35	0.34		21.65	58.8	8.5
LM % Change	Proven	135%		0%	-15%	-12%		135%	102%	121%
	Probable	4%		-12%	-23%	-30%		-9%	-20%	-28%
Total Proven & Probable		16%		-9%	-23%	-31%		5%	-11%	-19%
Ying Mine 2013	Proven	5.24	0.10	207	3.56	1.34	16,931	34.81	186.7	70.2
	Probable	7.40	0.05	200	2.62	0.77	12,230	47.71	193.7	57.0
Total Proven & Probable		12.64	0.07	203	3.01	1.01	29,160	82.52	380.4	127.2
Ying Mine 2012	Proven	2.62	0.06	273	5.06	2.16	4,900	23.02	132.5	56.7
	Probable	7.17	0.06	242	3.66	1.12	14,300	55.72	262.4	80.2
Total Proven & Probable		9.79	0.06	250	4.03	1.40	19,200	78.70	395.0	136.9
Ying % Change	Proven	100%	67%	-24%	-30%	-38%	246%	51%	41%	24%
	Probable	3%	-17%	-17%	-28%	-31%	-14%	-14%	-26%	-29%
Total Proven & Probable		29%	17%	-19%	-25%	-28%	52%	5%	-4%	-7%

Some significant aspects of the comparison are:

- 29% increase in total Ying Proven plus Probable tonnage.
- A small increase in total Ying Proven plus Probable silver content and a small decrease in total lead and zinc content.
- Respective decreases in total Ying Proven plus Probable silver, lead and zinc grades of 19%, 25% and 28% (see Section 14.8 for commentary on Resource grade differences).
- Increase in Ying total Proven metal content for silver, lead and zinc of 51%, 41% and 24% respectively.
- Decrease in Ying total Probable metal content for silver, lead and zinc of 14%, 26% and 29% respectively
- Largest silver and lead percentage grade decrease at SGX.
- 20% increase in silver grade and 54% increase in silver content at TLP.

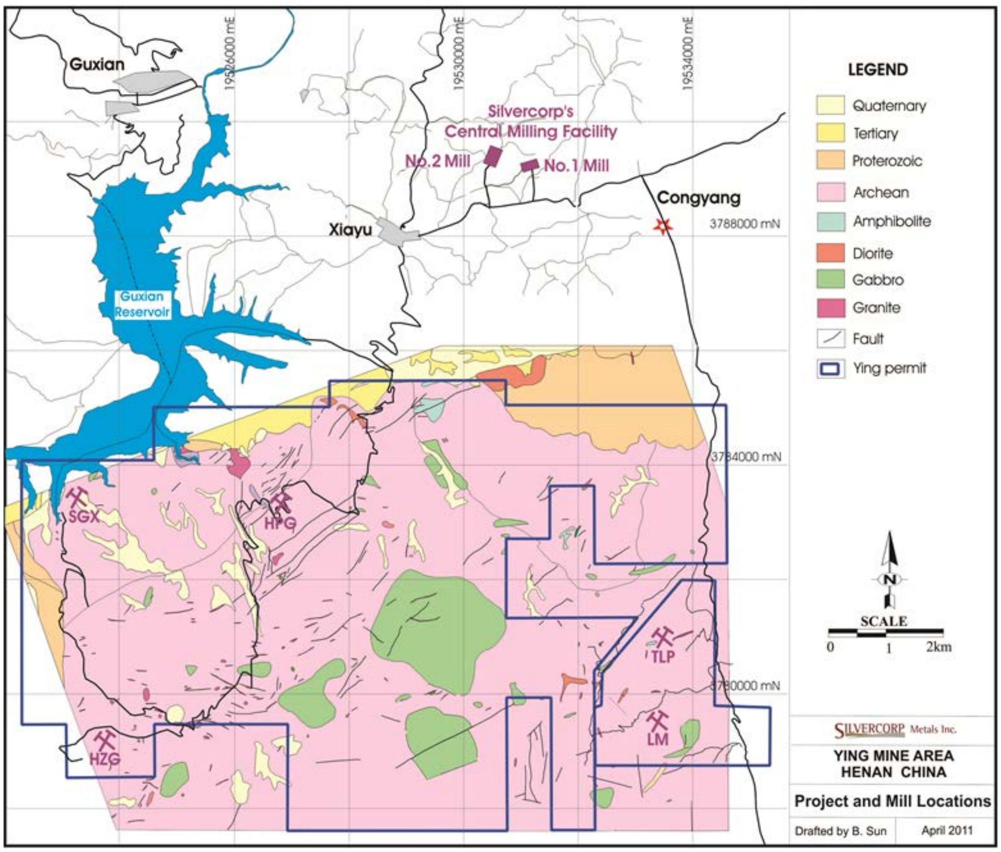
16 Mining methods

16.1 Ying Mining Operations

16.1.1 Introduction

The Ying Mining District has been intermittently mined over many years by small-scale, local miners. Silvercorp commenced mining at its Ying property (SGX mine) in April 2006. Its current mining activities continue to be focused at the SGX mine, but now also include the HZG (a satellite deposit to SGX), HPG, TLP and LM mines. Figure 16.1 is a plan view showing the relative location of the mines.

Figure 16.1 Ying mines locations



Underground access to each of the mines in the steeply-sloped, mountainous area is generally via adits at various elevations, inclined haulageways, shaft/internal shafts (winzes), and decline (ramp).

The mines are developed using trackless equipment – 20 t trucks and single-boom jumbos, small, conventional tracked equipment – electric / diesel locomotives, rail cars, electric rocker shovels; and pneumatic hand-held drills (jacklegs). At the TLP mine and at four adits of the SGX mine, small tricycle trucks with a payload of up to 3 t each are used to haul ore to surface.

The global extraction sequence is top-down between levels, and generally outwards from the central shaft or main access location. The stope extraction sequence is bottom-up, with shrinkage and resuing being the main mining methods. Stope production drilling is by jackleg. In-stope rock movement is by gravity to draw points or by hand-carting/hand-shovelling to steel ore passes or chutes. Production mucking uses mostly hand shovels or, occasionally, rocker shovels, with rail cars and electric or diesel locomotives transporting ore to the main shaft or inclined haulageway. Ore transport to surface is accomplished via skip/cage hoisting (shaft), rail-cars (tracked adit and/or inclined haulageway), small tricycle trucks, or 20 t trucks (ramp). Some hand picking of high grade ore and of waste is done on surface, with transport to the centralized processing plants being via 30 t and 45 t trucks or barge and truck combination.

16.1.2 SGX

The SGX mine is in the western part of the Ying district. It is accessed by a total of eight adits and a ramp, which is currently driven to 260 mRL with a total length of 2955 m. In respect of the existing underground infrastructure and the distribution of Mineral Resources, the whole mining area is divided into 14 production systems. A production system is an independent mining area with an independent transport and muck hoisting system. SGX is the largest of the Silvercorp Ying operations, producing about 49% of tonnes and 62% of Ag ounces for the total operation in 2012. The Ag-Pb-Zn mineralization is found in at least 27 veins with the four largest vein systems (S7, S2, S16 and S14) accounting for over 75% of this mineralization. Vein widths range from around 0.3 m to 5.1 m with approximately 43% mined by resuing and approximately 57% mined by shrinkage, on a tonnage basis. Mining is currently planned down to the 10 mRL. Adjacent to the SGX mine are the ore and waste sorting facilities, and main office, engineering and administration buildings.

16.1.3 HZG

The HZG mine is a satellite of the SGX mine, with portals located about 4 km to the south of the main SGX site. It is accessed by five adits, and hosts seven production systems. The vein widths projected for mining range from about 0.2 m to 3.5m, the veins being generally similar to those found throughout the district. Projected mining in terms of tonnage is approximately 51% resuing and 49% shrinkage, and the mining plan envisages ore being produced from five veins between the 450 mRL and 950 mRL. 2011 was the first year of production at HZG. Approximately 11% of Ying 2012 ore tonnage and Ag ounces were produced at HZG.

16.1.4 HPG

The HPG mine area has been operated since 2007 and is located in the central part of the district, to the northeast of the SGX mine. It is accessed from six adits and mining from 15 veins is projected in the LOM plan between the 800 mRL and 80 mRL. The HPG mine is divided into eight production systems. Projected mining is about 42% resuing and about 58% shrinkage, with vein widths projected for mining ranging from less than 0.3 m up to about 2.7 m. About 8% of Ying 2012 ore tonnage was produced at HPG (approximately 4% of Ag ounces).

16.1.5 TLP

The TLP mine lies about 11 km east–southeast of SGX. There are 36 known veins, all dipping westward. The mine is serviced from eight adits, and hosts eight production systems. The mining plan currently shows production occurring through to 2030 from stopes between 200mRL and 1100mRL and from vein widths generally between 0.3 m and 5.0 m, although some are up to 12.6 m. Over 73% of stoping is envisaged as being by shrinkage, and about 27% by resuing. About 20% of Ying 2012 production tonnes (9.5% of Ag ounces) came from TLP.

16.1.6 LM

The LM mine is located just south of the TLP mine and about 12 km from SGX. 46 veins with steep dips to either east or west have been identified. Access is via five adits, a shaft, and a ramp, which is currently being driven to 706 level with a total length of 2791 m. The LM mine is divided into two areas - LM East and LM West - with 14 production systems. LOM production is envisaged through to 2023 at LM West and 2026 at LM East, from veins lying between 970mRL and 210mRL that are ranging from less than 0.3 m up to about 7.3 m. Approximately 12% of Ying 2012 production tonnes (14% of Ag ounces) were produced from LM.

16.2 Mining methods and mine design

16.2.1 Geotechnical and hydrogeological considerations

No specific geotechnical or hydrogeological study data is available for the Ying mines.

Development and mining operations to date have generally encountered good ground conditions. The excavation of relatively small openings, both in development and stoping, facilitates ground stability. Support is only installed where deemed to be necessary, with rockbolts being used for hangingwall support on occasion. Timber and steel I-beams may also be used where unstable ground is encountered.

AMC is not aware that water in-flow to date at the Ying mines has created any significant problems. Section 16.2.9 discusses mine dewatering.

16.2.2 Development and access

As referenced above, the mines in the Ying District are located in narrow valleys, and a series of adits at each mine provides access from the surface to the mining areas. Most of the operational levels do not have their own access portal and must connect to internal shafts or inclined haulageways. The ongoing development of two ramps, each approximately 5km in length, at the SGX and LM mines (5050 m at SGX and 5100 m at LM West) will provide connection between most of the underground operations at these two major operating mines.

Mine access for rock transportation, materials supply and personnel is provided by five different means and, in combination, they form the access systems for the Ying District mines:

- Adits and portals
- Inclined haulageways
- Decline accesses (ramp).
- Internal shafts (winzes)
- Shaft

Adits are driven slightly to the rise from surface at a size of approximately 2.2 m x 2.2 m. These are the principal means of access for men and materials and transport of ore and waste. All services such as electrical, compressed air, drill water and dewatering lines are located in the adits. In many instances, they are also used for delivery and removal of fresh and return air respectively. Most of the adits are equipped with narrow gauge rail for transport by railcars. Where there is no rail, tricycle cars are utilized for transport of ore, waste and supplies.

Inclined haulageways are driven at approximately 25 to 30^{o}. Typical dimensions are 2.4 m W x 2.2 m H. They are equipped with narrow gauge rail and steps on one side for foot travel. The main purpose of these drives is haulage of ore and waste, and delivery of ventilation and other services such as water, compressed air, communications and electricity. Figure 16.2 shows an inclined haulageway at the SGX mine.

Figure 16.2 Inclined haulageway at SGX mine

The main ramps that are being developed in the SGX and LM mines are jumbo-driven drifts with dimensions of 4.2 m wide by 3.8 m high at 12% grade. One daylights at LM West as the 980 Ramp, developed from 980 to 500 m elevation. At the SGX mine, the 560 Ramp starts at 560 m elevation and bottoms at 0 m elevation. The total planned length is just over 10 km.

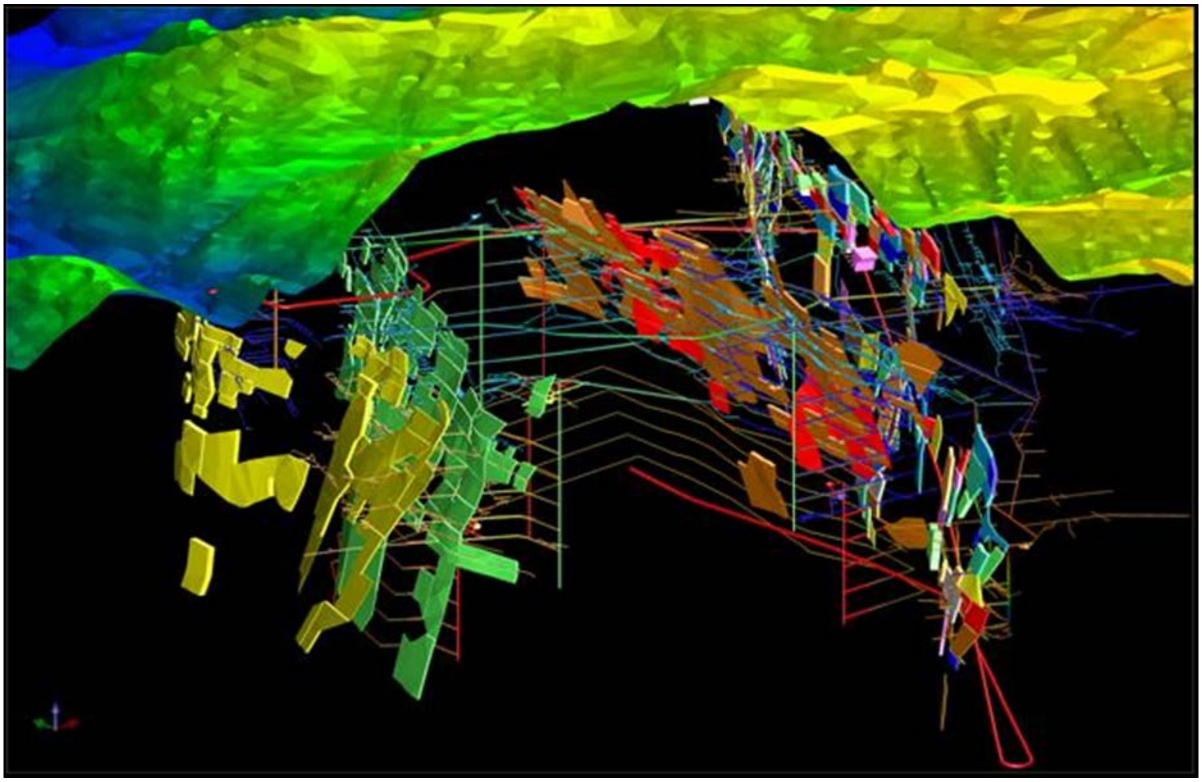
As of June 2013 there were 21 internal shafts (winzes) throughout the Ying property. The hoisting capacity of these shafts varies from 50,000 tpa to 150,000 tpa (combined ore and waste). Fully-loaded rail cars that bring up ore and waste are cage-transported via these shafts; they are also used for hoisting men and materials. There is one internal shaft in the SGX mine to load waste using a skip.

The only shaft to surface is the 969 shaft at LM West. It has a finished diameter of 3.5 m and is equipped with a ZJK-2×125P hoist winch. The total depth of the shaft is 480m, and the hoisting capacity is 150,000 tpa of combined ore and waste, with a standard cage. This shaft works in tandem with PD900 winze in the LM East area.

At SGX, only the adit portals and one ramp connect the mine workings to surface. Inclined haulageways and internal shafts provide access to the ore, which is generally located at elevations below the level of portal entrances. Further declines/internal shafts are planned for the LM, HZG and HPG mines.

Figure 16.3 is an orthogonal view of the SGX mine design.

Figure 16.3 SGX mine design



16.2.3 Mining methods

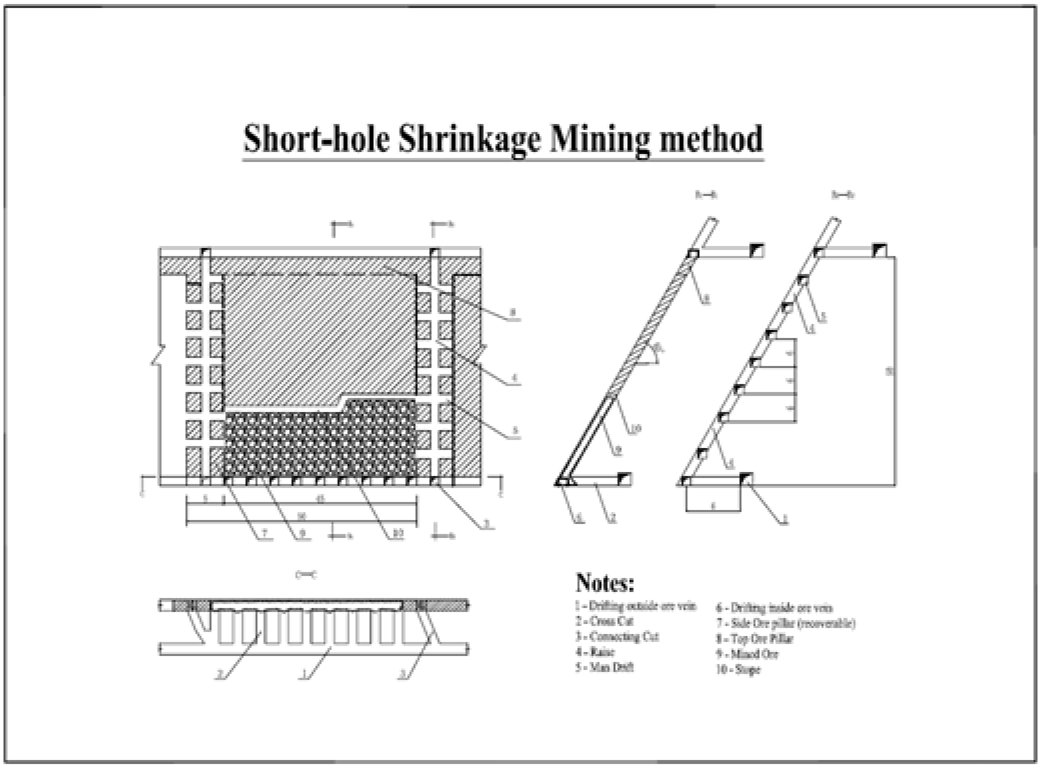
Shrinkage stoping and resue stoping are the mining methods employed at the Ying mines. The LOM plan envisages the continuation of these methods.

16.2.3.1 Shrinkage stoping

A sill drive is initially driven along the vein at 1.8 m height. For typical shrinkage stopes, the lower part of the vein will be mined at 1.2 m width, while the upper part will be mined at 0.8 m width. An access drive at 2 m W x 2 m H (conventionally a footwall drive) is also developed parallel to the vein at a stand-off distance of about 6m. Crosscuts for ore mucking from draw points are driven between the vein and the strike drives at approximately 5 m spacing. The crosscuts act as draw points for the mucking of the stope ore. Each stoping block is typically 40 m to 60 m in strike length by 40 m to 50 m in height. Travelway raises that are also used for services are established between the levels at each end of the stope block. Waste packs are built on each void side of the raise as stoping proceeds upwards.

Jacklegs are used to drill a 1.8 – 2.0 m stope lift that is drilled and blasted as inclined up-holes with a forward inclination of 65 – 75^{o} (“half-uppers”). The typical drill pattern has a burden of 0.6 – 0.8 m and spacing of 0.8 – 1.2 m, dependent on vein width. Holes are charged with cartridge explosives and ignited with tape fuse. The powder factor is generally 0.4 – 0.5 kg/t. Stope blasting fills the void below with ore as mining proceeds upwards. The ore swell is mucked from the drawpoints to maintain a stope working height of about 2 m. While mining is underway, only 30 - 40% of the stope ore may be mucked. When mining is complete, all remaining ore is mucked from the stope, unless significant wall dilution occurs. The stope is left empty beneath a sill (crown) pillar of, typically, around 2 m thickness (adopted thickness ultimately dependent on extraction width). Ventilation, compressed air and water are carried up the travelway raises to the mining horizon. Loading of the ore from the draw points is by miners into rail cars, either using rocker-shovels or by hand. Figure 16.4 is a schematic of the shrinkage stoping method.

Figure 16.4 Shrinkage stoping method



16.2.3.2 Resue stoping

Resue stoping veins are typically high-grade and generally between 0.1 m (minimum extraction 0.3 m) and 0.80 m width. Resue stoping involves separately blasting and mucking the vein and adjoining waste to achieve a minimum stope mining width.

Vein and access development preparation is essentially the same as for shrinkage stoping, other than draw points being established at approximately 15 m spacing along strike. Blasted ore is mucked into steel-lined mill holes that are carried up with the stope and feed to the draw points. The base of the mill holes is held in place with a timber set.

Half-upper lifts are drilled with jacklegs and blasted in essentially the same manner as for shrinkage stoping. Typically, after a lift in the vein is blasted and mucked, the footwall is blasted and the ensuing waste is used to fill the space mined out and to provide a working floor. This process is repeated until the stope sill (crown) pillar is reached. The entire stope is left filled with waste from the slashing of the footwall.

The blasted ore is transported by wheel barrow and/or hand shovelled to the mill hole, which is extended in lift segments as the stope is mined upwards. The footwall waste is slashed (blasted) to maintain a minimum mining width (typically 0.8 m).

The order of vein extraction and footwall slashing is generally dependent on the condition of the vein hangingwall contact. Where the contact is distinct and stable, the vein is extracted first; otherwise the footwall waste is extracted first, followed by vein slashing.

Figure 16.5 shows the back of a resue stope at the SGX mine. Excavation width at the back is about 0.4 m.

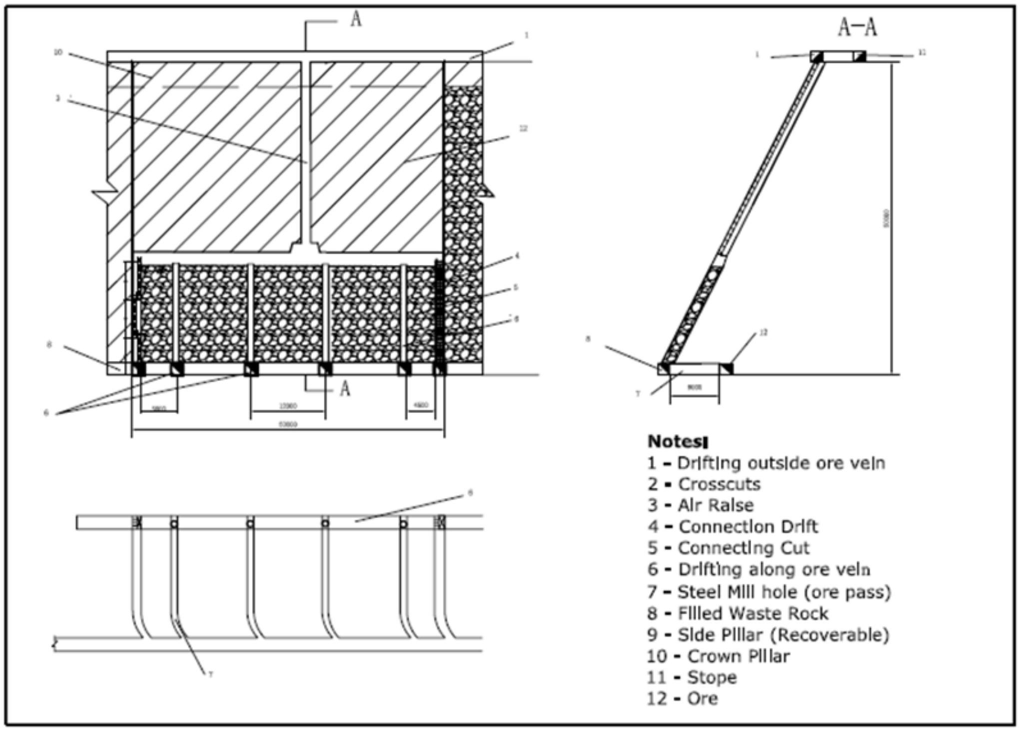
Figure 16.5 Resue stope at SGX mine

Rubber mats and/or belting are placed on top of the waste after each waste lift to minimize ore intermingling with the waste (ore losses) and also to minimize over-mucking of the waste (dilution). The rubber mats and/or belting are rolled up and removed prior to slashing the footwall, with that broken material forming the floor for the next platform lift.

Silvercorp acknowledges that in-stope ore movement may potentially be improved by using scraper winches with small buckets.

Figure 16.6 is a schematic of the resue stoping method.

Figure 16.6 Resue stoping method



16.2.3.3 Stope management and grade control

Silvercorp has developed a stope management protocol and stope management manual at the Ying operations. The purpose of stope management is to implement stope operation procedures for dilution reduction via the Mining Quality Control Department. The department has a total of 22 technical staff, including management, mine engineers, geologists and technicians, and reports directly to Silvercorp's HQ in Beijing. The mine engineers in the group are responsible for supervising the stope operation procedure, with stope inspection occurring at least once per day to check that mine contractors are following procedure guidelines. The geologists and geological technicians are responsible for stope geological mapping and sampling, which occurs every 3 - 5m of stope lift. The department also measures the mined area of a stope at the end of each month for mine contract payment purposes.

Key aspects of the stope inspection are as follows:

- Ensuring that the back and floor of the stope are flat prior to drilling blasting holes.
- Checking to ensure the boundary of the mineralization and drill hole locations are correctly marked with red paint before drilling.
- Ensuring drill holes are inclined not less than 60^{o} to the horizontal, are not longer than 2 m, and are drilled optimally relative to vein and excavation width to minimize dilution.
- In a resuing stope, checking if the stope floor is covered with rubber mat/belt before blasting.
- In a resuing stope, checking to make sure that waste is sorted first and left in the stope before mucking ore to the mill holes after blasting; also ensuring that the floor and walls are cleaned with a broom to minimize ore losses before footwall slashing.
- After blasting, checking that the stope back is not more than 3.5 m high and the steel mill holes in a resue stope are properly covered with timbers.

Regarding contract payments, a mine contractor is paid based on the amount of ore mined. As it may be seen as an incentive for the contractor to maximize material removed from the stope, contractor payments are governed by a specific formula that calculates planned ore tonnes based on extraction to design and a planned dilution factor. During mine operations, each rail car or small tricycle load of ore is weighed at a weigh station outside the mine portals. If weighed ore tonnes are greater than planned ore tonnes from a given stoping area, the mine contractor is paid solely based on the planned tonnes. For shrinkage stopes, an adjustment for paid tonnes is required to be made, since a stope usually takes several months to complete and, generally, only blast swell is mucked until the stope nears completion.

16.2.4 Ore and waste haulage

As described above, ore from the resue or shrinkage stopes and waste from development are loaded by hand or rocker shovel into 0.7 m^3 rail cars. Each ore car is tagged to identify the stope from which the ore has been mined. The cars are pushed by hand or by loco along the rail on the production level to the bottom of the inclined haulageway, where they are hoisted to the next level. If this level is the adit level, the cars are parked until sufficient numbers have been accumulated to form a train for the locomotive to bring to the portal. The dimensions of the adits and inclined haulageways are referenced above. Some of the mines in the Ying District have internal shafts (winzes). These shafts are used in the same manner as the inclined haulageways. Rail cars are pushed onto the cage for transport to the next level. Only one internal shaft in SGX is equipped with a skip to hoist waste.

Figure 16.7 shows a typical Ying loco with rail cars.

Figure 16.7 Ying loco and rail cars

16.2.5 Equipment

16.2.5.1 Mine equipment

Most of the key mining equipment is provided by Silvercorp and is maintained by contractors. Exceptions to this are the air compressors at small adits such as CM103 and CM102 at the SGX mine, which are provided by the mining contractors. The ramp development contractors in SGX and LM West also use their own equipment.

The Silvercorp fixed plant is predominantly domestically manufactured and locally sourced (Henan Province). The equipment manufacturers are well known and commonly used. Tables 16.1 and 16.2 list equipment in the Ying district.

Table 16.1 Ying mines current equipment list

Mine / Camp	Equipment	Model	Capacity	Quantities
SGX	Winch	2JTP-1.6*0.9	95 kW	2
	Winch	2JTP-1.6*0.9	132 kW	10
	Winch	JTP-1.6*1'2	185 kW	1
	Winch	JT-0.8*0.6	45 kW	5
	Winch	JTK1.2*1.2	75 kW	1
	Primary Fan	K45-No.16	35-65 m^3/s	1
	Primary Fan	K45-No.11	12-25 m^3/s	2
	Compressor	L-22/7	Flow: 22 m^3/min; Pressure: 0.7MPa	9
	Compressor	L-10/7	Flow: 10 m^3/min; Pressure: 0.7MPa	9
	Compressor	LG-22/8	Flow: 22 m^3/min; Pressure: 0.8MPa	4
	Cage	GS 1-1		11
	Skip		1.5 M^3	1
	Shotcreter	HPS-5	5 m^3/h	2
	Shotcreter	JG-150	3.5 m^3/h	2
	Auxiliary fan	JK58-4	5.5 kW	32
	Auxiliary fan	JK58-4.5	11 kW	36
HZG	Winch	JTP-1.6*1.5	185 kW	1
	Winch	2JTP-1.6×1.2P	132 kW	1
	Winch	JTK-1.6×1	132 kW	1
	Winch	JTK-1X0.8	45 kW	1
	Winch	JTK-0.8×0.6	22kW	5
	Cage	GS 1-1		1
	Primary Fan	K45-4-No.10	30 kW	1
	Auxiliary fan	JK58-4	5.5 kW	10
	Auxiliary fan	JK58-4.5	11 kW	6
	Compressor	LG110-8	Flow: 20m^3/min; Pressure: 0.8MPa	8
	Compressor	BJN-10/8G	Flow: 10m^3/min; Pressure: 0.8MPa	1
HPG	Winch	JTP-1.6	132 kW	1
	Winch	JK-2*1.25P	220 kW	1
	Winch	JTK-1.2	75 kW	2
	Winch	JTK-1	45 kW	3
	Winch	JTK-1	55 kW	1
	Winch	JTK-0.8	45 kW	1
	Compressor	LG110-8	Flow: 20 m^3/min; Pressure: 0.8MPa	2
	Compressor	4L-20/8	Flow: 20 m^3/min; Pressure: 0.8MPa	3
	Compressor	L-10/7	Flow: 10 m^3/min; Pressure: 0.7MPa	5
	Compressor	L-11/7	Flow: 11 m^3/min; Pressure: 0.7MPa	2

Mine / Camp	Equipment	Model	Capacity	Quantities
	Compressor	VF-7/7	Flow: 7 m^3/min; Pressure: 0.7MPa	1
	Primary Fan	K45-4-No.10	30 kW	1
	Auxiliary fan	JK255-2	5.8 kW	8
	Auxiliary fan	JK58-4.5	11 kW	10
TLP	Winch	JTK-1.2*1.0	75 kW	2
	Winch	JTK-1.0*0.8	37 kW	2
	Primary Fan	FBCZ-NO11	30 kW	2
	Auxiliary fan	JK_2-2NO4	5.5 kW	30
	Auxiliary fan	9.19No.5.6	11 kW	16
	Compressor	LG110SF-22/8	Flow: 22 m^3/min; Pressure: 0.8MPa	2
	Compressor	LG110A-8	Flow: 20 m^3/min; Pressure: 0.8MPa	6
	Compressor	LGD-10/8	Flow: 10 m^3/min; Pressure: 0.8MPa	1
LM	Winch	2JK-2.0*1.25P	185 kW	1
	Winch	2JTP-1.6*0.9	132 kW	1
	Winch	JTK-1.0*0.8	37 kW	1
	Winch	JTK-1.2*1.0	75 kW	6
	Primary Fan	BK54-4-No.11	30 kW	3
	Auxiliary fan	JK58-4	5.5 kW	20
	Auxiliary fan	JK58-4.5	11 kW	22
	Compressor	LG110A-8	Flow: 20 m^3/min; Pressure: 0.7MPa	7
	Compressor	4L-10/7	Flow: 10 m^3/min; Pressure: 0.7MPa	4
	Compressor	L-20/7	Flow: 20 m^3/min; Pressure: 0.7MPa	1
	Compressor	L-10/7	Flow: 10 m^3/min; Pressure: 0.7MPa	3

Table 16.2 Ramp contractor equipment list

Contractors	Equipment	Model	Capacity	Quantities
SGX Ramp	One boom Jumbo Drill	CIJ17HT-C	55 kW	1
	Caterpillar Type Loader	LWLX-180	55 kW	2
	Shovel	XG951 III	162 kW	1
	Shotcreter	PC5T	5 m^3/h	2
	Concrete Mixer	JZC350	20 m^3/h	2
	Compressor	LG110A-8/11011	21 m^3/min	2
	Haul Trucks	15t	125 kW	5
	Auxiliary fan	SDF-II	30	5
LM West Ramp	One boom Jumbo Drill	HT81A	60 kW	1
	Caterpillar Type Loader	LWLX-120	55 kW	2
	Shotcreter	PC5T	5 m^3/h	1
	Concrete Mixer	JZC350	20 m^3/h	1
	Compressor	LG110A-8	110 kW	2
	Auxiliary fan	FBD No5.6	15 kW	2
	Auxiliary fan	JK_2-2NO4	5.5 kW	6
	Shovel	LWL180	180t/h	1
	Haul Trucks	15t	162 kW	6

16.2.5.2 Equipment advance rates

Table 16.3 summarizes advance rates assumed for development and production activities.

Table 16.3 Equipment advance rates

Development or Production Activity	Rate(m / month)	Machine Type
Jumbo - Ramp	150	Single Boom Electric-Hydraulic
Jackleg – Levels (Hand Mucking)	50	Jackleg (YT-24)
Jackleg – Levels (Mechanical Mucking)	120	Jackleg (YT-24)
Jackleg - Stope Raises	40	Jackleg (YT-24)
Jackleg – Shaft (Mechanical Mucking)	55	Jackleg (YT-24)
Jackleg – Declines (Mechanical Mucking)	70	Jackleg (YT-24)

16.2.6 Manpower

Silvercorp operates the Ying mines mainly using contractors for mine development, production, and exploration. The mill plant and surface workshops are operated and maintained using Silvercorp personnel. Silvercorp provides its own management, technical services and supervisory staff to manage the mine operations. Since 2012 Silvercorp also employs its own hourly workers for underground production and development in HZG (PD810, PD 820, PD890), HPG (PD3), and TLP (PD730).

Each mine complex is run by a mine manager and several deputy mine managers. Because of their proximity, the SGX and HZG mines have the same management, as do the TLP and LM mines.

The Ying Mining District has about 3,000 workers in total. Tables 16.4, 16.5, and 16.6 provide a recent 'snapshot' of the workforce, split by Silvercorp staff, contract workers, and Silvercorp hourly employees.

Table 16.4 Silvercorp staff

Mine	Staff
SGX/HZG	394
HPG	65
TLP/LM	185
Mill Plant	208
Company Administration	144
Total	**996**

Table 16.5 List of contract workers in the Ying district

Mine	Contractors	Workers	Location
SGX/HZG	Wenzhou Mining Construction Group	329	CM101,CM105,PD700
	Luanchuan Shunli Engineering Inc.(L.S)	50	CM103,PD628
	Shangluo Shunan Engineering Ltd.(W.Z)	98	CM102
	Henan Sanyi Mining Construction Corp.	140	PD16
	Luanchuan Shunli Engineering Inc.(L.H)	77	YPD01, YPD02
	Wenzhou Mining Construction Ltd	28	New Ramp.
	Subtotal	**722**	
HPG	Shangluo Shunan Engineering Ltd.(J)	63	PD5, PD640
	Shangluo Shunan Engineering Ltd.(T)	90	PD2, PD630
	Subtotal	153	

Mine	Contractors	Workers	Location
TLP/LM	Shangluo Shunan Engineering Ltd.(T)	384	PD820,PD 924,969 Shaft, PD918,PD991,PD969
	Shangluo Shunan Engineering Ltd.(W.Z)	109	PD800, PD840, PD890
	Shangluo Shunan Engineering Ltd.(W.Y)	78	PD930, PD960
	Henan Sanyi Mining Construction Corp.	193	PD838, PD900
	China 12 Metallurgy Construction Company	24	LM West Ramp 980
	Subtotal	788	
Total		1,663	

Table 16.6 Silvercorp hourly workers

Mine	Workers	Location
HZG	108	PD810, PD890
HPG	204	PD3
TLP	57	PD730
Total	369	

16.2.7 Ventilation

Mine ventilation at the Ying mines is planned and set up to be in accordance with Chinese laws and regulations. Among the key ventilation requirements are: minimum ventilation volume per person (4 m^3/min/person), minimum ventilation velocity (typically 0.25 - 0.50 m/sec dependent on location or activity), and minimum diluting volume for diesel emissions (4 m^3/min/kW). The following section describes the ventilation system at SGX. Other mines have a similar network of fans, entries and face ventilation.

16.2.7.1 SGX primary ventilation

The SGX primary ventilation volume is predominantly influenced by the minimum air velocity for the various development and production activities. The peak ventilation volume is estimated to be 63.6 m^3/sec, which is inclusive of 15% air leakage.

A diagonal ventilation system with double wings is utilized in the SGX mine.

West Wing (vein S14, S6, S2 Stopes): fresh air enters 400 mRL, 350 mRL, 300 mRL, and 260 mRL from adit PD16 via No.2 internal shaft and CM105 via No.1 internal shaft. Exhaust air returns to the 650 Adit via 450mRL, exploration line 70-72 internal shaft, and ventilation raises, and then is exhausted to surface by a main axial fan.

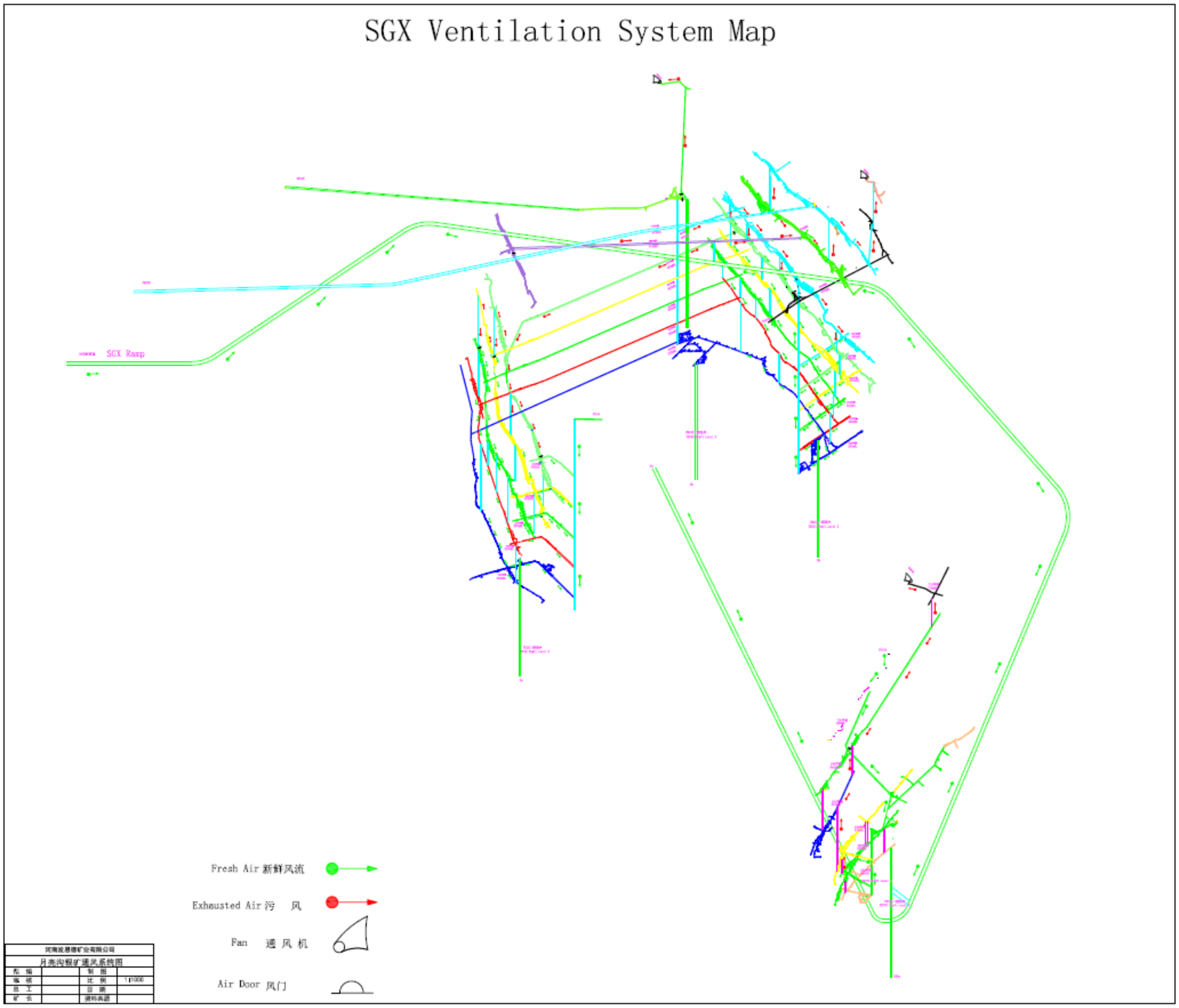
East Wing (vein S16W, S7, S8, S21 Stopes): fresh air enters 400 mRL, 350 mRL, 300 mRL, and 260 mRL from adit CM101 via No.3 internal shaft, and CM105 via No.1 internal shaft. Exhaust air: part returns to the 650 Adit via 450 mRL, exploration line 70 – 72 internal shaft, and ventilation raises, and then is exhausted to surface by a main axial fan, which is located at PD650 entrance. The remainder of the exhaust air returns to the 680 Adit via 490 mRL and ventilation raises, and then is exhausted to surface by a main axial fan.

The PD700 adit uses a separate ventilation system: fresh air enters 570 mRL and 530 mRL from adit PD700 via the inclined haulageway and internal shaft. Exhaust air returns to the CM108 Adit via 640 mRL and ventilation raises, and then is exhausted to surface by a main axial fan.

One 75 kW axial ventilation fan is installed in the entrance of PD 650 Adit. One 22 kW axial ventilation fan is installed in the entrance of PD 680 Adit. One 22 kW axial ventilation fan is installed in the entrance of CM 108 Adit. All these fans have spare motors for back-up.

Figure 16.8 is a ventilation system diagram for the SGX mine.

Figure 16.8 SGX ventilation system diagram



16.2.7.2 Secondary ventilation

The secondary ventilation system consists of auxiliary fans for ventilating production faces, development faces and infrastructure chambers.

Development faces are ventilated using domestically manufactured fans (5.5 to 11 kW – 380V). A combination of forced and exhaust ventilation is applied for long blind-headings.

Stopes are force ventilated using domestically manufactured fans via the timber cribbed access. The stope air returns to the upper level via a raise.

16.2.8 Backfill

Backfill such as tailings or development waste is not required for shrinkage mining, where blasted ore provides a working platform for each stope lift. The ore is removed on completion of stope mining leaving an empty void. There is potential to opportunistically dispose of development waste into these voids, but current mine plans do not make allowance for this.

The resue stoping method uses blasted waste from the footwall (to achieve the minimum mining width) as the working platform for each stope lift. The waste remains in the stope at completion of stope mining.

16.2.9 Dewatering

Mine dewatering is effected under the requirement from the "Chinese Safety Regulations of Metal and Non-metal Mines".

Typical underground water flow from the different mines is listed in Table 16.7 below.

Table 16.7 Mines water flow

Mine	Maximum water flow (m^3/day)	Average water flow (m^3/day)
SGX	27,000	9,000
HPG	1100	650
TLP	960	360
LM	840	600
HZG	560	260

The SGX dewatering system is described in some detail below. The dewatering systems at HZG, HPG, TLP, and LM mines are similar to those at SGX. These systems are briefly described also.

16.2.9.1 SGX dewatering

The pumping system is a dirty water arrangement with a sump and three pumps at each location. In normal circumstances, one pump is running, one is being maintained, and one is on standby. Under conditions of maximum water inflow, all available pumps can be operated, with the exception of pumps that are being maintained. If all pumps operate, they can handle the maximum estimated inflow rate. There are two main pipelines to surface, one of which is on standby. The underground sump capacity is 6 – 8 hours at the average water yield.

Stage 1 dewatering

Pump stations equipped with three or more pumps connected directly to surface are located at the bottom of internal shafts. Table 16.8 lists station pumps at the bottom of internal shafts.

Table 16.8 Stage 1 water pumps at SGX mine

Portal	Model	Units	Power (kW)	Flow(m^3/h)	Lift (m)
CM101	MD85-45*9	3	160	85	405
	D46-50*9	1	110	46	450
CM105	MD155-67*6	2	280	155	402
	MD46-50*8	1	90	46	400
	MD85-45*9	1	160	85	405
CM105-S2#	MD155-67*6	2	280	155	402
	D46-50*9	1	110	46	450
	MD25-50*8	1	75	25	400
PD16	D25-50*8	2	75	25	400
	D46-50*9	1	110	46	450
PD700	MD46-50*7	3	75	46	350
CM105 Skip shaft	MD155-67*6	3	280	155	402

Portal	Model	Units	Power (kW)	Flow(m^3/h)	Lift (m)
CM102	WQX12.5-80/4	2	5.5	12.5	80
	MD25-50*6	1	75	50	300
CM103	WQX12.5-80/4	2	5.5	12.5	80
YPD01	250QJ50-180/9	1	55	50	180
YPD02	WQ40-80	1	22	40	80

Stage 2 dewatering

Mining level accesses have been designed with a 0.3% gradient to allow proper drainage. The pump and piping arrangements are similar to Stage 1. The inflow collected from various mining levels is then pumped to the 260 m elevation; from here it is pumped to surface through the 1st stage dewatering system. Table 16.9 lists the details of the SGX second stage pumping system.

Table 16.9 Second stage water pumps at SGX mine

Pump Stations	Units	Model	Power (kW)	Flow (m^3/h)	Lift (m)
CM101	3	MD85-45*7	132	85	315
CM105	3	MD155-67*5	220	155	335
CM105-S2	3	MD155-67*5	220	155	335
PD16	3	MD46-50*6	75	46	300
CM102-S8 Internal shaft	3	MD25-50*4	30	25	200
PD700	3	MD46-50*7	90	46	350

In case of a flood, water dams are set up at the entrance to shaft stations and pump houses in order to protect personnel and equipment.

Development face dewatering

Conventional electric submersible pumps are used for development ramp and decline face dewatering on an as-needed basis. Water is stage discharged to the nearest level pump station.

16.2.9.2 HZG dewatering

Dewatering is divided into two stages: the first stage is from 650 mRL to 820 mRL; the second stage is from 300 mRL to 650 mRL. The sumps at both 300 mRL and 650 mRL have a capacity of 150 m^3 each. For the first stage, three 75 kW D25-50x5 centrifugal pumps are located at the pump station in a similar set-up to SGX. The second stage utilizes three 75 kW D25-50x8 centrifugal pumps. Two 89 mm pipelines installed in inclined haulageways route the water from the 650 mRL sump to surface. One line is on standby.

16.2.9.3 HPG dewatering

PD3 dewatering is divided into two stages: the first is from 460 mRL to PD3 (600 m) adit level, the second is from 300 mRL to 460 mRL. The sumps at both 300 mRL and 460 mRL have a capacity of 300 m^3. For the first stages, there are two centrifugal pumps, model D85-50X4 with power draw 75 kW, and one centrifugal pump D46-50X4 model with power draw at 45 kW. For the second stage, there are three centrifugal pumps model D85-50X5 with power draw at 75 kW. Two 108 mm pipelines installed in inclined haulageways take the water to surface. One line is on standby.

16.2.9.4 TLP dewatering

Water discharge is currently from the 700 m level to the 730 m level, and then via the PD730 adit to surface. The pump model is WQ40-80/4-15, head is 80 m, designed discharge capacity is 40 m^3/h and power is 15 kW. For the second stage dewatering, there are three centrifugal pumps installed in Line 31 internal shaft at 510 mRL bottom pump station. The model is MD46-50X6, power is 75 kW. Two 89 mm pipe lines are installed along Line 31 internal shaft, via 650 mRL, Line 33 internal shaft, PD770 inclined haulageway, and PD 770 adit to surface.

16.2.9.5 LM dewatering

LM West

Three centrifugal pumps (model MD46-50X11), with a combined power draw of 132 kw, are installed in the 969 shaft 500 mRL bottom pump station. There are two 89 mm pipe lines installed in the 969 shaft, which are then routed via 926 mRL and PD 924 adit to surface.

LM East

In LM East, three 110 kw MD46-50x8 centrifugal water pumps are installed in 500mRL pump station at the PD900 internal shaft. Second stage dewatering will be handled by three 75 kw MD46-50x6 centrifugal water pumps installed in the internal shaft 250mRL bottom pump station. Two 89 mm pipe lines are installed in PD900 internal shaft and then routed via 840mRL and PD 838 adit to surface.

16.2.10 Water supply

Water consumption at SGX area is low and is sourced from the Guxian Reservoir. It is primarily used for drilling and dust suppression. Water consumption is rated at 19.3 m^3/h for each portal. As per safety regulations, a fire-prevention system with 27 m^3/h is required. To meet safety and production needs, there is a 200 m^3 water pond at each portal, with the exception of PD16 where the capacity is 300 m^3. Water supply is via 89 mm diameter pipelines.

The water source for HZG, HPG, TLP, and LM mines is from nearby creeks and springs and underground sources. A water pond of 100~200 m^3 capacity is established at each adit portal. Both the water quality and quantity from local creeks is sufficient to meet mine requirements.

HZG requirements are estimated at 330 m^3/d. There is a water pond of 100 m^3 at each portal.

HPG requirements are estimated at 310 m^3/d. There is a water pond of 200 m^3 at the mine site, with water being delivered via a 107 mm diameter pipeline.

TLP Mine requirements are estimated at 556 m^3/d. There is a water pond of 200 m^3 at the mine site, with water being delivered via an 89 mm diameter pipeline.

LM Mine requirements are estimated at 320 m^3/d for LM East and 400 m^3/d for LM West. There is a water pond of 200 m^3 at each portal, with water being delivered via 89 mm diameter pipelines.

16.2.11 Power supply

Power for the SGX mine is supplied from the local government network by three lines. One is a 35 kV high-voltage line that is connected from Luoning Guxian 110 kV substation; the second is a 10 kV high-voltage line that is connected from Luoning Guxian 35 kV substation. The power source is hydropower, generated at the Guxian Reservoir Dam, and the length of overhead power lines is about 8 km. The third network supply is a 10 kV high-voltage line from the Luoning-Chongyang 35 kV substation, about 12 km from SGX.

A fully automated 35 kV substation in the immediate vicinity of the mine site was built in 2008. The capacity of the main transformers is 6,300 kVA.

The 35 kV overhead line can supply main power for all mine production; the 10 kV overhead line is maintained as a standby. Two 1,500 kW and one 1,200 kW generators are installed in the fully automated 35 kV substation as a back-up supply for the CM101, CM102, CM103, CM105, PD16 and PD700 adits in the event of a power outage.

Underground water pumping stations and hoist winches belong to the first class power load, and require two independent 10 kV power lines, one for operation and the other for backup. During normal operation they can maintain stope operation in addition to meeting the requirement of the first-class power load. In case of emergencies, including underground flooding, they are only required to guarantee service of the first-class power load.

See also Section 18.3.

16.2.12 Compressed air

Compressed air is primarily used for drilling. Jacklegs are used in all stopes and conventional development faces. A minor quantity of air is used for shotcrete application and cleaning holes.

Compressor plants are located adjacent to each portal; they are of two-stage, electric piston configuration. Air is reticulated via steel pipes of varying sizes, depending on demand, to all levels and is directed to emergency refuge stations. Air lines are progressively sized from 101 mm diameter down to 25 mm diameter at the stopes.

Compressed air consumption is estimated for each mine operating system (usually differentiated by adits), based on mine production and number of development faces. Suitable air compressors are installed to satisfy volume requirements.

16.2.12.1 Explosives

Refer to Section 18.8.6.

16.2.13 Communications

Mine surface communication is available by landline service from China Network Company (CNC) and by mobile phone service from China Mobile (CMCC) and China Unicom.

Key underground locations such as hoist rooms, shaft stations, transportation dispatching rooms, power substations, pump stations, refuge rooms and the highest point of each level are equipped with telephones. Communication cables to underground are connected via internal shafts and declines. Internal telephones are installed in operating areas and dispatching rooms, which are also connected with communication cables to the local telephone lines.

16.3 Safety

Ying Mine safety is practiced as per Chinese health and safety laws and regulations. The Occupational Health and Safety (OHS) department role is to provide safety training, enforce OHS policies and procedures, make mine safety recommendations and carry out daily inspections of the underground workings and explosive usage.

Each of the mining contractors is required to appoint two to three safety officers in each portal.

A ten-member safety committee is maintained for each of the SGX (including HZG), HPG and TLP/LM mines. The committees are led by the Henan Found general manager and include the deputy general manager, mine manager, safety department supervisor, and mining contractor representatives. The committees are coordinated by each mine’s safety department, and the mine management and the safety officers are required to have valid mine safety training certificates issued by the Provincial Bureau of Safe Production and Inspection.

Insurance policies covering death and injury have been purchased for all of the staff and contractor workers in the mines.

The mine and contractors supply Personal Protective Equipment (PPE) to their own personnel.

A contract with the Luoning County General Hospital is in place to take and treat injured workers from all mines, except those treated at the mine clinic.

Between January 2012 and June 2013, there were seven lost time injuries in the Ying District, five to contract workers, and two to Silvercorp employees, with the maximum individual lost time being 90 days. AMC notes that Silvercorp has gone beyond Chinese statutory requirements in certain areas of safety but also recognizes that some operating practices and procedures fall short of more international standards. AMC recommends that Silvercorp continue with a focus of improving mine and site safety and including implementation of a policy where the more stringent of either Chinese or Canadian safety standards are employed.

16.4 Production and scheduling

16.4.1 Development schedule

Table 16.10 summarizes the LOM development schedule for each of the Ying mines and for the operation as a whole.

Table 16.10 Ying Mines LOM Development Schedule

SGX	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Capital Lateral (m)	3,370	3,595	2,170	1,715	2,232	1,845	800	-	110	270	-	420	40	-	-			16,567
Capital Vertical (m)	1,800	1,300	310	200	150	-	-	-	120	-	15	25	-					3,920
Operating Lateral (m)	16,991	15,608	14,688	13,236	10,210	9,022	10,402	8,925	7,905	3,390	3,440	2,745	3,020	2,395	95			122,072
Operating Vertical (m)	3,205	3,410	3,130	3,195	2,630	1,770	1,255	1,415	1,390	550	610	700	770	690	50			24,770
Total (m)	25,366	23,913	20,298	18,346	15,222	12,637	12,457	10,340	9,525	4,210	4,065	3,890	3,830	3,085	145			167,329
HZG	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**					**Total**
Capital Lateral (m)	135	1,018	1,244	473	90	478	300	60	-									3,798
Capital Vertical (m)		135	505															640
Operating Lateral (m)	3,493	4,270	3,630	4,520	3,660	2,115	1,990	1,335	85									25,098
Operating Vertical (m)	1,335	1,100	670	870	935	420	540	345	-									6,215
Total (m)	4,963	6,523	6,049	5,863	4,685	3,013	2,830	1,740	85									35,751
HPG	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**					**Total**
Capital Lateral (m)	1,105	2,660	410	851	450	850	918	820	470	740	880	755	80					10,989
Capital Vertical (m)	150	-	-	200	300	200	-	100	-	50	-	50	-					1,050
Operating Lateral (m)	3,884	4,187	3,859	2,015	2,170	1,680	1,946	2,005	1,735	1,558	1,450	860	500					27,849
Operating Vertical (m)	1,251	965	1,050	1,105	490	695	635	450	600	635	580	425	350					9,231
Total (m)	6,390	7,812	5,319	4,171	3,410	3,425	3,499	3,375	2,805	2,983	2,910	2,090	930					49,119
TLP	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Capital Lateral (m)	3,270	3,460	3,670	3,130	3,390	3,080	2,860	2,350	2,280	1,560	1,180	1,560	1,270	1,270	570	590	330	35,820
Capital Vertical (m)	-	190	100	250	500	300	50	260	-	120	80	160	-	-	-	-	-	2,010
Operating Lateral (m)	3,910	3,085	2,890	3,160	2,855	3,360	3,600	4,080	3,750	3,980	4,250	4,060	4,350	3,510	1,740	1,080	640	54,300
Operating Vertical (m)	1,165	1,540	1,630	1,695	1,260	1,425	1,595	1,425	1,260	1,495	1,590	1,260	1,400	840	400	360	220	20,560
Total (m)	8,345	8,275	8,290	8,235	8,005	8,165	8,105	8,115	7,290	7,155	7,100	7,040	7,020	5,620	2,710	2,030	1,190	112,690
LM East	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**					**Total**
Capital Lateral (m)	1,620	2,035	1,335	1,588	1,040	1,590	1,082	1,390	1,270	1,530	1,709	630	92					16,911
Capital Vertical (m)	150	100	100	-	-	-	-	-	-	-	-	-	-					350
Operating Lateral (m)	2,232	2,566	2,223	2,290	2,260	1,975	2,022	2,005	2,258	1,878	2,111	1,085	80					24,985
Operating Vertical (m)	1,125	1,455	1,075	910	1,100	660	970	1,010	970	1,125	1,230	330	75					12,035
Total (m)	5,127	6,156	4,733	4,788	4,400	4,225	4,074	4,405	4,498	4,533	5,050	2,045	247					54,281

Table continues…

LM West	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**					**Total**
Capital Lateral (m)	2,790	1,985	1,500	1,950	1,900	2,140	2,230	2,320	1,880	960								19,655
Capital Vertical (m)	630	520	320	480	480	560	510	780	430	210								4,920
Operating Lateral (m)	5,770	5,980	6,300	6,320	5,230	5,650	5,405	4,451	2,863	2,585								50,554
Operating Vertical (m)	2,540	2,850	2,760	2,560	2,040	2,200	2,060	1,800	1,019	910								20,739
Total (m)	11,730	11,335	10,880	11,310	9,650	10,550	10,205	9,351	6,192	4,665								95,868
Ying Mines	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**					**Total**
Capital Lateral (m)	12,290	14,753	10,329	9,707	9,102	9,983	8,190	6,940	6,010	5,060	3,769	3,365	1,482	1,270	570	590	330	103,740
Capital Vertical (m)	2,730	2,245	1,335	1,130	1,430	1,060	560	1,140	550	380	95	235	-	-	-	-	-	12,890
Operating Lateral (m)	36,280	35,696	33,590	31,541	26,385	23,802	25,365	22,801	18,596	13,391	11,251	8,750	7,950	5,905	1,835	1,080	640	304,858
Operating Vertical (m)	10,621	11,320	10,315	10,335	8,455	7,170	7,055	6,445	5,239	4,715	4,010	2,715	2,595	1,530	450	360	220	93,550
Total (m)	61,921	64,014	55,569	52,713	45,372	42,015	41,170	37,326	30,395	23,546	19,125	15,065	12,027	8,705	2,855	2,030	1,190	515,038

Development is characterized as either operating or capital, and includes vein exploration, stope preparation, level development, decline and shaft excavation, and underground infrastructure development. Capital development is notionally that associated with ramp excavation, level access and level rock transportation routes. Operating development is notionally the portions of the level access that provide immediate access to a stope, draw point accesses, and vein development, including exploration vein development.

AMC notes the projected advance rate of 150 m/month for the main ramp developments at SGX and LM West. AMC also notes the reported 2012 total development advance of 90,594 m for the Ying mines (not including 70,080 m^3 of slashing).

AMC considers that the projected LOM development totals are achievable and notes that a continuing high degree of development focus will be necessary throughout the Ying operation.

16.4.2 Mines Production

16.4.2.1 Production Rate

Mine operations are scheduled for 365 days of the year, but with production on a 330 days per year basis. Nominal production rates for shrinkage and resuing stopes are around 1200 and 600 tonnes per month respectively, but with the actual rate from each stope being dependent on realized vein and excavation widths.

Table 16.11 is a general summary of production rates and projected years of operation for the Ying mines.

Table 16.11 Ying mines production rate summary

Mine	Production Rate (t/month)		Typical No. of Stopes in Operation	Annual Production (kt/a)	Estimated Mine Life (years)
	Shrinkage	Resue			
SGX	1200	600	40	330	16
HZG	1200	600	12	85	9
HPG	1200	600	10	70	13
TLP	1200	600	20	200	17
LM East	1200	600	10	85	13
LM West	1200	600	20	200	10

16.4.2.2 Mines Production 2010 to June 2013

Table 16.12 summarizes mine production tonnes and grade from 2010 to end of June 2013, including high grade, hand-sorted ore (direct shipping ore). 2012 production for the Ying mines as a whole is noted to have increased by about 24% since 2010, but consequent with the planned mining of lower grade areas at the SGX mine, Ag grade decreased by about 26% and Pb and Zn grades decreased by about 35%. The trend of increased production but with lower grades for the combined mines continued in the first half of 2013. The SGX mine generated about 59% of total production tonnes over the three years to end-2012, and about 42% of total production tonnes for the first half of 2013. All other mines increased their percentage share of total production in the first half of 2013 compared to the total of the three previous years.

Table 16.12 Ying mines production – 2010 to 30 June 2013

Mine	Ore Type	Unit	2010	2011	2012	2013 (Till June 30)	Total
SGX	Total Ore Mined	t	386,015	408,112[1]	351,931	162,829	1,308,887
	Grade	Ag (g/t)	408	368	297	240	345
		Pb (%)	6.95	6.73	5.20	4.03	6.05
		Zn (%)	2.64	2.22	2.13	1.62	2.24
HZG	Total Ore Mined	t	-	45,788	83,537[2]	36,631[2]	165,956
	Grade	Ag (g/t)	-	216	230	201	220
		Pb (%)	-	0.93	0.72	0.50	0.73
		Zn (%)	-	-			
HPG	Total Ore Mined	t	32,964	42,592	59,941	36,505	172,002
	Grade	Ag (g/t)	138	113	118	108	118
		Pb (%)	6.89	5.80	4.48	4.17	5.20
		Zn (%)	1.27	1.03	1.23	0.96	1.13
TLP	Total Ore Mined	t	115,047	100,546	142,626	81,320	439,539
	Grade	Ag (g/t)	102	106	113	126	111
		Pb (%)	3.00	2.86	2.37	2.04	2.58
		Zn (%)		-			-
LM	Total Ore Mined	t	46,150	49,871	87,417	67,360[3]	250,798
	Grade	Ag (g/t)	240	313	269	256	269
		Pb (%)	1.67	1.98	2.12	1.21	1.76
		Zn (%)					
Others[4]	Total Ore Mined	t			9,485	988	10,472
	Grade	Ag (g/t)			107	69	103
		Pb (%)			5.07	3.46	4.92
		Zn (%)			1.66	0.97	1.60
Ying Mines	Total Ore Mined	t	580,175	646,909	734,937	385,633	2,347,655
	Grade	Ag (g/t)	319	290	233	202	266
		Pb (%)	5.74	5.27	3.71	2.79	4.50
		Zn (%)	1.83	1.45	1.14	0.78	1.34

Total Ore Mined includes hand-sorted high grade ore
[1] SGX in 2011 Includes 11,052 t ore from BCG, YM01 and YM02 (YM01 and YM02 are small adits at SGX)
[2] HZG in 2012 and 2013 includes 14,675 t (2012) and 16,736 t (2013 to end-June) of ore from BCG (BCG is the south portion of HZG)
[3] LM in 2013 Includes 14,179 t of ore from PD991 (PD991 is a small access tunnel at LM)
[4] "Others" in 2012 and 2013 includes ore from YM01 and YM02

16.4.2.3 Production Schedule

Table 16.13 is a summary of projected LOM production for each of the Ying mines and for the entire operation based on the mid-2013 Mineral Reserve estimates.

A particularly significant aspect of the production profile is the ramp up to approximately 1 M tonnes per annum by 2017/2018, an approximately 40% increase over the production achieved in 2012. AMC notes that the development and infrastructure required to allow the projected production increases is either already in place, is in development, or has been planned. AMC also notes that the ability to achieve the projected production increases will, to a large degree, be dependent on the consistent availability of resources, particularly skilled manpower. AMC considers that there is a certain amount of risk associated with the provision of those resources and recommends that Silvercorp maintain particular focus in this area.

A further key aspect of the LOM profile is that the major part of the increased production will come from the TLP and LM mines. Together they will provide about 50% of the Ying production by 2015. AMC notes that projected metal grades through to around 2023 are largely in-line with grades reported in 2012 and 2013 to June 30. In order to maintain optimum metal grades, AMC recommends that Silvercorp continue its current efforts on dilution and grade control via the Mining Quality Control Department.

Table 16.13 Ying Mines LOM Production*

SGX	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Production (kt)	222.6	278.5	336.4	362.1	362.4	340.4	327.9	317.3	328.9	321.9	307.7	328.7	301.9	269.7	315.5	135.4		4,857.3
Ag(g/t)	265	268	248	261	257	225	226	194	211	209	202	215	183	167	159	183		219
Pb（%）	4.99	4.37	4.28	4.69	4.87	4.37	4.29	3.55	3.3	3.99	3.62	3.85	3.85	4.24	3.69	3.55		4.11
Zn（%）	2.08	2.33	2.3	2.37	2.59	2.53	2.23	2.49	2.29	2.26	2.08	1.74	1.92	1.38	1.57	1.31		2.14
HZG	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023								Total
Production (kt)	63.2	84.1	80.2	83.7	86.0	87.8	82.2	63.8	59.0									690.0
Ag (g/t)	347	359	341	326	288	311	309	227	214									306
Pb (%)	0.96	0.63	1.18	1.39	1.02	1.03	1.1	1.3	1.9									1.14
Zn (%)	0.16	0.19	0.13	0.13	0.13	0.16	0.2	0.15	0.14									0.15
HPG	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026					Total
Production (kt)	64.7	67.0	70.8	70.4	70.9	71.6	72.5	74.1	74.0	71.2	71.8	70.9	71.7					921.6
Au(g/t)	0.65	0.7	0.76	0.53	1.7	1.32	1.23	1.11	0.78	1.01	1.26	0.91	0.82					0.99
Ag (g/t)	89	91	95	94	94	95	96	95	94	94	92	92	95					94
Pb (%)	4.59	4.93	4.06	4.89	2.52	3.54	3.98	3.87	3.87	3.08	4.46	5.07	3.96					4.05
Zn (%)	0.59	0.44	1.05	1.16	1.08	0.88	0.83	0.88	1.12	1.32	0.94	0.88	1.02					0.94
TLP	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Production (kt)	183.7	187.3	199.4	200.0	200.0	208.7	206.2	207.4	206.4	200.0	199.9	200.0	199.8	199.9	200.0	200.0	80.5	3,279.2
Ag (g/t)	151.31	151.27	151.25	151.84	150.95	151.77	153.52	153.64	154.28	154.87	152.18	155.21	153.91	154.15	155.79	154.48	72.45	151
Pb (%)	2.54	2.53	2.51	2.5	2.5	2.51	2.51	2.52	2.54	2.5	2.55	2.54	2.49	2.46	2.5	2.63	2.73	2.53
Zn (%)	0.17	0.16	0.15	0.15	0.21	0.17	0.21	0.16	0.18	0.21	0.24	0.22	0.38	0.26	0.35	0.17	0.04	0.21
LM East	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026					Total
Production (kt)	71.6	78.6	83.2	83.7	84.8	88.6	90.6	91.3	90.1	87.5	86.3	86.0	13.9					1036.2
Ag (g/t)	293	310	306	273	308	320	294	283	280	229	217	211	181					275
Pb (%)	1.18	1.19	1.14	1.17	1.44	1.43	1.36	1.18	0.87	1.03	0.7	1.07	0.4					1.14
Zn (%)	0.22	0.23	0.23	0.29	0.37	0.35	0.34	0.32	0.35	0.33	0.17	0.2	0.09					0.28
LM West	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023								Total
Production (kt)	83.1	166.2	192.6	197.5	197.8	200.5	201.3	211.2	210.3	196.5								1857.0
Ag (g/t)	259	232	210	223	193	218	231	232	243	255								228
Pb (%)	1.93	2.25	2.4	2.52	2.59	1.92	2.28	2.09	1.87	1.95								2.19
Zn (%)	0.18	0.2	0.2	0.16	0.18	0.17	0.22	0.26	0.28	0.27								0.21
Ying Mine	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023								Total
Production (kt)	688.9	861.7	962.6	997.4	1,001.9	997.6	980.7	965.1	968.7	877.1	665.7	685.6	587.3	469.6	515.5	335.4	80.5	12,641.3
Au (g/t)	0.06	0.05	0.06	0.04	0.12	0.09	0.09	0.09	0.06	0.08	0.14	0.09	0.10					0.07
Ag (g/t)	228	235	222	226	219	215	215	197	204	200	177	184	162	162	158	166	72	203
Pb (%)	3.16	2.95	2.99	3.26	3.16	2.87	2.94	2.66	2.56	2.82	3.01	3.25	3.32	3.48	3.23	3.00	2.73	3.01
Zn (%)	0.83	0.90	0.98	1.04	1.13	1.04	0.94	1.02	1.00	1.08	1.16	1.01	1.24	0.90	1.10	0.63	0.04	1.01

*Rounding of some figures may lead to minor discrepancies in totals.

16.5 Reconciliation

Table 16.14 summarizes the Silvercorp reconciliation between Mineral Reserve estimates and mill feed, including high grade, hand-sorted ore, for the Ying mines from 1 January 2012 to 30 June 2013.

Table 16.14 Mineral Reserve to Production Reconciliation: January 2012 – June 2013

	Mine	Ore	Grade			Metal		
		(kt)	Ag (g/t)	Pb (%)	Zn (%)	Ag (koz)	Pb (kt)	Zn (kt)
Reserve (Proven + Probable)	SGX	372.8	377	6.35	3.20	4,519	23.7	11.9
	HZG	70.9	344	0.73	-	784	0.5	-
	HPG	73.8	88	4.47	1.17	209	3.3	0.9
	LM	113.4	364	2.96	-	1,327	3.4	-
	TLP	158.7	195	4.19	-	995	6.6	-
	Total	789.5	309	4.75	1.62	7,833	37.5	12.8
Reconciled Mine Production*	SGX	514.8	279	4.83	1.97	4,618	24.9	10.1
	HZG	115.6	221	0.59	-	821	0.7	-
	HPG	96.4	114	4.36	1.13	353	4.2	1.1
	LM	154.8	263	1.72	-	1,309	2.7	-
	TLP	223.9	118	2.25	-	849	5.0	-
	Total	1,105.6	224	3.39	1.01	7,951	37.5	11.2
Difference: Mill Feed* and Reserve (%)	SGX	38%	-26%	-24%	-38%	2%	5%	-15%
	HZG	63%	-36%	-19%	-	5%	32%	-
	HPG	31%	30%	-2%	-4%	69%	28%	26%
	LM	37%	-28%	-42%	-	-1%	-20%	-
	TLP	41%	-40%	-46%	-	-15%	-24%	-
	Total	40%	-28%	-29%	-37%	2%	0%	-12%

*Includes high-grade, hand-sorted ore.
Differences from Table 16.12 arise from the inclusion of BCG, YM01, YM02 and PD991 ore sources in Table 16.12

AMC makes the following observations relative to the data in Table 16.14:

- The overall 40% more tonnes and approximately 30% less metal grade for production compared to Mineral Reserve estimates is cause for concern (see below re dilution, etc.).
- Of particular note is HZG, where the tonnage differential is +63% for a 36% lower Ag grade.
- An exception to the lower grade trend is at HPG, where the production Ag grade is indicated as 30% higher than that for the Mineral Reserve estimate.
- AMC accepts that a major factor in the overall higher tonnes/lower grade picture is high unplanned dilution. Silvercorp has indicated that sub-optimal contractor mining practices have been a large contributor to the increased dilution and has initiated tighter controls in this regard. Silvercorp has also noted that some adverse ground conditions and use of shrinkage stoping in veins less than 0.8 m in width and/or discontinuous may have also played a role.
- AMC considers that an intentional move to mine lower grade, but still economic, material outside of the vein proper may have partially contributed to the lower-grade production in 2012 and 2013, especially at SGX.
- AMC notes other factors that may, if present, have contributed to collective and individual site tonnage and grade differences include:
  - — mis-attribution of feed source to the mill
  - — variation in dilution control and/or estimates at individual sites

- mining of Inferred and/or unclassified material
- over- and/or under-estimation of Mineral Resource/Reserve tonnes and grades at individual sites
- mill process control issues.

AMC understands that Silvercorp has recently revised its stockpiling and record keeping procedures and, as referenced above, has placed a high level of focus on dilution control in recent months. AMC endorses these actions and also recommends that Silvercorp undertake periodic mill audits aimed at ensuring optimum process control and mill performance. AMC also recommends that the summation of individual ore car weights by stope and zone be fully integrated into the tracking and reconciliation process.

16.6 Mining Summary

The Ying mine complex is a viable operation with a projected LOM through to 2030 based on Proven and Probable Reserves. The potential exists for an extended LOM via further exploration and development, particularly in areas of Inferred Resources.

By 2017/2018, an increase in annual production of about 40% is planned over that achieved in 2012. Development and infrastructure to allow access to, and mining in, a greater number of working places is either in place, in development or is planned. AMC considers that the projected production increase can be achieved but that there is a degree of risk associated with having sufficient skilled mining labour consistently available. AMC also notes that a continuing high degree of focus will be necessary throughout the Ying operation for planned development targets to be achieved.

Metal grades through to around 2023 are largely in-line with reported production grades in 2012 and 2013 to June 30. The current focus on dilution and grade control will need to be diligently maintained if Mineral Reserve mining grades are to be achieved.

AMC recommends that recent comprehensive efforts to fully integrate the Resource estimation, Reserve estimation and mine planning processes be continued.

AMC also recommends that Silvercorp undertake periodic mill audits aimed at ensuring optimum process control and mill performance; and that the summation of individual ore car weights by stope and zone be fully integrated into the tracking and reconciliation process.

The Ying mines safety is governed by Chinese statutory requirements and AMC understands that, in certain areas, those requirements are exceeded. AMC advises, however, that Silvercorp should continue with a focus on safety improvement, including implementation of a policy where the more stringent of either Chinese or Canadian safety standards are employed.

AMC recommends that Silvercorp investigate the use of portable compressors in mining areas with a view to minimizing power costs.

AMC recommends the investigation of the benefits of a wider application of slushers for muck movement in stopes.

The generally good ground conditions, and the regularity and sub-vertical nature of the Ying district veins, may provide an opportunity to effectively employ more bulk-mining methods such as long-hole benching, and still with reasonable dilution. AMC recommends that Silvercorp consider the application of such methods.

AMC considers that adoption of the above recommendations can form part of the day-to-day running of the Ying mines and that no particular cost provisions need be made in this regard.

17 Recovery methods

17.1 Introduction

Silvercorp runs two processing plants, Plant 1 and Plant 2, for the Ying operations, with a total design capacity of 1,600 tpd (prior to October 2011), and then 2,600 tpd after October 2011 when expansion phase II was completed. The two plants are situated within a distance of 2 km from each other. The development history is described below and summarized in Table 17.1:

- Both plants were designed based on the lab tests completed by HNMRI in 2005.
- Plant 1 (Xiayu Plant, 600 tpd) has been in operation since March 2007.
- Plant 2 (Zhuangtou Plant): (1) Phase I (1,000 tpd) has been in production since December 2009; (2) Phase II (1,000 tpd) has been in production since October 2011 when expansion of another parallel flotation bank was completed. Now, the total design processing capacity has reached 2,000 tpd.
- From January 2012, the total design processing capacity for Plants 1 and 2 is about 2,600 tpd of ore, but the actual capacity can reach 3,000 – 3,350 tpd.
- The LOM plan calls for 3,000 tpd capacity in years 2016 to 2022 (Table 17.15) as LM-W meets planned production levels.

In this section, global production data up to June 2013 has generally been referenced. Individual plant performance reconciliation data is based on the full year 2012.

Table 17.1 Summary of processing plants 1 and 2 capacities

Items	Plant 1	Plant 2 (Phase I)	Plant 2 (Phase II)	Plants 1+2
Year in Operation	**Mar 2007**	**Dec 2009**	**Oct 2011**	
Design Capacity (tpd)	600	1000	1000	2600
Actual Capacity (tpd)	850	1250	1250	3350
Plant Availability (day/yr)	330	330	330	330
Major Ore Feed	LM/TLP/HZG	SGX/HPG/TLP	SGX/HPG/TLP	All
Tailings Pond	P1-Zhuangtou	P2-Shi W Gou	P2-Shi W Gou	P1+P2

17.2 Ore supply and concentrate production from Ying property mines

17.2.1 Ore supply

Ore from the various mines in the district is shipped to the mill-flotation Plants 1 and 2:

- SGX/HPG Lumps: Rich large-size galena lumps with characteristic specular silver-grey colour are hand-sorted at the mine sites, crushed, and then shipped by dedicated trucks to Plant 1. The lumps are milled in a dedicated facility, and then sold directly or mixed with flotation PbS concentrate for sale. The lead lumps bypass flotation circuit.
- SGX/HZG and HPG ore: Transported using trucks on barges from the SGX/HZG and the HPG mines to cross the lake, and then trucked to the plant.
- TLP/LM Ores: Transported via truck directly from mine site to the plant.

Table 17.2 summarizes the ore supply from the mines from 2010 to mid-2013. It shows that:

- SGX and TLP were the major ore suppliers for the plants, but with an increasing contribution from LM off-setting a decline in TLP production.
- HZG mine started producing in 2011.
- Ore supply from 2010 to 2012 increased by 26.7%.

Table 17.2 Ore supply to the processing plants 1 and 2 (2010 to 2013, dry base including lead lumps)

Year	Unit	SGX	TLP	LM	HZG	HPG	Others*	Sub-Total
2010	Tonnes	386,015	115,047	46,150	0	32,964	0	580,175
	Contribution (%)	67	20	8	0	6	0	100
2011	Tonnes	408,112[1]	100,546	49,871	45,788	42,592	0	646,909
	Contribution (%)	63	16	8	7	7	0	100
2012	Tonnes	351,931	142,626	87,417	83,537[3]	59,941	9,485	734,937
	Contribution (%)	48	19	12	11	8	1	100
2013 (Till 30 June)	Tonnes	162,829	81,320	67,360[2]	36,631[3]	36,505	988	385,633
	Contribution (%)	42	21	17	9	9	<1	100
Production Ranking (2012)		1	2	3	4	5	6	

[1] SGX in 20112 Includes 11,052 t ore from BCG, YM01 and YM02 (YM01 and YM02 are small adits at SGX)
[2] LM in 2013 Includes 14,179 t of ore from PD991 (PD991 is a small access tunnel at LM)
[3] HZG in 2012 and 2013 includes 14,675 t (2012) and 16,736 t (2013 to end-June) of ore from BCG (BCG is the south portion of HZG)
[4] "Others" in 2012 and 2013 includes ore from YM01 and YM02

Table 17.3 shows a significant increase of mined ore weight (dry) from 2007 to 2012, in line with the increase in processing plant capacity.

Table 17.3 Ore supply increase from 2007 to 2012 (dry base including lead lumps)

Year	2007	2008	2009	2010	2011	2012
Tonnes	254,153	428,906	340,590	580,175	646,909	734,937
Increase (%)	Base	69	34	128	155	189

17.2.2 Ore composition per mine

Table 17.4 shows average ore composition for 2012. It indicates that SGX, HPG, and TLP ores are much richer in Pb/Ag than the other mines. TLP, LM and HZG have very low zinc values (shown as 'zero' in the table).

Table 17.4 Average ore composition by mine (dry base including lead lumps, 2012)

Unit	SGX	TLP	LM	HPG	HZG	Others*
Ag (g/t)	297	113	269	118	230	150
Pb (%)	5.2	2.37	2.12	4.48	0.63	4.14
Zn (%)	2.13			1.23		1.13

* "Others" includes ore from YM01 and YM02

17.2.3 Concentrate production by mine in 2012

Table 17.5 summarizes the quantity of PbS and ZnS concentrate products produced by mine in 2012. About 16% of total products were produced by hand-sorting.

Table 17.5 Concentrate production by mine (2012)

Products	Wt.	SGX	TLP	LM	HPG	HZG	Others	Sub-Total
1. Hand-Sorted Concentrate								
	(tonnes)	9,637	0	0	129	0	0	9,766
2. Flotation Concentrate								
Pb Float Conc	(tonnes)	22,847	7,298	3,760	4,611	1,866	1004	41,386
Zn Float Conc	(tonnes)	9,243	0	0	1,227	0	213	10,683
3. Hand + Float Concentrate								0
Pb+Zn Conc	(tonnes)	41,727	7,298	3,760	5,967	1,866	1,217	61,834
Conc Contribution (%)		67.48	11.80	6.08	9.65	3.02	1.97	100
Hand-Sorted Conc (%)								15.79
Flotation Conc (%)								84.21
Conc. Production Ranking (2012)		1	2	4	3	5	6	

17.2.4 Concentrate quality and metal recovery (average) 2007– 2013

Table 17.6 and Table 17.7 summarize the concentrate quality and recovery (average) by year. The results show that:

- Pb & Ag recoveries have been very consistent.
- Ag grade in PbS concentrate meets the design targets; however the Pb grade in 2012 and 2013 is below target.
- Zn grade and recovery are lower than the target due to lower zinc content in the ore feed.
- The statistics are consistent with an increasing proportion of production from lower grade mines like LM.

Table 17.6 Concentrate quality by year

Product	Yr	Wt (t)	Pb (%)	Zn (%)	Ag (g/t)
PbS	2007	10,208	56.67	7.18	2,223
Lumps	2008	12,482	55.16	6.12	2,007
Hand Sort	2009	13,493	55.00	5.72	2,051
	2010	12,678	52.31	5.53	1,890
	2011	12,559	51.37	4.83	1,709
	2012	9,766	45.82	6.13	1,607
	2013*	2,252	47.20	7.10	1733
PbS	2007	18,992	67.27	6.83	4,382
Flotation	2008	27,382	60.79	4.36	3,626
Conc	2009	29,853	66.18	5.3	3,712
	2010	39,963	62.67	4.02	3,619
	2011	42,814	61.17	3.61	3,556
	2012	41,386	51.81	3.70	3,463
	2013*	17,506	52.14	3.65	3,908
Design			60	1.95	
ZnS	2007	13,577	1.64	49.47	444
Flotation	2008	12,209	1.56	48.61	459
Conc	2009	13,707	1.48	48.57	453
	2010	15,001	1.5	49.1	446

Product	Yr	Wt (t)	Pb (%)	Zn (%)	Ag (g/t)
	2011	12,945	1.5	49.66	433
	2012	10,683	0.90	52.72	338
	2013*	3,760	0.71	52.10	259
Design			0.95	45	

* To 30 June 2013

Table 17.7 Overall metal recovery by year

Year	Pb (%)	Zn (%)	Ag (g/t)
2007	95.57	72.88	90.95
2008	94.67	70.11	90.31
2009	96.32	69.54	92.6
2010	95.07	69.52	91.21
2011	95.81	68.59	92.59
2012	94.94	67.12	92.72
2013	94.57	65.42	92.78
Av	95.28	69.03	91.88
Design	90	85	90

17.2.5 Impact of ore type on concentrate quality and metal recovery (2012)

Tables 17.8 to 17.12 summarize the concentrate production by mine (SGX, HZG, HPG, TLP, LM) for 2012.

Table 17.8 SGX mine – ore processed – actual mass balance (2012)

Product	Wt	Mass	Grade			Recovery		
	(tonnes)	Yield (%)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
Head	342,294	100	4.05	2.02	260	100	100	100
Lead Con.	22,847	6.67	57.99	5.73	3,571	95.52	18.96	91.81
Zinc Con.	9,243	2.70	0.72	54.63	355.	0.48	73.19	3.69
Tails	310,204	90.63	0.18	0.17	13	4.00	7.85	4.50

Zinc grade and recovery are slightly lower than target due to lower zinc content in the ore feed.

Table 17.9 TLP mine – ore processed – actual mass balance (2012)

Product	Wt	Mass	Grade			Recovery		
	(tonnes)	Yield (%)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
Head	142,626	100	2.37		113	100		100
Lead Con.	7,298	5.12	41.69		1,995	89.83		90.02
Tails	135,328	94.88	0.25		12	10.17		9.98

Table 17.10 LM mine – ore processed – actual mass balance (2012)

Product	Wt	Mass	Grade			Recovery		
	(tonnes)	Yield (%)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
Head	87,417	100	2.12		269	100		100
Lead Con.	3,760	4.30	46.81		5,826	95.10		93.18
Tails	83,657	95.70	0.11		19.15	4.90		6.82

Table 17.11 HPG mine – ore processed – actual mass balance (2012)

Product	Wt	Mass	Grade			Recovery		
	(tonnes)	Yield (%)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
Head	59,812	100	4.40	1.23	117	100	100	100
Lead Con.	4,611	7.71	52.09	3.66	1,328	91.22	22.95	87.48
Zinc Con.	1,227	2.05	1.88	41.04	202	0.88	68.49	3.54
Tails	53,974	90.24	0.39	0.12	12	7.90	8.56	8.98

Table 17.12 HZG mine – ore processed – actual mass balance (2012)

Product	Wt	Mass	Grade			Recovery		
	(tonnes)	Yield (%)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
Head	78,996	100	0.63		230	100		100
Lead Con.	1,866	2.36	24.68		9,263	91.98		95.31
Tails	77,130	97.64	0.05		11.02	8.02		4.69

Tables 17.8 to 17.12 indicate that:

- The metal recovery includes hand-sorted PbS lumps and flotation concentrates, and should therefore be higher than the flotation recovery alone, especially for the SGX and HPG cases.
- PbS grade: only SGX is close to the design expectation of 60 – 65% Pb.
- Pb recovery for SGX, LM, HZG and HPG ore but not TLP exceeded the design expectation.
- Ag recovery for SGX, LM, HZG and TLP ore but not HPG exceeded the design expectation.
- ZnS grade: only SGX grade is close to the target grade.
- Zn recovery for all mines is lower than the design expectation, due to low zinc in the feed, or minimal zinc for TLP, LM, and HZG.
- Note that, with the exception of HZG (very low lead feed grade), lead concentrates still exceed 40% Pb, which is acceptable within the Chinese domestic smelting market, although higher treatment charges and lower % payables will occur (see terms in Section 19).

17.2.6 Ore supply by plant

Silvercorp has adopted the following strategies to maximize the metal recovery and plant processing throughput:

- High grade lead lumps are hand-sorted at the mine sites and not processed via flotation circuit. This helps to reduce the flotation loading and operating cost.
- Plant 1: mainly processes low grade ores from LM, HZG, and part of TLP.
- Plant 2: mainly processes ores from SGX, HPG, and part of TLP.
- Blending lead concentrates from Plant 1 and Plant 2 to maximize profit.

Table 17.13 shows the ore feeds by mine for flotation. As previously mentioned, SGX and HPG are rich in lead; TLP, LM, and HZG have little zinc. Lead/silver recoveries are quite high (87 – 96%). Zinc Recovery is in the range of 68 – 73%.

Table 17.13 Flotation Feeds: Ore Grade and Recovery (2012)

Mines	Grade			Recovery		
	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
SGX	4.05	2.02	260	95.52	73.19	91.81
HZG	0.63		230	92.07		95.26
TLP	2.37		113	89.83		90.02
HPG	4.40	1.23	117	91.22	68.49	87.48
LM	2.12		269	94.94		92.97
Avg	3.13	1.08	216	93.95	72.27	91.99

Table 17.14 shows the ore feeds from each mine being processed at flotation Plant 1 and Plant 2 for 2012.

Table 17.14 Flotation Feeds: Tonnes to Plants (2012)

Mines	Plant 1(t)	Plant 2(t)	Subtotal(t)
SGX	11,017	348,668	359,685
TLP	78,641	67,324	145,965
LM	86,619	2,908	89,527
HPG	5,474	55,846	61,320
HZG	68,153	12,823	80,976
YM01	5,327		5,327
YM02	4,392		4,392
Sub-Total	259,623	487,569	747,192
Ratio (%)	34.75	65.25	

Table 17.14 shows that:

- For Plant 2, most of the SGX, HPG, part of TLP and HZG ores are used as the feed for flotation.
- For Plant 1, most of the low grade ores from LM, HZG, and part of TLP are processed.
- 65.25% of the ore is processed at Plant 2. The daily processing rate is about 487,569/330 = 1,477 tpd. As previously mentioned, Plant 2 is currently under-utilized.
- 34.75% of the ore is processed at Plant 1. The daily processing rate is about 259,623/330 = 788 tpd.

17.2.7 LOM mill feed schedule

From the mine schedule a mill feed schedule has been derived on the assumption that ores from TLP and HZG are mainly fed to Plant 1, while ores from SGX, HPG, LM East, LM West and part of the ore from TLP are fed to Plant 2. After 2023, only Plant 2 is projected to be in operation. This is shown in Table 17.15 below.

Table 17.15 LOM mill feed schedule

Plant	Plant No 1				Plant No 2							
Mine	**TLP**	**HZG**	**Subtotal**	**Rate**	**SGX**	**HPG**	**LM-E**	**LM-W**	**TLP**	**Subtotal**	**Rate**	**Total**
Year	**tpa**	**tpa**	**tpa**	**tpd**	**tpa**	**tpa**	**tpa**	**tpa**	**tpa**	**tpa**	**tpd**	**tpa**
2014	43,525	63,219	106,744	323	222,601	64,721	71,563	83,136	140,204	582,224	1,764	688,969
2015	176,050	84,125	260,175	788	278,487	67,017	78,556	166,225	11,241	601,526	1,823	861,701
2016	187,425	80,195	267,620	811	336,368	70,763	83,219	192,593	12,000	694,943	2,106	962,563
2017	187,975	83,748	271,723	823	362,046	70,409	83,675	197,538	12,000	725,668	2,199	997,391
2018	187,934	85,951	273,885	830	362,400	70,904	84,782	197,827	12,000	727,913	2,206	1,001,798
2019	196,180	87,846	284,026	861	340,337	71,615	88,644	200,449	12,523	713,569	2,162	997,594
2020	193,849	82,248	276,097	837	327,894	72,522	90,567	201,323	12,377	704,683	2,135	980,780
2021	194,992	63,759	258,751	784	317,339	74,106	91,320	211,175	12,452	706,392	2,141	965,143
2022	194,006	58,984	252,990	767	328,857	74,012	90,067	210,292	12,384	715,611	2,169	968,601
2023	139,997		139,997	424	321,923	71,253	87,487	196,531	60,000	737,194	2,234	877,191
2024	-		-	-	307,665	71,759	86,263		199,913	665,600	2,017	665,600
2025	-		-	-	328,728	70,863	86,028		199,995	685,614	2,078	685,614
2026	-		-	-	301,878	71,733	13,912		199,783	587,306	1,780	587,306
2027	-				269,742				199,912	469,654	1,423	469,654
2028	-				315,466				199,979	515,445	1,562	515,445
2029	-				135,384				199,696	335,080	1,015	335,080
2030	-								80,512	80,512	244	80,512
Total	1,701,934	690,075	2,392,009	7,249	4,857,114	921,678	1,036,082	1,857,089	1,576,970	10,248,934	31,057	12,640,942

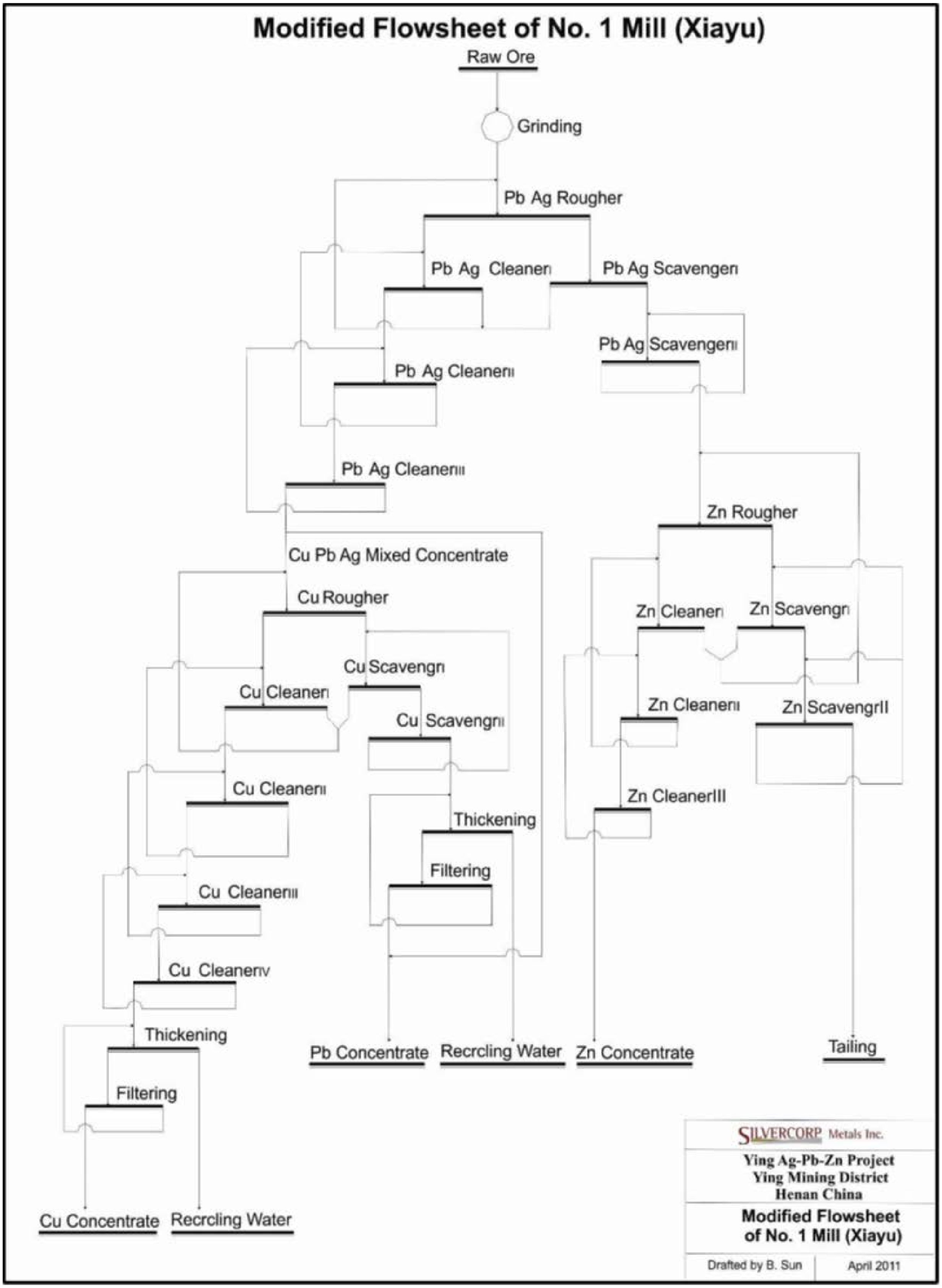
17.3 Mill plant No.1 (Xiayu)

17.3.1 Process flowsheet

For processing Plant 1, general view photos and the flowsheet are shown in Figure 17.1 and Figure 17.2, respectively.

Figure 17.1 General view photos (Plant 1)

Figure 17.2 Flowsheet (Plant 1)



The flowsheet includes the following major unit operations:

- Crusher circuit (one train)
- Ball mill and Pb/Zn/Cu flotation circuit (two trains)
- Filtration and product handling circuit (one train)

17.3.2 Process description

The overall process consists of crushing, grinding, flotation of lead and zinc concentrates, and concentrate dewatering unit operations:

- Ore crusher circuit (closed circuit with two-stage crushers-screen: jaw crusher, one cone crusher, vibrating screen, dust collectors, two ore storage bins) (one train: 1x1,000 tpd).
- Ball mill circuit-spiral classifiers circuit (two trains: 2x500 tpd).
- Flotation circuit (PbS flotation-ZnS flotation circuit: rougher-scavenger-cleaner cells, chemical preparation tanks) (two banks: 2x500 tpd).
- Concentrate thickening-ceramic filtration circuit (PbS filtration, ZnS filtration) (one train for each of Pb, Zn).
- Water make-up system.
- Tailings pond.

The following minor changes have been made to the original Plant 1 design:

- Addition of one cone crusher to reduce ball mill feed size and thus to increase ball mill capacity from 600 to 1,000 tpd.
- Ball mill grinding size target coarsened from 70 to 60% (-200 mesh), which helps to reduce energy consumption, mill grinding time and filtration time; with only a small recovery loss (see Section 13).
- Replacement of lime slurry by $NaOH/Na_2CO_3$ for flotation circuit, with improvements in operability.
- No re-grinding for zinc flotation feed.
- Chemical consumptions are slightly higher than that determined by the lab work.
- No water treatment plant is required, with recycle water from pond and fresh water from the reservoir being used.

Crushing

The crushing is a closed circuit, consisting of jaw-cone crushers with a vibrating screen. The primary jaw crusher (Model: PEF 500x750) has a closed side setting of 80 mm. Discharge from the primary jaw crusher is conveyed to the 15 mm aperture vibrating screen. Ore larger than 15 mm is conveyed to the secondary cone crusher (Model: PYH-2X cone crusher), which has a close side setting of 15 mm. Discharge from the secondary crusher is conveyed back to the 15 mm aperture screen. Discharge from the screen feeds ore bins with a live capacity of 100t.

Dust from crushing and screening processes is collected under vacuum, captured in a baghouse and then transferred to a process tank for feeding as a slurry to flotation.

Milling classification

- Crushed ore from the live bins is conveyed to a closed milling circuit consisting of two trains, each a grate-discharge ball mill (Model: MQCG 2100 x 3600) and a screw classifier (Model: FG-200).
- The ball charge is made of Mn-steel balls, with diameters ranging from 60 mm to 120 mm.
- The target grind size is 60-70% passing 200 mesh and the overflow density is maintained at 40% solids by weight when introduced to the conditioning tanks ahead of lead flotation.

Flotation (two trains)

- The O/F from classifier flows to the lead rougher conditioning tank, and then to lead rougher flotation cells. The lead flotation bank consists of one stage of roughing, two stages of scavenging (both BF-4 type cells) and three stages of cleaning (BF-1.2 type cells).
- Lead scavenger tails flows to zinc flotation. The zinc flotation bank consists of one stage of roughing, two stages of scavenging and three stages of cleaning, cells being the same size as in the lead circuit.
- In the case of high-copper ore being processed, the lead-copper rougher froth concentrate will be sent to the lead/copper flotation separation circuit. The copper flotation bank consists of one stage of roughing, two stages of scavenging and four stages of cleaning (optional at Plant 1).

Product concentrating, filtration and handling

- Both lead and zinc concentrates are diluted to 15% solids by adding water for natural settling. The diluted slurries flow to their respective settling containment concrete structures for settling.
- The settled slurries at the bottom (with approximately 50-60% solids by weight) are pumped to a ceramic filter for dewatering. The moisture content of dewatered lead and zinc concentrates are 5% and 7%, respectively.
- The filter cake products are sent to Plant 2 for concentrate blending. Blended concentrate products are then sold and shipped by truck to the clients.

To optimize profitability, high grade PbS (58-60% Pb) from Plant 2 is blended with middle grade PbS (48-50% Pb) from Plant 1 before ore shipping to clients.

Tailings thickening

- Tailings from the zinc scavenger flotation circuit are pumped into the tailings thickener, and then the thickener U/F to the pond (Dong Zi Gou Dam) located at the northern creek located between No.1 Mill and No.2 Mill. The total tailings capacity of this dam is 3,330,000 m^3, with an effective capacity of 2,830,000 m^3 or 4,215,000 tonnes of tailings. The current elevation of the tailings dam is 641.6 m, and capacity is as high as 660 m.
- The plant recirculates the lead and zinc concentrate thickener overflows in addition to the tailings dam supernatant water.
- A crew of 11 people monitors the tailings dam. Reclaimed process water from the tailings pond is pumped for reuse in the milling process.

17.3.3 Metallurgical performance (Plant 1)

Table 17.16 lists the mass balance based on design for the No.1 Mill. It is noted that a copper flotation system was added in 2009 to handle TLP and HPG ores.

Table 17.16 Designed mass balance at the No.1 mill (daily based)

Product	Quantity (tpd)	Distribution (%)	Pb (%)	Zn (%)	Pb Recovery (%)	Zn Recovery (%)
Ore	600	100	3.18	1.73	100	100
Pb Conc	28.62	4.77	60.00	1.95	90.00	5.38
Zn Conc	19.62	3.27	0.95	45.00	0.98	85.00
Tailings	551.76	91.96	0.31	0.18	9.02	9.62

Mass balances have been shown in Tables 17.10 and 17.12 for LM and HZG ores for 2012, and ore grade vs recovery for LM, HZG and (part of) TLP is shown in Table 17.17. The processing results show that:

- Pb/Ag recoveries exceed the design expectation for both LM and HZG ores.

- Pb recovery is slightly lower than the design expectation for TLP ores, but the Ag recovery exceeds the design target.
- Since Zn grades are very low, no Zn concentrate is generated from LM, HZG, and TLP ores.

Table 17.17 Flotation feeds: ore grade vs. recovery (2012) (Plant 1)

Mines	Grade			Recovery		
	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
HZG	0.63		230	92.07		95.26
LM	2.12		269	94.94		92.97
TLP	2.37		113	89.83		90.02

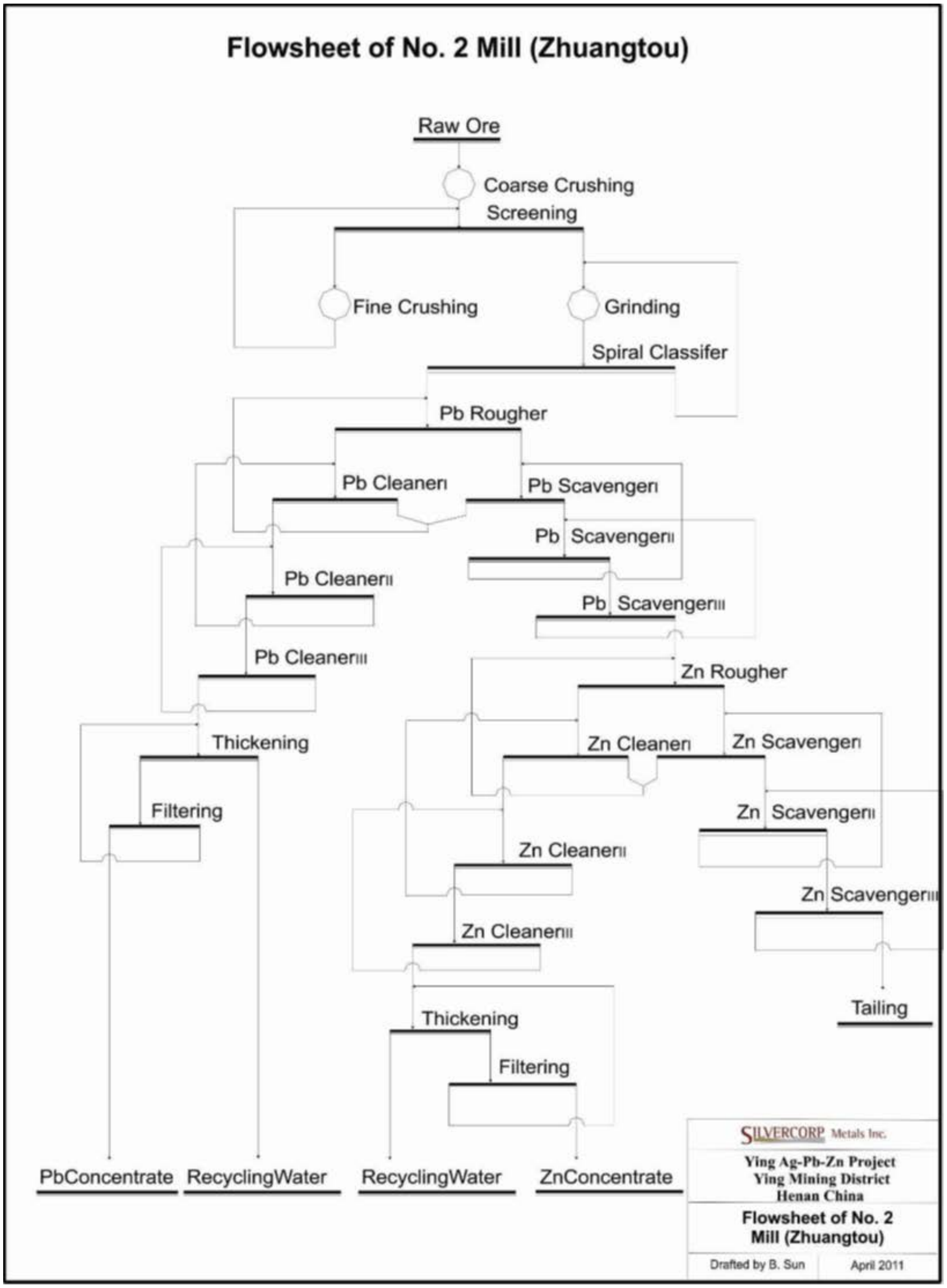
17.4 Mill Plant 2 (Zhuangtou)

A general view photo and flowsheet are shown in Figures 17.3 and 17.4, respectively.

Figure 17.3 General view photos (Plant 2)

No.2 Mill (Zhuangtou) is located 2 km to the west of No.1 Mill; No.2 Mill also includes two parallel processing lines. The first line of capacity 1,000 tpd has been operating since December 2009. The second flotation line of capacity 1000 tpd was installed in October 2011.

Figure 17.4 Flowsheet for Plant 2



17.4.1 Flowsheet

Figure 17.4 presents the modified flow sheet of No.2 Mill. The flowsheet includes the following major unit operations:

- Crusher circuit (one train)
- Ball mill and Pb/Zn flotation circuit (two trains)

- Filtration and product handling circuit (one train)

17.4.2 Process description

The process for Plant 2 is very similar to that for Plant 1, except for the larger size equipment, and consists of the following:

- Ore crusher circuit (closed circuit with three-stage crushers-screen: one jaw crusher, two cone crushers, vibration screen, dust collectors, ore storage bins) (one train: 1x2,500 tpd).
- Ball mill circuit (two-stages ball mill -15" hydrocylone/spiral classifiers) (Two trains: 2x1,000 tpd).
- Flotation circuit (PbS flotation-ZnS flotation: rougher-scavenger-cleaner cells, chemical preparation tanks) (2x1,000 tpd). No copper flotation.
- Product thickening-Ceramic filtration circuit (PbS filtration, ZnS filtration).
- Water make-up system.
- A new tailings pond (monitored by 11 people, as per Plant 1 TMF).

The plant was built based on the design document with very similar minor changes to those implemented in Plant 1.

Crushing

The crushing is a closed circuit, consisting of two jaw-cone crushers with a vibrating screen. The primary jaw crusher (Model: PEF 800x1000) has a closed side setting of 80 mm. Discharge from the primary jaw crusher is conveyed to the 15 mm aperture vibrating screen. Ore larger than 15 mm is conveyed to the secondary cone (Model: PYHD-3CC) and tertiary cone crusher (Model: PYHD-5C), which has a close side setting of 15 mm. Discharge from the secondary crusher is conveyed back to the 15 mm aperture screen. Discharge from the screen feeds ore bins with a live capacity of 1,000t.

Milling classification

Crushed ore from the live bins is conveyed to a closed milling circuit consisting of a two trains, each of grate-discharge ball mill (Model: MQG 2700 x 4000) and classifier (Model: TG-200), plus 15" cyclones.

Flotation

- Similar to Plant 1, but with larger cells (BF-16 and BF-4).
- No copper flotation.

Product concentrating, filtration and handling

Similar to Plant 1 with larger size thickener, filter and handling system.

To optimize profitability, high grade PbS (58-60% Pb) from Plant 2 is blended with middle grade PbS (48-50% Pb) from Plant 1 before ore shipping to clients.

Tailings thickening

Tailings from the zinc scavenger flotation circuit are pumped into the tailings thickener, and thickener U/F to the new tailings pond located under the Mill 2.

17.4.3 Metallurgical performance (Plant 2)

According to the original design, No.2 Mill can process both Pb and Zn ore and also Cu, Pb and Zn ore. However, in practice, No.2 Mill currently processes Pb and Zn ore only. Designed mass balance at the No.2 Mill is shown in Table 17.18.

Table 17.18 Designed Mass Balance for No.2 Mill (Pb+Zn Ore) (phase I, 1000 tpd)

Product	Quantity (t)	Product Rate (%)	Pb (%)	Zn (%)	Pb Recovery (%)	Zn Recovery (%)
Ore	1000	100	4.75	3.63	100	100
Pb Conc	64.4	6.44	65	1.95	93.11	9.39
Zn Conc	59.1	5.91	0.45	50.57	2.67	81.98
Tailings	876.5	87.65	0.35	0.24	6.44	4.94

Mass balances are shown in Tables 17.8, 17.9, and 17.11 for SGX, TLP and HPG ores for 2012, and grade vs recovery are shown in Table 17.19. The processing results show that:

- Pb/Ag recoveries exceed the design expectation for SGX ores.
- Pb recovery for TLP/HPG ores and Ag recovery for HPG ores are close to the design expectation, while the Ag recovery for TLP ores exceeds the design expectation.
- Zn recoveries for SGX and HPG ores are 73.19% and 68.49 respectively, lower than the design expectation (82%).
- Since Zn grade is very low, no Zn concentrate is generated from TLP ores.

Table 17.19 Flotation Feeds: Ore Grade vs. Recovery (2012) (Plant 2)

Mines	Grade			Recovery		
	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (%)
SGX	4.05	2.02	260	95.52	73.19	91.81
TLP	2.37		113	89.83	0	90.02
HPG	4.40	1.23	117	91.22	68.49	87.48

17.4.4 Sampling (For Plants 1 and 2)

For metallurgical accounting purposes, a set of five samples is usually taken every eight hour shift for a total of 15 samples per 24 hour day. The shift samples include flotation feed from the classifier overflow, lead and zinc concentrates from the 3rd cleaners, and lead and zinc tailings from the last scavengers.

17.5 Process control and automation

There is no centralized automation station or control room for overall plant process monitoring or control. Operation control is done locally:

- Ore feed to ball mill is controlled via an electronic scale, water addition is controlled via slurry density and experience.
- Chemical dosages are controlled via a localized PLC system for each set of equipment. Chemical dosage is adjusted in a narrow range (around the default target or setting value), based on assay feedback (each half hour) to handle process upsets such as ore feed changes.
- Automatic sampling of key metallurgical accounting streams, e.g. flotation feed, concentrates and tailings.

- A central control room in the grinding-flotation building from which TV imaging of key points in the production flow can be monitored.
- To help process monitoring and control, samples are taken every 0.5 hr for the purpose of quality control, mass balance and recovery calculation.

The planned level of process control and automation is basic but adequate, recognizing that the process separation is complex and that operating labour to monitor process variables is low-cost and plentiful.

17.6 Ancillary facilities

17.6.1 Laboratory

The laboratory is equipped with the usual sample preparation, and fire assay, wet chemistry and basic photometric analytical equipment, as well as crushing, grinding, flotation, and gravity separation, and metallurgical testing equipment. The laboratory processes up to 100 samples per day.

It also conducts routine analysis of ores and concentrates as well as water quality and other environmental testing. It also provides a technical service to the processing plant in monitoring plant conditions, and solving production problems and investigating processes to assist with the improvement efforts.

Silvercorp QA / QC check procedures include inserting standards in the sample batches submitted to the labs on a regular basis and submitting duplicate pulps to an independent external lab on an intermittent basis.

17.6.2 Maintenance workshop(s)

Daily maintenance requirements are serviced through section specific workshops, each equipped with crane, welding capability and basic machine-shop facilities. More extensive maintenance and major overhaul needs are met through use of appropriate contractors.

17.7 Key inputs

17.7.1 Power

Mill power is drawn from the Chinese national grid. It is transformed from 10,000 V to 400 V by a total of twelve 400 KVA transformers (See also Section 18.3).

The mill power consumption is 40.9 kWh per tonne of ore.

Plant 1: Total installed power amounts to 2,753.2 kW (includes standby equipment) and the estimate for actual power drawn is 2,331.5 kW, which corresponds to 1.01×10^7 kWh per annum.

Plant 2: Total installed power amounts to 8,090.5 kW (includes standby equipment) and the estimate for actual power drawn is 6,570.0 kW, which corresponds to 2.50×10^7 kWh per annum.

17.7.2 Water usage and mass balance for Plant 1 and Plant 2

The water usage includes:

- Fresh make-up water used for cooling, reagent preparation and flotation.
- Recycle water used for ball mill and flotation.
- Water recycle from the tailings pond back to the recycle water tank.

Water for Plant 1

The fresh makeup water usage is around 909 m^3/d, while the rest is made up by recycle water - 2,956 m^3/d from thickeners and tailings pond. Total water usage is about 3,864 m^3/d, recycle ratio is 2956/3864 = 76.5%.

Water for Plant 2

The fresh makeup water usage is around 2,089 m^3/d, while the rest is made up by recycle water - 5,911 m^3/d from thickeners and tailings pond. Total water usage is about 8,000 m^3/d, recycle ratio is 5,911/8,000 = 73.9%.

Strategy to reduce fresh water usage

To reduce water consumption, and achieve zero discharge for non-rainy seasons, the following practices have been implemented:

- Reclaimed water from the tailings ponds and overflows from the two concentrators is recycled to minimize fresh water requirements. The raw water cost at 1.3 RMB per m^3 is 250,000 RMB per annum at the current production rate. Water is piped to the raw water tank from a river source adjacent to the concentrator property, a distance of 2.5 km.
- With the reuse of recycled water from the tailings pond, there is minimal lock-up of water in tailings and close to 75% recycling of water; however there is a requirement for fresh water for, e.g. pump seals, cooling and reagent mixing, and it is this requirement that sets the overall fresh water demand.
- Upfront water usage is about 3.5-4 m^3/t ore processed, but allowing for recycled water, net usage is less than 1 m^3/t ore processed.

17.7.3 Reagents

The reagents used in both plants include:

- Depressant / modifiers: 1-Sodium sulphide, 2-Zinc sulphate, 3-Sodium sulphite, 4-Copper sulphate.
- Collectors: 1-Di-ethyl dithiocarbamate, 2-Ammonium dibutyl dithiophosphate, 3-Butyl xanthate.
- Frother: No. 2 oil (added directly).

Reagent preparation and application of chemicals are described as follows:

- Reagent storage and mixing is located adjacent to the grinding/flotation plant and comprises a storage area with hoisting equipment to lift bags and drums through into the mixing area.
- From the mixing area the reagents are pumped up to the dosing station, located above the flotation section for dosing and gravity feeding to the various addition points.

17.8 Conclusions

Both Plants 1 and 2 are exceeding design throughput levels.

Lead and silver recovery targets are being met, although zinc recovery is lower than design, attributed to low zinc feed grades.

Similarly, concentrate grades from the lower grade ores fed to Plant 1 are below design targets; however blending with Plant 2 concentrates enables commercial targets to be met.

Improvements are consistently targeted on process system and other facilities both in plant 1 & 2 to improve the metal recovery, and save energy.

Historically, higher-grade feed from SGX has enhanced plant performance but, with the proportion of SGX decreasing, the challenge is to maintain similar metallurgical performance on lower grade feedstock. From recent performance, it appears that recoveries are being maintained but concentrate grades are lower than target, however not to the extent where there is a major deterioration in smelter terms.

18 Project infrastructure

18.1 Tailings Management Facility (TMF)

18.1.1 Overview

Table 18.1 outlines key parameters for the two TMFs. TMF 1 has served both mill Plant 1 and Plant 2 during the period of 2007-2012. Since the new TMF 2 was put into operation in April 2013, the two TMFs serve their respective mill plants:

- TMF 1 (Zhuangtou tailings pond, built in 2006, designed by Sinosteel Institute of Mining Research Co., Ltd) serves mill Plant 1.
- TMF 2 (Shi-Wa-Gou tailings pond, built in 2011, designed by San-Men-Xia Institute of Gold Mining Engineering Co.) serves mill Plant 2.

The TMFs were designed based on then-current resource/reserve estimations and LOM production projections. Subsequent resource expansion and increased production projections indicate that the current tailings capacity will not be adequate for the full Ying LOM. Additional tailings capacity will thus be required in the later period of the LOM production.

Table 18.1 Outline of the two TMFs

	Unit	TMF 1 (Zhuangtou)	TMF 2 (Shi-Wa-Gou)
Year Built		2006	2011
Start Operation		Dec 2006	April 2013
Total Volume	(Mm^3)	2.83	4.06
Working Volume	(Mm^3)	0.86	3.75
Service Life	(yr, design)	23	11.9
Remaining life	(yr)	7	11
Production rate[1]	(ore, tpd)	Plant 1 (600tpd)	Plant 2 (2000tpd)
Tailings Rate	(tpa, dry)	182,000	574,200

[1] The rates for production and tailings deposition indicated in this table are as per original design. Average daily production rates in the LOM plan fall within the rates indicated above.

This section describes the site, tailings properties, TMF sizing and design, tailings transfer, and water balance – recycle. The TMF design covers:

- Starter dam
- Trench, seepage collection, water decant system
- Reclaiming and water recycle system
- Geotechnical, safety and risk assessment, etc.

18.1.2 Tailings properties

Tailings from the two mill-flotation plants are similar in terms of properties. Tailings properties (mainly from zinc rougher flotation circuit) are summarized below:

- Dry solids: true density 2.94 t/m^3, bulk density 1.64 t/m^3.
- Tailings slurry: before deposition – weight percent solids of 21.8% with slurry density of 1.16 t/m^3; after deposition in the pond – solids density 49% by weight; S.G. 1.49 t/m^3.
- Tailings particle sizing: 70% <75 µm (200 mesh), average diameter 49–50 µm. A detailed particle size distribution (PSD) analysis is summarized in Table 18.2.

- Clay content is about 15% by weight.

The compaction and ultimate density is normally quite sensitive to the moisture content. The optimum moisture can be fairly tightly constrained in the +/- 1-2% range. Shear tests are conducted to determine the internal strength of the tailings, which is important for the stability analysis.

Geochemical properties of the tailings were assessed by a multi-element analysis (Pb and Zn). No leaching tests have been carried out to determine the potential for metal leaching.

Table 18.2 Tailings PSD1 and compositions

Size Range (mm)	Yield (%)	Composition (%)			Distribution (%)		
		Pb	Zn	Ag (g/t)	Pb	Zn	Ag
+0.100	14.73	0.20	0.19	21.25	6.85	9.03	11.12
-0.100+0.074	15.18	0.27	0.23	27.28	9.49	11.11	14.71
-0.074+0.037	21.31	0.36	0.27	22.10	17.81	18.73	16.73
-0.037+0.019	21.57	0.62	0.40	31.43	31.10	27.83	24.08
-0.019+0.010	14.90	0.57	0.38	34.77	19.75	18.26	18.40
-0.010	12.31	0.52	0.38	34.21	15.00	15.04	14.96
Total	100.00	0.43	0.31	28.15	100.00	100.00	100.00

*Measured by the Hunan Institute of Metallurgy, [1]Particle size distribution (PSD)

Water chemistry is shown in Table 18.3. About 75% of the process water is recycled back to the plant (refer to Section 17.7.2).

Table 18.3 Chemical Composition for Pond Recycle Water

Element	Pb	Zn	Cu	S2-	Sulphate	COD[1]	Org carbon	pH
Level (mg/l)	0.95	1.94	0.06	0.35	68	38.8	4.03	7.5

[1]Chemical oxygen demand (COD)

18.1.3 Site description

TMF 1 is located adjacent to Plant 1, and TMF 2 is located adjacent to Plant 2. The distance between the two plants is about 3 km, and the distance between the two TMFs is less than 2 km. All four facilities are within a 4–5 km radius:

- TMF 1: The TMF starter dam is located within the lower reaches of Donggou valley.
- TMF 2: The TMF starter dam is located within the lower reaches of Shi-Wa-Gou valley.
- TMF 1 and 2 are about 1.5 km from Zhuangtou Village and about 600 m from the entry of Xiashi Gully.

TMF 1 and 2 are located on the south edge of the North China Platform, within the Xiaoshan-Lushan arch fault fold cluster area and the Feiwei Earthquake Zone. Historically the area has been subjected to earthquakes with recorded magnitudes of less than five. Luoning County has been classified as grade 6 in terms of seismicity, and as such, a basic design seismic acceleration of 0.05 g is required to be taken into consideration in the design.

AMC's understanding is that the seismic rating is in accordance with the China Seismic Intensity Scale (CSIS), which is similar to the Modified Mercali Intensity (MMI) scale, now used fairly generally and which measures the effect of an earthquake at the surface, as opposed to the now obsolete Richter magnitude scale which measures the energy released at source. In effect, CSIS grade 6 is similar to VI (Strong) on the MMI, although the CSIS scale also specifies peak acceleration and peak velocity. The 0.05 g acceleration cited above for design purposes would correlate more with MMI V (Moderate) according to the United States Geological Service (USGS) Earthquakes Hazard Program. AMC recommends that this be clarified.

18.1.4 TMF design, construction, operation and safety study

18.1.4.1 Design: TMF 1

The following criteria and parameters are based on the design done by the Sinosteel Institute of Mining Research Co., Ltd (Report dated March 2006):

- Storage capacity calculations for the valley site indicate an estimated available volume of 2.83 Mm^3. It is assumed that, at the dry density of 1.49 t/m^3, this volume is equivalent to 4.2 Mt of tailings.
- At a rate of deposition of 183,000 tpa, the calculated design service life was approximately 23 years.
- In 2007, the dam elevation was 610 m.
- At the end of June 2013, the dam elevation was 641.6 m, reflecting the build-up of tailings from the previous six years of production.
- At the end of another nine years of service, it is expected that the dam's maximum elevation will be 650 m at design production rates. At a deposition rate of 1 m per year, this translates to nine additional metres of available height. Figures 18.1 to 18.3 show the status of TMF 1 as of mid-February 2012.

Figure 18.1 Zhuangtou TMF 1 (17 Feb 2012)

Figure 18.2 Zhuangtou TMF 1 Tailings Discharge (17 Feb 2012)

Figure 18.3 Zhuangtou TMF 1 Downstream View of Starter Dam (17 Feb 2012)

18.1.4.2 Design: TMF 2

The preliminary design for the Shi-Wa-Gou Tailings Storage Facility (TMF 2) was completed by San-Men-Xia Institute of Gold Mining Engineering Co. (Report dated Jan 2011).

- Storage capacity calculations for the valley site indicate an estimated available volume of 5.36 Mm^3. It is assumed that at a dry density of 1.49 t/m^3, this volume is equivalent to 7.98 Mt of tailings.
- At a deposition rate of 574,200 tpa, the designed service life is approximately 12 years.
- This new storage facility was completed at the end of July 2012, and put into service in April 2013. As of the end of June 2013, the dam elevation was at 592.5 m.
- At the end of another 11 years of service, it is expected that the maximum dam elevation will be 690 m at design production rates.
- Figures 18.4 to 18.6 show the status of TMF 2 as of mid-February 2012.

Figure 18.4 Shi-Wa-Gou TMF 2 (18 Feb 2012)

Figure 18.5 Shi-Wa-Gou TMF 2 Upstream View No Tails Deposited Yet (18 Feb 2012)

Figure 18.6 Shi-Wa-Gou TMF 2 Downstream View of Starter Dam (18 Feb 2012)

18.1.4.3 Dam classifications

Table 18.4 shows the Chinese system of dam classifications. This system is based on height and volume of the dam. Both TMF 1 and TMF 2 are classified as Grade III facilities.

Table 18.4 Criteria for dam grade definition (PRC)

Dam Grade Level	Volume V（x10,000 m^3）	Dam Height（m）
I	V>10,000 and/or H>100	
II III IV V	V≥10,000 1000≤V＜10,000 100≤V＜1000 V＜100	H≥100 60≤H＜100 30≤H＜60 H＜30

AMC understands that site-specific risk assessment, such as for geotechnical risk, has been carried out by Henan Luoyang Yuxi Hydrological & Geological Reconnaissance Company.

18.1.4.4 Starter dam

The TMF consists of an initial earth retaining dam, behind which the tailings are stored. These tailings are delivered via a pipeline. The tailings are allowed to drain to the desired dry density. The same tailings are used to raise the dam gradually until the allowable height and volume is reached.

The starter dam is a homogeneous rock-filled dam. Starter dam embankment slopes are designed at 1:2. Construction lifts are to be 2 m high. The preliminary design requires the downstream slope of the tailings to be formed at an overall slope of 1:5.

- TMF 1: The starter dam crest elevation is at 606 m. The design information indicates that the crest design width is 4 m, and that it has a length of 97.2 m. The TMF is to be constructed by the upstream method of construction to a maximum crest elevation of 650 m and the overall height of the TMF facility will be 70 m.
- TMF 2: The starter dam crest elevation is at 591 m. The design information indicates that the crest design width is 4 m, and that it has a length of 101.7 m. The TMF is to be constructed by the upstream method of construction with a height of 99 m, to a maximum crest elevation of 690 m. The overall height of the TMF facility will be 135 m (36+99=135 m).

18.1.4.5 Trench design for surface water

Surface water drainage features have been incorporated into the preliminary design of the TMF. Immediately downstream of the starter dam embankment there is a surface water cut-off trench (cross section area 400 mm x 400 mm). There is provision in the preliminary design for the construction of cut-off trenches (cross section area 1,000 mm x 1,000 mm) 2 m above the starter dam embankment to prevent scour of the abutments by rainwater run-off.

18.1.4.6 Water decant system design

The results of a hydrology study have been referenced as part of the design reporting and the water balance has been evaluated.

- TMF 1: Provision has been made to remove supernatant water from the TMF via five vertical reinforced concrete decant structures. Water from the decant structures is diverted around the starter embankment via a 2.0 m diameter by 1,093 m long reinforced concrete lined drainage culvert with a 5.71% grade.
- TMF 2: Provision has been made to remove supernatant water from the TMF via ten vertical reinforced concrete decant structures. Water from the decant structures is diverted around the starter embankment via a 2.5 m diameter by 1,400 m long reinforced concrete lined drainage culvert with a 5.71% grade. The water discharge flow capacity is about 28 to 29 m^3/s, which is greater than that calculated as required (27.23 m^3/s) to meet a 1 in 500 year recurrence interval (probable maximum flood criterion).

- The fact that the water diversion does not pass through the starter dam embankment is considered to be a positive feature.

18.1.4.7 Seepage collection design

Seepage control is effected by geo-membrane and geo-textile impervious layers together with an intercepting drain and collector system discharging into a downstream water storage dam for pumping to the concentrator.

The preliminary TMF design provides for a cut-off drain to be constructed 150 m downstream of the starter dam embankment at an elevation of 610 m. High strength nylon injection-moulded 300 mm diameter seepage collector pipes, at a spacing of 15 m and inclined upwards at 1%, have been incorporated into the design of the cut-off drain. The cut-off drain design includes provision for a gravel (15 mm to 50 mm particle size) pack filter encased in a geo-fabric (400 g/m^2). The intention of this cut-off drain is to capture seepage from the TMF and also to improve stability under dynamic conditions by lowering the phreatic surface.

18.1.4.8 Reclaim pond design

A “reclaim pond” was constructed below each starter dam. This is a water reclaim pond formed by the construction of an earth embankment. The stated intention of the water reclaim pond is to intercept all the seepage and discharge water of the tailings reservoir dam during normal operation to realize zero discharge for no-rainfall seasons. About 75% of water is recycled back to the mill plant:

- TMF 1: The reclaim and settling pond size is about 4x150 m^3=600 m^3 (four cells in series for water clarification). Two pumps (one spare pump) are used to pump the recycle water back to the plant.
- TMF 2: The reclaim and settling pond is designed to process recycle water (input 6,635 m^3/day). Two pumps (one spare or standby pump) are used to pump the recycle water back to the plant (5,021 m^3/day, net water recycle with evaporation losses excluded).

18.1.4.9 Geotechnical stability, safety and risk assessment study

The Henan Luoyang Yuxi Hydrological and Geological Reconnaissance Company prepared a geotechnical report titled Reconnaissance Report upon Geotechnical Engineering (4 July 2006). This report was prepared during the construction of the tailings starter embankment, when the foundation had been prepared and in accordance with recommendations given in the Preliminary Design report.

Flood calculations have been performed appropriate to the Grade III classification of the TMFs, which requires the flood control measures to meet a 1 in 100 year recurrence interval for design purposes, with a 1 in 500 year probable maximum flood criterion also. A safety and reliability analysis for the TMF has been carried out in accord with the Safety Technical Regulations for Tailings Ponds (AQ2006-2005) and under the Grade III requirements. These stipulate minimum Factors of Safety, as determined by the Swedish Circular Arc Method for assessing the potential for slip rotation failure, in the 1.05-1.20 range. Although the calculated factors of safety are generally around 1.3 (minimum), the method used is now considered outdated and industry practice would be to conduct finite element numerical modeling. It is noted that the quoted factors of safety are consistent with Chinese practice requirements. However, they are lower than those required by International Practices.

18.1.4.10 Site monitor stations

For each TMF, survey monitoring stations have been established at regular intervals along the embankment crest. The results of monitoring were seen by AMC, and it is judged that the observed settlement is consistent with consolidation of a rock fill under its own weight.

18.1.4.11 Tailings pond operation and management

Site management has indicated that each TMF is staffed by a total of 11 people, including a safety manager and two tailings engineers. The staffing level is more than adequate, and the inclusion of tailings engineers is consistent with good practice.

18.1.5 Tailings transfer to the ponds

TMF 1: Tailings (about 3,200 m^3/day) and other water streams (combined total about 3,250 m^3/day, 135 m^3/hr) from Plant 1 are being discharged into the TMF 1 via three PVC pipes under gravity from the crest of the starter dam.

TMF 2: Tailings (about 6,300 m^3/day) and other water streams (combined total about 6,650m^3/day, 276.5 m^3/hr: refer to Section 17.7.2) from Plant 2 are being discharged into TMF 2 via three PVC pipes under gravity from the crest of the starter dam.

The velocity of discharge at the time of the initial site visit was variable along the length of the abutment, with discharge velocity being the lowest at the discharge nearest the right abutment. Discharge direction at the discharge near the left abutment was also approximately parallel to the starter dam crest alignment. Discharge described in the above manner is not optimal in that it has potential to allow accumulation of fine material adjacent to the starter dam embankment, and this may have an adverse effect on the phreatic surface.

18.1.6 Water balance considerations

Water usage and mass balance for Plant 1-TMF 1 and Plant 2-TMF 2 have been discussed in section 17.7.2. About 75% of the process water is recycled back to the plant. Zero discharge is the production target for no-rainfall seasons.

18.2 Waste rock dump

Waste dumps for the Ying project are listed in Table 18.5 and locations of the dumps are marked on the surface layout maps of the different mines. Based on mine and development plans, the five mines on the Ying Property will move about 2,038,000 m^3 of waste rock to the surface dumps during the remaining mine life. The remaining capacities of the existing dumps are about 2,793,000 m^3.

Table 18.5 Waste dumps at the Ying project

Mines	No. of Waste Dumps	Remaining Capacity (m^3)	LOM Waste (m^3)	Variance [1]
SGX	6	774,000	650,435	123,565
HZG	5	841,000	133,600	707,400
HPG	2	695,000	198,514	496,486
TLP	7	142,000	495,900	-353,900
LM	5	341,000	559,934	-218,934
Total	26	2,793,000	2,038,384	754,616

[1] +ve indicates dump over capacity; –ve indicates extra space required.

From Table 18.5 it can be seen that the waste dump capacity at SGX, HZG, and HPG is enough for the LOM waste rocks, but the waste dumps in TLP and LM West do not have enough capacity for LOM.

In LM West, there will be a new waste dump built in Houyangpo Valley near the New Ramp portal. The tip head capacity of this dump (+1100mRL waste dump) is 750,000 m^3.

In TLP, the waste rock from PD730 can be dumped to Xigou valley, and it can also be used to construct the road, which can accommodate about 300,000 m^3 of waste.

Waste may also be opportunistically placed into the shrinkage stope voids, although this is not in the current mine plan.

Waste can also be consumed for local construction works such as hardstand areas, retainer walls and other miscellaneous infrastructure foundations.

18.3 Power supply

The power supply for the Ying property is from Chinese National Grids with various high voltage power lines and distances to the different mine camps and mill plants.

18.3.1 SGX and HZG Mines

Three power lines supply electricity to the SGX/HZG camps:

- The 35 kV and 10 kV power lines are from nearby Guxian Hydropower Station, 7.85 km northwest of the SGX mine where the hydropower is generated by the Guxian Dam and there are two substations, one with 110 kV and another with 35 kV capacity.
- The SGX 35 kV line is connected to the Louning Guxian 110 kV substation, while the 10 kV line is connected to the Louning Guxian 35 kV substation.
- The third line is a 10 kV line that is connected from the Chongyang 35 kV substation, about 12.1 km northeast of the SGX mine.

At the SGX mine, a fully automated 35 kV transformer station in the immediate vicinity of the mine site was built in 2008. This connects to the 35 kV line from Guxian and provides main electricity for the mine production and for office and residential use. The main transformers in the 35 kV substation have a total capacity of 6,300 kVA.

Two 10 kV lines mainly act as a standby source of power in case of disruption of the 35 kV line. Two 1,500 kW and one 1,200 kW diesel generators are installed at the 35 kV substation and are connected to local mine power grids acting as a backup power supply in the event of a grid power outage.

Underground water pumps, primary fans and shaft hoists are major pieces of equipment that require a guaranteed power supply, so two 10 kV power lines (one for normal operation and another one for backup) from different sources are installed to connect to this equipment.

Power from the 35 kV substation is transformed to 10 kV and is delivered to each adit by overhead lines that mostly follow the access roads. The overhead lines terminate at transformers outside each adit portal, shaft or decline. The transmission cables are 105 to 150 mm^2 size.

18.3.2 HPG Mine

Two high voltage 10 kV lines supply electricity to the HPG mine site. The main power supply line is from the Chongyang 35 kV substation, 11 km northeast of the mine, and a second line connects to the SGX 35 kV substation that is used as a standby line. One 400 kW diesel generator is installed outside of the HPG PD3 tunnel, acting as backup power supply.

The 10 kV line terminates at the transformers outside each adit portal. The office buildings and camp areas for mine operations are connected to the same power line. A 105 mm^2 cable is used to connect 10 kV power to an internal shaft hoist chamber in PD3.

18.3.3 TLP/LM Mine

Two 10 KV power lines provide electricity for TLP and LM mine; both are from Chongyang 35 kV substation, 8 km north of the TLP mine.

Similar to the other mines on the Ying Property, the 10 kV line terminates directly to transformers outside of adit portals. The office buildings and camp areas for mine operations are connected to the same power line. The 105 to 150 mm^2 cables are used to connect 10 kV power to internal shaft hoist chambers of Lines 55, 33, 23, inclined haulageways in PD730 at the TLP mine, and the internal shaft hoist chamber in PD900 at the LM East camp.

18.3.4 No. 1 and No. 2 Mills and office/camp complex

Power for the No. 1 and No. 2 Plants and Silvercorp's site administration office building and camp complex is drawn from the Chongyang 35 kV substation. The 10 kV power from the substation is transformed to 400 V by several transformers for mill operations, water pumps and for office and camp uses.

The total power consumptions for No. 1 and No. 2 Plants, including associated water pumps, are 2,500 kVA and 6,500 kVA respectively.

18.3.5 Underground lighting

A number of 400 V to 230 V and 400 V to 127 V transformers are used to transform high voltage to low voltage power for underground lighting purpose. Mining level lights run on a 36 V system. Step down transformers are used in many locations as required.

18.4 Roads

The central mills and mine administration office and camp complex are located 3 km northeast of the town of Xiayu, in the southwest of the Luoning County. Luoning to Xiayu is connected by a 7 m wide and 48 km long paved road called the Yi-Gu Way. The company has built a 2 km long, 6 m wide concrete road to link the mill/office complex to the Yi-Gu Way.

Access to the SGX/HZG mine from the mill-office complex is via a 7 km paved hilly road to the Hedong wharf of the Guxian Reservoir, and then across the reservoir by boat to the mine site. Silvercorp has built two large barges that can carry up to five 45-tonne trucks (see Figure 18.7), to ship ore from the SGX/HZG and HPG mines across the reservoir. Mine personnel are transported by motor boats. Mine supplies are usually hauled by small barges owned and operated by local villagers.

Figure 18.7 Silvercorp barge with five loaded trucks.

The HPG mine can be accessed either by boat or 12 km paved road, southwest of the main office complex.

The TLP/LM mines are 15 km southeast of the main office complex and are accessed by paved road along the Chongyang River.

Gravel roads link to all adits from the mine camps. Drainage ditches with trees are formed along the roads. The roads are regularly repaired and maintained by designated workers. Safety barriers are installed in some steep slope areas, and warning signs are posted at steep slopes, sharp turn points, and places with potential traffic risks.

18.5 Transportation

Heavy-duty trucks are used to transport ore, mine supplies, and concentrates.

As indicated above, ore produced at the SGX/HZG and HPG mines is loaded onto 45-tonne trucks, with the trucks being transported by barge across the Guxian Reservoir (6 km and 4 km across from SGX and HPG respectively). The trucks then continue a further 7 km by road to Silvercorp's central mills.

At the SGX mines, ore from adits PD700, CM101, PD16, and CM105 is transported to a hand-sorting facility at the north side of the mine by diesel powered locomotive railcars in a 2.7 km long tunnel rail system. The tunnel starts at PD700 at 640 mRL and then extends north-easterly for 1,245 m to CM101. From CM101, the tunnel extends north-westerly for 365 m to PD16 where an ore bin was built to transfer ore from 640 m to 565 m elevation. From PD16, the rail goes north about 810 m to the ore bin at the hand-sorting facility. Ore from CM102, CM103, YPD01 and YPD02 of the SGX mine and from all adits of the HZG mine is hauled to the ore stockpile yard at the SGX site using 6-tonne tricycle trucks.

In order to efficiently and safely transport ore from HZG to SGX, Silvercorp has constructed a 1,270 m long tunnel from PD820 that connects the existing tunnel rail system to PD700 of the SGX. The tunnel was completed in December 2012, with overhead electrical line installation and narrow gauge railway construction following. When the entire transport system is completed and put into service, it will allow ore mined from all the adits at the HZG mine to be transported to the SGX mine stockpile yard via the tunnel rail system by trolley locomotive.

Ore from the TLP and LM mines is hauled to the central mill using 30- and/or 45-t truck fleets. All of the ore stockpiles outside of the underground adits are accessible by the trucks.

The final products from the mill plants are lead and zinc concentrates, which are transported by trucks to local smelters located within a 210 km radius.

18.6 Water supply

Domestic water for the SGX mine is sourced from the Guxian Reservoir, while water for the HPG, TLP, LM and HZG mines is sourced from nearby creeks and springs. Water is regularly tested and AMC understands that its quality and quantity meet requirements.

Mine production water for drilling and dust suppression is sourced from underground at all the mines.

18.7 Waste water and sewage treatment

Waste water is generated from mining activities, mineral processing and domestic sewage.

At the SGX mine, underground water is pumped to surface via the mine portals, and then pumped to Sedimentation Pond 1. At this pond, lime is added to assist flocculation. Further sedimentation occurs in Pond 2. The overflow is then allowed to drain to three settlement tanks before it is discharged into the Guxian Reservoir through a discharge point near CM102 that has been approved by the Yellow River Management Committee.

The Ying TMF tailings water is collected using four dams under the TMF embankment over a 1 km range. The collected tailings water from the TMF is piped back to the processing plant for reuse. No tailings water is discharged to the environment.

Sewage from mining areas is collected and treated by a biological and artificial wetland treatment system. AMC understands that reports indicate that the treated water meets all the criteria of water reuse, with 100% being reused for landscape watering. There is no discharge to the reservoir.

At the HZG, HPG, TLP and LM mines, underground water and domestic sewage are filtered through gravel pits and then discharged to the environment.

18.8 Other infrastructure

18.8.1 Mine dewatering

Mine dewatering is described in Section 16.2.9. It is undertaken in accordance with the “Chinese Safety Regulations of Metal and Non-metal Mines”.

18.8.2 Site communications

Mine surface communications are by landline service from CNC and with mobile phone services from China Mobile and China Unicom. Internal telephones are installed in active mining areas and the dispatch room and are connected with local communication cable nets. An HYA cable is used for surface and an HUVV cable is used for underground tunnels.

High speed internet cables are connected to all of the mine sites from Xiayu.

18.8.3 Camp

At each mine and mill site there are dormitory buildings and administration buildings that are equipped with dining rooms and washrooms for Silvercorp's management, technical personnel and hourly workers. Colour-coded steel housing structures are built adjacent to each portal as living facilities for the mine contractor workers. These buildings also include dining rooms and washrooms.

18.8.4 Dams and tunnels

Dam and diversion tunnels have been constructed to prevent storm and heavy rainfall from washing out surface infrastructures, and also to block waste rock and waste materials flow into the Guxian Reservoir. Table 18.6 lists the dam and tunnels at each mine.

Table 18.6 Dams and tunnels in the Ying district

Mine	Tunnel/Dam	Profile (m*m)	Length (m)	Purpose
SGX	PD700-Zhanggou Tunnel	3.5*3.2	512	To divert flood to Zhanggou above PD700 (712m Elevation) in the SGX valley
	PD16-Zhaogou Tunnel	2.2*2.4	540	To divert flood water to Zhanggou above PD16 (598m elevation) in the SGX valley
	CM101-PD16 Tunnel	2.2*2.4	330	To divert flood water from above CM101 (650m Elevation) into PD16-Zhanggou Tunnel (598m elevation)
	CM105 West Tunnel	2.2*2.4	580	To divert flood water from above CM105 (570m Elevation) to east site of the Guxian Reservoir
	SGX Dam	50*12*55 (bottom width, top width, height)	90	To prevent waste rock and waste material from washing into the Guxian Reservoir
TLP	PD770-Chongyang River	3.0*3.0	750	To divert the Xigou Creek and prevent PD730 from flooding
LM West	924 West Tunnel	3.0*3.0	70	To divert the Xigou Creek and prevent PD924 from flooding
HPG	PD3 Tunnel	3.2*3.5	80	To divert HPG creek and prevent PD3 from flooding

18.8.5 Surface maintenance workshop

Each mine has a maintenance workshop in which the following auxiliary services are provided:

- Tire processing, maintenance and servicing
- Welding
- Electrical
- Hydraulic
- Tools, parts and material warehouse

The repair workshop is mainly responsible for maintenance of large-scale production equipment, vehicle repair, processing and repair of component parts, and the processing of emergency parts. All necessary equipment is available. Mechanical Maintenance Facilities are composed of mining equipment maintenance workshop, equipment and spare parts store, dump oil depot, reserve electric locomotives, and tramcar maintenance workshop and stockpile yard.

AMC noted working practices and safety equipment standards during its site visit that were less than would be anticipated in North America in similar mining operations.

The mining contractor generally has its own maintenance workshops adjacent to adit portals. Tricycle trucks, electric locomotive and rail cars, minor equipment (such as jacklegs, secondary fans, development pumps, etc.) are serviced in these workshops.

All maintenance work at the Ying camp is performed on surface and there are no workshops located underground.

18.8.6 Explosives magazines

Each mine has an explosives magazine and detonator storage house with strict security. The magazines are gated and are guarded by two gate keepers and a dog. Surveillance cameras are installed in the magazine areas. All explosive tubes and detonators are labeled with barcodes, which are scanned before release from the magazine for security audit purposes. AMC noted that these magazines were well constructed and maintained.

Underground working party magazines are located adjacent to each level's return air shaft or decline and are limited to one day's requirement for bulk explosives and three day's requirement for blasting ancillaries.

18.8.7 Fuel farm

Diesel fuel is used for mobile mine equipment, some small trucks, and surface vehicles. There are two fuel farms at the SGX mine, with a total capacity of 60 tonnes. The first is located 459 m north of PD16 to supply diesel for mobile equipment. The second unit is next to the 35 kV power substation, and mainly supplies diesel to the generators.

Fuel storage tanks are also installed in the TLP, LM and HPG mines to provide diesel for surface mobile equipment.

Each of two large truck-carrying barges has two diesel fuel tanks that can store up to 7.5 t of diesel. Full tanks of diesel can keep the barges operating for about 10 days.

The contractors have their own small fuel tankers near the portals, and provide fuel for underground diesel locomotives, tricycle trucks and mobile equipment.

There are up to ten 200 L gasoline tanks stored in an underground tunnel about 450 m east of the SGX wharf to supply gasoline for surface personnel-carrying vehicles and motor boats.

Containment for storage of fuel is constructed in the vicinity of the diesel generators and fuel dispensing facilities. The storage facility must be located down-wind from the mine air intake fans and a reasonable distance from buildings, camp and mine portal (dependent upon local occupational health and safety regulations and fire-fighting requirements). The lined containment area is constructed such that spills are confined and can readily be cleaned, and so that the need for extensive and costly remediation work can be avoided during site closure.

18.8.8 Mine dry

At each mine site, the dormitory buildings and administration buildings provide showers and washrooms for Silvercorp employees. There are showers and washrooms near each adit portal for contract workers. Provisions for personal protective equipment such as gloves, safety glasses, hard hats and cap lamps /batteries are made by Silvercorp or its contractors.

18.8.9 Administration building

At each mine site, there is an administration building that provides working space for management, supervision, geology, engineering, and other operations support staff. Silvercorp's local office is located at the central mill site; this building can accommodate over 150 staff. The senior management in charge of Ying District sales, purchasing, accounting and technical services are located at the local office.

18.8.10 Warehouse and open area storage

There are warehouses at each mine site that are designed for materials and equipment inventory storage. In addition, there are open storage areas that can be used for the same purpose.

18.8.11 Assay laboratory

The assay laboratory is located in a separate building at the northwest side of the No.1 Plant. The laboratory is a two-storey structure equipped to perform daily analyses of mine and process samples.

18.8.12 Security / gatehouse

There is a designated security department at each mine site and mill plant that is responsible for daily security tasks. A security gatehouse is located at each mine site access road with personnel on round-the-clock duty. Monitoring cameras are installed at the gatehouses for additional coverage. There are also personnel on duty at all times at each access road. The night shift is responsible for patrol of the key areas. In terms of the ore transportation, there are dedicated personnel in charge of inspection for the transportation process.

18.8.13 Compressed air

Compressed air is primarily used for drilling blast holes. Jacklegs are used in all stopes and conventional development faces. There are some minor uses for shotcreting and hole cleaning.

Compressor plants are located adjacent to every portal. These compressors are of a two-stage electric piston configuration. Compressed air is reticulated via steel pipes of varying sizes, depending on demand, to all levels and to the emergency refuge stations. Air lines are progressively sized from 4 inch to 1 inch at the stopes.

18.8.14 Underground harmful gas monitoring system

Each mine in the Ying District has or is planned to have underground Harmful Gas Monitoring and Personal Location Systems. At the time of its 2012 site visit, AMC noted one such unit being installed at SGX. Silvercorp has subsequently indicated that systems are now operational in the SGX, TLP, HPG, LM, and HZG mines. The Underground Harmful Gas Monitoring System and Personal Location System should meet the requirements of the Chinese Coal Mine Safety Regulation (Version 2006). All of the underground areas must be covered.

The system is used to monitor the underground ventilation network. Data such as air velocity and CO concentration can be collected, processed, and reported instantly. When any item is above the threshold limit value (TLV), the mine control room is notified immediately. The sub-system of safety monitoring, which has a routine inspection cycle of less than 30 seconds, can exchange data with the Automation Integrated Software Platform instantly.

The underground monitoring substation has two-way communication with transmission interfaces. It has a simulation data collector for CH_4, air speed, air pressure, CO and temperature, and can collect information on power status, ventilator switch, air door switch and smoke. The system is supported by a computer in the central office.

18.8.15 Underground personal location system

The underground personal location system can indicate the exact time that each miner enters or exits underground. The system can provide the total number of miners going underground, with detail of names and working durations, and can print out daily and monthly time sheets. It can instantly report the number of workers working underground and their location.

19 Market studies and contracts

19.1 Concentrate marketing

AMC understands that the lead and zinc concentrates are marketed to existing smelter customers in Henan and Shaanxi provinces and appropriate terms have been negotiated as detailed in Section 19.2 below.

With respect to copper, testwork has so far been unsuccessful in producing a saleable copper concentrate, but copper levels in the ore are low and this is not a material commercial issue, nor does it materially impact on lead concentrate quality.

19.2 Smelter contracts

Monthly sales contracts are in place for the lead concentrates with leading smelters, mostly located in Henan province. Among them are Henan Yuguang Gold and Lead Smelting Co. Ltd, JiyuanWanyang Smelting (Group) Co. Ltd, JiyuanJinli Smelting (Group) Co., and LuoningYongning Gold and Lead Smelting Co. Ltd. For the zinc concentrate, sales contracts are in place with Henan Yuguang Zinc Industry Co. Ltd and Shaanxi Shangluo Zinc Smelting Co. Ltd. The contracts are renewed on a monthly basis.

All contracts have freight and related expenses to be paid by the smelter customers.

The key elements of the contracts are summarized in Table 19.1 below:

Table 19.1 Key elements of smelter contracts

	Pb Concentrate & Direct Smelting Ore						Zn Concentrate	
	% Pb	Deduction RMB/t Pb	Ag (g/t)	% payable	Au (g/t)	% payable	% Zn	Deduction RMB/t Zn
Minimum Quality	35		500		1		40	
Payment Scales	>=60	1700	>=5000	91	>=20	87	>=45	Price =<RMB 15000/t:4800
	55-60	1800	4500-5000	90.5	15-20	86		Price > RMB 15000/t:4800+(price-15000)*80%
	50-55	1900	4000-4500	90	10-15	85	40-45	Price =<RMB 15000/t:4800+45 per % lower than 45%
	45-50	2000	3500-4000	89.5	7-10	84		Price > RMB 15000/t:4800+(price-15000)*80%+45 per % lower than 45%
	40-45	2100	3000-3500	89	5-7	83		
	35-40	2600	2500-3000	88.5	3-5	82		
			2000-2500	88	2-3	81		
			1500-2000	87.5	1-2	80		
			1000-1500	87				
			500-1000	86.5				

With respect to lead and zinc terms, the above deductibles calculate out to 85-90% payable for the lead concentrate and approximately 70% for zinc, at long-term prices. AMC considers these to be favourable terms relative to global smelter industry norms. Silver payables of approximately 90% are similarly in accord with industry norms.

19.3 Commodity prices

AMC has used the metal prices shown below and in Table 22.1 for its economic analysis and considers them to be reasonable.

For the purposes of cut-off grade and silver equivalent calculations, AMC has used recent reported individual metal processing recoveries and operating costs for each site, and the following long-term metal prices: Au $1,250/oz, Ag $19/oz, Pb $1.00/lb, Zn $0.82/lb.

20 Environmental studies, permitting and social or community impact

20.1 Introduction

Silvercorp has all the required permits for its operations on the Ying Property. The exploration and mining permits are described in Section 4.1 of this report.

The existing mining permits cover all the active mining areas and give Silvercorp the right to carry out full mining and mineral processing operations, in conjunction with safety and environmental certificates. Five safety certificates have been issued by the Department of Safety Production and Inspection of Henan Province, covering the SGX mine, Zhuangtou TMF, HPG mine, TLP mine and LM mine. Five environmental certificates have been issued by the Department of Environmental Protection of Henan Province, covering the Yueliangou project (SGX mine and 1,000 tpd mill plant), HPG mine, TLP mine, LM mine and the 2,000 tpd mill plant built in 2009. For each of these certificates, there are related mine development/utilization and soil/water conservation program, and rehabilitation plan reports. Silvercorp has also obtained approvals and certificates for wastewater discharge locations at the SGX mine, the HPG mine, and the two TMFs.

There are no cultural minority groups within the area surrounding the general project. The culture of the broader Luoning County is predominantly Han Chinese. No records of cultural heritage sites exist within or near the SGX and HPG project areas. The surrounding land near the SGX Mining Area is used predominantly for agriculture. The mining area does not cover any natural conservation, ecological forests or strict land control zones. The current vegetation within the project area is mainly secondary, including farm plantings. Larger wild mammals have not been found in the region. Small birds nesting and moving in the woodland are observed occasionally. The surrounding villagers raise domestic animals, such as chickens, ducks, pigs, sheep, goats, dogs, etc.

Silvercorp has made a range of cash donations and contributions to local capital projects and community support programs, sponsoring university students and undertaking projects such as road construction, and school repairs, upgrading and construction. Silvercorp has also made economic contributions in the form of direct hiring and retention of local contractors, suppliers and service providers.

20.2 Laws and regulations

Silvercorp's operations in the Ying Property operate under the following Chinese laws, regulations and guidelines:

Laws

1 Law of Environmental Protection PRC (1989)
2 Law of Minerals Resources of PRC (1996)
3 Production Safety Law of the PRC (2002)
4 Law of Occupational Disease Prevention (2001-Amended 2011)
5 Environmental Impact Assessment (EIA) Law (2002)
6 Law on Prevention & Control of Atmospheric Pollution (2000)
7 Law on Prevention & Control of Noise Pollution (1996)
8 Law on Prevention & Control of Water Pollution (1996, amended in 2008)
9 Law on Prevention & Control Environmental Pollution by Solid Waste (2002)
10 Forestry Law (1998)
11 Water Law (1988)
12 Water & Soil Conservancy Law (1991)
13 Land Administration Law (1999)
14 Protection of Wildlife Law (1989)
15 Energy Conservation Law (1998)

16 Management Regulations for the Prevention & Cure of Tailings Pollution (1992)

17 Management Regulations for Dangerous Chemical Materials (1987)

Regulation guidelines

1 Environment Protection Design Regulations of Construction Project (No.002) by Environment Protection Committee of State Council of PRC (1987)

2 Regulations on the Administration of Construction Project Environmental Protection (1998)

3 Regulations for Environmental Monitoring (1983)

4 Regulations on Nature Reserves (1994)

5 Regulations on Administration of Chemicals Subject to Supervision & Control (1995)

6 Regulations on Management of Chemicals Subject to Supervision & Control (1995)

7 Environment Protection Design Regulations of Metallurgical Industry (YB9066-55)

8 Comprehensive Emission Standard of Wastewater (GB8978-1996)

9 Environmental Quality Standard for Surface Water (GB3838-1988)

10 Environmental Quality Standard for Groundwater (GB/T14848-1993)

11 Ambient Air Quality Standard (GB3095-1996)

12 Comprehensive Emission Standard of Atmospheric Pollutants (GB16297-1996)

13 Environmental Quality Standard for Soils (GB15618-1995)

14 Standard of Boundary Noise of Industrial Enterprise (GB12348-90)

15 Emissions Standard for Pollution from Heavy Industry; Non-Ferrous Metals (GB4913-1985)

16 Control Standard on Cyanide for Waste Slugs (GB12502-1990)

17 Standard for Pollution Control on Hazardous Waste Storage (GB18597-2001)

18 Identification Standard for Hazardous Wastes-Identification for Extraction Procedure-Toxicity (GB5085.3-1996)

19 Standard of Landfill and Pollution Control of Hazardous Waste (GB 18598-2001)

20 Environmental Quality Standard for Noise (GB3096-2008)

21 Emission Standard for Industrial Enterprises Noise at Boundary (GB12348-2008)

22 Evaluating Indicator System for Lead and Zinc Industry Cleaner Production (Trial) (2007)

20.3 Waste and tailings disposal management

Silvercorp's main waste by-products are waste rock produced during mining operations and the mine tailings produced during processing. There is also minor sanitation waste produced.

Waste rock is deposited in various waste rock stockpiles adjacent to the mine portals and is utilized for construction around the site. The waste rock is mainly comprised of quartz, chlorite and sericite, kaolin and clay minerals and is non-acid generating.

Once the stockpile is full (or at the time of site closure), the waste rock stockpiles will be covered with soil and re-vegetated. For stabilization, retaining wall structures will be built downstream of the waste rock site. A diversion channel will be constructed upstream to prevent high flows into the stockpile and the slope surface from washing out. A waste rock stockpile in the main exploration-development camp, Shagouxi (SGX), has already been covered with soil and re-vegetated.

Process tailings are discharged into purpose-built tailings management facilities TMF1 and TMF2) - that have an effective design capacity of 2.43 Mm^3 and 5.37 Mm^3 respectively, (refer also to Section 18.1). The TMFs have decant and under-drainage systems that provide for flood protection and for the collection of return water. Daily inspections are undertaken of the tailings pipelines, TMF embankment and the seepage/return water collection system. The TMF under-drainage and return water collection system comprise a tunnel discharging directly into an unlined collection pond/pumping station, which is situated just downstream of the TMF embankment. According to the current rehabilitation plan, after the completion of the TMFs, the facility will be covered with soil and re-vegetated. The SGX Environmental Impact Assessment (EIA) Report states that the tailings do not contain sulphide and have no potential for acid generation.

20.4 Site monitoring

20.4.1 Monitoring plan

Silvercorp developed comprehensive monitoring plans during the EIA stage, including monitoring plans during the construction period. An environmental protection department consisting of five full time staff was set up for this project. The full time environment management personnel are mainly responsible for the environment management and rehabilitation management work in the Ying Property.

The monitoring plans include air and dust emissions and noise and wastewater monitoring. The monitoring work is completed by qualified persons and licensed institutes. For water environment monitoring, an intensive program has been developed and implemented, including twice-a-month testing of sanitary waste-water and surface water by the Luoning County Environmental Protection Bureau. Mine water discharge and surface water is tested monthly by the Yellow River Basin Environmental Monitoring Centre, an inter-provincial government organization. Detailed monitoring plans are shown in Table 20.1.

Table 20.1 Water environmental monitoring plan for Ying mining area

Items	Monitoring Points (section)	Monitoring Parameters	Frequency	Monitored by
Sanitary Wastewater	Final discharge point	pH, NH3-N, CODcr, BOD, TSS	Twice/month	Luoyang Environmental Monitoring Centre
Surface water	Shagou Yuelianggou	pH, Cr6+, NH3-N, Cd Pb, Ag, CODcr and Cu	Twice/month	
Process wastewater	Discharge point after sedimentation treatment	pH	Once/month	Luoyang Environmental Monitoring Centre
		Pb, CODcr, NH3-N and SS	Once/month	
		Cd,S2-,As, phenol, Zn, Ag and TPH	Once/quarter	
Mining water	Discharge point after sedimentation tank	Temperature, pH, SS, CODcr, NH3-N, total P, N, SO4, Ag Cu, Zn, Pb, Cd, Hg, phenol and TPH	Once/month	Yellow River Basin Monitoring Centre
Surface water	Sections at Shagou to Guxia Reservoir Upper section of Guxia Reservoir from Shagou Down gradient section of Guxia reservoir (500 m from Shagou entrance)			

AMC understands that monitoring results from 2007 to 2012 indicate that the surface water results are in compliance with Class II and III limits of Surface Water Environmental Quality Standards (GB3838-2002), sanitary and process plant wastewater results are in compliance with Class I limits of Integrated Wastewater Discharge Standard (GB8978-1996), and mining water results are in compliance with Class I limits of Integrated Wastewater Discharge Standard (GB8978-1996). These standards match the requirements in the EIA approvals. In addition, AMC understands that the project-stage completion inspection results were all compliant for wastewater discharge, air emission, noise and solid waste disposal.

There have been a few exceptional cases in which pH values of the discharged mining water were slightly over 9.0 and Pb concentrations slightly exceeded the permitted limit 0.011 mg/l at the general discharge point after sedimentation tank for both SGX and TLP mines.

20.4.2 Water management

The water supply for the SGX and HPG projects is sourced mainly from the Guxian Reservoir and mountain spring water. Water supply for the TLP, LM, and HZG projects is mainly from mountain spring water near the mines.

Maintaining water quality for Guxian Reservoir, while operating the SGX/HZG and HPG projects, is a key requirement in the project environmental approvals. Silvercorp has created a SGX and HPG surface water discharge management plan. This comprises collection and sedimentation treatment of mine water combined with a containment system (i.e. zero surface water discharge), and installation of a stormwater drainage bypass system for the segregation and diversion of clean stormwater and for flood protection.

Prior to completion of the stormwater drainage bypass system, drainage construction in the project water catchment area was completed. Overflow water from the mill process (which is segregated by the thickener), and water generated from the tailings by the pressure filter, are returned to the milling process to ensure that wastewater (including tailings water) is not discharged.

Water from mining operations is reused for the same purpose and the remaining water is treated according to the Surface Water Quality Standards (GB3838-2002) and Integrated Wastewater Discharge Standard (GB8978-1996) to meet the Class III requirements of surface water quality and Class I wastewater quality before being discharged to Guxian Reservoir at discharge points approved by the Yellow River Management Committee in Luoning County.

Monthly monitoring results by the Luoyang Environmental Monitoring Station and Yellow River Basin Environmental Monitoring Centre indicate that water discharged to the surface water body is in compliance. Selected data in Table 20.2 and Table 20.3 show the general level of test results.

Table 20.2 Selected (2012) monitoring results, SGX mine surface water

Sampling Date	SS	COD	NH3-N	Ag	Cu	Zn	Pb	Cd	TPH	Phenol
GB3838Limit	**70**	**15**	**0.5**	**0.1**	**1.0**	**1.0**	**0.011**	**0.005**	**0.05**	**0.002**
2012/1/9	41	14.0	0.08	<DL	0.011	0.008	0.0044	<DL	<DL	<DL
2012/2/9	47	14.4	0.06	<DL	0.012	0.007	0.0080	<DL	<DL	<DL
2012/3/9	53	13.7	0.10	<DL	0.011	0.008	0.0052	<DL	<DL	<DL
2012/4/10	57	14.6	0.07	<DL	0.012	0.007	0.0056	<DL	<DL	<DL
2012/5/11	68	14.0	0.16	<DL	0.013	0.009	0.0052	<DL	<DL	<DL
2012/6/11	79	14.2	0.14	<DL	0.011	0.010	0.0052	<DL	<DL	<DL
2012/7/10	82	14.8	0.22	<DL	0.013	0.010	0.0052	<DL	<DL	<DL
2012/8/9	87	13.3	0.25	<DL	0.010	0.012	0.0050	<DL	<DL	<DL
2012/9/8	91	14.3	0.35	<DL	0.011	0.014	0.0050	<DL	<DL	<DL
2012/10/10	96	13.6	0.20	<DL	0.013	0.016	0.0052	<DL	<DL	<DL
2012/11/9	47	14.1	0.18	<DL	0.014	0.019	0.0057	<DL	<DL	<DL
2012/12/10	38	15.4	0.16	<DL	0.012	0.022	0.0054	<DL	<DL	<DL

Units – mg/l

Table 20.3 Selected monitoring results (2012), surface water

Sampling location	NH3-N	Ag	Cu	Zn	Pb	Cd	As	Hg	Cr
GB3838Limit	**0.5**	**0.1**	**1.0**	**1.0**	**0.011**	**0.005**	**0.05**	**0.002**	
200m from Zhuangtou tailing dam	0.458	<Dl	<Dl	<Dl	0.009	0.008	0.0043	<DL	<DL
SGX Mine	0.95	<DL	0.01	<DL	<DL	<DL	0.0043	<DL	<DL
Yuelianggou Mine	0.087	<DL	<DL	0.070	<DL	0.0002	0.0041	<DL	<DL
HPG Mine	0.35	<DL	0.011	0.017	0.0054	<DL	<DL	0.00006	<DL
Chongyanggou Mine	0.095	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL

Units – mg/l

With the exception of one small creek, there are no surface water sources near the TLP and LM mines, and no mining water is discharged to this creek from the mines. There is limited volume of mining water generated from the lower sections of the TLP and LM mines, most of which is used in the mining activities, and none generated from the upper sections.

20.4.3 Groundwater

Groundwater guidelines are contained in the Groundwater Environmental Quality Standards (GB/T14848-93). There is a groundwater monitoring program for the processing plant area, but not for the mining areas. It is recognized that there is no requirement under the Chinese environmental approval to monitor this potential impact. Groundwater (the main drinking water sources) monitoring results of tested parameters, including pH, Pb, Hg, Zn, Cd, Cu, As, cyanide, and sulphate, conducted by the Luoyang Environmental Monitoring Station in January 2013 at different areas indicated that groundwater quality is in compliance with Class III of GB/T14848-93. The results are summarized in the Table 20.4 below:

Table 20.4 Results summary of drinking water (groundwater)

Location	Pb	Hg	Zn	Cd	Cu	As	Ag	CN
Class III Limit	**0.05**	**0.001**	**1.0**	**0.01**	**1.0**	**0.05**		**0.05**
SGX Mine	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
Mill Plant	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
Mill Plant nearby resident	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
HPG Mine	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
Chongyang Mine	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
Chongyang Mine resident	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
Yuelianggou Mine	<0.001	<0.00005	<0.1	<0.0005	<0.01	<0.0005	<DL	<0.002
Detection limit (DL)	0.01	0.00005	0.01	0.001	0.01	0.0002	0.007	0.004

Units – mg/l

20.4.4 Waste water

There are three sources of waste water: mining activities, mineral processing and domestic sewage. Mine water is pumped to surface via the mine portals, and then pumped to Sedimentation Pond 1 via a lime dosing system to assist in flocculation. The settled water is then drained to Sedimentation Pond 2, where the overflow is allowed to drain to another system of three settlement tanks before being discharged to Guxian Reservoir through a discharge point approved by the Yellow River Management Committee at an elevation of 549.5 m above sea level. Sewage from mining areas is collected and treated by a biological and artificial wetland treatment system. The treated water meets the criteria for water reuse and is applied 100% to landscape watering with no discharge to the public water body. Table 20.5 shows selected mine water and sanitary waste water monitoring results.

Table 20.5 Mining water and sanitary waste water monitoring results

Sampling location	pH	Cd (mg/L)	Pb (mg/L)	Zn (mg/L)	Cu (mg/L)
Industrial wastewater reuse standard (GB / T19923-2005)	**6.5-7.5**	**10**	**60**	**20**	**20**
Discharge point after sedimentation treatment	8.3	<DL	<0.0046	<0.033	0.014
Entrance to Guxian Reservoir	8.0	<DL	<0.0056	<0.024	<0.011
Integrated wastewater discharge standards （GB 8978-1996）Class I Limit	**6～9**	**0.1**	**1.0**	**2.0**	**0.5**
Sanitary wastewater treatment	pH	NH3-N (mg/L)	COD (mg/L)	BOD (mg/L)	SS (mg/L)
After biological and wetland treatment	7.9	0.4	24	19.2	13.1

According to the EIA approval, water quality protection for the Guxian Reservoir and the SGX project area is subject to Chinese National Standard Environmental Quality Standard for Surface Water (GB3838-1988 – Class II) and the mine discharge water quality is to meet Class I of the Integrated Wastewater Discharge Standard (i.e. at the point of discharge). Quality monitoring of the mine waters and the surrounding receiving surface waters is carried out under contract by the Luoning County Environmental Protection Bureau and the Yellow River Basin Environmental Monitoring Centre, in line with specifications in the site environmental monitoring plan. The monthly monitoring results have so far indicated that water discharged to surface water bodies is in compliance with both standards.

The Ying TMFs under-drainage and return water collection system comprises a tunnel discharging directly into a collection pond/pumping station just downstream of the TMF embankment. This TMF decant and under-drainage system provides a mechanism for the direct discharge of tailings and/or contaminated tailings water from the TMF. This existing collection pond is designed to overflow into a second containment/seepage dam. There are two further containment dams downstream, with a fourth dam, approximately 1 km downstream, also acting as another pumping station and emergency containment system. The collected tailings water from the TMF in these dams is pumped back through a long pipe to the processing plant for reuse. No tailings water is discharged to the public water body.

20.5 Permitting requirements

The following permits and approvals have been obtained by Silvercorp for the Ying operation.

20.5.1 Environmental impact assessment reports & approvals

- Environmental Impact Assessment Report of SGX Mine Project, by Luoyang Environmental Protection & Design Institute, January 2006
- Approval of Environmental Impact Assessment Report of SGX Mine Project by Henan Environmental Protection Bureau, February 2006
- SGX Mine Project Trial Production Completion Acceptance Inspection Approval by Henan Environmental Protection Bureau, January 2009
- Environmental Impact Assessment Report of HPG Mine, by Luoyang Environmental Protection & Design Institute, November 2002
- Approval of Environmental Impact Assessment Report of HPG Mine by Henan Environmental Protection Bureau, January 2003
- Approval of Environmental Impact Assessment Report of TLP Mine by Henan Environmental Protection Bureau, November 1998
- Approval of Environmental Impact Assessment of LM Mine Expansion by Henan Environmental Protection Bureau, May 2010

- Environmental Impact Assessment Report of 2000 t/d processing plant and tailings storage facility, by Luoyang Environmental Protection & Design Institute, May 2009
- Approval of Environmental Impact Assessment Report for 2000 t/d Processing Plant and Tailings Storage Facility, by Henan Environmental Protection Bureau, July 2009

20.5.2 Project safety pre-assessments reports and safety production permits

- Yuelianggou (SGX Mine) Project Safety Pre-assessment Report & Registration by Henan Tiantai Mining Safety Engineering Company, December 2008
- HPG Mine Safety Pre-assessment Report & Registration by Henan Minerals Test Centre, April 2010
- TLP Mine Safety Pre-assessment Report & Registration by Henan Tiantai Mining Safety Engineering Company, December 2008
- LM Mine Safety Pre-assessment Report & Registration by Henan Minerals Test Centre, January 2011
- Safety Production Permit (XCJC309Y) for SGX Mine by Henan Safety Production & Supervision Bureau, valid from 1 March 2012 to 28 February 2015
- Safety Production Permit (XCJC307) for HPG Mine by Henan Safety Production & Supervision Bureau, valid from 26 July 2011 to 25 July 2014
- Safety Production Permit (XCJC301) for TLP Mine by Henan Safety Production & Supervision Bureau, valid from 11 January 2012 to 10 January 2015
- Safety Production Permit (XCJC303YB) for LM Mine by Henan Safety Production & Supervision Bureau, valid from 29 March 2011 to 28 March 2014
- Safety Production Permit (XCWK333Y) for Yuelianggou Tailing Dam Operation by Henan Safety Production & Supervision Bureau, valid from 31 December 2010 to 29 December 2013

20.5.3 Resource utilization plan (RUP) reports & approvals

- RUP Report and Approval for SGX Mine by China Steel Group Design Institute
- RUP Report and Approval for HPG Mine by Sanmenxia Gold Design Institute, February 2010
- RUP Report and Approval for TLP Mine by China Steel Group Design Institute
- RUP Report and Approval for LM Mine by Sanmenxia Gold Design Institute, April 2010

20.5.4 Soil and water conservation plan and approvals

- Soil and Water Conservation Plan for the SGX Mine by Luoyang Soil and Water Conservation Supervision Station and approved by Luoyang Water Resources Management Bureau, May 2009
- Soil and Water Conservation Plan for HPG Mine by Luoyang Soil and Water Conservation Supervision Station and approved by Luoyang Water Resources Management Bureau, May 2008
- Soil and Water Conservation Plan for LM Mine by Luoyang Soil and Water Conservation Supervision Station and approved by Luoyang Water Resources Management Bureau, January 2007
- Approval of Wastewater Discharge at the SGX mine and HPG mines to the Guxian Reservoir by Yellow River Irrigation Work Committee, January 2007
- Approval of Wastewater Discharge in the Ying TMF to the Chongyang River by Yellow River Irrigation Work Committee, January 2007

20.5.5 The geological hazards assessment report and approval

- The Geological Hazards Assessment Report for the SGX mine by Henan Provincial Science and Research Institute of Land and Resources, January 2009
- Geological Hazards Assessment Report is a part of the documents for the mining permit application that was implemented in March 2004. This report was not required for HPG, LM, and TLP mines since the original mining permits were issued before March 2004.

20.5.6 Mining permits

See Section 4.1.

20.5.7 Land use right permits

- **Land use right certificate No 0032 (Luoning County Guoyong (2011) No 0032).** The certificate covers a land area of 98,667 m^2 located in Shagou Village, Xiayu Town, Luoning County and will expire in 2061; issued and approved by Luoning County Government, Luoning County Land and Resources Bureau and Ministry of Land and Resources of PRC.
- **Forest land use right permit (Yulinzixu 2008 No 170),** issued by Henan Forest Bureau in November 2008. The permit covers a forest land area of 12.8064 hectares located in Zhuangtou Village, Xiayu Township, Luoning County for the processing plant and the tailings dam construction.

20.5.8 Water permits

- **Water permits (Ning Water No. 2012-001).** The permit allows the taking of 309,600 m^3 water for mill processing from Chongyang River at the inlet of the Xiashi Valley (downstream of No. 1 TMF) and the Chongyang River and expires on 30 June 2017. The permit was issued and proved by Luoning County Bureau of Water Resources Management on 21 June 2012.
- **Water permits (Ning Water No. 2008-001).** The permit allows the taking of 823,100 m^3 of water for mill processing from Luo River at the inlet of the Chongyang River, 7 km north of the No. 2 mill and will expire on 30 November 2013. Permit was issued and proved by Luoning County Bureau of Water Resources Management on 13 August 2008.

20.6 Social and community interaction

The nearest significant community to the Ying projects is the Xia Yu Township, which is approximately 2 km to the southwest of the Ying processing plant. The Luoning County Town is approximately 48 km to the northeast and the Lushi County Town is approximately 30 km to the southwest.

The project area surrounding land is predominantly agricultural.

Silvercorp has provided several donations and contributions to communities within the Luoning County; these comprise a range of cash donations, to local capital projects and community support programs, and capital projects such as road construction and repairing, constructing and upgrading schools. Prior to 2013, Silvercorp is reported to have spent 14,747,000 RMB in donations.

In addition to the above donations, in 2012 and 2013, Silvercorp made general contributions to local community support programs of 53,600 RMB, 2,700 RMB, 99,000 RMB and 466,000 RMB to Shagou (SGX), TLP/LM, Chongyang (where the 35 kV substation is located), and Xiayu Villages respectively.

Silvercorp also employs several local contractors and local suppliers where practical.

AMC understands that there are no records of public complaints in relation to Silvercorp's Ying Property operations.

20.6.1 Cultural minorities and heritages

There are no cultural minority groups within the general project area. The cultural make-up of the broader Luoning County is predominantly Han Chinese. AMC understands that there are no records of cultural heritage sites located within or near the Ying Property.

20.6.2 Relationships with local government

Silvercorp has indicated that it has close relationships with the local Luoning County and Luoyang City, evidenced by the following:

- The Company consults with the Luoning County on local issues.
- The Luoning County is utilized to undertake regular water quality monitoring for the SGX and HPG Projects.
- Relations with statutory bodies are positive and Silvercorp has received no notices of breaches of environmental conditions.

20.6.3 Labour practices

Silvercorp's production activities are in compliance with Chinese and international labour regulations. Formal contracts are signed for all the full time employees with, what AMC understands are wages well above minimum wages. The company provides annual medical surveillance and checks are conducted for its employees before, during and after their employment with the Company. The Company does not use child or under-aged labour.

20.7 Remediation and reclamation

Silvercorp developed remediation and reclamation plans during the project approval stage, including measures for project construction, operation and closure. The Company is reported to have spent approximately $4.0 million on environmental protection, including dust control measures, wastewater treatment, solid waste disposal, the under-drainage tunnel, soil and water conservation, noise control, ecosystem rehabilitation, and emergency response plans. From 2007 to March 2012, a land area totalling 38,600 m^2 was planted with trees and grasses as planned in the EIA. Unused mining tunnels and the HPG tailings dam have been closed and rehabilitation coverage has been completed. The reclamation cost is estimated to be around $1.5 million. Table 20.6 details expenditures for environmental protection, rehabilitation, reclamation and compensation for land acquisition from 2005 to 2013

Table 20.6 Expenditures on reclamation and remediation from 2005 to 2013

Year / Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	Totals
Environmental Protection	116	240	170	852	6,390	6,695	7,000	2,980	7,502	31,945
EIA	114			129	78	174		580	390	1,465
Soil & Water Conservation	60	60			90		140	560		910
Environmental Equipment			455	998	703	349		170	219	2,894
Tailing Dam		13	4,432	3,975	1,491		22,296	3,440	2,166	37,813
Compensation for land acquisition	739	4,311	2,467	4,811	2,034	1,248	11,676	760	817	28,863
Totals	1,029	4,624	7,525	10,765	10,786	8,466	41,111	8,490	11,094	103,890

Note: Costs in 1,000 RMB

20.8 Site closure plan

Mine closure will comply with the Chinese National regulatory requirements. These comprise of Article 21 (Closure Requirements) of the Mineral Resources Law (1996), and Articles 33 and 34 of the Rules of Implementation Procedures of the Mineral Resources Law of the People's Republic of China (2006).

The site closure planning process will include the following components:

- Identify all site closure stakeholders (e.g. government, employees, community, etc.).
- Undertake stakeholder consultation to develop agreed upon site closure criteria and post-operational land use.

- Maintain records of stakeholder consultation.
- Establish a site rehabilitation objective in line with the agreed post-operational land use.
- Describe/define the site closure liabilities (i.e. determined against agreed closure criteria).
- Establish site closure management strategies and cost estimates (i.e. to address/reduce site closure liabilities).
- Establish a financial accrual process for the site closure.
- Describe the post-site closure monitoring activities/program (i.e. to demonstrate compliance with the rehabilitation objective/closure criteria).

Based on the Chinese national regulatory requirements Silvercorp will complete a site decommissioning plan at least one year before mine closure. Site rehabilitation and closure cost estimates will be made at that time.

21 Capital and operating costs

21.1 Key unit operating cost parameters

21.1.1 Mining contract rates

Silvercorp utilizes contract labour for mining on a rate per tonne or a rate per metre basis. The contract includes all labour, all fixed and mobile equipment, materials, and consumables, including fuel and explosives, which are purchased through the company. Ground support consumables such as timber and power to the portal areas are the responsibility of the company. Table 21.1, Table 21.2 and Table 21.3 list the 2012 – 2013 contract rate schedules for the Ying Property.

Table 21.1 Cost schedule for shafts/drifts driving

Drifting Rates under Shaft			
Size (m)	**RMB/m**	**US$/m**	**Notes**
2.2x2.0	1205	194	Major drifting
2.0x2.0	1146	185	Drifting along veins
2.0x1.8	1087	175	Drifting along veins
1.8x1.8	1050	169	Drifting along veins
1.8x1.6	1026	165	Drifting along veins
2.0x2.0	1470	237	Raise
1.5x1.5	1205	194	Raise
2.4x2.2	2415	390	Declines
φ3.5	12000	1935	Shaft, Cost include shotcrete
Drifting Rates under Adit			
Size (m)	**RMB/m**	**US$/m**	**Notes**
2.2x2.0	909	147	Major drifting
2.0x2.0	849	137	Drifting along veins
2.0x1.8	790	127	Drifting along veins
1.8x1.8	749	121	Drifting along veins
1.8x1.6	718	116	Drifting along veins
2.0x2.0	1260	203	Raise
1.5x1.5	909	147	Raise
2.0x1.8	3500	565	Small Shaft
4.2x3.8	6300	1016	Ramp
4.7x3.8	6600	1065	Ramp

Table 21.2 Basic rates for mining methods

Methods	Under shaft		Under adit	
	RMB/t	US$/t	RMB/t	US$/t
Short-hole shrinkage stope :				
Vein thickness < 1.5m	103.5	16.7	90.5	14.6
Vein thickness >= 1.5m	90.6	14.6	79.6	12.8
Resuing stope	217	35.0	202	32.6

Table 21.3 Ground support rates

Types	Units	Rates under Shaft		Rates under Adit	
		RMB	US$	RMB	US$
Timber Support	Single Set	78	13	78	13
Steel Support	Single Set	167	27	156	25
Shot Crete	m^2	67	11	56	9
Concrete	m^3	501	81	468	75
Rock Bolt	Piece	33	5	33	5

1 US$ = 6.20 RMB

Table 21.4 2012 diamond drilling rate

Type of Drilling	Metre range	Basic Rates	
		RMB/m	US$/m
Surface Drill (75mm)	0-500 m	515	83
	500-800 m	670	108
	800-1,000 m	824	133
Underground drill-short hole	0 - 300m)	195	31
Underground drill-deep hole	>300m	255	41

21.2 Summary of capital costs

The principal capital requirement in the Ying district is for mine development. Capital provision is also made for exploration drilling and for sustaining surface facilities and equipment in general. Specific processing plant capital requirements going forward are projected to be minimal as plant capacity has already been expanded as described in Section 17 to meet the forecast mine production.

The basis for calculating the mine development capital cost has been described in Section 16, where the projected horizontal and vertical mine development meterage is presented for each mine. The table rates in Section 21.1 provide the unit cost basis for mine development capital cost.

Projected mining capital costs are summarized by mine in Table 21.5.

Table 21.5 Total projected capital cost – Ying property

	Mine	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
RMB (M)	SGX	28.12	26.04	13.39	10.11	12.39	9.3	4.19		1.14	1.4	0.08	2.31	0.21					108.69
	HZG	0.45	8.27	22.8	3.4	0.37	3.57	2.01	0.21										41.08
	HPG	4.31	9.03	1.39	3.62	2.62	3.61	3.12	3.15	1.6	2.72	3.04	2.75	0.27					41.22
	TLP	11.12	12.45	12.86	14.23	25.64	23.29	11.95	9.01	7.93	5.83	4.37	6.04	4.37	4.45	2.01	2.04	1.14	158.73
	LM East	13.68	13.68	10.84	8.35	4.77	7.42	4.58	6.22	5.54	6.46	7.76	2.92	0.36					92.57
	LM West	17.78	12.02	8.37	12.05	11.71	12.64	13.81	15.13	11.41	5.69								120.61
	Total Mining	75.47	81.5	69.66	51.76	57.5	59.82	39.66	33.72	27.62	22.09	15.24	14.01	5.21	4.45	2.01	2.04	1.14	561.78
US$ (M)	SGX	4.47	4.14	2.13	1.61	1.97	1.48	0.67		0.18	0.22	0.01	0.37	0.03					17.28
	HZG	0.07	1.31	3.63	0.54	0.06	0.57	0.32	0.03										6.53
	HPG	0.69	1.44	0.22	0.58	0.42	0.57	0.5	0.5	0.25	0.43	0.48	0.44	0.04					6.55
	TLP	1.77	1.98	2.04	2.26	4.08	3.7	1.9	1.43	1.26	0.93	0.69	0.96	0.69	0.71	0.32	0.32	0.18	25.24
	LM East	2.17	2.18	1.72	1.33	0.76	1.18	0.73	0.99	0.88	1.03	1.23	0.46	0.06					14.72
	LM West	2.83	1.91	1.33	1.92	1.86	2.01	2.2	2.41	1.81	0.9								19.18
	Total Mining	12.00	12.96	11.07	8.23	9.14	9.51	6.3	5.36	4.39	3.51	2.42	2.23	0.83	0.71	0.32	0.32	0.18	89.31
	Drilling Program	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.2	1.2	1.1	0.9	0.8	0.72		21.7
	Surface Facilities	3.7	3.7	3.6	3.2	2.8	2.8	2.7	2.7	3.1	2.4	2.6	2.1	2.1	3.2	1.6	1.4	2.8	46.5
	Total	17.6	18.56	16.47	13.23	13.74	14.01	10.7	9.66	9.09	7.41	6.22	5.53	4.03	4.81	2.72	2.44	2.98	157.51

21.3 Summary of operating costs

Operating costs are summarized by mine in Table 21.6. In a similar fashion to the mining capital costs, the mining method and quantities described in Section 16 together with the contract rates tabulated above provide the basis for the mining operating costs.

Table 21.6 Operating cost summary (2013 US$)

Cost Item (US$/t ore)	SGX	HZG	HPG	LM	TLP
Mining Cost	49.42	59.48	54.37	41.49	38.5
Hauling cost	4.06	4.23	4.13	3.05	3.19
Milling cost	11.32	10.67	11.3	11.64	12.95
G&A and Other Cost	9.29	9.29	9.29	9.29	9.29
Mineral resources tax	1.92	1.92	1.92	1.92	1.92
Totals	**76.01**	**85.59**	**81.01**	**67.39**	**63.93**

1 US$ = 6.29 RMB

The principal components of the milling costs are utilities (power and water), consumables (grinding steel and reagents) and labour, each approximately one third of the total cost.

“G&A and Other” cost includes an allowance for tailings dam and other environmental costs. The major capital expenditure on the two tailings storage facilities has already been expended and the ongoing costs associated with progressively raising the dam with tailings as described in Section 18 is regarded as an operating cost.

AMC considers the operating costs to be appropriate to the methods and technology used and to the scale of the operations.

22 Economic analysis

22.1 Introduction

Although Ying is a producing property and therefore does not require an economic analysis for the purposes of this report, AMC believes it is reasonable to include a summary-level analysis to illustrate the potential economic impact relative to the latest Mineral Reserve estimations and to the associated production schedules.

The Ying District is largely a mature operation. Average grades are projected to be strong, although lower than in earlier years. Operating and capital costs are anticipated to be reasonable. For the summary economic assessment, AMC has used the same metal prices as in the Mineral Reserve estimation, namely:

Gold	US$1,250/oz
Silver	US$19/oz
Lead	US$1/lb
Zinc	US$0.82/lb

Some alternative price scenarios are considered as part of the sensitivity analysis.

The only tax considered in the pre-tax cash flow forecast is the Mineral Resources Tax, equivalent to US$1.92/ tonne of ore. This tax is equivalent to a royalty

An exchange rate of 1US$ = 6.29RMB has been used.

22.2 Annual production schedule

The LOM ore production schedule by mine, average metal grades, and recovered metal is shown in Table 22.1.

AMC notes that the gold grade (originating from HPG ore fed through Plant 2) does not reach payable grades in a total Pb concentrate product. In practice, and with appropriate blending, AMC acknowledges that a small volume of payable gold concentrate could be produced intermittently; and assuming, in the absence of metallurgical data, a notional and conservative 70% Au recovery, an additional product value of up to $12M could be added to the discounted cash flow. As is seen in considering the cash flow forecast in Section 22.3, this amounts to approximately 2% of the total base case pre-tax NPV of the Ying Property.

Table 22.1 Ying property LOM production schedule

Mine Ore Production	**Yr / Unit**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
SGX	ore tpa	222,601	278,487	336,368	362,046	362,400	340,337	327,894	317,339	328,857	321,923	307,665	328,728	301,878	269,742	315,466	135,384		**4,857,114**
HZG	ore tpa	63,219	84,125	80,195	83,748	85,951	87,846	82,248	63,759	58,984									**690,075**
HPG	ore tpa	64,721	67,017	70,763	70,409	70,904	71,615	72,522	74,106	74,012	71,253	71,759	70,863	71,733					**921,678**
TLP	ore tpa	183,729	187,291	199,425	199,975	199,934	208,703	206,226	207,444	206,389	199,997	199,913	199,995	199,783	199,912	199,979	199,696	80,512	**3,278,904**
LM East	ore tpa	71,563	78,556	83,219	83,675	84,782	88,644	90,567	91,320	90,067	87,487	86,263	86,028	13,912					**1,036,082**
LM West	ore tpa	83,136	166,225	192,593	197,538	197,827	200,449	201,323	211,175	210,292	196,531								**1,857,089**
Total Ying Mine	**ore tpa**	**688,969**	**861,701**	**962,563**	**997,391**	**1,001,798**	**997,594**	**980,780**	**965,143**	**968,601**	**877,191**	**665,600**	**685,614**	**587,306**	**469,654**	**515,445**	**335,080**	**80,512**	**12,640,942**
Grade (Average)																			
Silver Grade	g/t	228	235	222	226	219	215	215	197	204	200	177	184	162	162	158	166	72	**203**
Lead Grade	%	3.16	2.95	2.99	3.26	3.16	2.87	2.94	2.66	2.56	2.82	3.01	3.25	3.32	3.48	3.23	3.00	2.73	**3.01**
Zinc Grade	%	0.83	0.90	0.98	1.04	1.13	1.04	0.94	1.02	1.00	1.08	1.16	1.01	1.24	0.90	1.10	0.63	0.04	**1.01**
Gold Grade	g/t	0.06	0.05	0.06	0.04	0.12	0.09	0.09	0.09	0.06	0.08	0.14	0.09	0.10					**0.07**
Recoveries (Overall)																			
Silver Recovery	%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	92.70%	**92.70%**
Lead Recovery	%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	95.10%	**95.10%**
Zinc Recovery	%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	67.00%	**67.00%**
Silver produced	k oz	4,679	6,026	6,365	6,726	6,528	6,391	6,297	5,656	5,875	5,219	3,514	3,767	2,841	2,261	2,423	1,658	174	76,399
Lead produced	tonnes	20,733	24,172	27,382	30,949	30,104	27,263	27,442	24,423	23,581	23,559	19,058	21,159	18,538	15,554	15,825	9,565	2,090	361,394
Zinc produced	tonnes	3,841	5,197	6,338	6,944	7,607	6,959	6,206	6,581	6,511	6,335	5,159	4,660	4,891	2,842	3,787	1,416	22	85,296

22.3 Cash Flow Forecast

Based on the projected LOM production and the metal price and other assumptions shown above, pre-tax and post-tax cash flow forecasts have been generated as presented in Table 22.2. Over the LOM, 62% of the net revenue is projected to come from silver, 33% from lead and 5% from zinc.

A base case NPV at 8% discount rate of $601M (pre-tax), $451M (post-tax) is forecast.

Table 22.2 Ying property cash flow forecast

Revenue	Unit / Yr	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Silver Price	US $/oz	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	**19**
Lead Price (US $1/lb)	US $/t	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	**2,205**
Zinc Price (US $0.82/lb)	US $/t	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	**1,808**
Silver Revenue (gross)	US$M	88.90	114.49	120.93	127.79	124.03	121.43	119.64	107.47	111.63	99.16	66.76	71.57	53.98	42.96	46.05	31.50	3.30	**1,451.58**
Lead Revenue (gross)	US$M	45.71	53.29	60.36	68.23	66.37	60.10	60.50	53.84	51.99	51.94	42.01	46.65	40.87	34.29	34.89	21.09	4.61	**796.72**
Zinc Revenue (gross)	US$M	6.94	9.39	11.46	12.55	13.75	12.58	11.22	11.90	11.77	11.45	9.33	8.42	8.84	5.14	6.85	2.56	0.04	**154.19**
Total Gross Revenue	**US$M**	**141.55**	**177.17**	**192.76**	**208.57**	**204.15**	**194.11**	**191.35**	**173.21**	**175.38**	**162.55**	**118.10**	**126.64**	**103.69**	**82.39**	**87.78**	**55.15**	**7.95**	**2,402.50**
Silver Net % Payable	%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	**89%**
Lead Net % Payable	%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	**85%**
Zinc Net % Payable	%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	**70%**
Silver Revenue (net)	US$M	79.12	101.90	107.63	113.73	110.39	108.07	106.48	95.65	99.35	88.25	59.42	63.70	48.04	38.23	40.98	28.03	2.94	**1,291.91**
Lead Revenue (net)	US$M	38.85	45.30	51.31	57.99	56.41	51.09	51.42	45.77	44.19	44.15	35.71	39.65	34.74	29.15	29.65	17.92	3.92	**677.22**
Zinc Revenue (net)	US$M	4.86	6.58	8.02	8.79	9.63	8.81	7.85	8.33	8.24	8.02	6.53	5.90	6.19	3.60	4.79	1.79	0.03	**107.94**
Total Net Revenue	**US$M**	**122.83**	**153.77**	**166.96**	**180.52**	**176.42**	**167.97**	**165.75**	**149.74**	**151.78**	**140.41**	**101.66**	**109.24**	**88.97**	**70.98**	**75.43**	**47.75**	**6.88**	**2,077.06**
Operating Costs																			
Mining	US $/t	46.12	46.16	46.09	46.19	46.22	46.08	45.97	45.63	45.62	44.76	45.65	45.75	46.12	44.77	45.18	42.91	38.50	45.16
Hauling	US $/t	3.62	3.61	3.61	3.62	3.62	3.61	3.60	3.57	3.58	3.54	3.68	3.69	3.75	3.69	3.72	3.54	3.19	3.60
Milling	US $/t	11.77	11.70	11.69	11.68	11.68	11.70	11.70	11.73	11.73	11.79	11.85	11.83	11.88	12.01	11.95	12.29	12.95	11.88
General & Administration	US $/t	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.29
Mineral Resource Tax	US $/t	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92
Total Operating Cost	**US$M**	**50.10**	**62.63**	**69.88**	**72.51**	**72.86**	**72.41**	**71.09**	**69.63**	**69.87**	**62.55**	**48.18**	**49.69**	**42.85**	**33.67**	**37.15**	**23.44**	**5.30**	**913.80**
Capital Costs																			
Mining	US$M	12.00	12.96	11.07	8.23	9.14	9.51	6.30	5.36	4.39	3.51	2.42	2.23	0.83	0.71	0.32	0.32	0.18	89.48
Drilling	US$M	1.90	1.90	1.80	1.80	1.80	1.70	1.70	1.60	1.60	1.50	1.20	1.20	1.10	0.90	0.80	0.72	0.00	23.22
Surface Facilities	US$M	3.70	3.70	3.60	3.20	2.80	2.80	2.70	2.70	3.10	2.40	2.60	2.10	2.10	3.20	1.60	1.40	2.80	46.50
Total Capital Cost	**US$M**	17.60	18.56	16.47	13.23	13.74	14.01	10.70	9.66	9.09	7.41	6.22	5.53	4.03	4.81	2.72	2.44	2.98	159.20
Undiscounted Cash flows (pre-ta	US$M	55.13	72.58	80.61	94.78	89.83	81.54	83.97	70.45	72.81	70.45	47.26	54.02	42.09	32.50	35.56	21.87	-1.40	1004.05
Undiscounted Cash flows (post ta	US$M	41.35	54.44	60.46	71.08	67.37	61.16	62.97	52.84	54.61	52.84	35.44	40.52	31.57	24.37	26.67	16.40	-1.40	752.69
Discount Rate	% Real	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	**8%**
Discounted Cash flows (pre-tax)	US$M	51.05	62.23	63.99	69.66	61.13	51.39	48.99	38.06	36.43	32.63	20.27	21.45	15.48	11.06	11.21	6.38	-0.38	601.04
Discounted Cash flows (post-tax)	US$M	38.29	46.67	47.99	52.25	45.85	38.54	36.74	28.55	27.32	24.47	15.20	16.09	11.61	8.30	8.41	4.79	-0.38	450.69
Cumulative Pre-tax NPV @ 8%	**US$M**	**51.05**	**113.28**	**177.26**	**246.93**	**308.06**	**359.45**	**408.44**	**446.51**	**482.93**	**515.56**	**535.83**	**557.29**	**572.76**	**583.83**	**595.04**	**601.42**	**601.04**	**601.04**
Cumulative Post-tax NPV @ 8	**US$M**	**38.29**	**84.96**	**132.95**	**185.20**	**231.05**	**269.59**	**306.33**	**334.88**	**362.20**	**386.67**	**401.87**	**417.96**	**429.57**	**437.87**	**446.28**	**451.06**	**450.69**	**450.69**

22.4 Sensitivity Analysis

Table 22.3 shows impact on pre-tax NPV of a 20% adverse change in individual metal prices, operating cost and capital cost. Most sensitivity is seen in silver price, capital cost and operating cost. The NPV is moderately sensitive to lead price and only slightly sensitive to zinc price.

Table 22.3 Ying property sensitivity analysis

Item	Variant	Unit	NPV ($US M)
Base Case (NPV @ 8%)	-	-	601.0
Lead price - fall 20%	0.8	US$/lb	522.0
Zinc price - fall 20%	0.66	US$/lb	588.5
Silver price long-term "real"	16	US$/oz	477.8
Opex increase	20%	%	494.1
Capex increase	20%	%	473.5

23 Adjacent properties

Silvercorp now controls all the significant silver-lead-zinc properties and known mineralized occurrences within the Ying Property. There are no known adjacent properties with similar types of mineralization.

24 Other relevant data and information

AMC is not aware of any additional information or explanation that is necessary to make the technical report understandable and not misleading.

25 Interpretation and conclusions

Silvercorp has been active on the Ying Property, which includes the SGX, HZG, HPG, TLP and LM mines, since 2004. Annual production has ramped up substantially in recent years, reaching 735,000 t of ore in 2012 and 385,000 t of ore in the first six months of 2013.

Mineralization in the Ying district comprises numerous steeply-dipping silver-lead-zinc veins with widths varying from a few centimetres to a few metres and with strike lengths up to a few thousand metres. Exploration is by underground drilling, surface drilling and chip sampling of underground workings. Silvercorp's logging, surveying, sampling, sub-sampling and assaying procedures follow common industry practice, although a splitting stage precedes final pulverization, which is not considered by AMC to be of material concern. QA/QC programs have been in place since 2004 and the results are deemed satisfactory by AMC.

AMC observes that uncertainty in the grade, tonnage and location of individual veins is likely to be high. However, the large number of veins and active mining areas within each vein means that economic risk related to this uncertainty is likely to be low. Silvercorp has a history of profitable mining, which demonstrates its ability to successfully manage this uncertainty. AMC does not foresee any other uncertainties related to the Mineral Resource Estimate that are likely to impact on the potential economic viability of the project.

Mineral Resource estimates have been prepared by AMC Qualified Person, Andrew Fowler, who accepts responsibility for them. The Mineral Resource was estimated with Datamine™ mining software using three dimensional (3D) block modelling and ordinary kriging. Grade was interpolated into each vein independently. The interpolation also implemented Datamine's™ dynamic anisotropy estimation process to ensure appropriate sample selection within the search neighbourhood. After interpolation, the grade was averaged across the full width of mineralization and a 0.3 m minimum mining width calculation was applied, whereby mineralization widths < 0.3 m had a dilution envelope of zero grade added to make up the difference. The Mineral Resource was then reported above a cut-off grade.

Given the length of time it took to block model the numerous veins at the Property, AMC believes the Mineral Resource estimation method should be reviewed prior to the next estimation; specifically, in regards to the block model versus polygonal method for all or some of the veins. However, AMC advises that most of the time was spent to build the original wireframes for this block model estimate. In future, this becomes only an incremental exercise.

For the purposes of cut-off grade and silver equivalent calculations, AMC has used recent reported individual metal processing recoveries and operating costs for each site, and the following long-term metal prices: Au $1250/oz, Ag $19/oz, Pb $1.00/lb, Zn $0.82/lb.

Measured and Indicated Resources total 14.01 Mt averaging 237 g/t Ag, 3.64% Pb and 1.22% Zn, while Proven and Probable Reserves total 12.6 Mt averaging 203 g/t Ag, 3.0% Pb and 1.0% Zn. Mineral Resource cut-off grades are:

- SGX: 140 g/t AgEq
- HZG: 155 g/t AgEq
- HPG: 160 g/t AgEq
- LM: 135 g/t AgEq
- TLP: 120 g/t AgEq

Mineral Reserve cut-off grades recognise mining dilution and recovery factors, and the cost differences between sites and between the resuing and shrinkage mining methods employed; they are as follows:

- SGX: 176 g/t AgEq Resuing, 120 g/t Ag/Eq Shrinkage
- HZG: 170 g/t AgEq Resuing, (no Shrinkage envisaged)

- HPG: 229 g/t AgEq Resuing, 139 g/t Ag/Eq Shrinkage
- LM: 161 g/t AgEq Resuing, 117 g/t Ag/Eq Shrinkage
- TLP 163 g/t AgEq Resuing, 116 g/t Ag/Eq Shrinkage

AMC has tested the sensitivity of Mineral Reserve estimates to an increase in cut-off grade, and has found only a 4.7% decrease in total projected AgEq ounces for a 20% increase in cut-off grades.

Mineral Reserve estimates are based on the assumption that the current stoping practices of cut and fill resuing and shrinkage stoping will continue to be predominant. The sub-vertical veins, generally competent ground, reasonably regular vein width, and hand-mining techniques using short rounds, allows a significant degree of selectivity and control in the stoping process. Minimum extraction widths of 0.3 m for resuing and 0.8 m for shrinkage are assumed, with 0.8m being the minimum mining width for both methods. AMC has observed the mining methods at Ying and considers these widths to be reasonable.

Mining dilution and recovery factors vary from mine to mine, dependent on vein width and mining method. Calculated dilution factors average 40% for resuing and 24% for shrinkage, while assumed recovery factors are 95% for resue stopes and 92% for shrinkage stopes.

Average silver and lead grades for the combined Ying Mines Mineral Reserves are about 14% and 19% respectively lower than reported mined grades for 2012 alone, and about 24% and 33% respectively lower than reported mined grades for the period January 2010 to June 2013. This is consistent with the mining plan moving into generally lower grade areas, particularly at the SGX mine; however, AMC notes that the grade distribution of the Mineral Reserves allows opportunity to mine at above-overall-average grades in the first part of the projected remaining LOM. AMC advises that best mining practices and tight dilution control will be key to optimizing grade throughout the extraction of the Ying Mineral Reserves.

The Ying mine complex has a projected LOM through to 2030 based on Proven and Probable Reserves. The potential exists for an extended LOM via further exploration and development, particularly in areas of Inferred Resources.

An increase in annual production through to 2017/2018 of about 40% over 2012 levels is planned. Development and infrastructure to allow access to, and mining in, a greater number of working places is either in place, in development or is planned. AMC notes that the ability to achieve the projected production increases will, to a large degree, be dependent on the consistent availability of resources, particularly skilled manpower. AMC considers that there is a certain amount of risk associated with the provision of those resources and recommends that Silvercorp maintain particular focus in this area.

A key aspect of the LOM profile is that the major part of the increased production will come from the TLP and LM mines. Together they will provide about 50% of the Ying production by 2015. AMC notes that, projected metal grades through to around 2023 are largely in-line with grades reported in 2012 and 2013 to June 30. In order to maintain optimum metal grades, AMC recommends that Silvercorp continue its current efforts on dilution and grade control via the Mining Quality Control Department.

The two processing plants, Plant 1 and Plant 2, are situated within 2 km of each other and have a total current design capacity of 2,600 tpd, comprising 600 tpd for Plant 1 and 2,000 tpd for Plant 2. To date the plants have been under-utilized relative to design and ultimate capacity but during the period 2016-2022, a total plant capacity of 3000 tpd is required, which AMC believes is achievable. Plant 1 feed comprises mainly low grade ore from LM, HPG and HZG, while Plant 2 feed comprises mostly higher grade ore from SGX and TLP. To optimize profitability, blending of concentrates is practiced. SGX/HPG also contains high grade ore which is hand-sorted at the mine sites, milled in a dedicated facility, and then sold directly or mixed with flotation lead concentrate for sale. Ore from the SGX/HZG mine is carried in trucks by boat across the Guxian Reservoir to the mills. Other ore is trucked by road.

Historically, higher grade feed from SGX has enhanced plant performance but, with the proportion of SGX ore decreasing, the challenge will be to maintain a similar metallurgical performance on lower grade feedstock. Maintaining recovery seems achievable but with a moderate adverse impact on concentrate lead grades. These are still marketable, but incur higher treatment charges and lower % payables. Each processing plant has an associated TMF, with TMF 2 now in full operation. The TMFs were designed based on then-current resource/reserve estimations and LOM production projections. Subsequent resource expansion and increased production projections indicate that the current tailings capacity will not be adequate for the full Ying LOM. Additional tailings capacity will thus be required in the later period of the LOM production.

Flood and safety calculations have been performed in accordance with Chinese standards. While the calculated factors of safety are consistent with Chinese practice requirements, they are somewhat lower than those required by international practice.

There is a potential inconsistency in the TMF seismicity ratings with regard to design peak acceleration parameters which requires clarification.

Silvercorp has all the required permits for its operations on the Ying Property. The Mineral Resource and Mineral Reserve estimates include material (about 25% of the Indicated Resource) that is currently below the elevation approved in the mining permits. However, AMC is satisfied that there is no material risk of Silvercorp not receiving approval to mine these resources when access is required in the future.

Silvercorp has established an environmental protection department which is responsible for environmental and rehabilitation management work in the Ying Property. Monitoring results to date indicate, with relatively minor exceptions, that discharges have met required standards. In accordance with Chinese national regulatory requirements, Silvercorp will complete a site decommissioning plan at least one year before mine closure.

The principal capital cost requirement is for continued mine development, with the total mining capital over the LOM estimated at approximately $89M. Future processing plant capital requirements are minimal as plant capacity has already been expanded to meet the forecast mine production. Exploration drilling and overall surface sustaining capital have been estimated at about $22M and $47M respectively. Estimated site operating costs range from US$66/t of ore mined for TLP to US$86/t of ore mined for HZG. AMC considers both operating and capital cost estimates to be reasonable.

Using long-term metal prices of silver $19/oz, lead $1.00/lb, zinc $0.82/lb and gold US$1,250/oz, and a USD:RMB exchange rate of 6.2, AMC has estimated a pre-tax NPV at an 8% discount rate of $601M ($451M post-tax). Over the life of the mines, approximately 62% of the net revenue comes from silver, 33% from lead and 5% from zinc. Most sensitivity to NPV is seen in silver price, capital cost and operating cost; a 20% adverse change in either of these items shows a decrease in NPV of similar magnitude. The NPV is moderately sensitive to lead price and only slightly sensitive to zinc price.

The Ying mines safety is governed by Chinese statutory requirements and, AMC understands that, in certain areas, Silvercorp has moved above and beyond those requirements. AMC advises, however, that to minimize both personnel and corporate risk, Silvercorp should continue with a focus on safety improvement, inclusive of implementation of a policy where the more stringent of either Chinese or Canadian safety standards is employed.

26 Recommendations

AMC makes the following recommendations:

1 Review Resource modelling approach prior to next estimate with specific focus on block model versus polygonal method for all or some of the veins.

2 Continue to build on the bulk density database and refine the relationship between grade and bulk density.

3 Continue exploration tunnelling and diamond drilling at the Ying Property. The exploration tunnelling is used to upgrade the drill-defined Resources to Measured category and the diamond drilling is used to expand and upgrade the previous drill-defined Resources, explore for new mineralized zones within the unexplored portions of vein structures, and test for the down-dip and along-strike extensions of the vein structures. The proposed exploration work is as follows:

SGX and HZG:

Exploration Tunnelling:

12,300 m exploration tunnelling on vein structures S2, S4, S6, S7, S7-1, S7-2, S7E2, S8, S8E, S8Branch, S14, S14-1, and S14-2 between levels 260 m and 625 m at SGX, and HZ20 and H22 between levels 450 m and 810 m at HZG.

Diamond Drilling:

35,000 m underground and surface diamond drilling on major vein structures S2, S6, S7-1, S8, S14, S16W and S18 at SGX, and HZ20, HZ20W, HZ20E, HZ22, HZ5, HZ23 at HZG.

HPG:

Exploration Tunnelling:

3,560 m exploration tunnelling on major vein structures H4, H5, H13, H14, H15, H16, H16E and H17 between levels 200 m and 800 m.

Underground Drilling:

8,185 m underground diamond drilling on vein structures H5W, H16 and H17 as well as their subzones.

LM

Exploration Tunnelling:

8,800 m on vein structures LM2, LM3, LM5 and LM6 between levels 500 m and 750 m at LME, and LM7, LM8, LM10, LM11, LM12, LM13, LM14, LM16, LM19, and LM20 between levels 650 m and 900 m at LMW.

Diamond Drilling:

13,000 m underground drilling on LM5 and LM6 at LME and LM8, LM17, LMW4 and LMW18 at LMW.

TLP:

Exploration Tunnelling:

5,400 m exploration tunnelling on vein structures T1W1, T1, T11, T14-1, T16, T16E, T16W, T17, T23, T33, T33E and T33W between levels 690 m and 990 m.

Diamond Drilling:

8,000 m underground drilling on vein structures T3, T33, T33W3 and T11.

The estimated cost for the above exploration work is:

- Tunnelling: RMB 36,812,600 (US$6M);
- Drilling: RMB 17,306,504 (US$2.8M).

4 Investigate the assay bias issue (reference silver results for CDN-ME-1206 show a high bias, while the zinc results for CDN-FCM-7 show a low-bias) in preparation for the next Mineral Resource estimate.

5 Continue with recent comprehensive efforts to fully integrate the Resource estimation, Reserve estimation and mine planning processes

6 Consider removing sustaining capital from cut-off grade calculations.

7 Maintain particular focus on consistent provision of the skilled resources that will be necessary to achieve targeted production over the LOM.

8 Continue current efforts on dilution and grade control via the Mining Quality Control Department.

9 Clarify seismic ratings and design peak acceleration parameters. (Cost estimate US$35,000.)

10 Maintain the highly focused development approach that will be necessary throughout the Ying operation for LOM development targets to be achieved.

11 Continue with a focus on safety improvement, including implementation of a policy where the more stringent of either Chinese or Canadian safety standards are employed.

12 Investigate the use of portable compressors in mining areas with a view to minimizing power costs. (Cost estimate US$20,000.)

13 Investigate the benefits of a wider application of slushers for muck movement in stopes. (Cost estimate US$20,000.)

14 Consider the application of more bulk-mining methods such as long-hole benching. (Cost estimate US$60,000.)

15 Place a strong focus on stockpiling and record keeping procedures, and ensure that the summation of individual ore car weights by stope and zone is fully integrated into the tracking and reconciliation process.

16 Undertake periodic mill audits aimed at ensuring optimum process control and mill performance.

17 Begin planning for additional tailings capacity requirement towards end of LOM.

27 References

Broili et al. (2006) Technical Update for Silvercorp Metals Inc on the Ying Silver-Lead-Zinc Project Henan Province Peoples Republic of China, 18 April 2006

Broili et al. (2006) Technical Update for Silvercorp Metals Inc on the Ying Silver-Lead-Zinc Project Henan Province Peoples Republic of China, 26 May 2006

Broili et al. (2008) NI 43-101 Technical Report and Pre-Feasiblity Study November 2008 for Silvercorp Metals Inc. TP-LM Silver-Lead Project , Henan Province, Peoples Republic of China; prepared for Silvercorp Metals, Inc by BK Exploration Assoc., Washington USA

Broili et al. (2010) Ying District Silver-Lead-Zinc Project for Silvercorp Metals Inc., 26 February 2010

Henan Luoyang (2006) Yuxi Hydrological and Geological Reconnaissance Company, Reconnaissance Report upon Geotechnical Engineering, 4 July 2006

San-Men-Xia Gold Mining Engineering Ltd (Report dated Jan 2011). Original report prepared for Silvercorp Metals Inc., in Mandarin.

AMC Mining Consultants (Canada) Ltd (2012) Technical Report for Ying Gold-Silver-Lead-Zinc Property, Henan Province, China. Original report prepared for Silvercorp Metals Inc., 1 May 2012 (no revision).

AMC Mining Consultants (Canada) Ltd (2012) Technical Report for Ying Gold-Silver-Lead-Zinc Property, Henan Province, China. Original report prepared for Silvercorp Metals Inc., 1 May 2012 (Revised 30 April 2013).

Broili and Klohn (2007) Technical Update on the Ying Silver-Lead-Zinc and the HPG Gold-Silver-Lead Projects, Henan Province, China, 16 August 2007; Report prepared for Silvecorp Metals Inc., by BK Exploration Assoc., Washington USA

Xu et al. (2006) Technical Review on HPG Silver-Lead Project, Luoning County, Henan Province, People's Republic of China; Report prepared for Silvercorp Metals, Inc., by SRK Consulting, Beijing, China.

Sinosteel Institute of Mining Research Co., Ltd (2006) Report dated March 2006.

Chen A (Jun He Law Offices, Beijing, 2014) Re: Summary of Mining Licenses and Exploration Licenses, Letter to Silvercorp dated June 25, 2014.

Various Silvercorp files and documents not specifically referenced

Broili (2004) Technical Report for SKN Resources Ltd on the Ying Silver-Lead-Zinc Project, Henan Province, China, 21 April 2004; Report prepared for Silvercorp Metals Inc., by BK Exploration Assoc., Washington, USA

Broili (2005) Technical Report for SKN Resources Ltd on the Ying Silver-Lead-Zinc Project Henan Province, Shina, 18 April 2005; Report prepared for Silvercorp Metals Inc., by BC Exploration Assoc Washington USA

Cullen (2011) Technical Report on the BYP Property, Hunan Province, China, Report prepared for Silvercorp Metals Inc., 24 June 2011

Klohn et al. (2011) Technical Report Resources and Reserves Update HPG Mine Ying Silver-Lead-Zinc District Report prepared for Silvercorp Metals Inc., 20 May 2011

Klohn et al. (2011) Technical Report Resources and Reserves Update TLP & LM Mine Ying Silver-Lead-Zinc District Report prepared for Silvercorp Metals Inc., 20 May 2011

Klohn et al. (2011) Technical Report Resources and Reserves Update SGX Mine Ying Silver-Lead-Zinc District Report prepared for Silvercorp Metals Inc., 20 May 2011

Maanshan Engineering Exploration and Design Institute (Report dated March 2006). Original report prepared for Silvercorp Metals Inc., in Mandarin.

28 Qualified Persons' certificates

Andrew Fowler PhD

1 I, Andrew Fowler PhD, MAusIMM CP(Geo), do hereby certify that I am Senior Geologist for AMC Consultants Proprietary Limited, Level 19, 114 William Street, Melbourne, Victoria 3000.

2 I graduated with a PhD from University of Melbourne, Australia in 2006.

3 I am a Chartered Professional in the discipline of Geology and a registered member of the Australasian Institute of Mining and Metallurgy.

4 I have practiced my profession continuously since November 2008. My relevant experience includes two years as Exploration Geologist with a junior greenfields explorer, Mithril Resources, two years as Project Geologist/Head Geologist with an operating underground gold-antimony mine operated by AGD Operations, and five years as a Senior Geologist with AMC Consultants Pty Ltd.

5 The Technical Report to which this certificate applies is entitled "Ying Property NI 43-101 Technical Report Silvercorp Metals Inc. Henan Province, China" and is effective 31 December 2013.

6 I visited the Ying property in September 2013 for five days.

7 I am responsible for the preparation of Sections 2 to 12, 14, 23, 24 and parts of 1, 25, and 26 of the Technical Report.

8 I am independent of the issuer as described in Section 1.5 of NI 43-101.

9 I have had no prior involvement with the Ying property.

10 I have read NI 43-101 and certify that the parts of the Technical Report for which I am responsible have been prepared in compliance with the Instrument.

11 As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 29 July 2014

Original signed by:

Andrew Fowler PhD, MAusIMM CP(Geo)

A Riles

1. I, Alan Riles, MAIG, BMet (Hons), Grad Dipl Professional Management, do hereby certify that I am Principal Metallurgical Consultant with Riles Integrated Resource Management Ltd, 8 Winbourne St., Gorokan NSW 2263, Australia.
2. The Technical Report to which this certificate applies is entitled "Ying Property NI 43-101 Technical Report Silvercorp Metals Inc. Henan Province, China" and is effective 31 December 2013 (the "Technical Report").
3. I graduated with a Bachelor of Metallurgy (Hons Class 1) from Sheffield University, UK in 1974. I am a registered member of the Australian Institute of Geoscientists. I have practiced my profession continuously since 1974, with particular experience in study management and both operational and project experience in precious and base metal deposits. I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
4. I visited the Ying property on February 16 – 19, 2012.
5. I am responsible for the preparation of Sections 13, 17, 19, and parts of 22 of the Technical Report.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have prior involvement with the Property that is the subject of the Technical Report. I was responsible for sections of the technical report entitled "Technical Report for Ying Gold-Silver-Lead-Zinc Property, Henan Province, China" and dated 1 May 2012.
8. I have read NI 43-101 and certify that the parts of the Technical Report for which I am responsible have been prepared in compliance with the Instrument.
9. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 29 July 2014

Original signed by:

Alan Riles, B.Met, MAIG

H A Smith

1. I, Herbert A Smith, P.Eng, of Vancouver, British Columbia do hereby certify that I am a Mining Manager and Principal Mining Engineer with AMC Mining Consultants (Canada) Limited, Suite 202, 200 Granville Street, Vancouver, British Columbia V6C 1S4.
2. The Technical Report to which this certificate applies is entitled "Ying Property NI 43-101 Technical Report Silvercorp Metals Inc. Henan Province, China" and is effective 31 December 2013 (the "Technical Report").
3. I graduated with a degree of B.Sc in Mining Engineering in 1972 and a degree of M.Sc in Rock Mechanics and Excavation Engineering in 1983, both from the University of Newcastle upon Tyne, England. I have worked as a Mining Engineer for a total of 36 years since my graduation and have relevant experience in underground mining, feasibility studies and technical report preparation for mining projects. I fulfil the requirements to be a "Qualified Person" for the purposes of NI 43-101.
4. I visited the Ying property on February 16 – 19, 2012 and in September 2013 for four days.
5. I am responsible for the preparation of Sections 15, 16, 18, 21, and parts of 1, 22, 25 and 26 of the Technical Report.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have prior involvement with the Property that is the subject of the Technical Report. I was responsible for sections of the technical report entitled "Technical Report for Ying Gold-Silver-Lead-Zinc Property, Henan Province, China" and dated 1 May 2012.
8. I have read NI 43-101 and certify that the parts of the Technical Report for which I am responsible have been prepared in compliance with the Instrument.
9. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 29 July 2014

Original signed and sealed by:

Herbert A Smith, P.Eng.

P R Stephenson

1. I, Patrick R Stephenson, P. Geo, BSc (Hons), FAusIMM (CP), MAIG, MCIM, of Vancouver, British Columbia, do hereby certify that I am General Manager and a Principal Geologist with AMC Mining Consultants (Canada) Limited, Suite 202, 200 Granville Street, Vancouver, British Columbia V6C 1S4.
2. The Technical Report to which this certificate applies is entitled "Ying Property NI 43-101 Technical Report Silvercorp Metals Inc. Henan Province, China" and is effective 31 December 2013 (the "Technical Report").
3. I graduated with a BSc (Hons) in Geology from Aberdeen University in Scotland in 1971. I am a registered member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia and of the Association of Professional Engineers and Geoscientists of Saskatchewan. I have worked as a Geologist and Manager for a total of 42 years since my graduation from university and have relevant experience in geology, exploration and Mineral Resource estimation for base and precious metal deposits and in public reporting of mineral assets. I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
4. I visited the Ying property in September 2013 for four days.
5. I am responsible for the overall compilation of the Technical Report and for Sections 20 and part of 1.
6. I am independent of the issuer as described in section 1.5 of NI 43-101.
7. I have prior involvement with the Property that is the subject of the Technical Report. I was responsible for sections of the technical report entitled "Technical Report for Ying Gold-Silver-Lead-Zinc Property, Henan Province, China" and dated 1 May 2012.
8. I have read NI 43-101 and certify that the parts of the Technical Report for which I am responsible have been prepared in compliance with the Instrument.
9. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 29 July 2014

Original signed and sealed by:

Patrick Stephenson, P.Geo.