

**Scott Wilson Mining**



**ST ANDREW GOLDFIELDS LTD.**

**TECHNICAL REPORT ON A  
PRELIMINARY FEASIBILITY STUDY  
OF THE HISLOP PROJECT,  
ONTARIO, CANADA**

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**September 28, 2009**

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**SCOTT WILSON ROSCOE POSTLE ASSOCIATES INC.**



# Report Control Form

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# 1 SUMMARY

## EXECUTIVE SUMMARY

Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) was retained by Michael Michaud, Vice President of Exploration for St Andrew Goldfields Ltd. (SAS), to prepare an independent Technical Report on the Hislop Project (the Project), near Matheson, Ontario. The purpose of this report is to provide a prefeasibility level study on the Project in support of SAS public disclosure of Mineral Resources and Mineral Reserves. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

SAS is a junior gold company with mining projects in the exploration and development stages along the Destor-Porcupine Fault Zone in Northeastern Ontario. SAS owns the Hislop property, the Holt and Holloway gold mines, and an extensive exploration land package in the area. In addition, SAS owns a 3,000 tonnes per day (tpd) capacity gold mill at the Holt Mine. The Project is a past producer with a small underground operation in the late 1980s and early 1990s and a small open pit, which was last worked in 2007. SAS plans to reopen the Holloway Mine and Holt Mine (Holloway-Holt Project), and the Holt Mill, which will be used for processing ore from the Project.

Currently, the major assets and facilities associated with the Project are:

- Mineral deposits on the Hislop property.
- Road access to the proposed pit area.
- Power lines and a connection to the Ontario power grid.
- A surface settling pond for the disposal of mine waters.
- Waste and overburden dumps.
- Mine reclamation and dewatering permits that remain in effect from previous mining campaigns.
- Access to spare capacity in the 3,000 tpd Holt gold recovery plant, which is currently owned and operated by SAS.

**CONCLUSIONS**

Scott Wilson RPA provides the following conclusions with regard to the Mineral Reserve development at the Hislop Project. For detailed recommendations related to the Mineral Resources, the reader is referred to the August 6, 2009 Technical Report by Scott Wilson RPA.

The June 2009 Hislop Project Mineral Resources estimated by SAS using a 0.94 g/t Au cut-off grade total 6.66 million tonnes of Indicated Mineral Resources at an average grade of approximately 1.98 g/t Au and 5.34 million tonnes of Inferred Mineral Resources at an average grade of approximately 1.80 g/t Au.

The September 1, 2009 Mineral Reserves are estimated by Scott Wilson RPA to be 1.9 million tonnes of Probable Mineral Reserves at an average grade of approximately 2.3 g/t Au and containing 142,000 ounces of gold. The Mineral Reserves are included within the stated Mineral Resources. In Scott Wilson RPA's opinion, these Mineral Resource and Mineral Reserve estimates are prepared in accordance with CIM definitions and are NI 43-101 compliant.

The Mineral Reserves are amenable to open pit mining and processing at the Holt Mill for the recovery of gold. The Mineral Reserves are based upon the Mineral Resources within an optimized pit design and include 15% dilution at a grade of 0.5 g/t Au and 90% extraction. The Mineral Reserves are based upon a gold price of US\$800 per ounce less a 4% NSR and an exchange rate of 0.85 (US\$:C\$). The average total operating cost per tonne of ore milled over the life of the Project is \$42.54.

A production schedule was generated based upon the production of 1,500 tonnes of ore per day from open pit mining. The Project cash flow was estimated based upon:

- Mill recovery of 84.5% in the Holt Mill.
- Gold at refinery 99.7% payable.
- Average exchange rate: C\$1.00 = US\$0.86.
- Average metal price: US\$850 per ounce gold.
- 4% NSR applied to revenue.

- 3 month preproduction period.
- Mine life capital: \$11.0 million.
- Average operating cost over the mine life is \$42.54 per tonne milled.

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals \$20.9 million over the mine life, and simple payback occurs after approximately 1.5 years.

The Total Cash Cost is US\$621 per ounce of gold. The mine life capital unit cost is US\$79 per ounce, for a Total Production Cost of US\$700 per ounce of gold. Average annual gold production during operation is 30,000 ounces per year. The pre-tax Net Present Value (NPV) at a 5% discount rate is \$17.2 million, and the pre-tax Internal Rate of Return (IRR) is 99.1%. SAS has sufficient tax pools to shelter the income and mining tax exposure on this Project.

Using a gold price of US\$950/ounce and an exchange rate of C\$1.00 = US\$0.85 for the life of the Project, the pre-tax undiscounted cash flow would be \$36.2 million, the pre-tax NPV at a 5% discount rate would be \$30.4 million, and the pre-tax IRR would be 158.4%.

Mining continues for a 38-month period, at the end of which there is a 418,000 tonne stockpile of ore ready to be processed. The current schedule has a shortfall of up to 480 tpd (average 250 tpd) over the period from month 16 to month 20.

Scott Wilson RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues that would materially affect the Mineral Reserve estimate.

## **RECOMMENDATIONS**

Scott Wilson RPA recommends that SAS continue the development of the Hislop Mineral Reserves with a view to advancing the Project to production and increasing the SAS gold production through exploitation of projected excess capacity at the Holt Mill.

The following recommendations pertain to the Mineral Reserves and the reader is referred to the August 6, 2009 Scott Wilson RPA Technical Report with regard to recommendations related to the Mineral Resources.

Scott Wilson RPA provides the following comments and recommendations:

- Identify the locations of underground workings on all mine plans and sections and develop procedures to ensure that such locations are monitored and that definition drilling is carried out in advance of mining through any workings.
- Assess pit slope recommendations in the field upon exposure, including consideration for the influence of underground workings and differences in rock structure, and modify the open pit design accordingly. Groundwater conditions should also be considered as the existing analysis assumes that the slopes are drained.
- Additional study should be completed to more accurately determine the material characteristics for the overburden, and to define appropriate slope angles for the overburden material.
- For ore haulage to the Holt Mill, SAS should communicate with local officials and local residents, and take action to reduce dust and to defray the maintenance costs, so that spring load restrictions are not a serious imposition on the operation.
- Ore grinding should be completed to the finest practical particle size to maximize metallurgical recovery.
- The use of oxygen should be considered in the process circuit to assist in leaching.
- SAS should refine their tailings management plans in order to accurately predict timing and cost for future tailings management facility construction.
- Additional rock characterization sampling is not required until mining is underway as the analysis of samples indicates a low potential to generate acidity.
- Additional engineering work should be completed to optimize the production schedule and reduce the shortfalls in the current plan.
- Prepare bid documents for the activities to be contracted and solicit bids for the work.

- Evaluate the bids compared to the estimates within this prefeasibility report to determine whether the mine design should be reviewed on the basis of the final contractor bids.
- Additional work should be completed to evaluate the potential to exploit additional resources beneath the existing open pit.
- Prior to the restart of processing operations, a detailed outline of the monthly metallurgical accounting procedures should be prepared, including the identification of sample locations, a sample calculation sheet, and an approval process.

To advance the project, Scott Wilson RPA recommends that SAS carry out the work as listed in Table 1-1.

**TABLE 1-1 PROPOSED WORK PROGRAM AND BUDGET**  
**St Andrew Goldfields Ltd. - Hislop Mine Property, Ontario, Canada**

Item	Cost (C\$)
Preparation of contract documents for Hislop mining, crushing and ore transport	15,000
Tailings facility construction schedules	20,000
Metal Leaching Analyses	20,000
Geotechnical Evaluation of Steeper Slopes	20,000
Review of Mine Design	50,000
<b>Subtotal</b>	<b>125,000</b>
Contingency	25,000
<b>Total</b>	<b>150,000</b>

## ECONOMIC ANALYSIS

A pre-tax Cash Flow Projection has been generated from the Life of Mine production schedule and capital and operating cost estimates, and is summarized in Table 1-2. A summary of the key criteria is provided below.

**ECONOMIC CRITERIA****REVENUE**

- 1,500 tpd from open pit (525,000 tpa).
- Mill recovery of 84.5% in the Holt Mill.
- Gold at refinery 99.7% payable.
- Average exchange rate C\$1.00 = US\$0.86.
- Average metal price: US\$850 per ounce gold.
- NSR includes doré refining, transport, and insurance costs.
- 4% NSR applied to revenue.
- Revenue is recognized at the time of production.

**COSTS**

- Preproduction period: 3 months.
- Mine life: 4 years.
- Life of Mine production plan as summarized in Table 1-2.
- Mine life capital totals \$11.0 million.
- Average total operating cost over the mine life is \$42.54 per tonne milled.



TABLE 1-2 PRE-TAX CASH FLOW SUMMARY

YEAR		-1	1	2	3	4	TOTAL
<b>PRODUCTION</b>							
Ore Mined	tonnes	117,633	412,442	704,340	677,729	-	1,912,145
Mine Grade	g/t	1.92	2.16	2.28	2.52	-	2.32
Au Feed Oz	ozs	7,277	28,677	51,618	54,885	-	142,457
Waste Mined	tonnes	585,104	3,634,541	3,878,435	1,811,387	-	9,909,466
Overburden	m3	258,459	384,899	94,818	723,737	-	1,461,914
Ore milled	tonnes	-	525,000	487,936	525,000	374,209	1,912,145
Grade	g/t	-	2.11	2.25	2.48	2.46	2.32
Ounces	ozs	-	35,620	35,300	41,916	29,622	142,457
Au Recovery	%	84.50%	84.50%	84.50%	84.50%	84.50%	84.50%
Au Produced	ozs	-	30,099	29,828	35,419	25,030	120,376
Refinery Recovery	%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%
Au Recovered	ozs	-	30,008	29,739	35,312	24,955	120,015
<b>REVENUE</b>							
Au Price	US\$/oz	-	950.00	850.00	800.00	800.00	849.90
Exchange Rate	US\$/C\$	-	0.90	0.85	0.85	0.85	0.86
Gross revenue	C\$ (000)	-	31,676	29,739	33,235	23,487	118,137
Refining	C\$ (000)	-	60	60	71	50	241
Smelter Revenue	C\$ (000)	-	31,615	29,679	33,164	23,437	117,896
Royalty	C\$ (000)	-	1,265	1,187	1,327	937	4,716
Net Revenue	C\$ (000)	-	30,351	28,492	31,838	22,500	113,180
<b>OPERATING COSTS</b>							
Strip OB	C\$ (000)	-	-	403	3,076	-	3,479
Mining Waste	C\$ (000)	-	7,416	7,914	4,800	-	20,130
Mine Ore	C\$ (000)	-	1,155	1,972	1,898	-	5,025
Crush & Haul	C\$ (000)	-	4,594	4,269	4,594	3,274	16,731
Milling	C\$ (000)	-	8,831	8,207	8,831	6,294	32,162
SG&A	C\$ (000)	-	1,050	976	1,050	748	3,824
Total Operating Cost	C\$ (000)	-	23,045	23,741	24,248	10,317	81,352
Unit Operating Cost	\$/t milled	-	43.90	48.66	46.19	27.57	42.54
Unit Cost per Ounce	US\$/oz	-	689	677	582	350	583
OPERATING PROFIT	C\$ (000)	-	7,305	4,750	7,590	12,183	31,829
<b>CAPITAL COSTS</b>							
Overburden Stripping	C\$ (000)	1,098	1,636	-	-	-	2,734
Waste Mining	C\$ (000)	1,551	2,215	2,364	-	-	6,130
Ore Haulage and Stockpiling	C\$ (000)	329	-	-	-	-	329
Mobilization	C\$ (000)	500	-	-	-	-	500
Mine	C\$ (000)	339	-	-	-	-	339
Mill	C\$ (000)	-	-	-	-	-	-
Camp	C\$ (000)	-	-	-	-	-	-
Exploration	C\$ (000)	-	-	-	-	-	-
Mine Closure	C\$ (000)	-	-	-	-	580	580
Contingency	25%	210	-	-	-	145	355
Total capital costs	C\$ (000)	4,027	3,851	2,364	-	725	10,967
<b>PRE-TAX CASH FLOW</b>							
Incremental	C\$ (000)	(4,027)	3,454	2,386	7,590	11,458	20,861
Cumulative	C\$ (000)	(4,027)	(573)	1,814	9,404	20,861	
<b>COST PER OUNCE</b>							
Operating	US\$	-	731	714	617	385	621
Capital	US\$	-	-	-	-	-	79
Total	US\$	-	731	714	617	385	700
PRE-TAX INTERNAL RATE OF RETURN (IRR)	%	99.1%					
<b>PRE-TAX NET PRESENT VALUE (NPV)</b>							
0.0%	C\$ million	20.9					
5.0%	C\$ million	17.2					
7.5%	C\$ million	15.7					

**CASH FLOW ANALYSIS**

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals \$20.9 million over the mine life, and simple payback occurs after approximately 1.5 years.

The Total Cash Cost is US\$621 per ounce of gold. The mine life capital unit cost is US\$79 per ounce, for a Total Production Cost of US\$700 per ounce of gold. Average annual gold production during operation is 30,000 ounces per year.

The Pre-tax Net Present Value (NPV) at a 5% discount rate is \$17.2 million, and the Pre-tax Internal Rate of Return (IRR) is 99.1%.

Using a gold price of US\$950/ounce and an exchange rate of 0.85 for the life of the Project the pre-tax undiscounted cash flow would be \$36.2 million, the pre-tax NPV at a 5% discount rate would be \$30.4 million, and the pre-tax IRR would be 158.4%.

**SENSITIVITY ANALYSIS**

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities to:

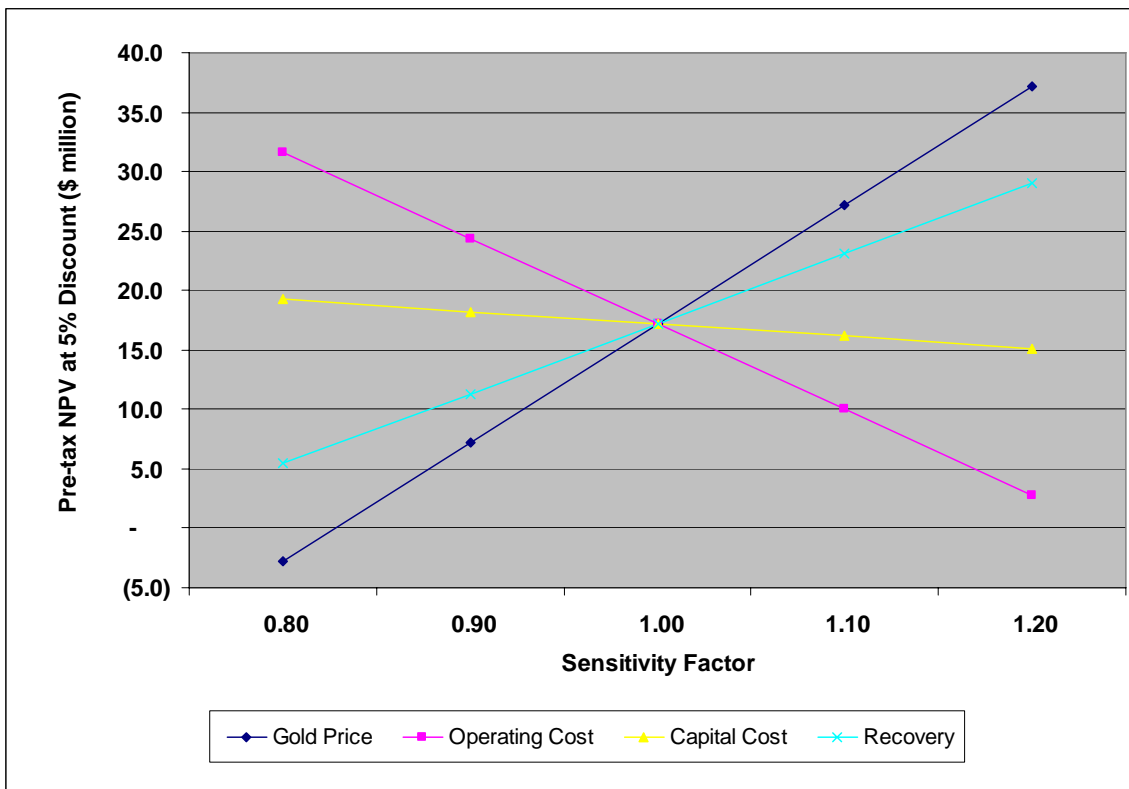
- Gold price, exchange rate, head grade and recovery
- Operating costs
- Capital Costs
- Metallurgical recovery

The sensitivity of the Project pre-tax NPV at 5% discount is shown in Table 1-3 and Figure 1-1.

**TABLE 1-3 SENSITIVITY ANALYSIS**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Sensitivity Factor		0.80	0.90	1.00	1.10	1.20
Gold Price	US\$/oz	680	765	850	935	1,020
Operating Cost	\$/t milled	34.04	38.29	42.54	46.80	51.05
Capital Cost	\$ '000	8,774	9,870	10,967	12,064	13,161
Recovery	%	74.5%	79.5%	84.5%	89.5%	94.5%
<b>Pre-tax NPV @ 5% Discount</b>						
Gold Price	\$ million	(2.8)	7.2	17.2	27.2	37.2
Operating Cost	\$ million	31.6	24.4	17.2	10.0	2.8
Capital Cost	\$ million	19.3	18.2	17.2	16.2	15.1
Recovery	\$ million	5.4	11.3	17.2	23.1	29.0

**FIGURE 1-1 SENSITIVITY ANALYSIS**



## **TECHNICAL SUMMARY**

### **PROPERTY DESCRIPTION AND LOCATION**

The Hislop Mine property is part of SAS's Larder Lake Mining District land holdings. The property consists of 24 patented mining claims and is located in Hislop and Guibord Townships. All of the mineral claims that are patented have been surveyed and the property is centred at approximately 551000E and 5371000N in NAD83, Zone 17.

### **LAND TENURE**

The Hislop property comprises a total area of approximately 571 ha and is wholly owned by SAS. There are various net profit payments, or NSR payments due on many of the claims; however, in the planned mining area, the only applicable royalty is a 4% NSR.

### **INFRASTRUCTURE**

The Hislop Project was the site of previous underground and open pit mining. The site is easily accessed from Highway 101, three kilometres south along Highway 572, with entry to a gravel road crossing the property.

The existing site power configuration consists of a 27 kV feed, delivered to site via a single wood pole transmission line originating at Tamarack Road. The power is distributed within the site parameters by means of two pole lines, each terminated with pole mounted transformers, metering stations and distribution panels, providing the site with 120V/240V/600V – 200A services.

### **HISTORY**

The earliest reports of exploration on the Hislop property date from 1934. Initial production from some of the deposits commenced in 1939. The property has changed ownership a number of times and there have been many diamond drilling campaigns conducted. There has been both underground and open pit mining on the Hislop property

in the immediate vicinity of the Mineral Resources and Mineral Reserves described in this report.

## **GEOLOGY AND MINERALIZATION**

Several mineralized zones occur on the Hislop property. The mineralized zones are located along a strike length of approximately 1,200 m, following the fault contact between mafic flows to the north and ultramafic rocks to the south. Gold is associated with the margins of feldspar porphyritic syenite dikes that have intruded the mafic and ultramafic rocks. The dikes are generally conformable to the contact between the mafic and ultramafic rocks striking west-northwest and dipping steeply to the north.

The mineralized areas have been called from west to east, the West Zone, Shaft Zone, and the South Area.

SAS has explored and reinterpreted the near-surface area of the Shaft Area. Diamond drill information was used to create a three-dimensional picture for each of the lithological units and each of the mineralized zones in the Shaft Area. The mineralized units were included in an overall envelope (Zone 1-01) and were named 3-01, 3-02, 3-03, and 3-04. The zones were followed over a strike length of 1.4 km.

## **MINERAL RESOURCES**

Scott Wilson RPA has reviewed the Mineral Resource estimates for the Hislop Project as reported by SAS as of June 2009. Scott Wilson RPA found that values and compilations of gold grades were accurately recorded and calculated as provided in block models and on cross-sections. Scott Wilson RPA carried out an independent estimate of the deposit to allow for comparison of the SAS estimates with the Scott Wilson RPA estimates, based on the data and solids provided.

The Mineral Resources effective June 2009 are summarized in Table 1-4.

**TABLE 1-4 MINERAL RESOURCE SUMMARY - JUNE 2009**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Classification	Zone	Tonnes (000)	Grade (g/t Au)	Ounces Gold (000)
<b>Indicated</b>				
	1-01	1,681	1.42	77
	3-01	1,793	2.16	125
	3-02	516	1.93	32
	3-03	2,358	2.21	168
	3-04	313	2.28	23
<b>Total Indicated</b>		<b>6,661</b>	<b>1.98</b>	<b>425</b>
<b>Inferred</b>				
	1-01	927	1.42	42
	3-01	1,446	1.71	80
	3-02	1,126	1.84	67
	3-03	1,427	1.94	89
	3-04	412	2.32	31
<b>Total Inferred</b>		<b>5,338</b>	<b>1.80</b>	<b>309</b>

## Notes:

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources were estimated at a block cut-off grade of 0.94 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US\$950 per ounce, and an exchange rate of C\$1.00 = US\$0.85
4. A minimum mining width of 2.0 m was used.
5. A bulk density of 2.84 t/m<sup>3</sup> was used for all rock types except syenite (2.68 t/m<sup>3</sup>).
6. Totals may not add exactly due to rounding.

## MINERAL RESERVES

Indicated Mineral Resources were evaluated and converted to Probable Mineral Reserves through the application of mining plans, estimates for dilution and extraction, and an economic cut-off grade. Only those Indicated Mineral Resources which could be included in a Life of Mine Plan (LOMP) were included as Mineral Reserves. There were no Inferred Resources converted to Mineral Reserves. The Mineral Reserves for the Project are summarized in Table 1-5 and are as of September 1, 2009. Scott Wilson RPA notes that the Mineral Resources stated in Table 1-4 are inclusive of Mineral Reserves.

**TABLE 1-5 MINERAL RESERVES - SEPTEMBER 2009**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Category	Tonnes ('000)	Grade (g/t Au)	Contained Ounces
Probable	1,912	2.32	142,500

## Notes:

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 1.1 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US\$800 per ounce, and an exchange rate of C\$1.00 = US\$0.85
4. The Mineral Reserves are contained within the stated Mineral Resources

## MINING OPERATIONS

The Hislop deposit has been designed as an open pit mine with a planned ore production rate of 1,500 tpd. The mining rate was selected as a supplement to the planned feed from the Holloway-Holt Project to be fed to the 3,000 tpd capacity Holt Mill.

The mining will be undertaken by mining contractors using conventional truck and shovel equipment, with haulage trucks in the 40 t capacity range and appropriately sized excavators for ore and waste. Overburden may be mined with larger units, but the ramps in the lower areas of the pit are designed for the 40 t class trucks.

The ramps will be 15 m wide for two lane traffic and 11 m wide for single lane traffic. The maximum ramp grade is 10% on the main ramps, with some short steeper sections for final mining of the lowest benches.

Pit slopes have been designed based upon a geotechnical study and report by Dr. P. Hughes and a review of that report by Dr. R. Pakalnis, both completed in 2009. The recommended inter-ramp pit slopes, which range from 47° to 50° for the designated design sectors, assumed dry (dewatered) conditions.

Overburden slopes have been designed with a 12 m high face sloped at 1.5H:1V, followed by a five metre wide berm to generate a maximum overall face angle of approximately 28° where a full 12 m of overburden exists. The slope design is based on a 1999 report by Acculab Engineering and Testing Ltd., which included a review of the

overburden slopes. The analysis was based upon samples collected from overburden adjacent to the existing pit.

For the purpose of estimating Mineral Reserves, Scott Wilson RPA has applied 15% dilution at 0.50 g/t Au and 90% extraction.

There are existing underground development workings and some stopes within the volume to be exploited by the open pit. The development workings include a shaft, ramps and development drifts and some empty stopes. Mining will progress through a number of underground workings, and the proposed plan is to drill ahead with the production drills in order to confirm the location of these voids. To mitigate safety hazards and maximize ore separation and extraction, blasting will be carried out to open these voids in such a manner as to allow filling of the voids with blasted rock.

The waste dump is planned to be located to the south of the open pit. The dump will be built in lifts with set backs to provide a 3H:1V overall slope which is consistent with the closure plan for the site. Without consideration for waste diverted to roads and yards, the waste dump will be approximately 400 m wide by 1,000 m long and 40 m high. Based on the same slope criteria, the overburden dump will be approximately 200 m wide by 800 m long and 40 m high.

Grade control activity will be carried out by SAS technical personnel. Blasthole sample analyses will be used to assess the gold grades for blasted material, and the blasted rock will be identified and sorted while loading to generate an ore stream, a low grade ore stream, and a waste stream.

Ore from the Hislop operation will be milled at the SAS owned 3,000 tpd carbon-in-leach (CIL) Holt Mill. The Holt Mill is located 52 km east of the Hislop Pit alongside Highway 101 east. Ore will be crushed using contracted equipment at the Project site and transported by highway trucks to the Holt Mill.



The 3,000 tpd capacity plant is planned to be operated at less than the rated capacity, with feed from the Holloway-Holt Project and the Hislop Mine. Initially, the mill is planned to operate with 1,500 tpd from Hislop and additional feed from the Holloway-Holt Project.

Scott Wilson RPA has assumed a plant recovery of 84.5% for the Hislop ore and a residue grade of 0.34 g/t based upon the average grade from the leach tests. Minor amounts of Hislop material have been processed at the Holt Mill, and there are few if any records of the mill performance with Hislop feed.

SAS is re-establishing an analytical laboratory to service the Holt Mill as well as the Holloway, Hislop, and Holt mining operations. The laboratory is expected to be operational in the fourth quarter of 2009.

Tailings will be stored in the facility at the Holt Mill. Recent surveys indicate that there is sufficient storage capacity with the planned dam construction.

## **ENVIRONMENTAL CONSIDERATIONS**

The Hislop site is subject to both Ontario provincial regulations and Federal Metal Mines Effluent Regulations (MMER) regulations. The Hislop site has operated under these requirements in the most recent operations.

There is a Certificate of Authorization (CoA) for the Hislop Settling Pond which outlines the permitted facilities and discharge. The discharge from the settling pond is limited to 1.9 m<sup>3</sup>/min based on 12 hours of operation per day. Previous operations were suitably dewatered with this rate and the expectation is that the existing CoA will provide sufficient dewatering capacity for the existing pit. Amendments have been submitted to account for the larger area of the proposed pit.

Rock samples have been collected and characterized with respect to their acid generation and metal leaching characteristics. Ore and waste samples have previously been collected and tested, in 1999, 2000, and 2006. The most recent sampling program

was aimed at collecting sufficient samples to characterize the rock types based on the estimated quantity of each of the different rock types expected to be encountered while mining.

Rock samples were collected from the ultramafic metavolcanic rock unit, the mafic metavolcanic rock unit, the mafic metavolcanic with hematite alteration rock unit, and the syenite intrusive rock unit. The analysis of the test data indicated that there is a low potential for the rock to generate acidity. Leaching of the O.Reg. 560/94 Schedule 1 parameters was shown to be low in comparison to screening criteria. Additional sampling was not recommended until mining commences. Monitoring of the drainage from the existing rock dumps was recommended as a field test of the drainage characteristics.

An amendment to the Hislop Mine closure report has been prepared, distributed, and discussed with regulatory officials and local First Nation representatives. The post-closure environmental impacts of the Hislop Open Pit Extension Project are anticipated to be small owing to the limited scale of the Project, which will not involve any permanent buildings, milling operations, or tailings areas. All temporary facilities, scrap, and equipment will be removed from the site.

## **CAPITAL AND OPERATING COST ESTIMATES**

Total capital costs for the Project amount to approximately \$11.0 million, which includes a 25% contingency.

Operating costs were developed from a combination of budgetary quotations from contractors for the mining, crushing, and hauling of ore to the Holt Mill; SAS operating budgets for the Holt Mill; and an estimate of the general and administrative (G&A) costs for the Hislop Project. Average operating costs over the mine life amount to \$42.54 per tonne milled.

**OPPORTUNITIES FOR IMPROVEMENT**

There are additional opportunities to increase the gold production from the Hislop deposit that should be evaluated and implemented if warranted.

Mineral Resources have been identified beneath the existing pit (located west of the current design pit where the Mineral Reserves exist); however, detailed planning for the pushbacks required to access and exploit these resources has not been undertaken as part of this study. The preliminary Whittle optimization indicated that a potential pushback and deepening of this pit could generate approximately 20,000 ounces of gold production.

There are also small near surface pods of Mineral Resources which have been identified in the resource estimate, but no planning for the extraction of these small pods has been undertaken in this study.

There are existing workings in the pit area, and there are resources that extend beneath the open pit. It may be viable and beneficial to develop a plan for the extraction of a 10 m to 15 m thick sill beneath the final pit bottoms using underground mining methods.

Low grade material that does not meet the pit discard grade criteria but contains sufficient gold to cover haulage and processing costs may be available for potential future milling as incremental feed to the Holt Mill, or as economic mill feed in a high gold price environment.

## 2 INTRODUCTION AND TERMS OF REFERENCE

Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) was retained by Michael Michaud, Vice President of Exploration for St Andrew Goldfields Ltd. (SAS), to prepare an independent Technical Report on the Hislop Project (the Project), near Matheson, Ontario. The purpose of this report is to provide a prefeasibility level study on the Project in support of SAS public disclosure of Mineral Resources and Mineral Reserves. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

SAS is a junior gold company with mining projects in the exploration and development stages along the Destor-Porcupine Fault Zone in Northeastern Ontario. SAS owns the Hislop property, the Holt and Holloway gold mines, and an extensive exploration land package in the area. In addition, SAS owns a 3,000 tpd capacity gold mill at the Holt Mine. The Project is a past producer with a small underground operation in the late 1980s and early 1990s and a small open pit, which was last worked in 2007. SAS plans to reopen the Holloway Mine and Holt Mine (Holloway-Holt Project) and the Holt Mill, which will be used for processing ore from the Project.

Currently, the major assets and facilities associated with the Project are:

- Mineral deposits on the Hislop property.
- Road access to the proposed pit area.
- Power lines and a connection to the Ontario power grid.
- A surface settling pond for the disposal of mine waters.
- Waste and overburden dumps.
- Mining reclamation and dewatering permits that remain in effect from previous mining.
- Access to spare capacity in the 3,000 tpd Holt gold recovery plant, which is currently owned and operated by SAS.

Scott Wilson RPA (and its predecessor company Roscoe Postle Associates Inc.) has previously prepared technical reports for SAS that include discussion on the Project. The most recent reports are:

- “Report on the Clavos, Stock Mine, Taylor, Central Timmins, and Golden Reward Properties in the Timmins Area of Northeastern Ontario” dated September 24, 2003.
- “Technical Report on the Taylor, Clavos, Hislop and Stock Projects in the Timmins Area, Northeastern Ontario, Canada” dated October 2, 2006, which contained a discussion of historical estimates for the Hislop property.
- Technical Report on the Hislop Project, Ontario, Canada, a NI 43-101 Technical Report, dated August 6, 2009.

## **SOURCES OF INFORMATION**

Scott Wilson RPA visited the property on several occasions between October 2006 and May 2009. Site visits were carried out by: Wayne Valliant, Principal Geologist, on May 26, 2009, and Dennis Bergen, Associate Principal Mining Engineer, on February 24 and 25, 2009, and previously on October 5, 2006.

Discussions were held with personnel from SAS. The contacts were:

- Jacques Perron, President and Director
- Michael Michaud, V.P. Exploration
- Duncan Middlemiss, V.P. Operations and General Manager
- John Kita, P.Eng., Manager of Geology
- Dan Boiley, DRA Americas, Holt Mill Superintendent
- Brad Cole, Environmental Coordinator
- Mark Johnston, Project Manager

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 22 References.

**LIST OF ABBREVIATIONS**

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

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

### 3 RELIANCE ON OTHER EXPERTS

This report has been prepared by Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) for St Andrew Goldfields Ltd. (SAS). The information, conclusions, opinions, and estimates contained herein are based on:

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

For the purpose of this report, Scott Wilson RPA has relied on ownership information provided by SAS. Scott Wilson RPA has not researched property title or mineral rights for the Hislop Project and expresses no opinion as to the ownership status of the property.

Scott Wilson RPA has relied on SAS for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Hislop.

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

## **4 PROPERTY DESCRIPTION AND LOCATION**

The Hislop property is part of SAS's Larder Lake Mining District land holdings which are listed in Table 4-1 and locations are shown in Figures 4-1 and 4-2. SAS also holds other patented/leased and unpatented claims abutting and in the immediate area of the Hislop property.

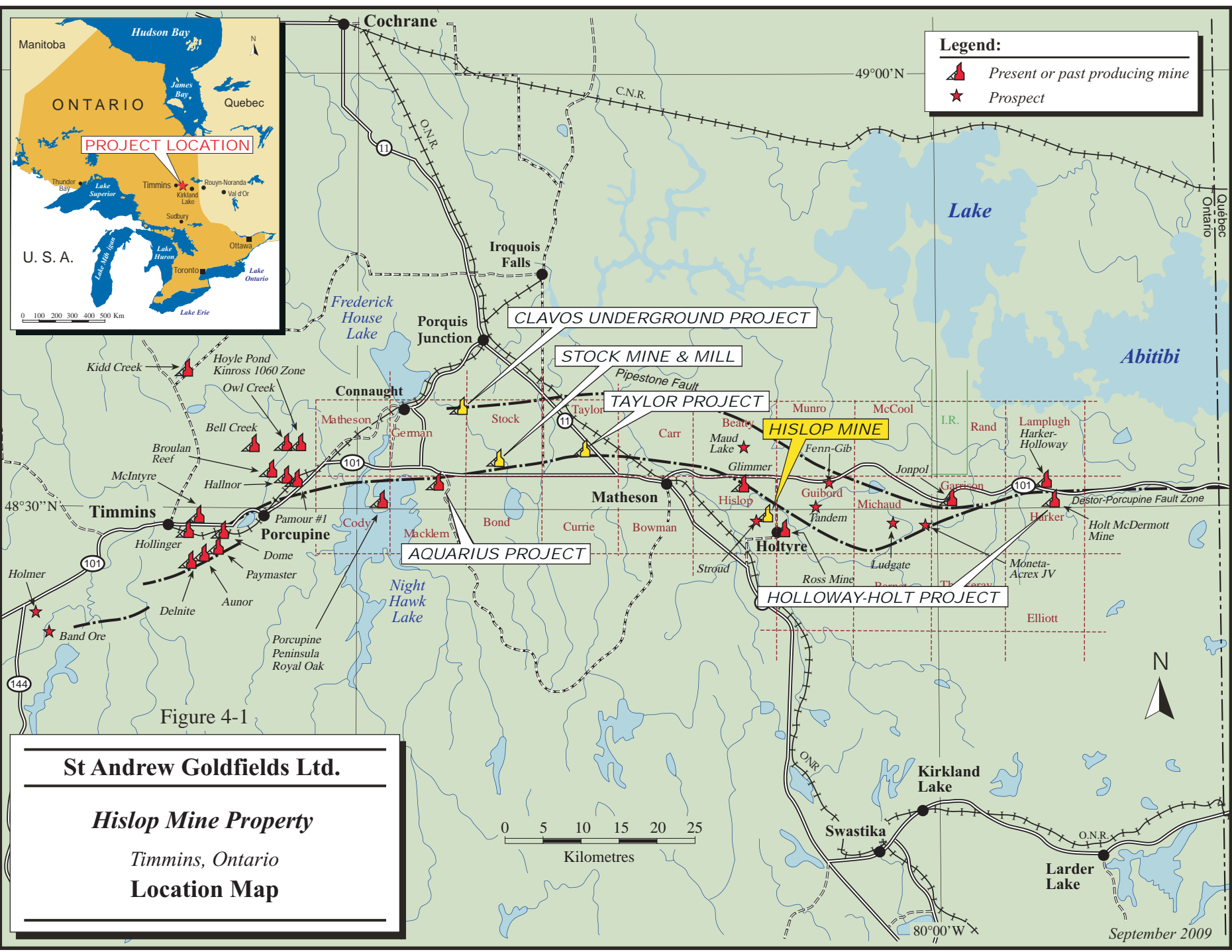
The property is centred at approximately 551000E and 5371000N in NAD83, Zone 17.

### **LAND TENURE**



The Hislop property is comprised of 24 patented mining claims in both Guibord and Hislop Townships. The property has a total area of approximately 571 ha and is wholly owned by SAS. All of the mineral claims have been surveyed.

There are various net profit payments, or NSR payments due on many of the claims; however, in the planned mining area, the only applicable royalty is a 4% NSR. The details of the royalties are set out in Table 4-1.





**Legend:**

-  Present or past producing mine
-  Prospect

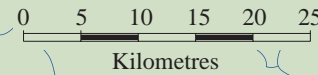
**St Andrew Goldfields Ltd.**

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*Hislop Mine Property*

Timmins, Ontario

**Location Map**



September 2009

4-2

Figure 4-1

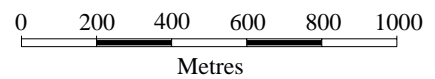
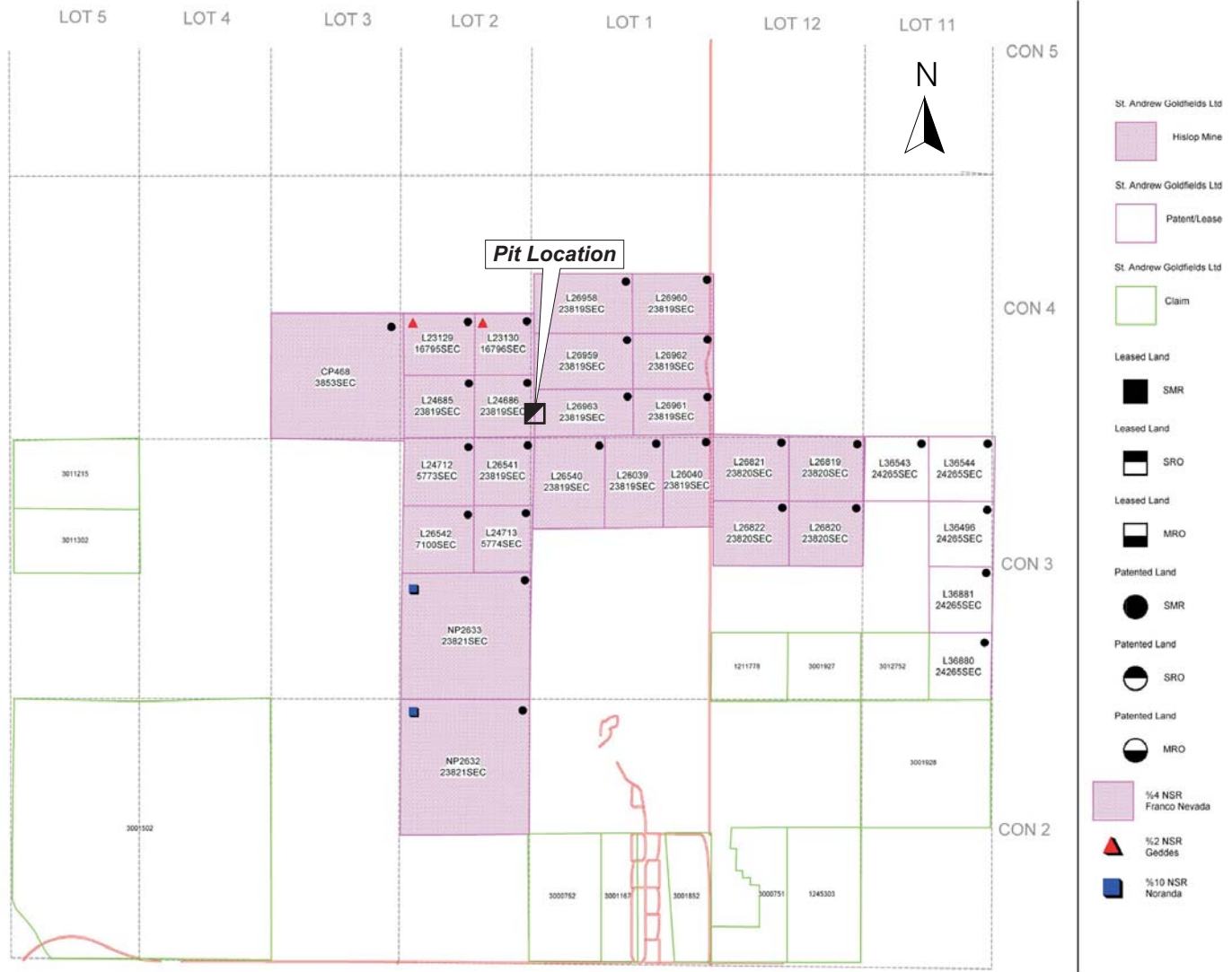


Figure 4-2

**St Andrew Goldfields Ltd.**

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*Hislop Mine Property*  
Timmins, Ontario

**Property Map**

**TABLE 4-1 CLAIM LIST**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

<b>Claim</b>	<b>Rights</b>	<b>Size (ha)</b>	<b>Township</b>	<b>Royalty</b>
L26819	S & MR	18.77	Guibord	4% Franco Nevada
L26820	S & MR	18.48	Guibord	4% Franco Nevada
L26821	S & MR	19.15	Guibord	4% Franco Nevada
L26822	S & MR	18.83	Guibord	4% Franco Nevada
L23129	MRO	16.84	Hislop	4% Franco Nevada, 2% NSR William Geddes
L23130	MRO	14.04	Hislop	4% Franco Nevada, 2% NSR William Geddes
L24685	S & MR	16.68	Hislop	4% Franco Nevada
L24686	S & MR	14.12	Hislop	4% Franco Nevada
L24712	S & MR	18.33	Hislop	4% Franco Nevada
L24713	S & MR	14.89	Hislop	4% Franco Nevada
L26039	S & MR	20.69	Hislop	4% Franco Nevada
L26040	S & MR	17.65	Hislop	4% Franco Nevada
L26540	S & MR	25.11	Hislop	4% Franco Nevada
L26541	S & MR	15.68	Hislop	4% Franco Nevada
L26542	S & MR	18.17	Hislop	4% Franco Nevada
L26958	S & MR	22.62	Hislop	4% Franco Nevada
L26959	S & MR	20.94	Hislop	4% Franco Nevada
L26960	S & MR	18.60	Hislop	4% Franco Nevada
L26961	S & MR	14.02	Hislop	4% Franco Nevada
L26962	S & MR	16.96	Hislop	4% Franco Nevada
L26963	S & MR	17.64	Hislop	4% Franco Nevada
CP468	S & MR	64.19	Hislop	4% Franco Nevada
NP2632	S & MR	66.46	Hislop	4% Franco Nevada, 10% NPR Noranda
NP2633	S & MR	62.55	Hislop	4% Franco Nevada, 10% NPR Noranda
<b>Total</b>		571.41		

Note: S = Surface Rights, M = Mining Rights, MRO = Mining Rights Only

## **5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **ACCESSIBILITY**

The Hislop property is located in the District of Cochrane, approximately 85 km east of Timmins, Ontario, and 45 km west of SAS's Holt Mill. There is daily air service between Timmins and Toronto. The Ontario Northland Railway and Highway 11 pass through Matheson, approximately 11 km to the west.

The property is easily accessible along Highway 101, and then south for two kilometres along a township road (Holtyre Road).

### **CLIMATE**

The climate in the area is typical continental, with extreme seasonal variations. From May through September, mean temperatures range from 9°C to 17°C, with occasional daily highs in excess of 30°C. In this area, winter conditions can be experienced from October through April. From December through March, mean temperatures range from -7°C to -16°C, but there can be short periods of -20°C to -30°C. There can be at least 50 cm snow on the ground on average during winter. Annual precipitation amounts to approximately 874 mm, with 66% of this occurring as rain.

### **LOCAL RESOURCES**

The Hislop property is in an area between Timmins and Rouyn-Noranda, which contains some of the world's largest copper-zinc and gold deposits. There has been mining in this area for over ninety years, resulting in a host of mining suppliers and contractors established in the larger centres such as Timmins, Kirkland Lake, and Rouyn-Noranda. Skilled professionals and labour can be found locally.

Water is plentiful in the area and can be sourced from rivers and small lakes. An electric power line connects the mine property to the provincial power grid connecting Kirkland Lake and Larder Lake.

## **INFRASTRUCTURE**

The Hislop site is currently in a state of “temporary suspension”. The main pit was allowed to flood after the completion of the 2007 campaign.

The existing site power configuration consists of a 27 kV feed, delivered to site via a single wood pole transmission line. The power is distributed within the site by means of two pole lines, each terminated with pole mounted transformers, metering stations and distribution panels, providing the site with 120V/240V/600V – 200A services.

The existing waste rock pile is segregated into “talc” and “non-talc” areas. Non-talc waste includes mafic and syenite rock, which are located in the western end of the waste rock pile. The non-talc portion of the stockpile is further segregated into sections where dominantly mafic and dominantly syenite waste rock is placed. Talc waste consists of carbonated, chloritic schist, which is stockpiled in the eastern end of the stockpile.

## **PHYSIOGRAPHY**

Topography in the project area is gently rolling, with average relief of approximately 40 m, in contrast to the range of hills a few kilometres to the north that have elevations ranging up to 200 MASL to 300 MASL. The area is reasonably well drained by creeks and small rivers, but there are numerous small swamps and marshy areas. Outcrop is limited due to an extensive blanket of overburden, mostly sand with lesser amounts of clay. Overburden depths can range from 5 m to 15 m, although dramatically thicker amounts have been encountered. The northerly trending Munro Esker overlies the western third of the property package.

The area is located within the Boreal Shield Ecozone. Forest cover is normally thick and dominantly coniferous, with black spruce and jack pine the commonest species, with lesser stands of poplar and birch. Current cover is second and third growth forest as a result of logging operations and forest fires.



5-3

Figure 5-1

**St Andrew Goldfields Ltd.**

*Hislop Mine Property  
Timmins, Ontario*

**Photograph of Current Site**



## 6 HISTORY

### EXPLORATION

The Hislop property has a long history of exploration and development as well as production in 1990-1991, 1993-1994, 1999-2000, and 2005-2006 as summarized below.

During the period from 1934 through to 1936, McIntyre Mines optioned six claims owned by Torovic Gold Mines and six claims owned by Vindur Porcupine Gold Mines, which form much of the current Hislop Mine property, and carried out a program of extensive surface trenching as well as a surface diamond drill program totalling 3,962.4 m in 45 holes. Results of the program proved inconclusive and the option was dropped in 1936.

In 1935, Mining Corporation drilled three holes totalling 819.3 m along a northeast to southwest section in the S1/2, Lot 2, Con III, on ground west of the Ross Mine. Results of this work revealed gold values over narrow widths in altered volcanic rocks, but no further work was undertaken.

Torovic Gold Mines and Vindur Porcupine Gold Mines amalgamated in 1938 to form Kelrowe Gold Mines, Limited (Kelrowe). During the period 1939 through 1940, Kelrowe sunk a shaft to a depth of 98 m, established levels at the 24 m, 55 m and 91 m elevations, undertook lateral development on the 24 m and 55 m levels, and completed 1,498 m of underground diamond drilling from stations on all three levels. All operations were suspended in 1940 and the mine was allowed to flood.

In 1939, Hollinger Mines Limited (Hollinger) drilled 10 surface holes for a total of 2,644 m in the S1/2 Lot 2, Con. III and the N1/2 Lot 2, Con. II that indicated the presence of interesting gold values in a broad zone of altered volcanic rocks. Subsequently in 1940, Hollinger completed a drive to the west-northwest at the 137 m level from the Ross Mine workings that extended 160 m on to the N1/2 Lot 2, Con. II and completed a 33.5 m

crosscut towards the south. A total of 1,953 m of underground diamond drilling was completed from the crosscut and stations along the drive.

In 1945, Kelwren Gold Mines, Limited (Kelwren) was formed when Kelrowe amalgamated with Wren Gold Mines. During the period 1945 to 1947, additional claims were obtained and a 32 hole surface diamond drill program totalling 5,028 m was completed. The shaft was deepened to 145 m and a new level established at the 137 m elevation. Development work began on the 91 m level, and more extensively on the 137 m level, where 4,588 m was drilled in 140 holes. In 1948, Kelwren reorganized to form Kelore Gold Mines, Limited (Kelore). During 1948, an underground diamond drill program of 122 holes totalling 3,847.5 m was completed. Operations were suspended in January 1949 and the workings allowed to flood. During the period 1949 to 1950, Kelore completed 3,466 m of surface diamond drilling in 14 holes.

During the years 1945 to 1949, Hiskerr Gold Mines Ltd. (Hiskerr) completed two diamond drill programs on two claims to the northwest of the Kelwren Shaft (23129 and 23130) that now form part of the Hislop Mine property.

In 1953, Kelore was renamed New Kelore Mines, Limited (New Kelore).

During 1955, Hiskerr completed additional diamond drilling amounting to approximately 1,220 m on the Hiskerr claims.

Hollinger optioned the Hislop property from New Kelore in 1973, and during the period 1973 through 1980, completed an extensive surface and underground exploration program. In 1973, 2,322.3 m in 11 surface diamond drill holes (HK series drill holes) were drilled and the mine workings were dewatered. In 1974, Hollinger completed an underground sampling and mapping program, and completed an underground diamond drill program comprising 8,914.8 m in 239 holes (K series holes). Geological reserves were estimated following this work. The option was dropped in 1980. In 1985, Geddes Resources Ltd. (Geddes) optioned the property from New Kelore, and Goldpost



Resources Inc. (Goldpost) subsequently acquired 100% of the Geddes interest in the property.

In 1986, Goldpost acquired two additional claims which increased the property holdings to a total of 19 patented mining claims and one 160 acre VETERAN Lot. During the period 1986 to 1989, Goldpost completed an extensive surface exploration program consisting of linecutting, ground magnetic surveys, ground very low frequency (VLF) surveys, geological mapping, trenching, and surface diamond drilling comprising 29,612 m in 303 holes (GK series holes). An underground development program consisting of a 422 m East Decline and a 997 m Main Decline was completed. Connections from the Main Decline to the existing workings were made at the 55 m, 91 m, and 137 m levels and an underground diamond drill program consisting of two drill holes (156.7 m in total) in the East Decline and 42 drill holes (3,614.6 m, HE series holes) in the Main Decline was completed. All levels and declines were channel sampled and geologically mapped.

In 1990, a joint venture was established between Goldpost and SAS to mine parts of the Shaft Zone and the North Zone. During 1990 and 1991, 5,401 m of underground drilling in 288 holes was completed and mining took place.

In 1993, the Hislop property was acquired by SAS from Goldpost. In the period 1993 to 1994, the workings were pumped out, underground drilling totalling 10,373.9 m in 270 holes was completed, development continued, and mine production was milled at the Stock Mill. In 1994, production was curtailed and underground workings allowed to flood. Entrances to the declines were sealed with steel barriers in 1995 and equipment was removed from site.

**TABLE 6-1 HISTORICAL DIAMOND DRILLING SUMMARY**  
**St Andrew Goldfields Ltd. - Hislop Mine Property, Ontario, Canada**

Company	Year (s)	Hole Series	Number of Holes	Surface or Underground	Aggregate Length (m)
McIntyre Mines	1934-1936		45	surface	3,962.4
Mining Corporation	1935		3	surface	819.3
Kelrowe Gold Mines, Ltd.	1938-1940			underground	1,498
Hollinger Mines Ltd.	1939		10	surface	2,644
Hollinger Mines Ltd.	1940			underground	1,953
Kelwren Gold Mines, Ltd.	1945-1947		32	surface	5,028
Kelwren Gold Mines, Ltd.	1945-1947		140	underground	4,588
Hiskerr Gold Mines Ltd.	1945-1947		9	surface	1,707
Kelore Gold Mines, Limited	1948-1949		122	underground	3,847.5
Hiskerr Gold Mines Ltd.	1948-1949			surface	6,096
Kelore Gold Mines Ltd.	1949-1950	Hislop	14	surface	3,644
Hiskerr Gold Mines Ltd.	1955			surface	1,220
Hollinger Mines Ltd.	1973-1980	HK	11	surface	2,322.3
Hollinger Mines Ltd.	1974	K	239	underground	8,914.8
Goldpost Resources Inc.	1986-1993	GK	303	surface	29,612
Goldpost Resources Inc.	1987-	GV	13	surface	In total 2,171
	1987	GS (RC)	36	surface	
Goldpost Resources Inc.	1988-1989	HE	44	underground	3,771.3
Goldpost Resources Inc.	1990-1993	BBG	129	underground	2,032.7
		BG	159	underground	3,368
St Andrew Goldfields	1993-1994	HE	32	underground	1,456.3
		BG-SZ	1	underground	3

In 1996, the two Hiskerr claims were acquired by SAS. A grid with line spacings at 30 m (100 ft) was established over the entire Hislop Mine property and Realsection induced polarization (IP) surveying totalling 201 line km was completed. During 1996 to 1997, a surface diamond drill program amounting to 8,575.2 m in 14 drill holes (including two wedged holes and deepening of a hole drilled during an earlier drill program) tested several of the IP anomalies.

Figures 6-1 and 6-2 are compilation plans for the north and south parts of the property and display areas of drilling, known mineralized zones, geophysical conductors and underground workings.

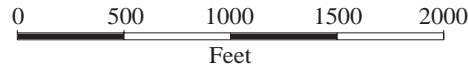
Figure 6-1

**St Andrew Goldfields Ltd.**

**Hislop Mine Property**  
Timmins, Ontario

**Compilation Plan - North Part**

September 2009

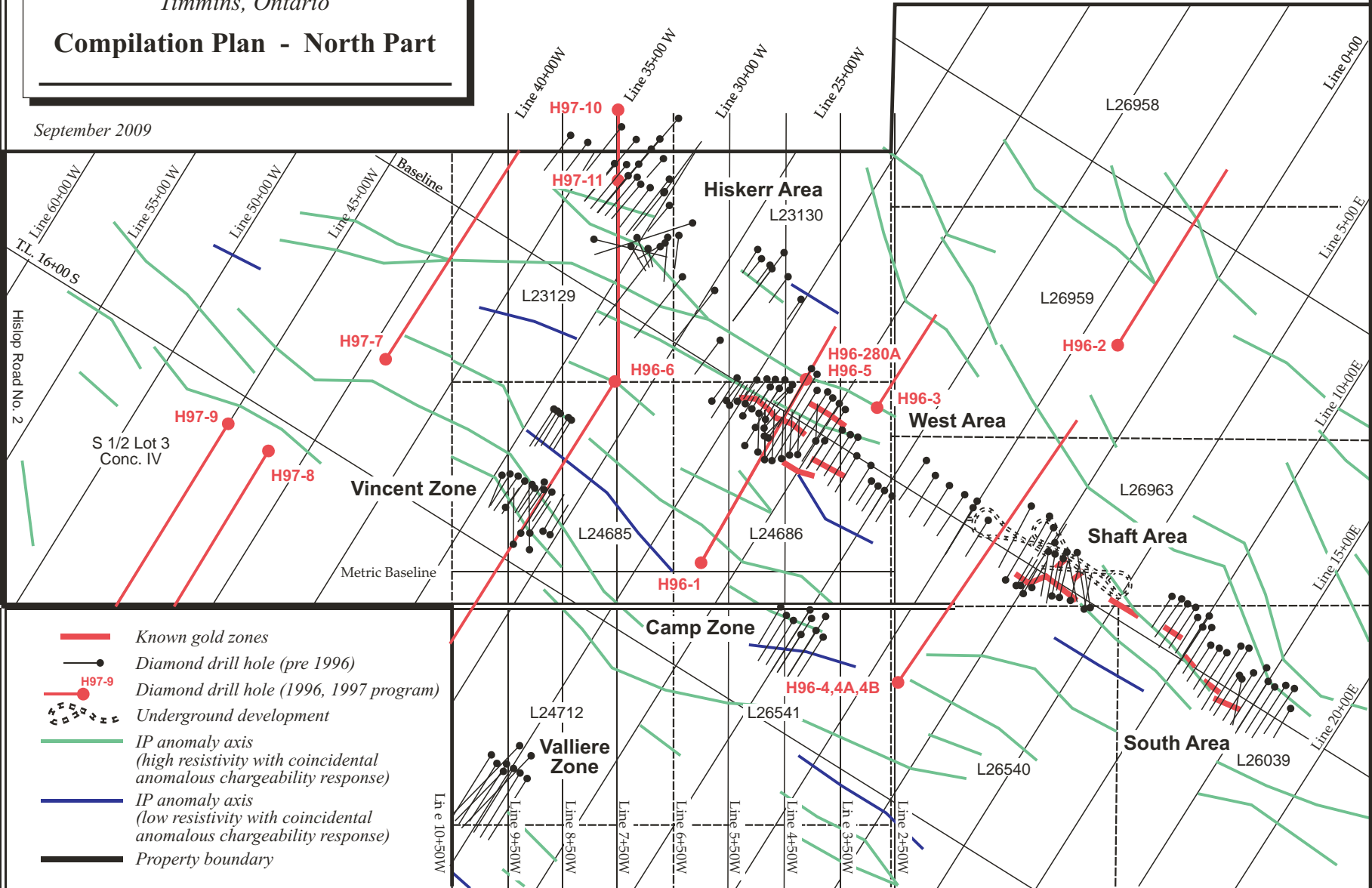


Conc. V

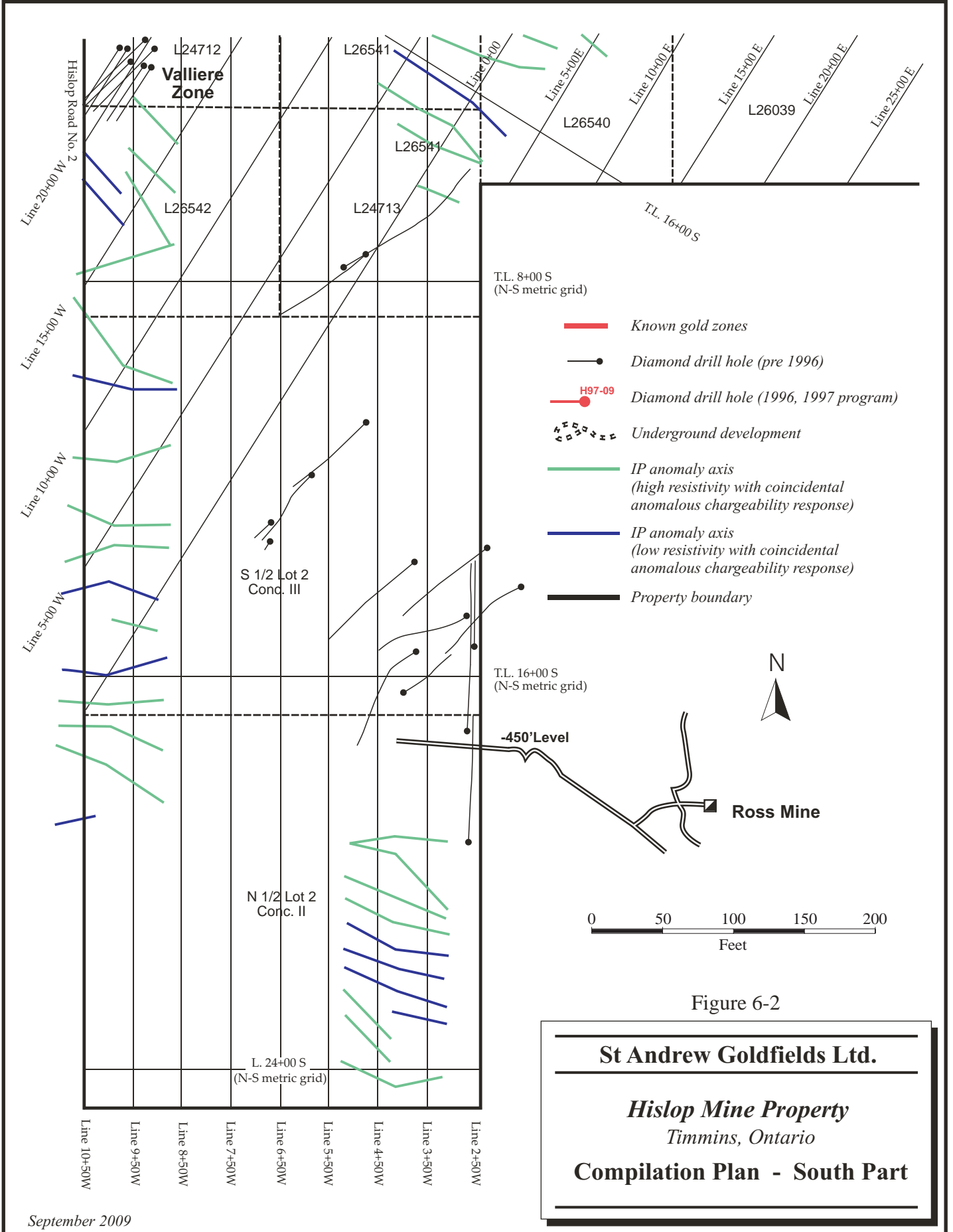
Conc. IV

Conc. III

6-5



- Known gold zones
- Diamond drill hole (pre 1996)
- Diamond drill hole (1996, 1997 program)
- Underground development
- IP anomaly axis (high resistivity with coincidental anomalous chargeability response)
- IP anomaly axis (low resistivity with coincidental anomalous chargeability response)
- Property boundary



September 2009

## PRODUCTION HISTORY

During the 1990-1991 production program, mining methods included longhole (60%), silling (20%), and shrinkage (20%), with ore coming from the Shaft Zone and the North Zone, just north of the old shaft. Haulage of ore out of the mine was by diesel-powered trucks up the ramp. Development for exploration and haulage was in the hanging wall because of poor footwall ground conditions. The ore was stored on surface, then transported by highway truck to the Stock Mill of SAS for processing. Average mill recovery was 92.2%. Mining ceased in August 1991 and the workings were allowed to flood. Cutting high assays to 17.1 g/t Au gave an estimated grade for the reserves mined that was 10% lower than the mill head grade. Cutting to 31.1 g/t Au gave a closer correlation between the reserves mined and the mill head grade.

For the 1993-1994 campaign, the workings were pumped out and the 2nd Level and 3rd Level were developed south from the decline through the Marsh Zones and the South Zone. The 5-East Zone was discovered near the West Marsh Zone. Ore was hauled up the ramp and trucked to the Stock Mill for processing. Mining was predominantly by longhole stoping. The main ore sources were the Shaft Zone (42,600 tonnes) and the North Zone (35,400 tonnes). Production also came from the Marsh Zones, 5-East Zone, Decline Zone, and South Zone. As noted elsewhere, metallurgical recovery from the Marsh Zones and the South Zone were lower than expected. This caused the overall Hislop Mine recoveries to decrease from 92% in the first half of 1994 to 83% in the latter half of 1994.

Production during the 1990-1991 and 1993-1994 campaigns is summarized in Table 6-2.

**TABLE 6-2 UNDERGROUND PRODUCTION HISTORY**  
**St Andrew Goldfields Ltd. - Hislop Mine Property, Ontario, Canada**

Year	Tonnes Mined	Grade (g/t Au)	Contained Ounces Au	Tonnes Milled	Ounces Au Produced
1990	23,516	7.89	6,584	18,756	4,199
1991	45,986	7.10	11,572	51,271	11,750
1992	-	-	-	-	-
1993	22,808	3.05	2,480	17,047	1,634
1994	103,688	4.83	18,040	114,717	17,620
<b>Total</b>	<b>195,998</b>	<b>5.55</b>	<b>38,676</b>	<b>201,791</b>	<b>35,203</b>

There was open pit production from the West Zone in the period July 1999 to October 2000. Total production from this time period (based on mill records) was 185,900 tonnes grading 3.4 g/t Au. An additional 612,000 tonnes of waste were mined for a waste:ore ratio of 3.3:1. The mine was operated at a nominal production rate of 1,800 tpd and a cut-off grade of 2.0 g/t Au was utilized. The ultimate pit is approximately 300 m long northwest-southeast, and 100 m wide. Locally, it extends to approximately 60 m below the surface.

Between 2005 and 2006, the northeast side of the pit was extended 135 m by 45 m in area to a depth of 27 m. The estimated resources were 39,500 tonnes grading 2.64 g/t Au, with a waste to ore stripping ratio calculated as 8.2:1. Production records indicate that between August 2006 and March 31, 2007, a total of 52,268 tonnes grading 2.07 g/t Au (from muck samples) were mined.

Table 6-3 lists the historical mineral resources for the Hislop Mine. These mineral resources were estimated in 1995 by SAS personnel. At the completion of mining in 1994, Scott Wilson RPA (then RPA) reviewed and restated the mineral resources in accordance with the classification at the time. At that time, mineral resources were also reported in the West Zone. However, because of the open pit production, the West Zone has now been removed from the historical mineral resource statement.

**TABLE 6-3 MINERAL RESOURCES AS OF DECEMBER 31, 1994**  
**St Andrew Goldfields Ltd. - Hislop Mine Property, Ontario, Canada**

Category	Area	Zone	Tonnes (000)	Grade (g/t Au)	Contained Ounces Au
<b>Indicated Resources</b>					
Indicated	Shaft	Shaft	14.5	7.3	3,400
Indicated	Shaft	North	25.4	6.7	5,400
<b>Total</b>	<b>Shaft Area</b>		<b>39.9</b>	<b>6.9</b>	<b>8,900</b>
Indicated	South	5-East	18.1	6.2	3,600
Indicated	South	Marsh	28.1	5.3	4,800
Indicated	South	South	82.6	5.9	15,700
<b>Total</b>	<b>South Area</b>		<b>128.8</b>	<b>5.8</b>	<b>24,200</b>
<b>Total Indicated: Shaft &amp; South Areas</b>			<b>168.7</b>	<b>6.1</b>	<b>33,000</b>
<b>Inferred Resources</b>					
Inferred	Shaft	Shaft	20.0	5.4	3,500

## Notes:

1. All assays greater than 31.103 g/t Au (1.0 oz/ton Au) are cut to 31.103 g/t.
2. Some of the Indicated Resources in the Shaft and South Areas could be categorized as Measured Resources.
3. Totals in this table may not add correctly due to rounding.

These mineral resource estimates were prepared prior to the introduction of NI 43-101 and are not considered to be compliant with NI 43-101. The estimates are considered to be a historical resource initially reported in "Report on the Stock, Taylor, and Hislop East Properties of St Andrew Goldfields" by RPA and dated April 7, 1995. The estimates are considered to be relevant because they give an indication of the size and grade of the remaining tonnages. The classification used in the 1995 report may not be consistent with NI 43-101. The categories used in the historical estimate are similar to the CIM Definition Standards on Mineral Resources and Mineral Reserves.

## 7 GEOLOGICAL SETTING

### REGIONAL GEOLOGY

The Hislop Project lies within the Southern Abitibi Greenstone Belt (SAGB) of the Superior Province in northeastern Ontario (Figure 7-1). In very general terms, the Abitibi Subprovince consists of Late Archean metavolcanic rocks, related synvolcanic intrusions, and clastic metasedimentary rocks, intruded by Archean alkaline intrusions and Paleoproterozoic diabase dikes. The traditional Abitibi greenstone belt stratigraphic model envisages lithostratigraphic units deposited in autochthonous successions, with their current complex map pattern distribution developed through the interplay of multiphase folding and faulting (Heather, 1998).

At a regional scale, the distribution of supracrustal units in the SAGB is dominated by east-west striking volcanic and sedimentary assemblages. The structural grain is also dominated by east-west trending Archean deformation zones and folds. The regional deformation zones commonly occur at assemblage boundaries and are spatially closely associated with long linear belts representing the sedimentary assemblages. The dominant regional fault in this area is the Destor-Porcupine, referred to as the Destor-Porcupine Fault Zone (DPFZ). The current locations of these regional deformation zones are interpreted to be proximal to the locus of early synvolcanic extensional faults. Belt scale folding and faulting was protracted and occurred in a number of distinct intervals associated at least in the early stages with compressive stresses related to the onset of continental collision between the Abitibi and older subprovinces to the north (Ayer et al., 2005). Throughout the history of the Abitibi Subprovince, there was repeated plutonism defined by three broad suites: 1) synvolcanic plutons, 2) syntectonic intrusions that range in age from 2695 Ma to 2680 Ma and include tonalite, granodiorite, syenite, and granite, and 3) post tectonic granites that range in age from approximately 2665 Ma to 2640 Ma (Ayer et al., 1999).

The southern part of the Abitibi greenstone belt, in the general vicinity of the Hislop Project, consists of three major volcanic lithotectonic assemblages and two unconformably overlying primarily metasedimentary assemblages (Ayer et al., 2005).



From oldest to youngest, these assemblages are the Stoughton-Roquemaure (2723 Ma–2720 Ma), the Kidd-Munro (2719 Ma–2711 Ma), the Blake River (2704 Ma–2696 Ma), the Porcupine (2690 Ma–2685 Ma), and the Timiskaming (2676 Ma–2670 Ma). The three oldest assemblages are all volcanic with plume, island arc, and rifted island arc affinities, have conformable contacts, and were developed by volcanic construction in variably extension to compression tectonic environments. On a belt scale, these form a broad synclinorium cored by the Blake River assemblage.

## **LOCAL GEOLOGY**

The Hislop Mine property is underlain by a sequence of mainly tholeiitic basalt and basaltic to peridotitic komatiite volcanic flows intruded by a number of sheets or dikes of syenite, feldspar porphyry, and intrusive breccia (Figure 7-2). Felsic lavas and fragmental rocks are reported to be extensive in the southern part of the property. Narrow dikes of lamprophyre intrude all other rock types and are generally aligned parallel to the main geological contacts and structures. The rocks have undergone low grade metamorphism and are located in a broad deformation zone which is part of the DPFZ. Because of this metamorphism and deformation, many of the geological contacts show evidence of shearing and displacement due to the competency contrast between the major rock types. In addition many of the rocks have undergone varying intensities of hydrothermal alteration, mainly carbonatization and silicification, in part related to the gold mineralization, making the correlation of the rock types difficult across the property.

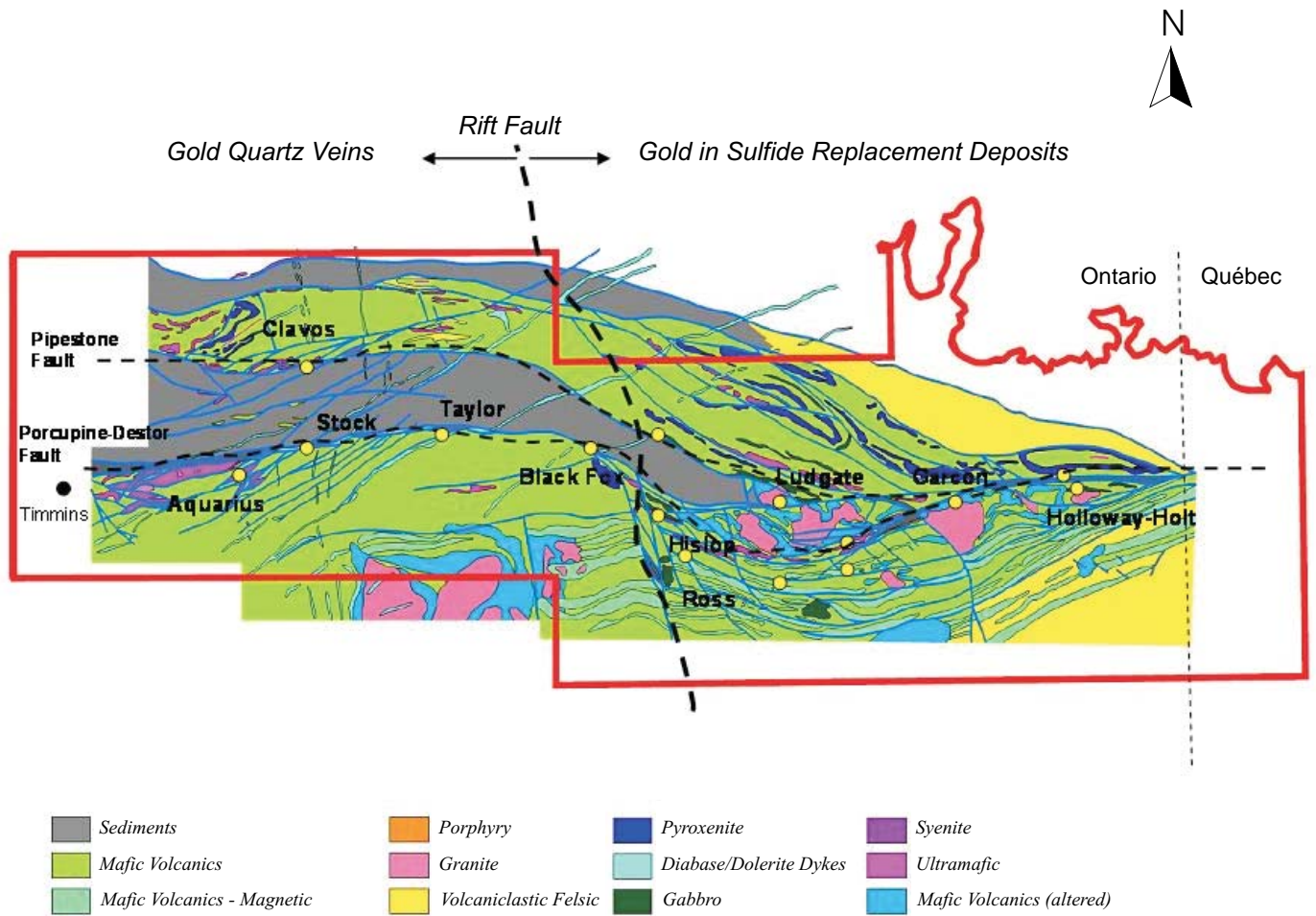


Figure 7-1

**St Andrew Goldfields Ltd.**

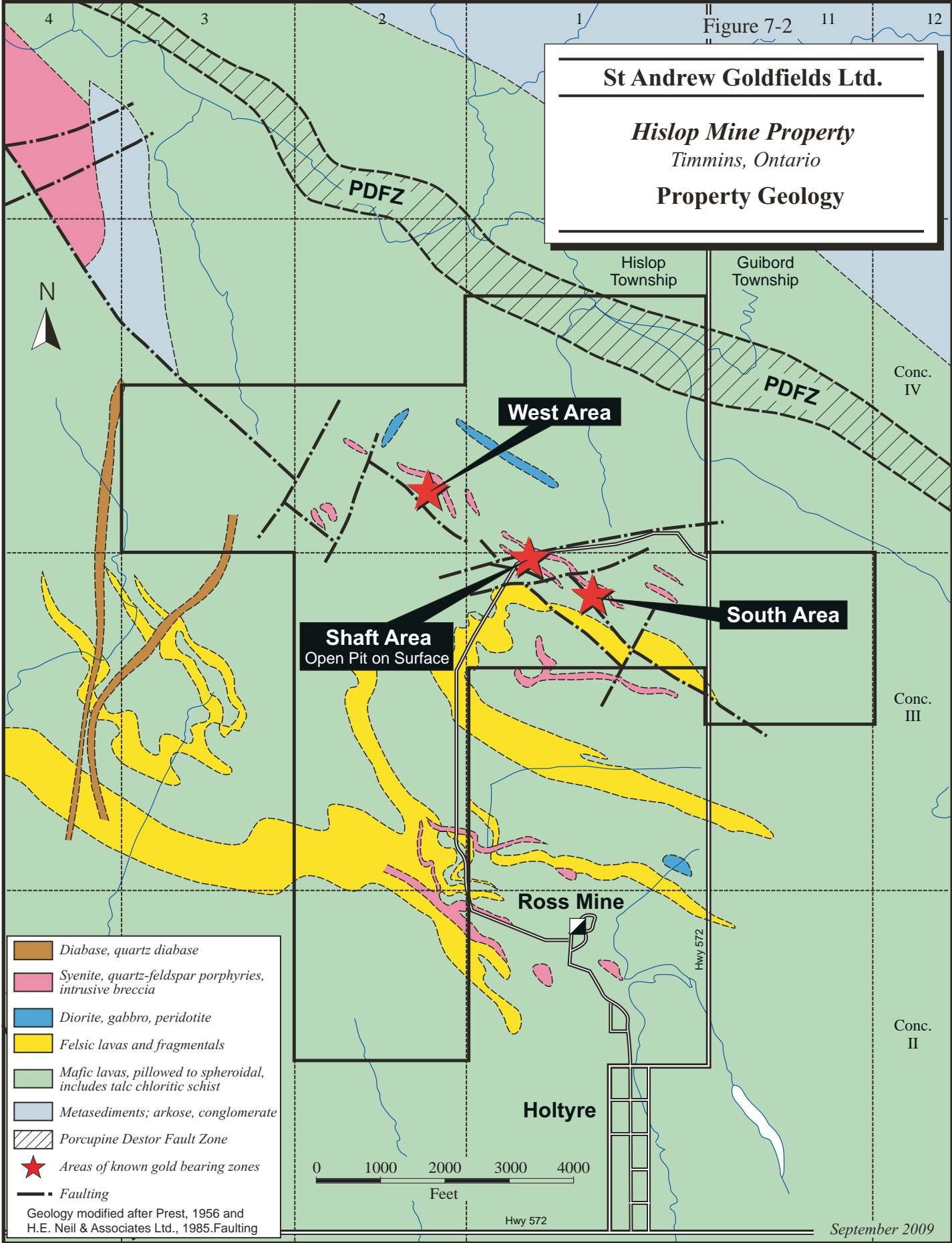
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*Hislop Mine Property*  
Timmins, Ontario

**Regional Geology**

Figure 7-2 11 12

**St Andrew Goldfields Ltd.**  
**Hislop Mine Property**  
 Timmins, Ontario  
**Property Geology**



- Diabase, quartz diabase
  - Syenite, quartz-feldspar porphyries, intrusive breccia
  - Diorite, gabbro, peridotite
  - Felsic lavas and fragmentals
  - Mafic lavas, pillowed to spheroidal, includes talc chloritic schist
  - Metasediments; arkose, conglomerate
  - Porcupine Destor Fault Zone
  - Areas of known gold bearing zones
  - Faulting
- Geology modified after Prest, 1956 and H.E. Neil & Associates Ltd., 1985. Faulting

0 1000 2000 3000 4000  
 Feet

Hwy 572

September 2009

## PROPERTY GEOLOGY

### GENERAL

Several mineralized zones occur on the Hislop property. The mineralized zones occur along a strike length of approximately 1,200 m, following the fault contact between mafic flows to the north and ultramafic rocks to the south (Figure 7-3). Gold is associated with the margins of feldspar porphyritic syenite dikes that have intruded the mafic and ultramafic rocks. The dikes are generally conformable to the contact between the mafic and ultramafic rocks striking west to northwest and dipping steeply to the north.

The mineralized areas have been called from west to east, the West Zone, Shaft Zone and the South Area.

### WEST ZONE

The West Zone sits directly on a major fault that strikes at approximately azimuth 122° (east-southeast) and dips steeply north or vertically. The fault is represented by a thick zone of talc-chlorite schist at least 70 m to 300 m thick. Fabric in the talc schist is closely spaced on a millimetre scale and most of the original fabric dips have been destroyed. The fabric is dominantly oriented with an azimuth of 122° and is nearly vertical. Rare zones in the talc chlorite show spinifex texture and whole rock high chrome contents (>2,000 ppm), which support the assumption that these rocks were komatiitic in composition. The talc schist forms the south wall of the current pit and extends approximately halfway across the pit in the west end, and almost entirely across the pit at the east end.

To the south of the talc-chlorite schist, there is a zone of mafic volcanic rocks. Mafic volcanic rocks to the south of the talc-schist have a weak magnetic signature, with open fold axes apparent from magnetic surveys. Fold axes are roughly parallel to the fault zone. Amplitudes of folds are approximately 800 m. Fabric is poorly developed. These southern mafic rocks are only mapped in core.



CODE	DESCRIPTION	CODE	DESCRIPTION
AAO	albite altered rock	G00	sediment - undivided
AFE	chlorite altered rock	SSA	arkose
AHO	chlorite altered rock	SSO	greywacke
AHM	hematite altered rock	OTF	folded iron formation
ACO	carbonate altered rock	VFO	felsic volcanic, rhyolite, rhyodacite
AQH	silica chlorite altered rock	VIO	intermediate volcanic, dacite
AQC	silica carbonate altered rock	VIP	intermediate volcanic, pillowed
AQO	silica altered rock	VIT	subvolcanic intermediate volcanic
AQD	altered rock - undivided	VIX	intermediate volcanic breccia
AFO	fochite, carbonate altered rock	VOB	biotite gabbro
ACG	green carbonate altered rock	VOD	gabbrin
ASO	dominantly sulphide rock	VMA	mafic volcanic - amygdaloidal
HCL	overburden, undivided	VMM	mafic volcanic - massive
HPO	overburden, undivided	VMO	mafic volcanic - basalt, andesite
FD	felsic dyke	VMP	mafic volcanic - pillowed
IFD	felsic intrusive - undivided	VMR	mafic volcanic - high Fe basalt
ID	intermediate dyke	VMT	mafic volcanic - tuffaceous
IO	intermediate intrusive	VNV	mafic volcanic - variolitic
MD	mafic dyke	VMX	mafic breccia
MO	mafic intrusive	VUC	ultramafic volcanic - talcose
IP2	quartz feldspar porphyry	VUK	ultramafic volcanic - kumalite
IPF	feldspar porphyry	VUM	massive ultramafic
IPD	felsic porphyry intrusive	VUO	ultramafic volcanic
IRO	quartz porphyry	VUT	ultramafic tuff
IRC	pegmatite	ZBO	tehronic breccia
ISO	syenite intrusive	ZCO	catadestite
ISP	porphyritic syenite	ZFD	fault zone
VDO	diolite	ZGO	gneiss
UO	ultramafic intrusive	ZSO	schist - undivided
LD0	dabase dyke	ZFO	tsuff
LLB	biotite lemporphyre	ZST	felsic chlorite schist
QUO	quartz	AKO	potassic altered rock
ZONE	zone	VMF	mafic volcanic - magnetitic
LLO	lemporphyre	QBK	quartz vein breccia
OCO	carbonate vein		
OVC	quartz carbonate vein		
OVO	quartz vein		
SCO	conglomerate		
SIA	argillite		
SIC	carbonaceous graphitic argillite		
SIO	fine grained sediment - undivided		
SIC	graphitic shale		



Figure 7-3

**St Andrew Goldfields Ltd.**

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*Hislop Mine Property*  
Timmins, Ontario

**Zone Geology**

To the north of the talc-chlorite schist is another group of mafic volcanic rocks. These rocks have a high magnetic signature and tight folding. The amplitudes of folds in this package of mafic rocks are on the order of 200 m. The fold axes in these rocks appear to be oriented at an azimuth of approximately 160°. These mafic rocks show what appear to be variolitic textures in some areas. There are medium-grained gabbroic flows/intrusive rocks in this sequence.

Sandwiched between the northern mafic flows and the talc schist is a coarse-grained feldspar porphyritic intrusive rock. The rock is composed of 40% to 70% pink to grey five millimetre to 20 mm feldspar phenocrysts, sitting in a variably altered, aphanitic groundmass. This rock has been designated syenite, coarse quartz-feldspar porphyry, and even granite by earlier workers. Since the relatively unaltered phenocrysts of this intrusive appear to be potassium feldspar, it is reasonable to call this rock a coarse-grained syenite. The syenite extends the length of the pit, is steeply north dipping, and reaches horizontal widths of 15 m to 50 m. The syenite appears to intrude the northern mafic sequence.

Minor lamprophyre dikes intrude all rock masses and can be seen to cut mineralized material at the north contact zone.

## **SHAFT ZONE**

The mineralization located in the vicinity of the New Kelore Shaft and the Goldpost Decline is called the Shaft Zone. The Shaft Zone is in turn composed of four separate zones: the South and 5-East zones on the south contact of the syenite, and the North and Decline zones on the north contact of the syenite. The near-surface portions of this mineralization have been drilled and reinterpreted by SAS and are the focus of the resource estimates.

The Shaft Zone is located between surface and 150 m depth and varies in width from 2.5 m to 17 m. The average width is 5.5 m. The zone strikes at 120° and dips 85° to the north. Metallurgical recovery from Shaft Zone ore exceeded 90% from production of 102,545 tonnes averaging 6.10 g/t Au. Gold occurs in the edges of a carbonate breccia



that separates the south contact of the syenite from the ultramafic rocks to the south. The gold either occurs as free gold or with wispy disseminated pyrite.

The 5-East Zone is similar to the Shaft Zone but is located 150 m to 230 m to the east of the shaft. Production from the 5-East Zone was 15,450 tonnes of ore averaging 4.70 g/t Au.

The North and Decline zones are located on the north side of the syenite, and both zones exhibit purple to cream albite-pyrite-hematite alteration in the mafic rocks. The North Zone extends from near surface to at least 130 m below surface, is approximately 80 m in strike length, and reaches widths of up to 10 m. The North Zone extends from five metres north of the shaft to 80 m east of the shaft. The North Zone production between 1990 and 1994 was 51,200 tonnes at 5.48 g/t Au.

The Decline Zone is a small zone located approximately 30 m northeast of the shaft from 100 m to 130 m from surface. Production from the North Zone was 9,100 tonnes at 3.50 g/t. Au.

## **SOUTH AREA**

The South Area is composed of the Marsh Zones (east, west, and central) and the South Area (not to be confused with the South Zone of the Shaft Area). The Marsh Zones have a strike length of 100 m and extend from surface to 130 m depth. The average width is approximately three metres. The zone is open at depth. The Marsh Zones are 200 m south-southeast of the shaft at the south side of the syenite contact. The Marsh Zones are separated from each other by dextral faults. During the 1993 and 1994 period, production from the Marsh Zones was 21,818 tonnes of ore grading 5.69 g/t Au.

Similarly, the South Zone is 400 m south-southeast of the shaft along the mafic-ultramafic contact and occurs along the south side of the syenite. The average width of the South Area is approximately 4.5 m. In 1993 to 1994, the South Area saw development at the 60 m and 90 m levels from the shaft to the South Area on the two levels. Some 14,000 tonnes of development muck was sent to the mill at an average

grade of 4.22 g/t Au. Metallurgical recovery was 80%. The near-surface portions of this mineralization have been drilled and reinterpreted by SAS and are the focus of the resource estimates.



## 8 DEPOSIT TYPES

The Hislop deposit is felsic intrusive related and located in a broad deformation zone within the DPFZ. Numerous gold deposits occur in the vicinity of the DPFZ and related structures, such as the Pipestone Fault. These include the major mines of the Timmins camp (Dome, Hollinger, McIntyre, and Pamour). A number of gold deposits have been discovered in more recent years, including the Holt-McDermott Mine, Holloway Mine, Owl Creek Mine, Bell Creek Mine, Hoyle Pond Mine, Aquarius Mine, Maude Lake Deposit, Glimmer (Black Fox) Mine, Stroud Deposit, Fenn-Gib Deposit, Ludgate Deposit, Jonpol Mine, and a number of other prospects.

Some of the DPFZ gold deposits extend from surface to over 1,000 m below surface, and some are blind deposits, in that they do not reach bedrock surface. The top of the Holloway deposit, for example, is over 300 m below surface.

The following description of potential gold deposit types on the SAS Timmins area claims is from Reid (2003). Deposit types and exploration models can generally be characterized as one of three main types, although they tend to merge with each other at times. The deposit types may have more to do with the different host rocks than a genetic difference. Proximity to the main break(s), associated splays, presence of hydrothermal alteration, Timiskaming sediments or high level porphyries are common to all. The three main types are as follows:

- **Green Carbonate Hosted:** Nighthawk Lake, Aquarius, Stock, West Porphyry, and Glimmer all fall into this classification. Gold is generally present as free gold in quartz veins or with disseminated sulphides associated with small intrusive rocks or albitic alteration in completely carbonate altered ultramafic flows. Carbonate alteration is up to 200 m wide and can be traced for thousands of metres discontinuously on strike. The gold is often in cross-cutting or conformable features. Timiskaming conglomerates are often proximal or part of the package.
- **Felsic Intrusive Related:** Ronnoco, Pominex, parts of the Taylor Shaft and Hislop are examples of this type. The intrusive rocks vary from feldspar (plus or minus quartz) porphyry in the west to more syenitic in the east. Mineralization is characterized by both thin crosscutting to stockwork quartz veins to disseminated sulphides to more contact skarns or hornfels, depending

on host rock. Carbonate alteration is still quite common in the host rocks with silica, sericite, and hematite more within the intrusive.

- **Mafic Volcanic Hosted:** Holloway, Holt, and Hoyle Pond are examples. Ubiquitous carbonate alteration with iron carbonate, albite, silicification and sericite more proximal to ore. Quartz veins and/or albitized variolitic mafic flows are often central to the zone and often found near the mafic/ultramafic contact.

## 9 MINERALIZATION

Two settings and styles of gold mineralization are present at the Hislop property. Gold occurs on the south side of the syenite dike complex in the carbonate and carbonate breccia rock which separates the syenite dikes from the less altered ultramafic volcanic rocks to the south side. Gold also occurs on the north contact of the syenite dike complex in quartz veinlets, stockworks, and fractures in hematite altered and syenitized mafic metavolcanic rocks.

The rocks and the associated mineralization strike northwest-southeast and dip steeply north to vertically. Later cross faults trend both east-west and northeast to southwest, and are steeply to vertically dipping. Gold mineralization occurs along the length of the syenite dike complex, but the gold-bearing zones tend to be wider and higher in grade where associated with these cross faults. The minor off-setting along these faults causes the mineralized zones to have an irregular appearance in detail.

Previous reports have described several zones of gold mineralization occurring in three main mineralized areas along a strike length of 1,100 m, centred on the original shaft. These include the Shaft Area, the South Area, and the West Area. SAS has explored and reinterpreted the near surface area of the Shaft Area.

Diamond drill information was used to create a three-dimensional picture for each of the lithological units and each of the mineralized zones in the Shaft Area. The mineralized units were included in an overall envelope (Zone 1-01) and were named 3-01, 3-02, 3-03, and 3-04. The zones were followed over a strike length of 1.4 km. Figure 9-1 is a plan view of the mineralized zones and Figure 9-2 is a schematic cross-section showing the geology and extent of mineralized zones 3-01 and 3-02.

9-2

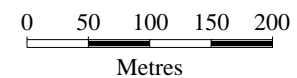
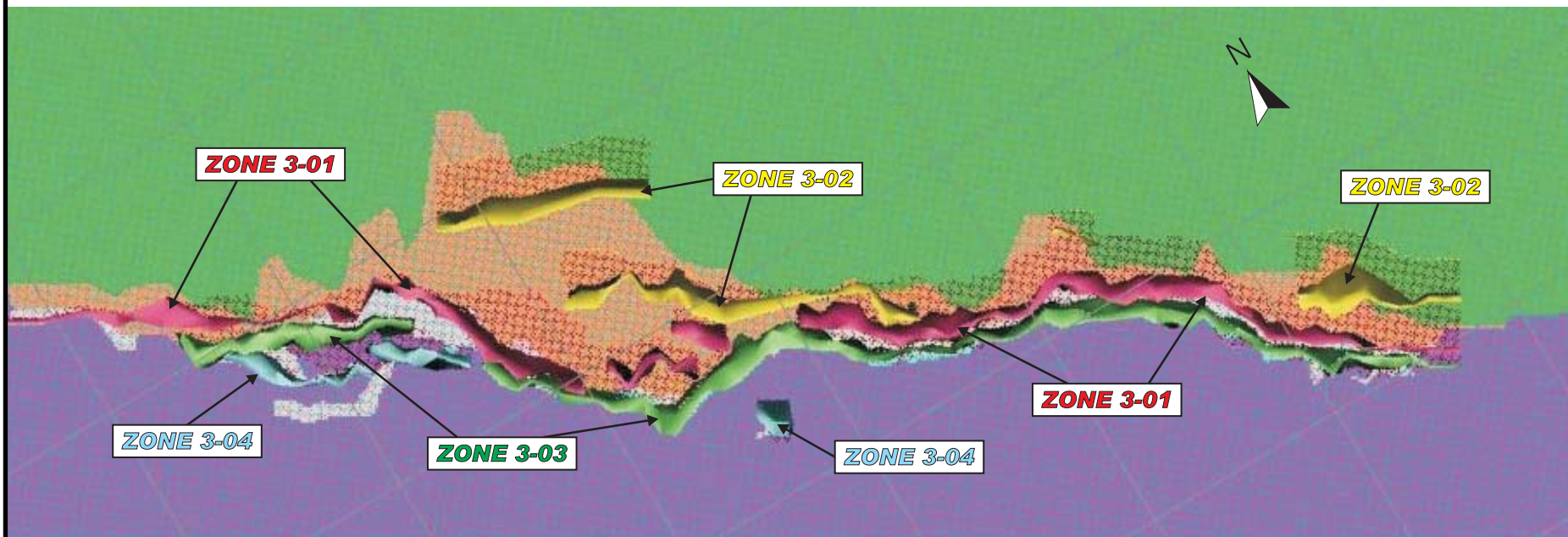


Figure 9-1

**St Andrew Goldfields Ltd.**

*Hislop Mine Property*  
*Timmins, Ontario*

**Lithology Ore Plan**



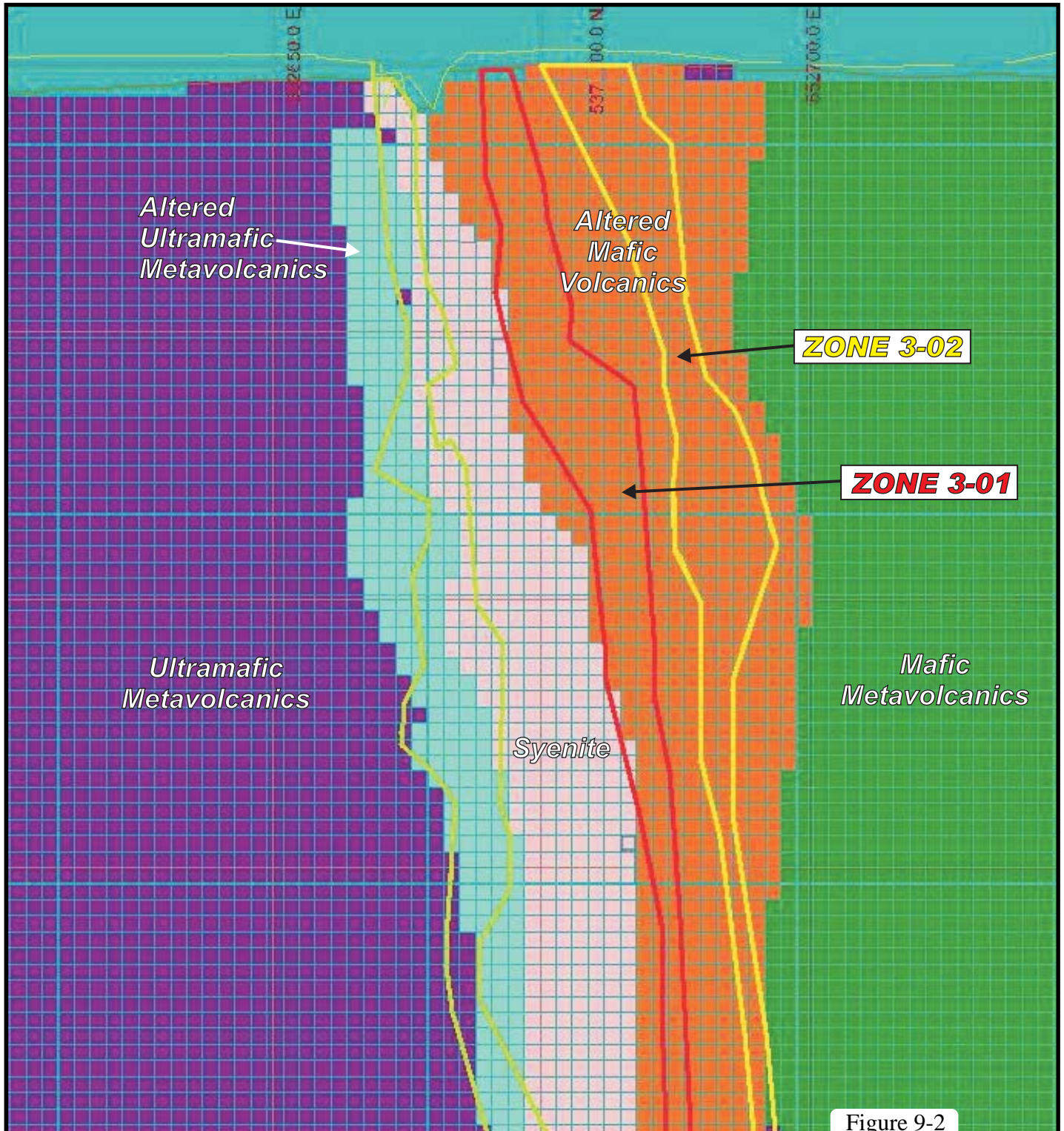
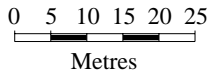


Figure 9-2

**St Andrew Goldfields Ltd.**

*Hislop Mine Property*  
Timmins, Ontario

**Typical Section**  
(Looking West)



Zone 1-01 is the low grade envelope in which all the defined mineralized zones are located. The actual limits are not based on firm lithologic or mineral contacts. Rather, this zone was defined to allow the inclusion of isolated gold values between and adjacent to the higher grade mineralized zones.

Zone 3-01 is hosted within the altered (hematized) mafic metavolcanic. This mineralization typically has the south contact defined by the syenite/altered mafic metavolcanic contact. The unit is fairly continuous along its 1.4 km strike length.

Zone 3-02 is hosted within the altered (hematized) mafic metavolcanic. The unit occurs 20 m to 100 m north of zone 3-01 and has a semi-continuous strike length of 980 m.

Zone 3-03 is hosted within the altered ultramafic metavolcanic. The altered host rock includes the “Green Quartz Carbonate” unit which hosted the higher grade material mined underground. The altered host rock occurs between the ultramafic unit and syenite intrusive. The degree of alteration varies along the 1.2 km strike length.

Zone 3-04 is hosted within the ultramafic metavolcanic and is associated with minor syenitic intrusions or inclusions. This zone is discontinuous, with three modelled portions over a total strike length of 580 m.

## 10 EXPLORATION

The historical mineral resource estimate was published in 1994. Between 1999 and 2005, SAS mined 226,600 tonnes grading 3.14 g/t Au from the open pit. Between 1996 and 2009, a total of 235 holes were drilled from surface with a total length of 32,679 m.

The 2006–2007 exploration program of surface diamond drilling and sampling of older core drilled within the hematized mafic volcanics identified the potential of an open pit mine. The 2009 exploration program was designed to increase the information density by infill drilling to reduce the drill spacing in the pit area to 15 m by 15 m to a depth of 100 m. As part of the above programs, approximately 7,000 samples were taken from previously drilled core to provide continuous assay information across the mineralized zones.

# 11 DRILLING

The current Hislop database is composed of surface and underground diamond drill holes. The drill hole information has been compiled from a variety of sources and has been standardized to:

- UTM NAD 83 metric co-ordinates
- All assays reported as g/t Au
- Common lithological legend

Table 11-1 summarizes the existing database.

**TABLE 11-1 DRILL HOLES IN THE DATABASE AS OF MAY 2009**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Series	Number	Metres	Company	Year
<b>Surface</b>				
VIN	10	923	Hollinger Mines Ltd	1939
HO	54	9,670	Kelwren / Hiskerr	1945 – 1947
HK	12	2,322	Hollinger Mines Ltd	1973 -1980
GK	304	29,612	Goldpost	1986 – 1993
GV	13	2,188	Goldpost	1987
H96/7	13	8,412	St Andrew Goldfields	1996 - 1997
H99	59	4,514	St Andrew Goldfields	1999
HP06/07	57	7,828	St Andrew Goldfields	2006 - 2007
HD09	84	8,844	St Andrew Goldfields	2009
HG09	2	200	St Andrew Goldfields	2009
HS09	4	1,200	St Andrew Goldfields	2009
<b>Total</b>	<b>612</b>	<b>75,713</b>		
<b>Underground</b>				
K	238	8,628	Hollinger	1974
HE	44	2,784	Goldpost	1988 - 1989
BBG	132	2,000	Goldpost	1990 - 1993
BG	160	3,381	Goldpost	1990 - 1993
HE	32	2,024	St Andrew Goldfields	1993 - 1994
<b>Total</b>	<b>606</b>	<b>18,817</b>		
<b>Grand Total</b>	<b>1,218</b>	<b>94,530</b>		

Until 2007, the surface and underground drill collar locations were surveyed by theodolite and distomat to the local imperial mine grid systems. Some of the older holes are located by cut grid co-ordinates, which have since been converted to imperial mine grid coordinates. Starting in 2007, the drill co-ordinates were converted to the UTM



NAD 83 systems. Many of the older holes were mathematically converted and the available collars were resurveyed using Topcon GR3 GPS Survey Instrument. Recent drill hole locations and completed drill hole collar locations have been surveyed using the Topcon GR3 GPS Survey Instrument.

Drilling since 2006 has had the downhole surveys done by FLEXIT, a downhole survey instrument that measures deviation and records it digitally. Downhole deviation in historic holes was determined by Tropari instruments and/or by acid tests which give a dip measurement only.

The drill logs provide sufficient description and recognition of the lithology, alteration, geological structures, and mineralization to correlate mineralization between holes and sections. Several underground holes in densely drilled areas were not able to be included within the mineralized zones without compromising the mineral shape. In these few cases, the hole was given the mineral interval for compositing. The assay data from these holes were included in the grade interpolation.

The Mineral Resource estimate is based entirely on diamond drilling data. The diamond drill spacing is approximately 15 m by 15 m.

Drilling in 2009 was completed by Orbit Garant Drilling Inc.

Split and whole core from recent drill programs is stored at the SAS exploration site.

After reviewing the core and drill logs from several drill holes, Scott Wilson RPA is of the opinion that logging and recording procedures are comparable to industry standards.

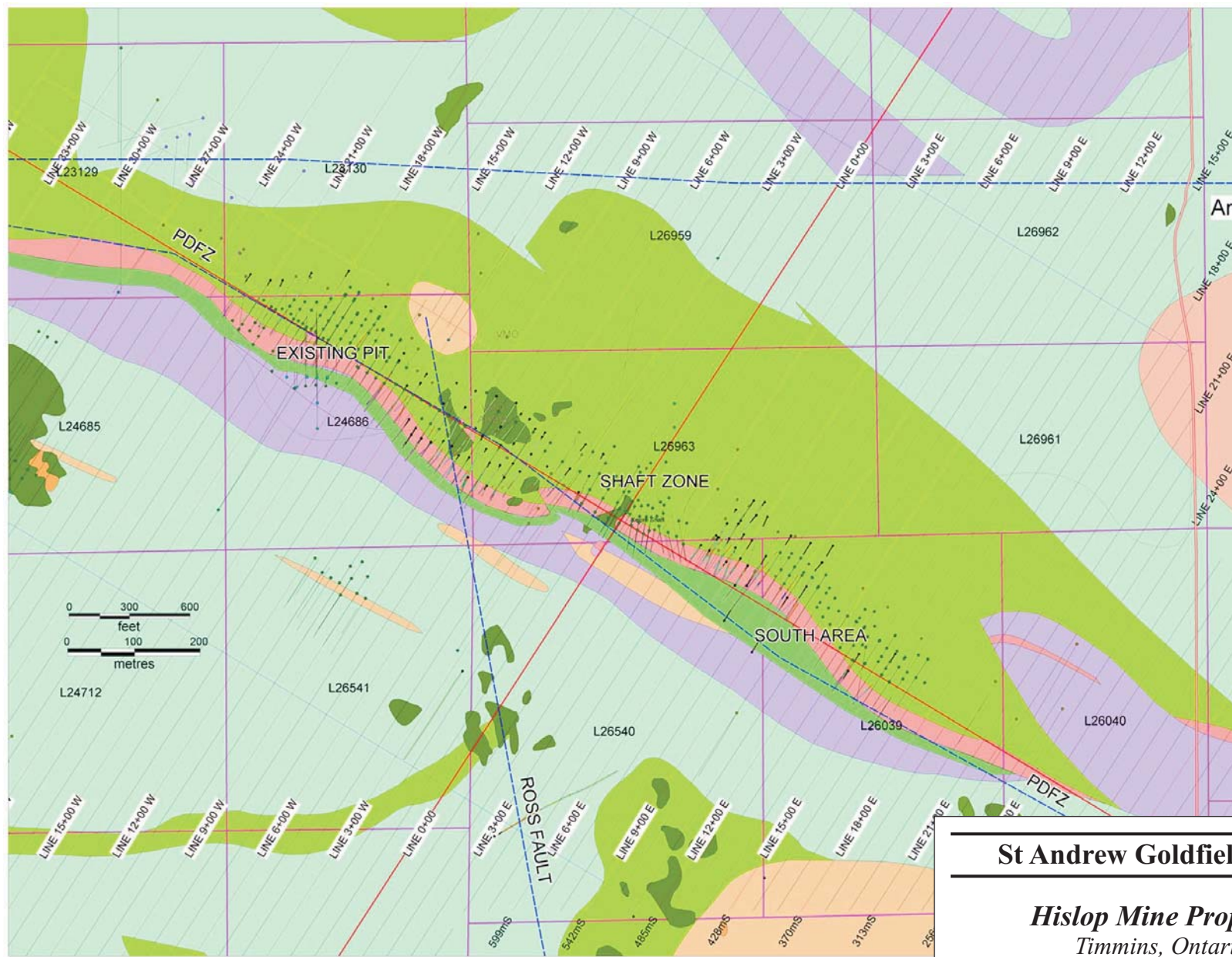


Figure 11-1

**St Andrew Goldfields Ltd.**

*Hislop Mine Property*  
Timmins, Ontario

**Surface Diamond Drill Traces**

## 12 SAMPLING METHOD AND APPROACH

Drill programs conducted prior to 1986 have a lack of report information regarding sampling, laboratory, and quality assurance/quality control (QA/QC) procedures. A total of 34 surface holes (HO and HK series) and 238 underground holes (K series) were used in the modelling. Data from these holes have been transferred from a Borsurv database to a central database. In general, selective samples were taken at 1.52 m intervals with a minimum interval of 0.6 m.

Drill core information for drilling completed between 1986 and 1999 is diverse. The information for the GK series of surface holes (267 holes used in modelling) includes original drill logs and Swastika Laboratories Ltd. (Swastika) assay certificates. Information for the underground drilling series BBG (132 holes used in modelling) includes original drill logs, location survey sheets, and in-house assay sheets. For the underground drilling series BG (160 holes used in modelling), available information includes original drill logs, location survey sheets, and Swastika assay certificates.

From 1999 onwards, diamond drill core for gold analyses was normally sampled at one metre intervals or less as dictated by geological contacts. In many cases, the entire hole is cut in half and sampled. At a minimum, the known mineralized or altered zones were sampled and assayed. Samples start or end at changes in lithology or alteration assemblage. In weakly altered or unaltered rock, sample lengths are often extended to 1.5 m, but sampling is continued through the entire alteration package. There is usually at least one sample in barren rock at the beginning and end of a sampled interval. The core is split using core splitters and electric rock saws, with one half forming the sample and the other half left in the box. When drilling began in 2006, a formal QA/QC program was implemented.

Surface core drilled since 1986 is stored in well-organized racks at the Aquarius Core Storage Facility, with sample intervals well marked with depths and sample numbers for easy review.

In Scott Wilson RPA's opinion, there are no factors regarding the sample method or approach that affect the resource estimation.

## 13 SAMPLE PREPARATION, ANALYSES AND SECURITY

During the 2009 drill program, drill core was picked up at the Hislop site by exploration personnel and transported to the exploration office near the Aquarius Project. At the exploration office, the core was logged, samples marked, tagged, split, placed in a plastic bag with a duplicate tag, and sealed. Groups of samples were sealed in white “rice” bags and delivered daily by SAS personnel to Swastika.

### **SAMPLE PREPARATION AND ASSAYING**

Samples submitted to Swastika were dried and crushed to 80% passing a 10 mesh screen. A split of 300 g to 400 g was taken from this material and pulverized so that 90% to 95% of the material passed through a 100 mesh screen. A 30 g sample was then taken for fire assay with an atomic absorption finish. The pulps and rejects of drill core samples are stored at the exploration office.

### **QUALITY ASSURANCE/QUALITY CONTROL**

During the drilling campaign of SAS, a QA/QC program consisting of sample standards and blanks was utilized, which represented approximately 7.5% of the total sample population. Forty samples were re-assayed at an external assay laboratory. Scott Wilson RPA considers the QA/QC sampling to be adequate based on this type of deposit and the known distribution of gold.

The QA/QC program was implemented by SAS to address three different issues: contamination, precision, and accuracy. SAS’s policy was to insert a sample blank and/or a sample standard every 25th sample, which represents approximately 5% of the total sample population. A total of 350 sample standards were submitted for analysis. In addition, a total of 363 sample blanks were inserted into the sample stream.

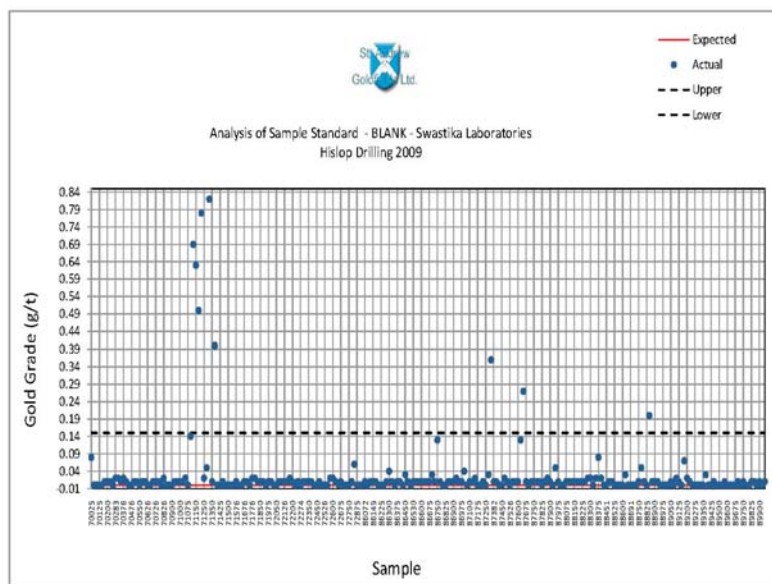
### **BLANK SAMPLES**

Sample blanks are used to detect contamination between samples during sample preparation, to check for drift, and to evaluate the accuracy of the assay. The sample

blanks were prepared by SAS from unmineralized diabase rock in drill core. The majority of the sample blanks inserted into the sample string assayed very near zero, indicating that contamination during sample preparation is minimal. In the odd occasion when significant contamination occurred, re-analyses were completed. The results of the sample blanks are illustrated in Figure 13-1.

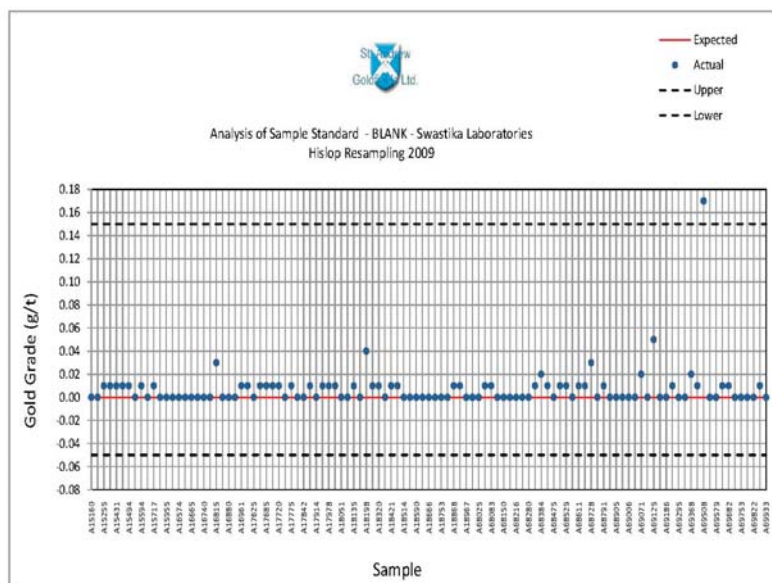
**STANDARD SAMPLES**

Three commercial sample standards, representing typical grade ranges were used. The samples were supplied by Ore Research and Exploration Pty. Ltd., Australia. Figures 13-2, 13-3, and 13-4 illustrate the distribution of assays for the three commercial sample standards: 10Pb, 15Pa, and 18Pb respectively. The solid line represents the expected grade and the dash lines are the performance gates. (The performance gates are calculated from the standard deviation of the pooled individual analyses generated from the certification program with outliers removed.) Generally, assaying of the sample standards produced consistent results, indicating the quality of the sample standard and of the assay methodology, thus confirming the accuracy of the original assay. Typically, any sample batch containing an assay at least two standard deviations greater than the assay mean would be sent for re-assay. There were only two occasions when re-assay was required.



Description of material	CRM Code	Unit Size	Metal Concentration	95% Confidence Interval	95% Tolerance Interval	LOW	HIGH
Gold ore (basalt, ~75u)	OREAS 15Pa	60g	Au 1.02 ppm	± 0.01 ppm	± 0.03 ppm	0.94	1.10
Gold ore (meta-basalt, ~30u)	OREAS 10Pb	60g	Au 7.15 ppm	± 0.11 ppm	± 0.07 ppm	6.57	7.73
Gold ore (basalt, ~75u)	OREAS 18Pb	60g	Au 3.63 ppm	± 0.03 ppm	± 0.02 ppm	3.42	3.84

For both chip and pulp gold standards tolerance intervals are based on a 50g analytical subsample weight; for chip standards 50g subsamples have been taken from 250g scoop splits following a three minute pulverisation.



Description of material	CRM Code	Unit Size	Metal Concentration	95% Confidence Interval	95% Tolerance Interval	LOW	HIGH
Gold ore (basalt, ~75u)	OREAS 15Pa	60g	Au 1.02 ppm	± 0.01 ppm	± 0.03 ppm	0.94	1.10
Gold ore (meta-basalt, ~30u)	OREAS 10Pb	60g	Au 7.15 ppm	± 0.11 ppm	± 0.07 ppm	6.57	7.73
Gold ore (basalt, ~75u)	OREAS 18Pb	60g	Au 3.63 ppm	± 0.03 ppm	± 0.02 ppm	3.42	3.84

For both chip and pulp gold standards tolerance intervals are based on a 50g analytical subsample weight; for chip standards 50g subsamples have been taken from 250g scoop splits following a three minute pulverisation.

Figure 13-1

**St Andrew Goldfields Ltd.**

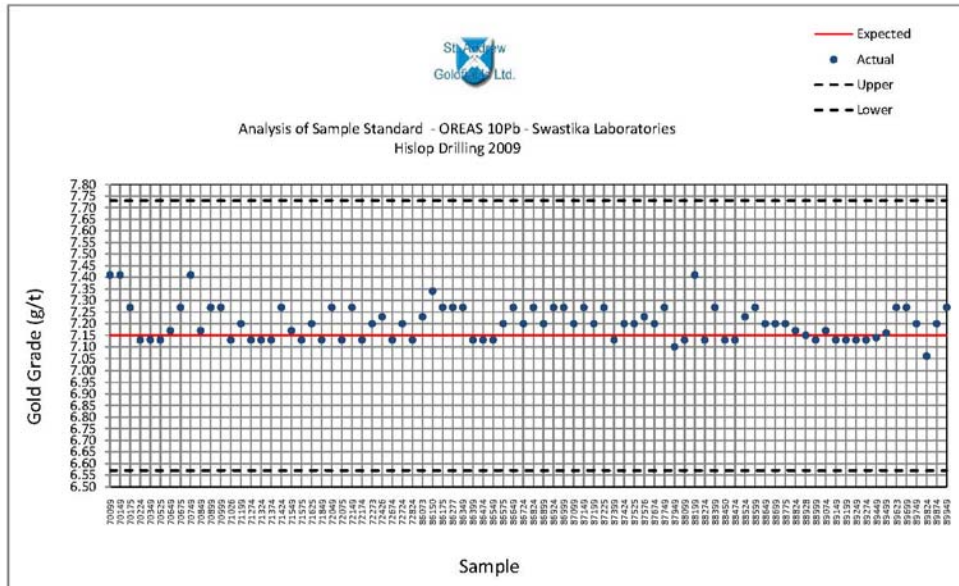
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*Hislop Mine Property*  
Timmins, Ontario

**Analysis of Sample Blanks**  
**2009 Drilling**

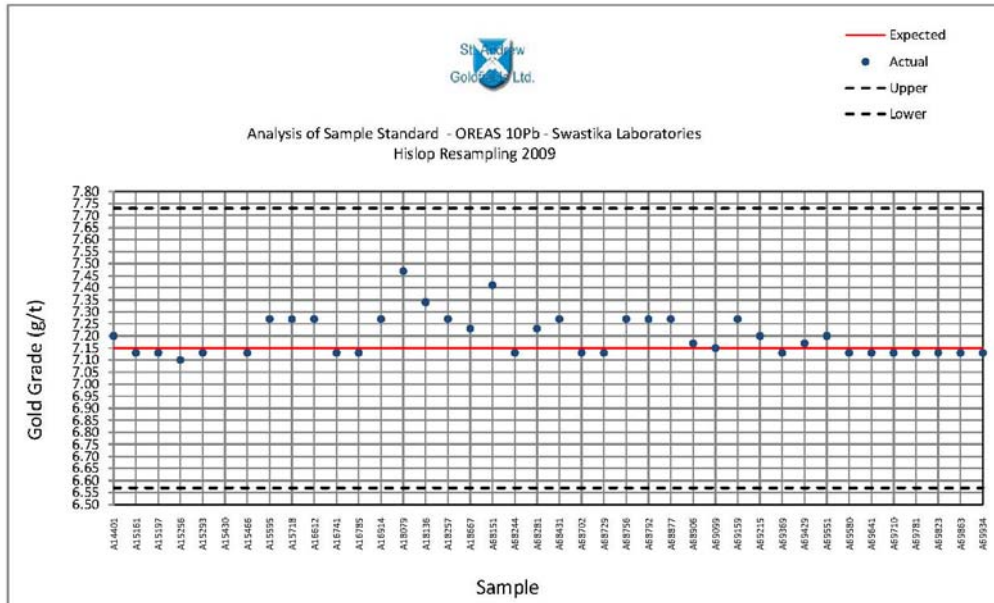


FIGURE 13-2 STANDARD SAMPLE OREAS 10B



Description of material	CRM Code	Unit Size	Metal Concentration	95% Confidence Interval	95% Tolerance Interval <sup>1</sup>	LOW	HIGH
Gold ore (basalt - 75µ)	OREAS 15Pa	60g	Au 1.02 ppm	± 0.01 ppm	± 0.03 ppm	0.94	1.10
Gold ore (meta-basalt - 30µ)	OREAS 10Pb	60g	Au 7.15 ppm	± 0.11 ppm	± 0.07 ppm	6.57	7.73
Gold ore (basalt - 75µ)	OREAS 18Pb	60g	Au 3.63 ppm	± 0.03 ppm	± 0.02 ppm	3.42	3.84

<sup>1</sup> For both chip and pulp gold standards tolerance intervals are based on a 50g analytical subsample weight; for chip standards 50g subsamples have been taken from 250g scoop splits following a three minute pulverisation.



Description of material	CRM Code	Unit Size	Metal Concentration	95% Confidence Interval	95% Tolerance Interval <sup>1</sup>	LOW	HIGH
Gold ore (basalt - 75µ)	OREAS 15Pa	60g	Au 1.02 ppm	± 0.01 ppm	± 0.03 ppm	0.94	1.10
Gold ore (meta-basalt - 30µ)	OREAS 10Pb	60g	Au 7.15 ppm	± 0.11 ppm	± 0.07 ppm	6.57	7.73
Gold ore (basalt - 75µ)	OREAS 18Pb	60g	Au 3.63 ppm	± 0.03 ppm	± 0.02 ppm	3.42	3.84

<sup>1</sup> For both chip and pulp gold standards tolerance intervals are based on a 50g analytical subsample weight; for chip standards 50g subsamples have been taken from 250g scoop splits following a three minute pulverisation.



FIGURE 13-3 STANDARD SAMPLES 15PA

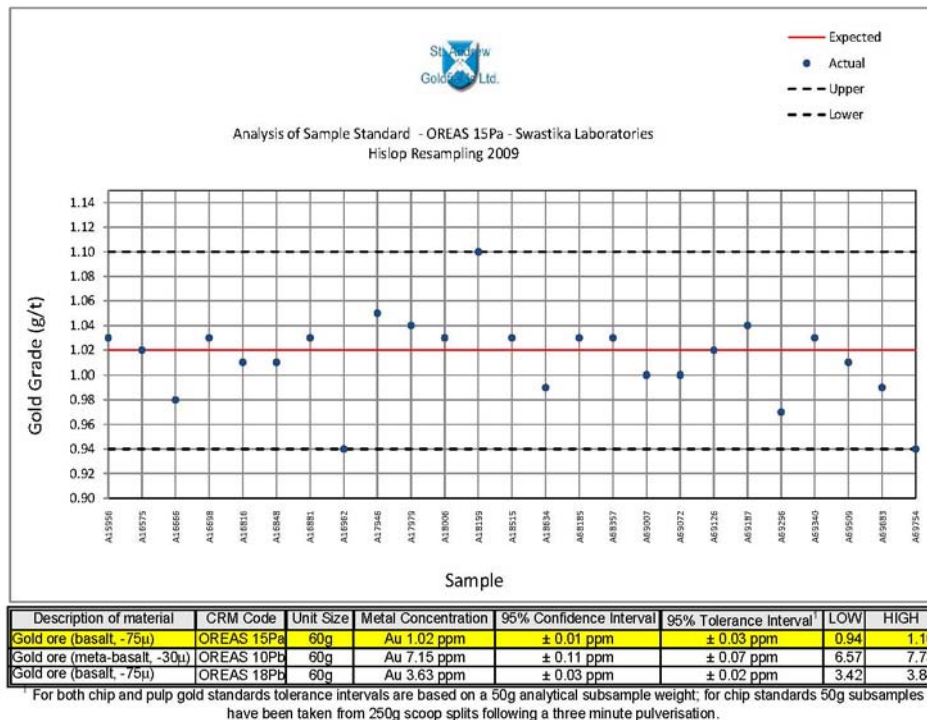
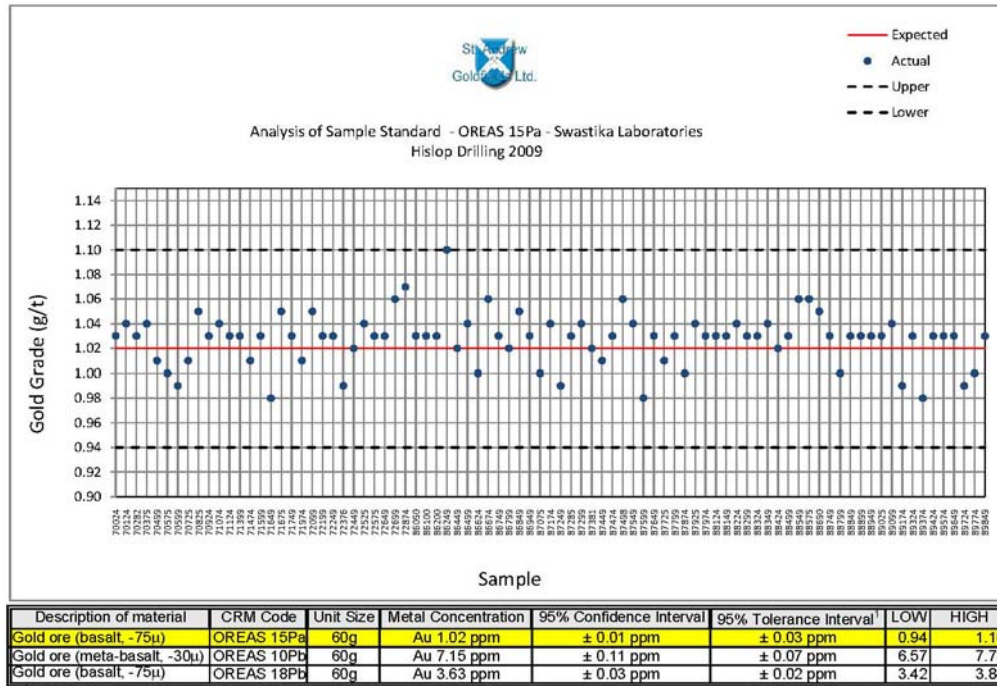
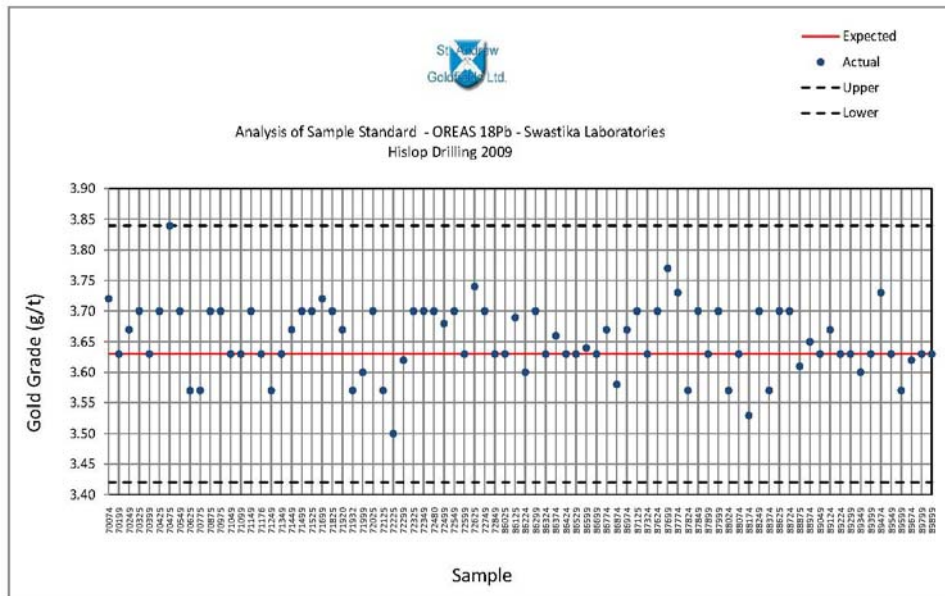
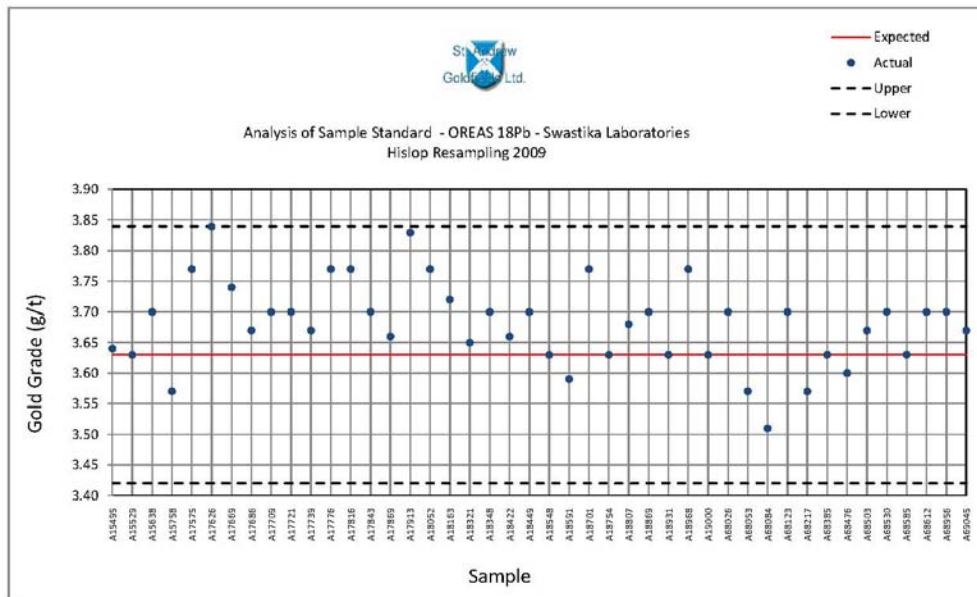


FIGURE 13-4 STANDARD SAMPLE 18PB



Description of material	CRM Code	Unit Size	Metal Concentration	95% Confidence Interval	95% Tolerance Interval <sup>1</sup>	LOW	HIGH
Gold ore (basalt, -75µ)	OREAS 15Pa	60g	Au 1.02 ppm	± 0.01 ppm	± 0.03 ppm	0.94	1.10
Gold ore (meta-basalt, -30µ)	OREAS 10Pb	60g	Au 7.15 ppm	± 0.11 ppm	± 0.07 ppm	6.57	7.73
Gold ore (basalt, -75µ)	OREAS 18Pb	60g	Au 3.63 ppm	± 0.03 ppm	± 0.02 ppm	3.42	3.84

<sup>1</sup> For both chip and pulp gold standards tolerance intervals are based on a 50g analytical subsample weight; for chip standards 50g subsamples have been taken from 250g scoop splits following a three minute pulverisation.

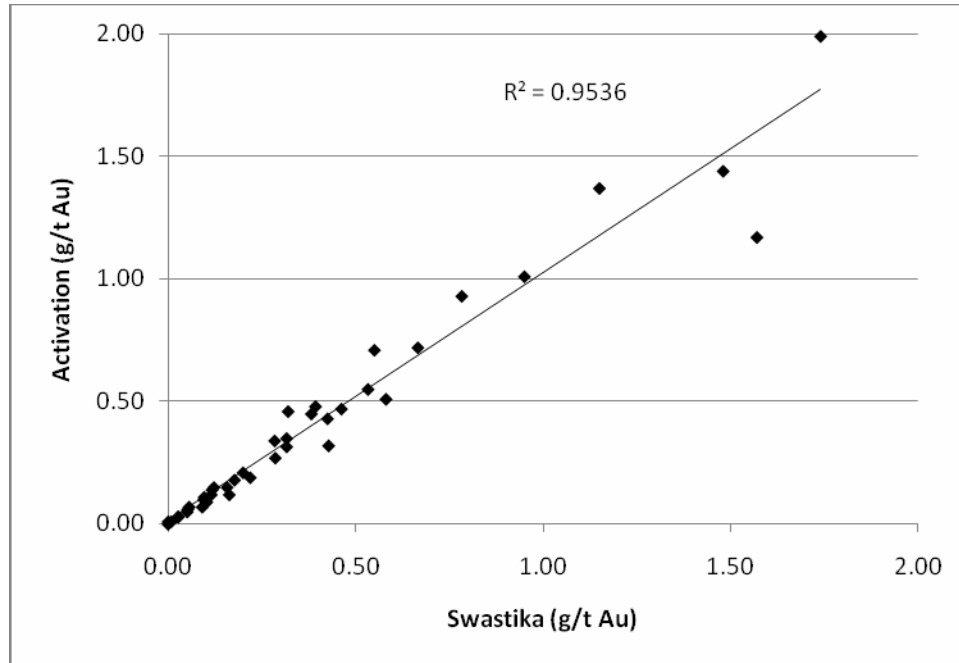


Description of material	CRM Code	Unit Size	Metal Concentration	95% Confidence Interval	95% Tolerance Interval <sup>1</sup>	LOW	HIGH
Gold ore (basalt, -75µ)	OREAS 15Pa	60g	Au 1.02 ppm	± 0.01 ppm	± 0.03 ppm	0.94	1.10
Gold ore (meta-basalt, -30µ)	OREAS 10Pb	60g	Au 7.15 ppm	± 0.11 ppm	± 0.07 ppm	6.57	7.73
Gold ore (basalt, -75µ)	OREAS 18Pb	60g	Au 3.63 ppm	± 0.03 ppm	± 0.02 ppm	3.42	3.84

<sup>1</sup> For both chip and pulp gold standards tolerance intervals are based on a 50g analytical subsample weight; for chip standards 50g subsamples have been taken from 250g scoop splits following a three minute pulverisation.

**INTERLABORATORY CHECK ASSAYS**

SAS submitted 40 rejects from the 2009 drilling program for re-assay at Activation Laboratories Ltd., Timmins, Ontario. Re-assaying rejects checks both the sample preparation and analysis procedures. The results are illustrated in Figure 13-5. The results compare well with an  $R^2$  value of 0.95.

**FIGURE 13-5 INTERLABORATORY CHECK ASSAYS**

## 14 DATA VERIFICATION

The Hislop Project has a history of gold production. Consequently, Scott Wilson RPA did not carry out any independent sampling of drill core or working faces to confirm the presence of gold values.

Several twin holes were drilled that compare well with adjacent holes. The assay comparison is shown in Table 14-1.

**TABLE 14-1 ASSAY COMPARISON OF TWINNED DRILL HOLES**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Hole ID	Zone	Core Length (m)	Grade (g/t Au)	Hole ID	Core Length (m)	Grade (g/t Au)
GK-008	3_01	7.62	0.84	HD09-001	7.5	0.74
GK-008	3_03	42.22 <sup>4</sup>	2.33	HD09-001	25.5 <sup>4</sup>	2.57
HD09-026	3_01	28.4	2.95	HD09-026MA	28.5	1.36
HD09-026	3_03	10.5	1.84	HD09-026MA <sup>2</sup>	9.5	3.21

Notes:

1. Twinned drill holes are less than four metres apart.
2. HD09-026MA hit u/g workings; mineralization continues 10 m.
3. HD09-026 Zone 3-03 calculated for first 10.5 m; mineralization continues for 10 m.
4. Length difference due to coring angle GK-008 at -57° and HD09\_01 at -46°.

The most recent drilling program consisted of 80 holes, totalling approximately 9,000 m of drilling. The drilling results from this program east and west of the shaft compare well with previous drilling with respect to lithologic and mineral contacts. Previous drilling results east of the shaft were based on systematic surface and underground drilling programs with a drill spacing averaging 15 m. The area west of the shaft is much more geologically complex and had not been systematically drilled in the past.

Scott Wilson RPA checked the assay entries on a number of diamond drill logs against the original assay certificates and found no transcription errors.

## 15 ADJACENT PROPERTIES

SAS's Timmins properties are centrally located in the Abitibi Greenstone Belt in the Superior Province of the Canadian Shield. The Abitibi Belt is the largest Archean belt of its kind in the world, and one of the most prolific in terms of mining production. Gold deposits are commonly localized within and proximal to the DPFZ along its 200 km length from west of Timmins through the Matheson area and eastward beyond the Destor area of Québec. These include the major mines of the Timmins camp (Dome, Hollinger, McIntyre, Pamour, and Hoyle Pond). A number of gold deposits have been discovered in more recent years, including the Holt-McDermott Mine, Holloway Mine, Owl Creek Mine, Bell Creek Mine, Aquarius Mine, Stock, Taylor, Clavos, Hislop, Glimmer Mine, Fenn-Gib Deposit, Southwest Zone, Jonpol Mine, and a number of other prospects. Six of these discoveries, the Stock, Taylor, Clavos, Hislop, Holloway-Holt, and Aquarius mines and deposits are held by SAS and are currently under care and maintenance.

Apollo Gold Corporation's 100% owned Black Fox Mine is located six kilometres west of the Hislop deposit. In April 2008, Apollo Gold Corporation filed a NI 43-101 Technical Report and announced total Probable Reserves of 1,330,000 ounces of gold at the Black Fox Mine.

The Black Fox Project development commenced in October 2008 with the removal of the glacial till material that overlay the open pit. Also, in October 2008, the expansion of the Black Fox mill began with the objective of increasing its throughput rate from approximately 1,100 tpd to 2,000 tpd. Mining of ore at Black Fox commenced in March 2009 and the mill expansion was commissioned in April 2009, with the first gold bar poured in May 2009. Production in the open pit in 2009 is estimated to total 2,983,000 tonnes, including 374,000 tonnes of ore.

The Ross Mine is located approximately two kilometres south of the Hislop deposit. This mine was opened in 1934 and closed in 1988. Past mineral reserve estimates were 628,155 tons averaging 5.88 g/ton Au (1934) and 518,000 tons averaging 4.64 g/ton Au (1975).

The Porcupine Mine includes the Dome open pit mine and mill, the Hoyle Pond mine, Pamour open pit mine, and a large land package in the Timmins camp, which has historically produced in excess of 60 million ounces of gold. Additional properties in the package include the Dome underground, Nighthawk Lake, Bell Creek, Hollinger, McIntyre, and Hallnor, in addition to Preston and Paymaster, which are adjacent to Dome. In 2008, Porcupine gold production amounted to 291,000 ounces. With existing mineral reserves, the Porcupine Mine has an expected mine life through 2016.

## 16 MINERAL PROCESSING AND METALLURGICAL TESTING

The metallurgical performance of the Hislop mineralization has been demonstrated in previous processing and through recent laboratory testing.

### PRIOR MILLING OF HISLOP ORE

Scott Wilson RPA (2006) reported that the Hislop Mine was in production in the years 1990 to 1994 and again in 1999 to 2000. All of the production was trucked to the Stock Mill. The Stock Mill was a cyanide leach plant with a carbon-in-pulp (CIP) circuit which was used by SAS to process ores from a number of sources. The Stock Mill had a capacity of 1,300 tpd, depending on the hardness of ore. Recoveries in the first years of production (1990-1991) averaged 92.2%. Mine production recommenced in 1993-1994 and different sources of ore were developed. Mill recoveries dropped from 92% early in 1994 to 83% in the latter part of 1994. During 1999 and 2000, a total of 185,091 tonnes grading 3.4 g/t Au were processed by the Stock Mill from the Hislop West Zone Pit. Average metallurgical recovery for the processing of this material was 77.7%. Studies completed by GBM Minerals Engineering Consultants (GBM, 2006) attributed some of the poorer recoveries to the presence of arsenopyrite.

SAS notes that through 1999 and 2000, while the Hislop ore was being processed at the Stock Mill, there was also milling of custom ore from the Black Fox Project together with ore from the Stock Mine. Therefore, depending on how the gold content was reconciled between the different mines, there is some uncertainty as to the metallurgical results for any one ore type. With regard to arsenopyrite, SAS notes that no arsenopyrite was identified in either of the two petrographic studies on Hislop ore. Scott Wilson RPA notes that the previous feed from the Hislop Project was from an open pit on the west end of the deposit, whereas resources in this report are at the east end of the deposit.

## REVIEW OF HISLOP METALLURGICAL PERFORMANCE BY GBM

GBM was engaged by SAS to assess the metallurgical performance of the Hislop ore in the Stock Mill and to make recommendations for future processing of Hislop ores. A summary of the 1999 and 2000 processing of Hislop ore is shown in Table 16-1.

**TABLE 16-1 HISTORICAL HISLOP PRODUCTION (STOCK MILL)**  
St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada

Year	Head Grade (g/t)	Tails Grade (g/t)	Gold Recovery (%)	Grind (% -38 $\mu$ )	Hislop Tonnes	Hislop %
<b>1999</b>						
Aug	4.09	0.89	78.0	71.5	8,879	32.0
Sep	4.59	1.42	68.3	75.7	7,451	30.1
Oct	3.03	0.97	67.4	75.4	11,731	54.0
Nov	3.13	1.05	65.9	75.3	8,437	40.8
Dec	3.79	0.79	78.7	77.9	7,983	35.7
<b>Average</b>	<b>3.73</b>	<b>1.02</b>	<b>71.7</b>	<b>75.2</b>	<b>8,896</b>	<b>38.5</b>
<b>2000</b>						
Jan	3.63	1.09	69.6	74.9	11,257	53.3
Feb	2.89	0.46	82.8	76.5	11,078	51.1
Mar	3.37	0.66	79.7	73.2	15,502	62.0
Apr	3.32	0.85	73.5	75.4	13,402	53.8
May	2.83	0.50	81.2	75.4	15,955	69.2
Jun	3.21	0.39	86.4	76.3	10,835	44.8
Jul	3.20	1.08	65.1	73.5	12,093	49.1
Aug	2.64	0.36	84.7	71.2	9,414	40.9
Sep	3.18	0.41	86.2	73.8	14,054	49.2
Oct	2.65	0.51	79.6	75.1	11,156	46.1
Nov	5.10	0.64	86.4	73.5	15,864	70.5
<b>Average</b>	<b>3.28</b>	<b>0.63</b>	<b>79.58</b>	<b>74.44</b>	<b>12,783</b>	<b>53.6</b>
<b>1999 &amp; 2000</b>	<b>3.38</b>	<b>0.73</b>	<b>77.68</b>	<b>74.61</b>	<b>11,568</b>	<b>50.0</b>

Laboratory test work has shown that the Hislop ore can be grind-sensitive. At a grind size P80 of 128 micron, average gold recoveries of 58% could be expected. This is a reduction of 15% compared to the optimal recovery.



Analysis of the Hislop production records from 1999 and 2000 showed that gold recoveries varied substantially, ranging from 65% to 86%. The lower recoveries (less than 70%) could not completely be explained by coarse grind size or low head grade. Incomplete leaching was unlikely as the leach profiles in the circuit were flat and indicated thorough leaching. The tailings grades corresponding to recoveries less than 70% averaged 1.12 g/t Au, while the tailings grades corresponding to the recoveries greater than 70%, averaged 0.6 g/t Au.

Test work and studies carried out in the past have attempted to account for the generally poor recoveries obtained from the Hislop ore by investigating the possible effects of graphitic carbon, tellurides, and arsenopyrite. No correlation was found between carbon or tellurium content, and tailings grade. However, a strong linear correlation was found between arsenic content and tailings grade. These findings were backed up by routine analyses on plant tailings samples which indicated that practically all of the Hislop ore contains arsenopyrite to a greater or lesser extent and showed tailings grade correlating strongly with arsenic content. Therefore, the generally poor and occasionally very poor recoveries obtained from Hislop ore were largely explained by GBM to be due to the presence of arsenopyrite.

GBM suggested that improved recovery might be attained through:

1. Oxygen addition to leaching,
2. The application of a high efficiency shear reactor,
3. A gravity recovery step.

## **2009 METALLURGICAL TESTING**

Samples were collected from specially selected 2009 drill core to provide representative material for metallurgical testing. Selected samples were sent to Process Research Associates Ltd. (PRA) in Vancouver, British Columbia, for cyanide leach testing.

The following list provides the sample information:

Crushed Mineralized Samples

17901 Hematized volcanic  
17902 Mafic  
17903 Syenite  
17904 Altered ultramafic  
17905 Syenite  
17906 Altered ultramafic  
17907 Ultramafic

Core Samples

17908 Hematized Volcanic  
17909 Syenite  
17910 Altered ultramafic

The three core samples were tested to determine the head assay and the Bond ball mill work index.

The crushed ore samples were subjected to carbon-in-leach (CIL) cyanidation with pre-aeration tests (4 hours pre-aeration, 20 hours leaching, 0.3 g/L NaCN, 15 g carbon, pH 11, 50% solids). The tailings were analyzed to determine the size assay analysis and acid base accounting (ABA). Sample 17901 was tested alone; samples 17903 and 17905 were combined for testing, so were samples 17904 and 17906. Samples 17907 and 17902 were not tested and were held in reserve. Subsequent to the initial leach results with 20 hours of leaching, three samples were leached for a further 10 hours to simulate the retention time in the Holt circuit at a rate of 2,500 tpd. Finally, three samples were ground finer and subjected to cyanidation. The results of the testing are summarized in the following subsections.

## **LEACH TEST RESULTS**

### ***INITIAL LEACH TESTS***

The results of the initial cyanide leach tests are shown in Table 16-2. The results for each sample were consistent and the ultramafic material returned a higher residue grade than the other materials. The samples were ground to approximately 80% minus 43 µ. The average recovery for all samples was 79.9%.

**TABLE 16-2 INITIAL CYANIDE LEACH RESULTS**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Test No	Sample ID	P80 size (µm)	NaCN (g/L)	Carbon (g/L)	Measured Head Au (g/t)	Calculated Head Au (g/t)	Recovery Au (%)	Residue Au (g/t)	Consumption (kg/t)	
									NaCN	Lime
CIL-1	17901	43	0.3	16	2.51	2.02	82.7	0.35	0.41	1.59
CIL-2	17901	43	0.3	16	2.51	1.90	81.0	0.36	0.40	1.54
CIL-3	17903+17905	44	0.3	15	2.14	2.22	83.5	0.37	0.33	1.35
CIL-4	17903+17905	43	0.3	16	2.14	2.14	82.3	0.38	0.34	1.39
CIL-5	17904+17906	43	0.3	17	2.09	2.16	74.5	0.55	0.39	1.71
CIL-6	17904+17906	43	0.3	17	2.09	2.22	75.5	0.55	0.40	0.86

**LONGER LEACH PERIOD**

To assess the impact of additional residence time in the leach circuit, the residue from three of the initial samples was leached for an additional ten hours. The results of that test work are summarized in Table 16-3.

**TABLE 16-3 LONGER PERIOD CYANIDE LEACH RESULTS**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Test No	Sample ID	NaCN (g/L)	Carbon (g/L)	Measured Head Au (g/t)	Calculated Head Au (g/t)	Recovery Au (%)	Residue Au (g/t)	Consumption (kg/t)		
								NaCN	Lime	
CIL-1R	CIL-1 Residue	17901	0.3	15	0.35	0.34	6.5	0.32	0.31	0.69
CIL-3R	CIL-3 Residue	17903+17905	0.3	15	0.37	0.36	10.3	0.32	0.27	0.64
CIL-5R	CIL-5 Residue	17904+17906	0.3	15	0.55	0.42	4.7	0.40	0.31	0.67

The longer leach period generated increase in recovery of 0.5% to 6.9% as shown in Table 16-4.

**TABLE 16-4 ADDITIONAL RECOVERY IN LONGER LEACH**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario**

Sample	Calculated Head (g/t)	Residue at 20 hr (g/t)	Residue at 30 hr (g/t)	Recovery at 20 Hr	Recovery at 30 Hr	Additional Recovery
CI-1	2.02	0.41	0.32	79.7%	84.2%	4.5%
CI-3	2.22	0.33	0.32	85.1%	85.6%	0.5%
CI-5	2.16	0.55	0.4	74.5%	81.5%	6.9%

***FINER GRIND TO LEACHING***

To assess the impact of finer grinding, three samples were prepared and ground to approximately 89% minus 44  $\mu$  and leached for 30 hours. The results are shown in Table 16-5. The finer grinding and longer leach returned higher recovery with increases of 3% to 4.5% in the recovery.

**TABLE 16-5 FINER GRIND LEACH RESULTS**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Test No	Sample ID	Passing 44µm (%)	Pre-aeration (hrs)	Retention (hrs)	NaCN (g/L)	Carbon (g/L)	Measured Head	Calculated Head	Recovery Au (%)	Residue Au (g/t)	Consumption (kg/t)	
							Au (g/t)	Au (g/t)			NaCN	Lime
CIL-1	17901	80	4	20	0.30	16	2.51	2.02	82.7	0.35	0.41	1.59
CIL-2		80	4	20	0.30	16	2.51	1.90	81.0	0.36	0.40	1.54
<b>Ave.</b>								<b>1.96</b>	<b>81.9</b>	<b>0.36</b>	<b>0.41</b>	<b>1.57</b>
<b>CIL-7</b>		<b>89</b>	<b>6</b>	<b>30</b>	<b>0.35</b>	<b>24</b>	<b>2.51</b>	<b>1.99</b>	<b>84.9</b>	<b>0.30</b>	<b>0.62</b>	<b>1.47</b>
CIL-3	17903 +17905	80	4	20	0.30	15	2.14	2.22	83.5	0.37	0.33	1.35
CIL-4		80	4	20	0.30	16	2.14	2.14	82.3	0.38	0.34	1.39
<b>Ave.</b>								<b>2.18</b>	<b>82.9</b>	<b>0.38</b>	<b>0.33</b>	<b>1.37</b>
<b>CIL-8</b>		<b>89</b>	<b>6</b>	<b>30</b>	<b>0.35</b>	<b>22</b>	<b>2.51</b>	<b>2.13</b>	<b>85.9</b>	<b>0.30</b>	<b>0.56</b>	<b>1.44</b>
CIL-5	17904 +17906	80	4	20	0.30	17	2.09	2.16	74.5	0.55	0.39	1.71
CIL-6		80	4	20	0.30	17	2.09	2.22	75.5	0.55	0.40	0.86
<b>Ave.</b>								<b>2.19</b>	<b>75.0</b>	<b>0.55</b>	<b>0.39</b>	<b>1.29</b>
<b>CIL-9</b>		<b>89</b>	<b>6</b>	<b>30</b>	<b>0.35</b>	<b>24</b>	<b>2.14</b>	<b>2.09</b>	<b>79.5</b>	<b>0.43</b>	<b>0.61</b>	<b>1.50</b>

**DIAGNOSTIC LEACH**

Diagnostic leach tests were performed on the residues from the longer leach period leach tests. Samples CIL 1R and CIL 3R were combined for one diagnostic leach and CIL 5R residue was the second sample. The results are shown in Table 16-6.

**TABLE 16-6 DIAGNOSTIC LEACH TEST RESULTS**  
**St Andrew Goldfields Ltd - Hislop Mine Property**

SUMMARY	CIL 1R + CIL3R residue		CIL 5 R residue	
	Distribution Au mg	Distribution Au %	Distribution Au mg	Distribution Au %
Stage 1 - Primarily associated with carbonaceous minerals	0.002	2.3	0.002	1.6
Stage 2 - Primarily associated with calcite/dolomite/pyrrhotite minerals	0.019	19.8	0.022	15.5
Stage 3 - Primarily associated with base metals sulphides (Labile sulphides)	0.016	16.8	.0016	11.3
Stage 4 - Primarily associated with majority sulphides (pyrite, arsenopyrite, and marcasite)	0.051	53.4	0.093	66.7
Residue - Insoluble or associated with preg-robbing and other refractory minerals	0.007	7.7	.007	4.9
<b>Total</b>	<b>0.095</b>	<b>100.0</b>	<b>0.139</b>	<b>100.0</b>

The diagnostic leach test results indicated that the refractory residual gold was mainly associated with majority sulphides such as pyrite, arsenopyrite, and marcasite, while partially associated with labile sulphides as well as carbonates.

**ACID BASE ACCOUNTING**

ABA tests were completed on the leached residues as shown in Table 16-7. All of the samples returned NP:AP ratios in excess of 4, indicating that the residues are not considered to be potential acid generating material.

**TABLE 16-7 ACID BASE ACCOUNTING RESULTS**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Item	Sample ID	S <sup>(T)</sup> %	S <sub>(SO4)</sub> %	Paste pH	Acid Potential	Neutralization Potential (NP)		
						Actual	Ratio	Net
1	CIL-1 Residue	1.75	<0.01	8.6	54.7	269.4	4.93	215
2	CIL-2 Residue	1.74	<0.01	8.7	54.4	264.2	4.86	210
3	CIL-3 Residue	1.60	<0.01	8.9	50.0	502.9	10.06	453
4	CIL-4 Residue	1.59	<0.01	8.9	49.7	509.7	10.26	460
5	CIL-5 Residue	3.03	<0.01	8.5	94.7	426.2	4.50	332
6	CIL-6 Residue	2.80	<0.01	8.5	87.5	433.3	4.95	346
7	DUP CIL-1 Residue	1.75	<0.01		54.7	270.5	4.95	216
8	DUP CIL-6 Residue	2.80	<0.01		87.5	435.5	4.98	348
ST	Standard (51.6)					50.9		

### BOND WORK INDEX RESULTS

The Bond ball mill work index was estimated by GBM to be 21 kWh/t based on the 1999 and 2000 processing at the Stock Mill. PRA (Inspectorate America Corporation, 2009) reported the Bond ball mill work index results as:

- 22.1 kWh/t for the Altered Ultramafic ore
- 15.8 kWh/t for the Syenite ore
- 20.4 kWh/t for the Hematized Volcanic ore

For comparison Holt and Holloway ores have Bond ball mill work indices of 19 kWh/tonne and 21 kWh/tonne, respectively.

# 17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

## SUMMARY

Scott Wilson RPA reviewed the Mineral Resource estimates of the Hislop Project as reported by SAS effective June 2009. Scott Wilson RPA carried out a number of checks to verify the Mineral Resource estimate, including a review of the database, parameters and assumptions, methodology, and classification. With few exceptions that were considered immaterial, Scott Wilson RPA found that the data was accurately recorded and the Mineral Resources were estimated using industry accepted standards and CIM definitions.

As part of this review, Scott Wilson RPA carried out an independent estimate of the mineral resources.

The Mineral Resources effective June 2009 are summarized in Table 17-1.



**TABLE 17-1 MINERAL RESOURCE SUMMARY - JUNE 2009**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Classification	Zone	Tonnes (000)	Grade (g/t Au)	Ounces Gold (000)
<b>Indicated</b>				
	1-01	1,681	1.42	77
	3-01	1,793	2.16	125
	3-02	516	1.93	32
	3-03	2,358	2.21	168
	3-04	313	2.28	23
<b>Total Indicated</b>		<b>6,661</b>	<b>1.98</b>	<b>425</b>
<b>Inferred</b>				
	1-01	927	1.42	42
	3-01	1,446	1.71	80
	3-02	1,126	1.84	67
	3-03	1,427	1.94	89
	3-04	412	2.32	31
<b>Total Inferred</b>		<b>5,338</b>	<b>1.80</b>	<b>309</b>

## Notes:

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources were estimated at a block cut-off grade of 0.94 g/t Au.
3. Mineral Resources are estimated using an average long-term gold price of US\$950 per ounce, and an exchange rate of C\$1.00 = US\$/0.85
4. A minimum mining width of 2.0 m was used.
5. A bulk density of 2.84 t/m<sup>3</sup> was used for all rock types except syenite (2.68 t/m<sup>3</sup>).
6. Totals may not add exactly due to rounding.

The Indicated Mineral Resources as shown in Table 17-1 were evaluated and converted to Probable Mineral Reserves through the application of mining plans, estimates for dilution and extraction, and an economic cut-off grade. For this report, those Mineral Resources at the Project that were amenable to open pit mining have been evaluated and appropriately classified as Mineral Reserves. Only those resources which could be included in a Life of Mine Plan (LOMP) were included as Mineral Reserves. There were no Inferred Resources converted to Mineral Reserves. The Mineral Reserves for the Project are summarized in Table 17-2. Scott Wilson RPA notes that the Mineral Resources stated in Table 17-1 are inclusive of Mineral Reserves.

The Mineral Resources for the Project are all based solely on diamond drill information, and are classified in the Indicated and Inferred categories. The Mineral

Reserves within this report have all been assigned to the Probable category. The reserves are as of September 1, 2009.

**TABLE 17-2 MINERAL RESERVES – SEPTEMBER 2009**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

<b>Category</b>	<b>Tonnes ('000)</b>	<b>Grade (g/t Au)</b>	<b>Contained Ounces</b>
Probable	1,912	2.32	142,000

Notes:

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 1.1 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US\$800 per ounce, and an exchange rate of C\$1.00 = US\$/0.85.
4. The Mineral Reserves are contained within the stated Mineral Resources

## MINERAL RESOURCES

### RESOURCE DATABASE AND VALIDATION

Scott Wilson RPA received the complete Gemcom Project and database for the Hislop Project from SAS. This database comprised 1,218 drill holes with 94,530 m of drilling for an average drill hole length of 77.7 m. The database comprised 47,196 assay records for gold totalling 59,607.5 m of assays for an average interval length of 1.26 m.

For drilling intersecting the resource solids, the database consisted of 1,091 drill holes with 71,042.0 m of drilling for an average drill hole length of 65.1 m. Within the solids, the database comprised 38,221 assay records for gold totalling 47,900.5 m of assays for an average interval length of 1.25 m.

All drill core, survey, geological and assay information used for the resource was verified and approved by SAS geological staff and maintained as a project database. A variety of validation queries and routines were run in Gemcom to help identify data entry errors. The database was found to be in good shape and no significant problems were noted. Scott Wilson RPA also verified a number of data records with original assay certificates and drill logs. No significant discrepancies were identified.

**GEOLOGICAL INTERPRETATION AND 3D SOLIDS**

SAS personnel reinterpreted and created 3D models of the lithology and gold mineralization in order to update the Mineral Resource estimate. In general, the gold mineralization and associated alteration and sulphide mineralization at the Hislop property has sharp boundaries with the surrounding volcanic rocks. The mineralized zones were constrained using the geological boundaries as controls. The geometry of the mineralization is well constrained by the information available from the drilling and underground workings.

The higher grade zone occurs completely within the lower grade mineral envelope. During interpretation, continuity of this zone was preserved by including some areas of lower grade material. The creation of this mineral boundary prevents the mixing of two populations, as well as extending the mineralized zones beyond lithologic/structural contacts during grade interpolation. This procedure minimizes the potential averaging of gold grades across this boundary, and prevents extending mineralized zones across contacts that could otherwise result in an incorrect grade and tonnage for the resource.

The lithology is modelled as five major rock types:

- Ultramafic Metavolcanic
- Altered Ultramafic Metavolcanic (Green Quartz Carbonate)
- Syenite Intrusive
- Altered Mafic Metavolcanics (Hematized)
- Mafic Metavolcanics

The gold mineralization is interpreted as four distinct zones within a low grade envelope. These have been defined as:

- 1-01      Low Grade Envelope
- 3-01      Hosted within the Hematized Metavolcanic adjacent to the north contact of the Syenite intrusive
- 3-02      Hosted within the Hematized Metavolcanic
- 3-03      Hosted within the Altered Ultramafic
- 3-04      Hosted within the Ultramafic

Scott Wilson RPA has reviewed the solids and agrees that the solids accurately represent the mineralized outlines.

Figure 17-1 provides a 3D view of the mineralized solids.

## ASSAY STATISTICS

The assay data from the core drilling programs have been used in the resource estimate. The assay data for gold within the various zones are typically highly skewed to the right (the mean is to the right of the mode) but, once transformed to logarithmic values, approach a normal distribution. The mean gold grade and coefficient of variation within the various mineralized horizons are similar; however, the coefficient of variation is relatively lower than most other gold deposits and is most likely related to the style of mineralization, which is similar to sulphide replacement, and the fine grain size.

Scott Wilson RPA tagged those assays to be included in the resource estimation and generated basic statistics for uncut gold assays on a zone basis as listed in Table 17-3.

**TABLE 17-3 DRILL HOLE GOLD ASSAY STATISTICS (UNCAPPED)**  
St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada

Zone	Number of Assays	Mean g/t	Standard Deviation	Sample Variance	Coefficient of Variation	Minimum g/t	Maximum g/t
1-01	21,282	0.47	1.49	2.2	3.17	0	81.60
3-01	6,437	2.76	25.28	639	9.13	0	1,807.54
3-02	1,190	1.63	4.78	23	2.93	0	105.26
3-03	8,531	2.67	7.55	57	2.83	0	385.03
3-04	781	2.36	7.49	56	3.17	0	185.14

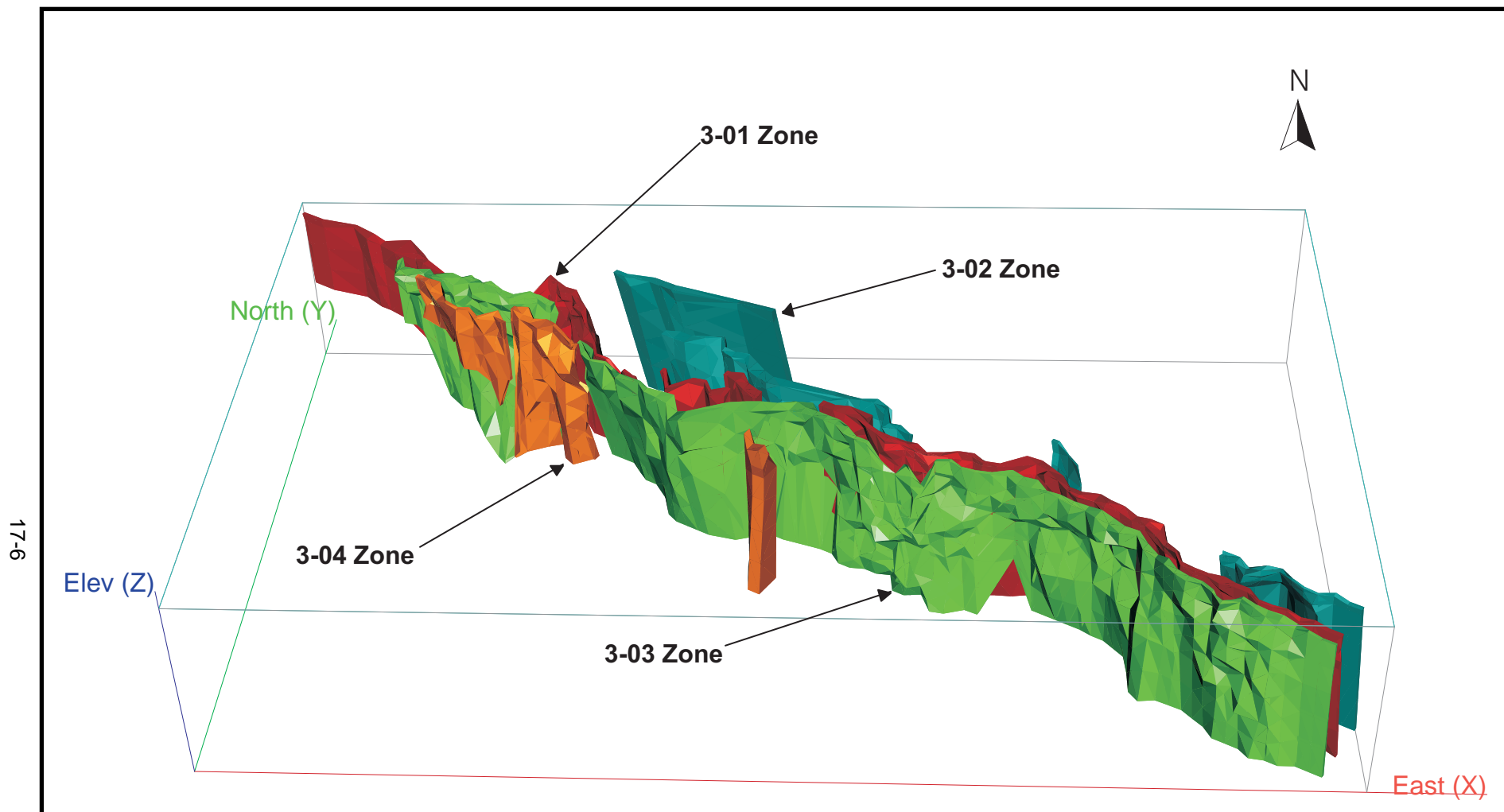


Figure 17-1

**St Andrew Goldfields Ltd.**  
*Hislop Mine Property*  
*Timmins, Ontario*  
**3D View of Mineralized Zones**  
**Looking North**

## DENSITY DATA

In previous work on the Hislop data, a bulk density of 2.82 t/m<sup>3</sup> was used in calculations. This density factor is considered to be appropriate for a sulphide replacement style of deposit within a sequence of mafic volcanic ultramafic rocks. No correlation exists between gold grade and density and, therefore, a bulk density by rock type was considered appropriate for this deposit.

Because of the multiple rock types which host the gold mineralization, confirmation of the rock bulk densities was completed by SAS. A program of density measurements was included in the 2009 diamond drill program. A sample of each typical rock type was taken from selected holes and sent to Swastika for density analyses.

During the SAS drilling campaign, 93 samples were sent to Swastika for density determination (i.e., sample dried and weighed (D) and then immersed in water and weighed (W), density =  $D/(D-W)$ ). Based on the results, the syenite rock is given a density of 2.68 t/m<sup>3</sup> and all other rock types were given a density of 2.84 t/m<sup>3</sup>. Table 17-4 summarizes the results of the density measurements.

**TABLE 17-4 2009 BULK DENSITY MEASUREMENTS**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Rock Type	Number of Samples	Average Density (t/m <sup>3</sup> )
Altered Ultramafic Metavolcanic (Green Quartz Carbonate)	15	2.86
Felsic Syenite Intrusive	23	2.68
Quartz Vein	1	2.85
Mafic Metavolcanic	35	2.83
Ultramafic Metavolcanics	19	2.83

## COMPOSITES

To normalize the assay data, the assay data for each core hole were composited in 1.5 m intervals within the various zones. The 1.5 m interval was chosen considering the assay interval (generally between 1.2 m and 1.52 m), the width of the mineralized zone

(above the expected cut-off grade, the zone is approximately five metres to 20 m wide), and the degree of selectivity (block size of 3 m x 3 m x 3 m) expected during mining.

Since no correlation between grade and density was identified, only sample length was used to weight the grades during compositing. Only assays occurring within the mineralized zones were composited. Each composite was assigned a code based on the solid in which the composite occurred. Less than 10% of the total core sampled did not have a corresponding assay value, primarily due to not being sampled. Composites in the following figures and tables are uncapped. Unsampled areas are ignored. Prior to calculating the block model, the holes where recomposited assuming nil grade for unsampled areas. However, if in the case of historic drilling, the hole passed through the projected mineralized zone(s) and no samples were taken, then these intervals were ignored.

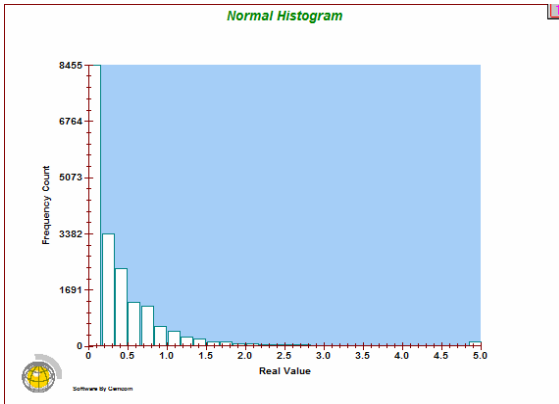
Table 17-5 summarizes the composite statistics generated by Scott Wilson RPA using the composites used in the block model.

**TABLE 17-5 DRILL HOLE COMPOSITE GOLD ASSAY STATISTICS  
(UNCAPPED)  
St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

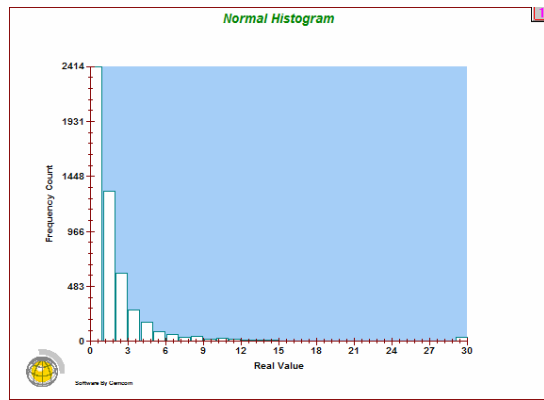
Zone	Number of Assays	Mean g/t	Standard Deviation	Sample Variance	Coefficient of Variation	Minimum g/t	Maximum g/t
1-01	21,817	0.40	1.20	1.4	2.96	0	64.54
3-01	5,260	2.64	24.89	620	9.41	0	1,706.60
3-02	1,109	1.52	4.51	20	2.96	0	96.14
3-03	7,384	2.52	6.20	38	2.44	0	266.33
3-04	771	1.93	4.07	17	2.11	0	58.47

The following grade histograms in Figure 17-2 illustrate graphically the gold distribution within each zone.

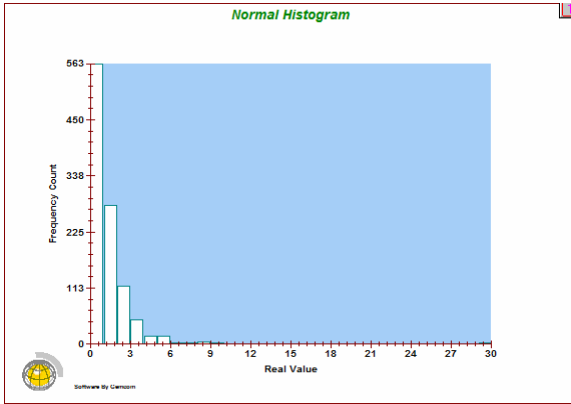
FIGURE 17-2 GRADE HISTOGRAMS



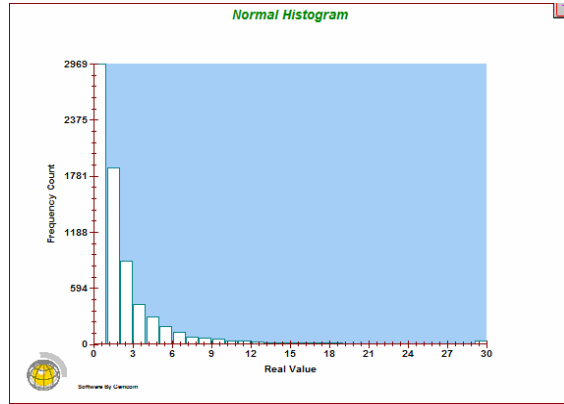
Zone 1-01



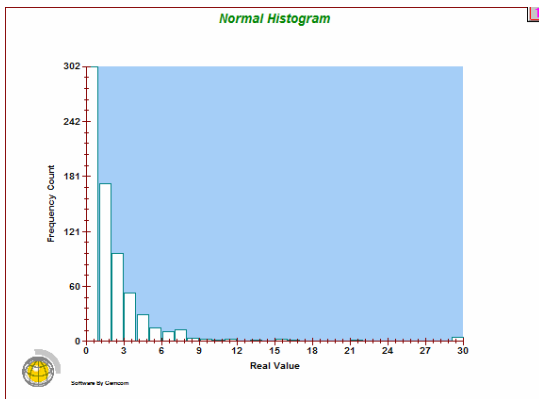
Zone 3-01



Zone 3-02



Zone 3-03



Zone 3-04



A small number of composite intervals do not exactly correspond to 1.5 m intervals. In general, higher grade composites occur randomly across the mineralized zones, with the majority of contacts defined by lower grade zones. Composites were calculated within the mineralized zones from the contact closest to the collar to the toe of the hole. All composite lengths greater than 0.01 m in length were used in the block calculations. Comparing various minimum composite lengths indicated this would result in a slightly more conservative gold value in the resource estimations. Table 17-6 compares the results of using minimum composite lengths of 1.5 m, 1.0 m, 0.5 m, and 0.01 m in Zone 3-03.

**TABLE 17-6 EFFECT OF MINIMUM COMPOSITE LENGTHS – ZONE 3-03**  
St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada

Composite Length (m)	Number of Points	Mean Grade (g/t Au)	Standard Deviation (g/t)	Variance	Coefficient of Variation	Skewness	Kurtosis
≥ 0.01	7,383	2.52	6.17	38.07	2.44	19.04	624
≥ 0.50	7,056	2.57	6.28	39.50	2.45	18.82	606
≥ 1.00	6,751	2.60	6.38	40.76	2.45	18.70	594
≥ 1.50	6,459	2.63	6.49	42.09	2.47	18.59	582

### GRADE CAPPING

Each zone was analyzed separately to establish a top cut grade for the composite assays. Table 17-7 illustrates the various results using commonly used capping criteria.

**TABLE 17-7 Au COMPOSITE ASSAY STATISTICS**  
St Andrew Goldfields Ltd. - Hislop Mine Property, Ontario, Canada

Zones	95 <sup>th</sup> Percentile (g/t)	Mean+2SD (g/t)	97 <sup>th</sup> Percentile (g/t)	99 <sup>th</sup> Percentile (g/t)	5*Mean (g/t)	Capping Applied (g/t)
1-01	1.5	3.0	2.0	4.0	2.3	5.0
3-01	7.0	52.7	10.0	22.5	13.5	25.0
3-02	3.5	11.0	5.0	11.0	8.0	15.0
3-03	8.5	15.0	11.5	22.0	13.0	35.0
3-04	6.5	11.0	7.5	15.5	11.0	15.0

To verify the effect of the cutting, a comparison of various cut grades (Table 17-8) showed no significant impact due to the close drill spacing, the fine grained gold particles, and relatively well distributed gold mineralization across the deposit compared with the majority of Archean gold deposits.

**TABLE 17-8 EFFECT OF COMPOSITE CAPPING - ZONE 3-03**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Capping Level (g/t)	Indicated		Inferred		Total	
	Grade (g/t Au)	Tonnes (000)	Grade g/t Au	Tonnes (000,000)	Grade g/t Au	Tonnes (000)
Uncapped	2.25	2,359	1.95	1.427	2.14	3,786
35	2.21	2,358	1.94	1.427	2.11	3,785
25	2.19	2,358	1.90	1.427	2.08	3,785

In Scott Wilson RPA's opinion, capping should be completed on individual raw assays as opposed to composited grades. However, as the composite length is similar to the sample length, it is considered acceptable.

## SEMI-VARIOGRAMS

In order to define the amount of grade variability and the orientation of maximum grade continuity, a complete suite of relative and non-relative 3D semi-variograms were generated from the 1.5 m composites. Semi-variograms were created for each of the zones defined in the geologic model, which all provided sufficient sample pairs using the drill hole data within the zones. In general, variography was controlled primarily by the orientation of the contacts of the gold mineralization, alteration zones, and lithologic contacts.

The relative nugget values (a measure of local variance) interpreted for the variogram models for gold varied by zone. They are approximately 20% of the total sill value (total variance). This indicates that the local variability in gold grade is low. Zone 3-02 showed a higher variability where the relative nugget value is approximately 45% of the total sill value.

The continuity of the gold mineralization is greatest along strike direction, approximately 90°, or in the same orientation as the strike direction of the block model. In all but one case, the range structure defined by the semi-variogram curve is at a distance greater than the drill spacing (approximately 15 m x 15 m) and the confidence in the resource estimate is high. In addition, the low nugget, or low degree of local variability in grade, means that the confidence in the local estimate is good. Zone 3-02 located north of the other zones exhibits poor range and a higher degree of local variance. This could be a result of the discontinuity of the zone. In a strike length of one kilometre, it is defined as four lenses averaging 200 m in length. A better variogram may be possible by redefining the zone and/or using an “unwrinkling” software program to “straighten” the zone prior to performing variogram analysis.

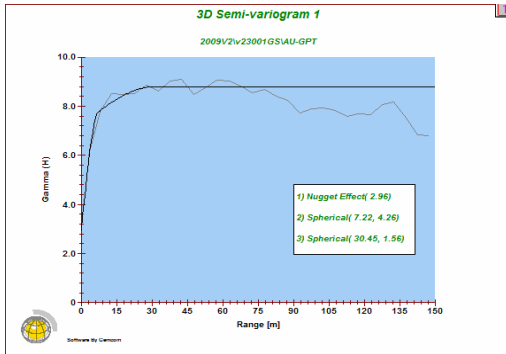
The results of the variography are summarized in Table 17-9 and illustrated in Figure 17-3.

**TABLE 17-9 COMPOSITE VARIOGRAM SUMMARY**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

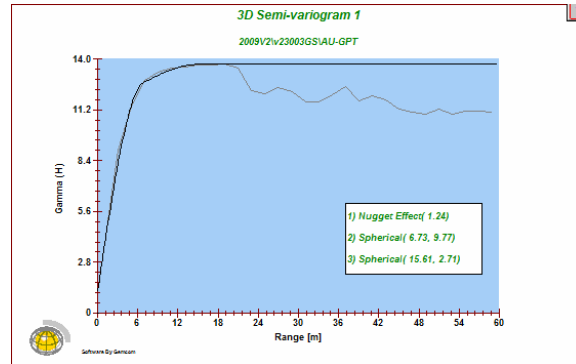
ZONE	Model 1			Model 2			Model 3		
	Type	Range (m)	Sill	Type	Range (m)	Sill	Type	Range (m)	Sill
3-01	Nugget	-	2.96	Spherical	7.22	4.26	Spherical	30.45	1.56
3-02	Nugget	-	1.10	Spherical	6.60	0.30	Spherical	8.60	0.60
3-03	Nugget	-	1.24	Spherical	6.73	9.77	Spherical	15.61	2.71
3-04	Nugget	-	1.10	Spherical	6.00	2.00	Spherical	18.00	1.00

Scott Wilson RPA reviewed the results of the geostatistical analyses and notes that the analyses have been carried out and interpreted in a reasonable fashion, consistent with common industry practice.

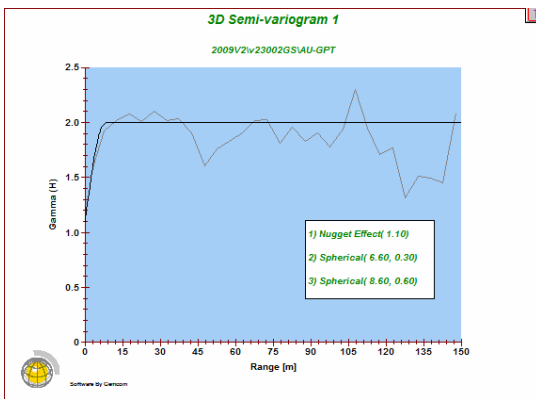
FIGURE 17-3 VARIOGRAMS



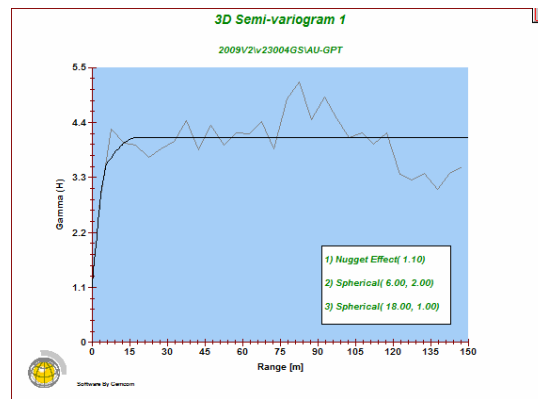
Zone 3-01



Zone 3-03



Zone 3-02



Zone 3-04

## BLOCK MODEL

A three-dimensional block model was constructed to include the grade, rock type, % model, density, and gold value for the various zones. The block size and orientation was chosen to best suit the dimensions of the deposit, orientation of the mineralized zones and the open pit mining method. A final block size of 3 m x 3 m x 3 m was selected oriented along the strike of lithology and mineralization.

A summary of the block model parameters (for zones 3-01, 3-02, 3-03, and 3-04) is provided in Table 17-10.

**TABLE 17-10 BLOCK MODEL PARAMETERS**  
**St Andrew Goldfields Ltd. – Hislop Mine Property, Ontario, Canada**

	Origin				Block Size Metres			Number of Blocks		
	x	y	z	Azimuth	x	y	z	x	y	z
All zones	551850	5371550	306	121	3	3	3	500	170	70

## GRADE INTERPOLATION

Gold grades were interpolated into the block model utilizing the inverse distance squared (ID<sup>2</sup>) method. Only composites assigned a rock code equal to that of the block being estimated were used in the calculation. Based on the size of blocks (3 m x 3 m x 3 m) and composite length (1.5 m), a minimum of one and a maximum of six samples were used, with a maximum of two samples per hole used in the calculation. The latter restriction ensured that at least one drill hole was required within the search radius for a block to be interpolated. Using a block size of 4 m x 4 m x 4 m and a minimum of two and a maximum of nine samples, with a maximum of three samples per hole, resulted in overly averaging the gold values within the mineralized zones.

The maximum number of composites from a single drill hole used to interpolate a block grade varied from one to three depending on the character of the mineralized zone. The minimum number of composites required to interpolate a grade into a block varied from one to three.

A large search radius was used to populate the block model. Above the 200 m elevation, the mineralized blocks were generally calculated from six samples taken from a distance of 8 m to 10 m. In the lower parts of the deposits, a larger percentage of blocks were calculated from samples over 20 m away.

Scott Wilson RPA notes that the search volumes are based on a distance equating to several times the variogram range for each deposit. Although most of the composites are selected at short distances, the large search values could interpolate grades in blocks using composites from a significant distance from the drill holes. In Scott Wilson RPA's opinion, the search parameters used for the grade interpolation are acceptable but not consistent with common industry practice, which would limit final search distances to one and a half or two times the range. Scott Wilson RPA recommends that, in future models, the search distances be limited to 1.5 to 2 times the range.

The mineralized zones are not continuous straight linear zones. There are a number of flexures along strike and dip. In order to limit the "striping" effects and empty blocks because of these flexures, a number of search domains were used in the calculation. Over 50 individual search domains were defined. Based on elevation, the zones were divided into upper and lower zones. In plan, the zones were divided into sections with continuous strike directions. Each section was inspected to assign a dip angle for each zone. The search radius was decreased where necessary to reduce the risk of using a value from across a displacing structure. Table 17-11 gives the parameters determined for each zone.

**TABLE 17-11 SEARCH SPHERE PARAMETERS**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Elevation	Zone	Number of Domains	Search Sphere Radius			Azimuth (°)	Dip (°)
			X (m)	Y (m)	Z (m)		
+200 m	3-01	8	50 - 100	50 - 100	18 - 50	90 - 152	-73N to -87N
	3-02	5	100	100	50	111 - 148	-72N to -86N
	3-03	11	50 - 100	50 - 100	50	88 - 149	-76N to -85S
	3-04	4	40 -100	100	10 - 50	110 - 149	-80N to -88N
-200 m	3-01	12	30 - 100	100	17 - 50	87 - 158	-72N to -88N
	3-02	4	100	100	50	113 - 125	-76N to -86N
	3-03	8	50 - 100	100	50	89 - 162	-76N to -86S
	3-04	2	100	100	50	120 - 127	-86N to -88S
All	1-01	5	100	100	13 - 25	109 - 131	-81N to -88N

The grade distribution of the zones is illustrated in Figure 17-4.

17-17

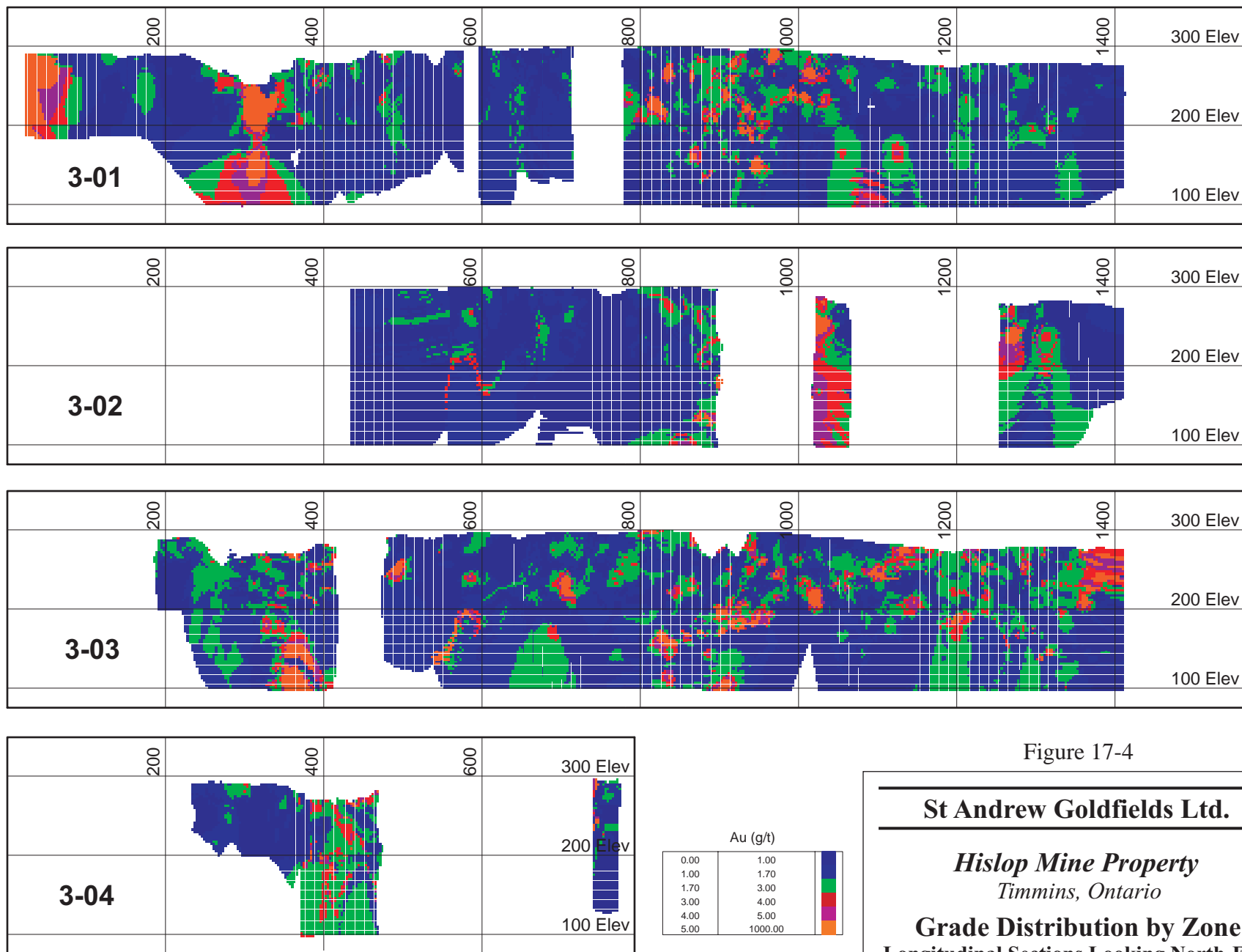


Figure 17-4

**St Andrew Goldfields Ltd.**

*Hislop Mine Property*  
*Timmins, Ontario*

**Grade Distribution by Zone**  
**Longitudinal Sections Looking North-East**



**RESOURCE ESTIMATE AND CLASSIFICATION**

The resource classification is essentially based on the density of drill hole information and the continuity of gold grade (maximum grade continuity was defined along strike). SAS constructed regular shells representing the mineralized zones of 0.5 g/t Au and greater than 1.0 g/t Au zones within the envelopes.

Scott Wilson RPA concurs that the Mineral Resource classification follows the CIM Definition Standards for Mineral Resources and Mineral Reserves as of December 11, 2005 (CIM definitions).

It is Scott Wilson RPA's opinion that the density of assay data and the knowledge of the deposit geometry provide sufficient confidence to determine the grade and tonnage of the deposit. The Indicated Mineral Resources are defined primarily within that portion of the deposit having a drill density of approximately 15 m or less. Inferred Mineral Resources are located primarily along the perimeter of the deposit, along the strike and down dip extensions of the deposit. Figure 17-5 shows the distribution of resource categories in the deposit. Scott Wilson RPA finds this classification strategy somewhat optimistic but acceptable based on a review of the density of drill information and recommends that future classification of the Mineral Resources be determined using appropriate ranges from variography in each zone.

17-19

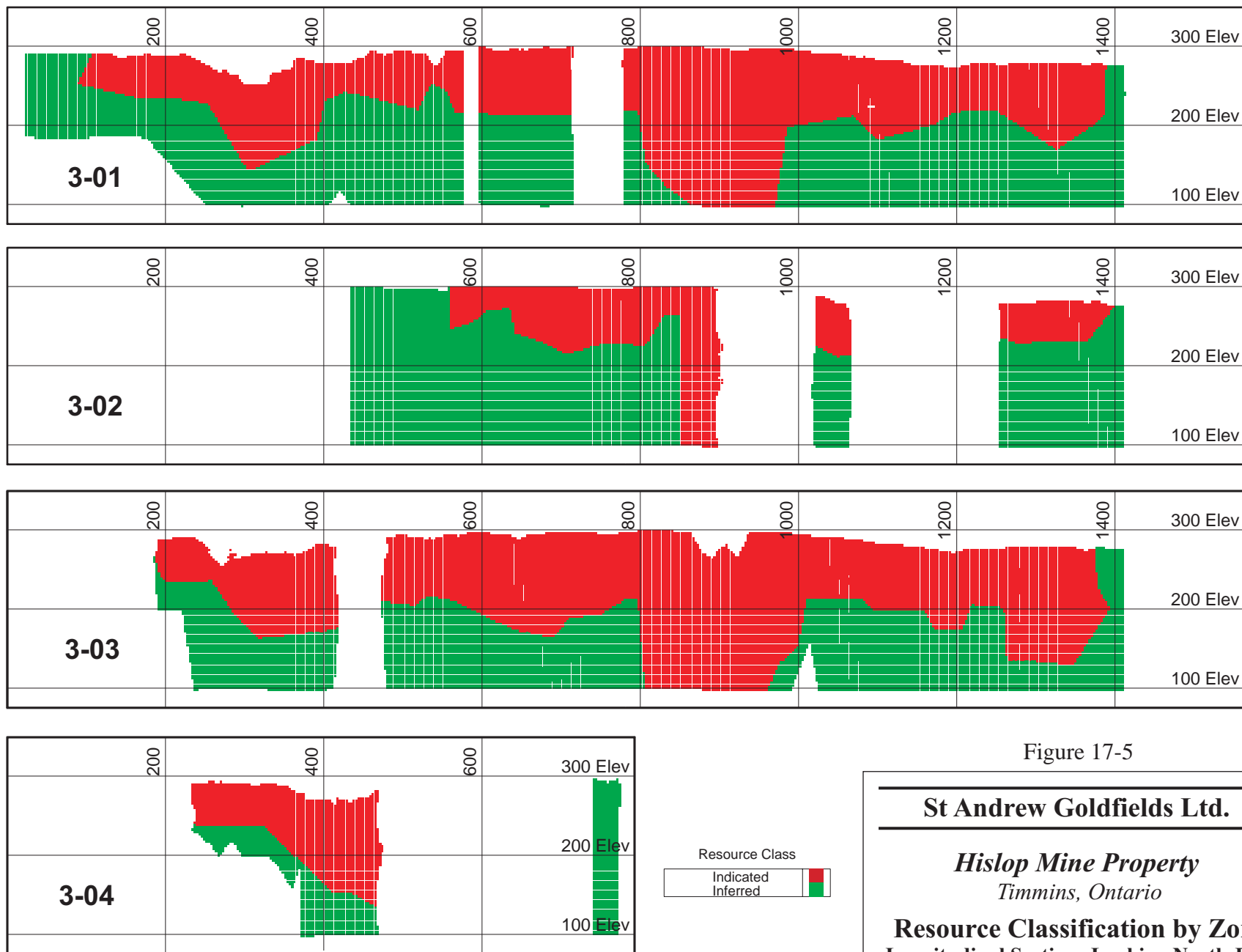


Figure 17-5

**St Andrew Goldfields Ltd.**

*Hislop Mine Property*  
 Timmins, Ontario

**Resource Classification by Zone**  
 Longitudinal Sections Looking North-East

The Mineral Resources for the deposits comprising the Hislop Mine property are summarized in Table 17-12. The global Indicated Mineral Resource from surface to the 100 m elevation (approximately 200 m deep) is 6.66 million tonnes grading 1.98 g/t Au.

**TABLE 17-12 MINERAL RESOURCE SUMMARY - JUNE 2009**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Classification	Zone	Tonnes (000)	Grade (g/t Au)	Ounces Gold (000)
<b>Indicated</b>				
	1-01	1,681	1.42	77
	3-01	1,793	2.16	125
	3-02	516	1.93	32
	3-03	2,358	2.21	168
	3-04	313	2.28	23
<b>Total Indicated</b>		<b>6,661</b>	<b>1.98</b>	<b>425</b>
<b>Inferred</b>				
	1-01	927	1.42	42
	3-01	1,446	1.71	80
	3-02	1,126	1.84	67
	3-03	1,427	1.94	89
	3-04	412	2.32	31
<b>Total Inferred</b>		<b>5,338</b>	<b>1.80</b>	<b>309</b>

Notes:

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources were estimated at a block cut-off grade of 0.94 g/t Au.
3. Mineral Resources are estimated using an average long-term gold price of US\$950 per ounce, and an exchange rate of C\$1.00 = US\$0.85
4. A minimum mining width of 2.0 m was used.
5. A bulk density of 2.84 t/m<sup>3</sup> was used for all rock types except syenite (2.68 t/m<sup>3</sup>).
6. Totals may not add exactly due to rounding.

Good potential for additional Mineral Resources is present at depth and within other areas of the Hislop property.

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

## MINERAL RESOURCE VALIDATION

Validation of the block models by SAS included:

- On-screen displays of plans and sections showing composite and block grades.

Scott Wilson RPA understands that the results of the above validation were satisfactory.

An ID<sup>2</sup> estimate using a single large search ellipsoid was independently completed on the resource using verified solids. The results were compared with the SAS totals (Table 17-13) and found to be comparable.

**TABLE 17-13 COMPARISON OF MINERAL RESOURCE ESTIMATES**  
**St Andrew Goldfields Ltd - Hislop Mine Property, Ontario, Canada**

Estimate	Indicated Resources			Inferred Resources		
	Tonnes (000)	Grade (g/t Au)	Ounces Gold (000)	Tonnes (000)	Grade (g/t Au)	Ounces Gold (000)
SAS	6,661	1.98	425	5,338	1.8	309
Scott Wilson RPA	6,648	2.09	447	5,500	1.8	320

## MINERAL RESERVES

Scott Wilson RPA has applied the CIM definitions. The relevant portions of the definitions are included below for reference.

*“Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve.*

*A Mineral Reserve is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that*

*economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.*

*Mineral Reserves are those parts of Mineral Resources which, after the application of all mining factors, result in an estimated tonnage and grade which, in the opinion of the Qualified Person(s) making the estimates, is the basis of an economically viable project after taking account of all relevant processing, metallurgical, economic, marketing, legal, environment, socio-economic and government factors. Mineral Reserves are inclusive of diluting material that will be mined in conjunction with the Mineral Reserves and delivered to the treatment plant or equivalent facility. The term 'Mineral Reserve' need not necessarily signify that extraction facilities are in place or operative or that all governmental approvals have been received. It does signify that there are reasonable expectations of such approvals.*

#### *Probable Mineral Reserve*

*A 'Probable Mineral Reserve' is the economically mineable part of an Indicated and, in some circumstances, a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.*

#### *Proven Mineral Reserve*

*A 'Proven Mineral Reserve' is the economically mineable part of a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.*

*Application of the Proven Mineral Reserve category implies that the Qualified Person has the highest degree of confidence in the estimate with the consequent expectation in the minds of the readers of the report. The term should be restricted to*

*that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect potential economic viability”*

The Indicated Mineral Resources as shown in Table 17-12 were evaluated and converted to Probable Mineral Reserves through the application of mining plans, estimates for dilution and extraction, and an economic cut-off grade. For this report, those Mineral Resources at the Project that were amenable to open pit mining have been evaluated and appropriately classified as Mineral Reserves. Only those resources which could be included in a Life of Mine Plan (LOMP) were included as Mineral Reserves. There were no Inferred Resources converted to Mineral Reserves. The Mineral Reserves for the Project are summarized in Table 17-14. Scott Wilson RPA notes that the Mineral Resources stated in Table 17-12 are inclusive of Mineral Reserves.

The Mineral Resources for the Project are all based solely on diamond drill information, and are classified in the Indicated and Inferred Mineral Resource categories. The Mineral Reserves within this report have all been assigned to the Probable category and are dated September 1, 2009.

**TABLE 17-14 MINERAL RESERVES – SEPTEMBER 2009**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

<b>Category</b>	<b>Tonnes ('000)</b>	<b>Grade (g/t Au)</b>	<b>Contained Ounces</b>
Probable	1,912	2.32	142,000

Notes:

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 1.1 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US\$800 per ounce, and an exchange rate of C\$1.00 = US\$0.85
4. The Mineral Reserves are contained within the stated Mineral Resources

Mining will be carried out using smaller scale mining equipment to provide the desired selectivity and to permit the use of narrower access ramps. Larger equipment may be used for stripping of waste and overburden. The mining is planned to be completed by contractors, and the ore will be hauled by contractors to the SAS Holt Mill for processing.

An optimized open pit design was generated using the Whittle software package, and subsequently used for production scheduling. The geometry of the Mineral Resource zones was reviewed to estimate the dilution and extraction estimates. For the purpose of estimating Mineral Reserves, dilution of 15% was applied at 0.50 g/t Au together with extraction of 90%.

Operating costs have been prepared from contractor estimates, the revised processing budget for the Holt Mill, and estimated administration costs for the Project. The metallurgical performance is based upon recent metallurgical testing of the Hislop deposit. From this information, the cut off grade has been estimated as shown in Table 17-15.

**TABLE 17-15 RESERVE CUT-OFF GRADE ESTIMATE**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

<b>Discard Cut-off Grade</b>		
Gold Price	US\$/oz	800.00
Exchange rate	US\$:C\$	0.85
Gold Price	C\$/oz	941.18
Gold Price	C\$/g	30.26
Royalty	%	4
Recovery	%	84.5
<b>Costs</b>		
Mining	C\$/t	-
Milling	C\$/t	25.00
Admin	C\$/t	2.00
Other	C\$/t	-
Contingency		0%
<b>Total</b>	<b>C\$/t</b>	<b>27.00</b>
<b>Cut-off Grade</b>	<b>g/t Au</b>	<b>1.1</b>

The cut-off grade calculation includes a net smelter royalty of 4% on all production from Hislop.

In addition to the Indicated Mineral Resources that have been converted to Probable Mineral Resources in this report, there are 50,000 tonnes of Inferred Mineral Resources grading 2.46 g/t Au located within the design pit. These Inferred Mineral Resources have not been included in the Mineral Reserve estimate and have not been considered in the cash flow projections.



## 18 OTHER RELEVANT DATA AND INFORMATION

The Hislop deposit is planned to be mined as an open pit operation with mining, crushing, and ore haulage to the Holt Mill undertaken by contractors under the direction of SAS technical personnel. The Mineral Reserves will be processed by SAS at its 100% owned Holt Mill.

### MINING OPERATIONS

The Hislop deposit has been designed as an open pit mine with a planned ore production rate of 1,500 tpd. The mining rate was selected as a supplement to the planned 1,000 tpd from the Holloway-Holt Project to be fed to the 3,000 tpd capacity Holt Mill. The layout of the proposed open pit and dump locations is shown in Figure 18-1.

The mining will be undertaken by mining contractors using conventional truck and shovel equipment, with haulage trucks in the 40 t capacity range and appropriately sized excavators for ore and waste. Overburden may be mined with larger units, but the ramps in the lower areas of the pit are designed for the 40 t class trucks.

The pit has been designed with six metre high benches. At the final walls, there will be 12 m (two benches) between each planned safety berm. The ramps will be 15 m wide for two lane traffic and 11 m wide for single lane traffic. The maximum ramp grade is 10% on the main ramps, with some short steeper sections for final mining of the lowest benches.

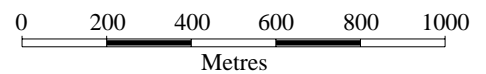
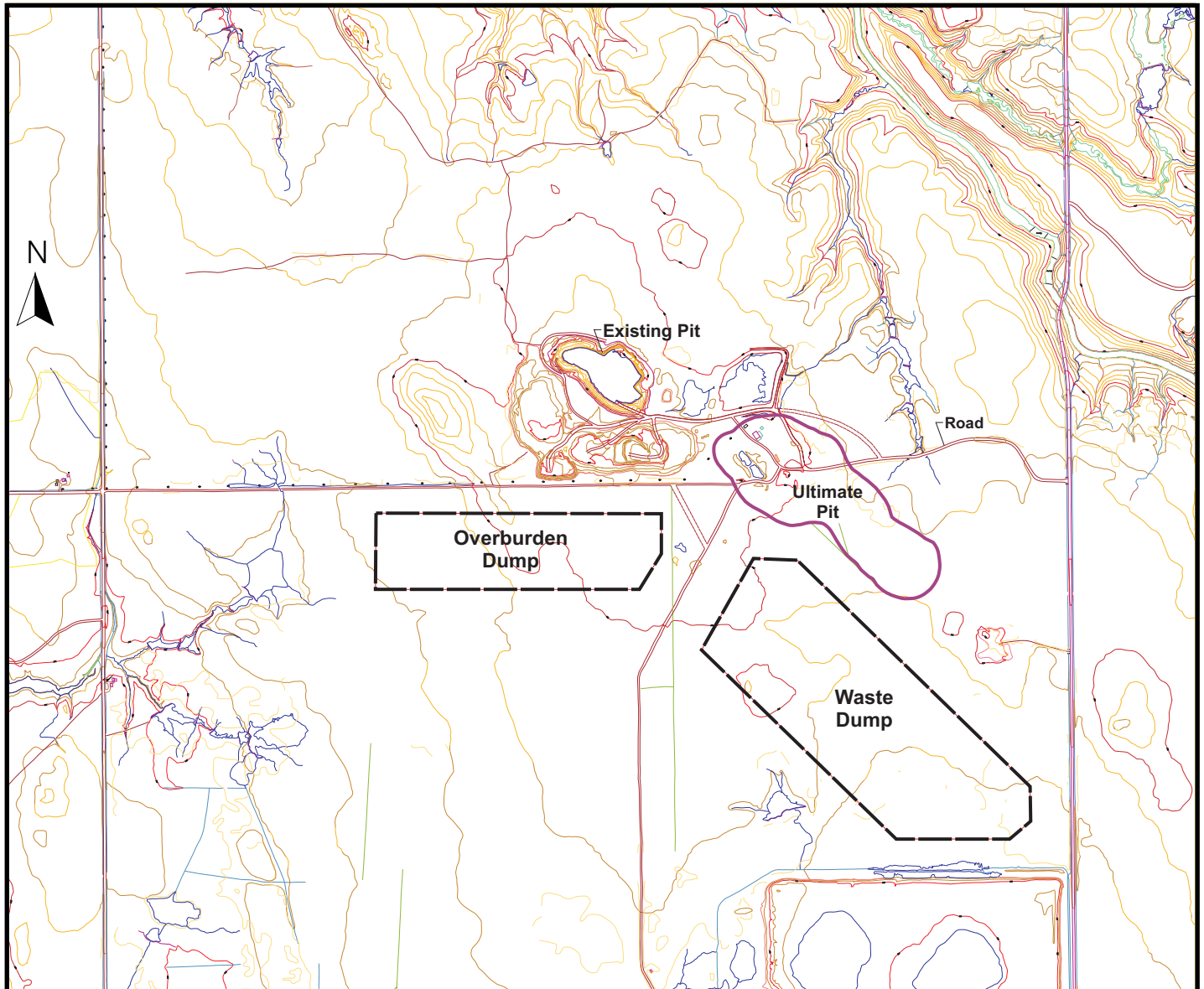


Figure 18-1

**St Andrew Goldfields Ltd.**

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*Hislop Mine Property*  
Timmins, Ontario

**Hislop Surface Plan**

## OPEN PIT OPTIMIZATION

The Whittle software package was used to develop an optimized pit shell for the Project, using the resource model developed by SAS and audited by Scott Wilson RPA. Prior to optimization, a fully diluted block model was developed from the resource block model and interpreted wireframes to better represent the selective mining unit (SMU) for the proposed open pit operation.

### PARAMETERS AND DISCARD CUT-OFF GRADE

Table 18-1 outlines the parameters used for the Whittle optimization.

**TABLE 18-1 WHITTLE PARAMETERS**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

Parameter	Units	Value
<b>Revenue</b>		
Gold Price	US\$/oz	800
Exchange Rate	US\$/C\$	0.85
Royalty	%	4.0
Recovery	%	83.0
<b>Costs</b>		
Ore Mining	C\$/t moved	2.65
Waste Mining	C\$/t moved	2.65
Overburden Mining	C\$/m <sup>3</sup> moved	4.00
Crushing	C\$/t milled	2.50
Haul to Mill	C\$/t milled	4.50
Milling	C\$/t milled	18.00
G&A	C\$/t milled	2.00

Overall pit slopes were applied by design sector, as per recommendations outlined in the geotechnical study completed by Dr. P. Hughes and reviewed by Dr. R. Pakalnis. Allowances for ramps were applied to certain sectors based on the expected ramp locations in the final design.

The discard cut-off grade is estimated to be 1.12 g/t Au based on the revenue and cost parameters presented in the above table.

**OPTIMIZATION RESULTS**

Table 18-2 outlines the optimization results. The Whittle shell used for the final open pit design, shown in Figure 18-2, contains approximately 1.9 million tonnes grading 2.48 g/t Au, totalling 156,000 contained ounces of gold.

**TABLE 18-2 OPTIMIZATION RESULTS**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

<b>Gold Price (US\$/oz)</b>	<b>Ore (‘000 t)</b>	<b>Grade (g/t Au)</b>	<b>Contained Au (‘000 oz)</b>	<b>Strip Ratio</b>	<b>Total Waste (‘000)</b>
800	1,964	2.48	156	6.26	12,295

**MINE DESIGN**

From the selected Whittle optimized shell, a ramp was designed into the pit and the design was smoothed to remove irregularities that are inconsistent with operating practices. The ramp design included provisions for two-way traffic in the upper sections of the pit, and single lane access in the two separate pit bottoms.

The mine design parameters were:

- 1,500 tpd ore
- 40 t capacity haul trucks
- 6 m high mining benches
- Double bench at final walls
- Ramp grade of 10% to 12%
- 15 m wide ramp – (three times 3.5 m truck width plus 4 m for berm and ditch) for two lane traffic
- 11 m wide ramp for single lane traffic.

Plan and section views of the open pit design are shown in Figures 18-3 to 18-6.

Looking NE

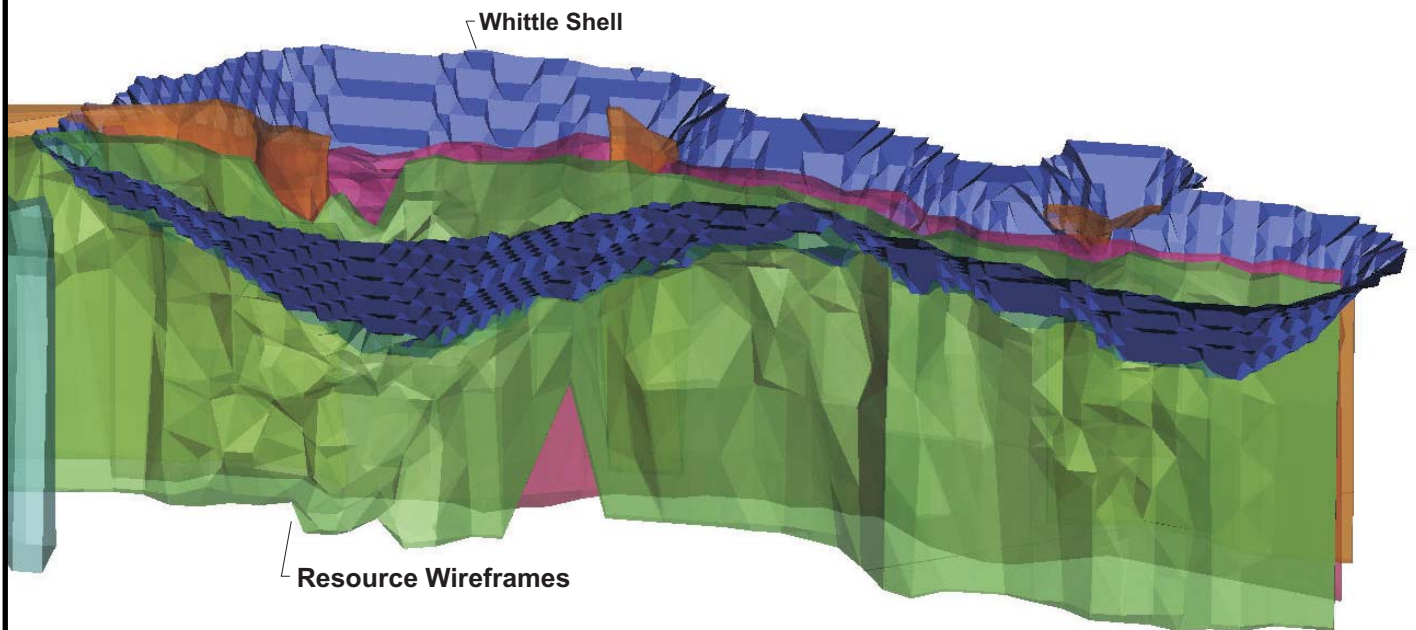


Figure 18-2

**St Andrew Goldfields Ltd.**

***Hislop Mine Property***

*Timmins, Ontario*

**Whittle Pit Shell**

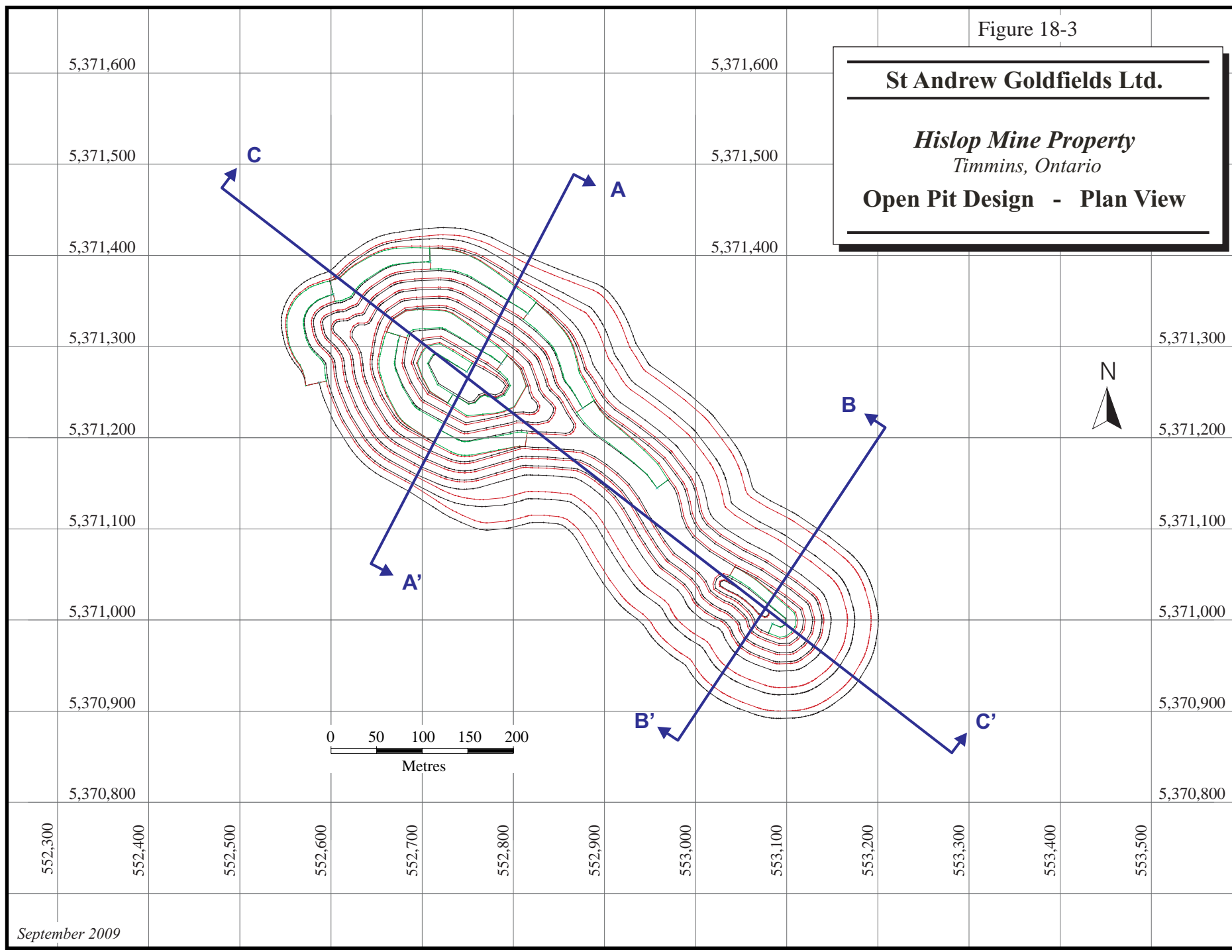
September 2009

Figure 18-3

**St Andrew Goldfields Ltd.**

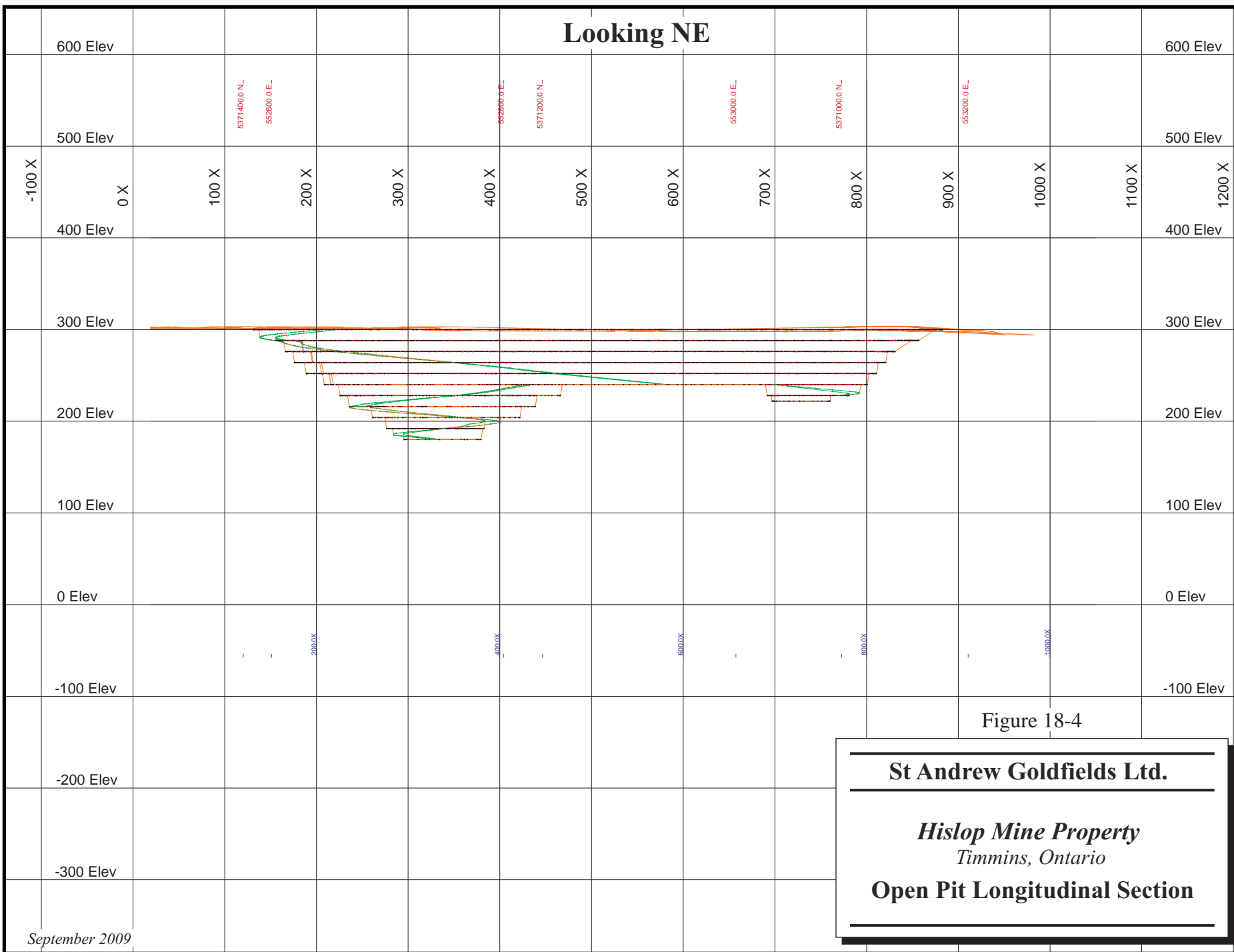
*Hislop Mine Property*  
Timmins, Ontario

**Open Pit Design - Plan View**



18-6

18-7

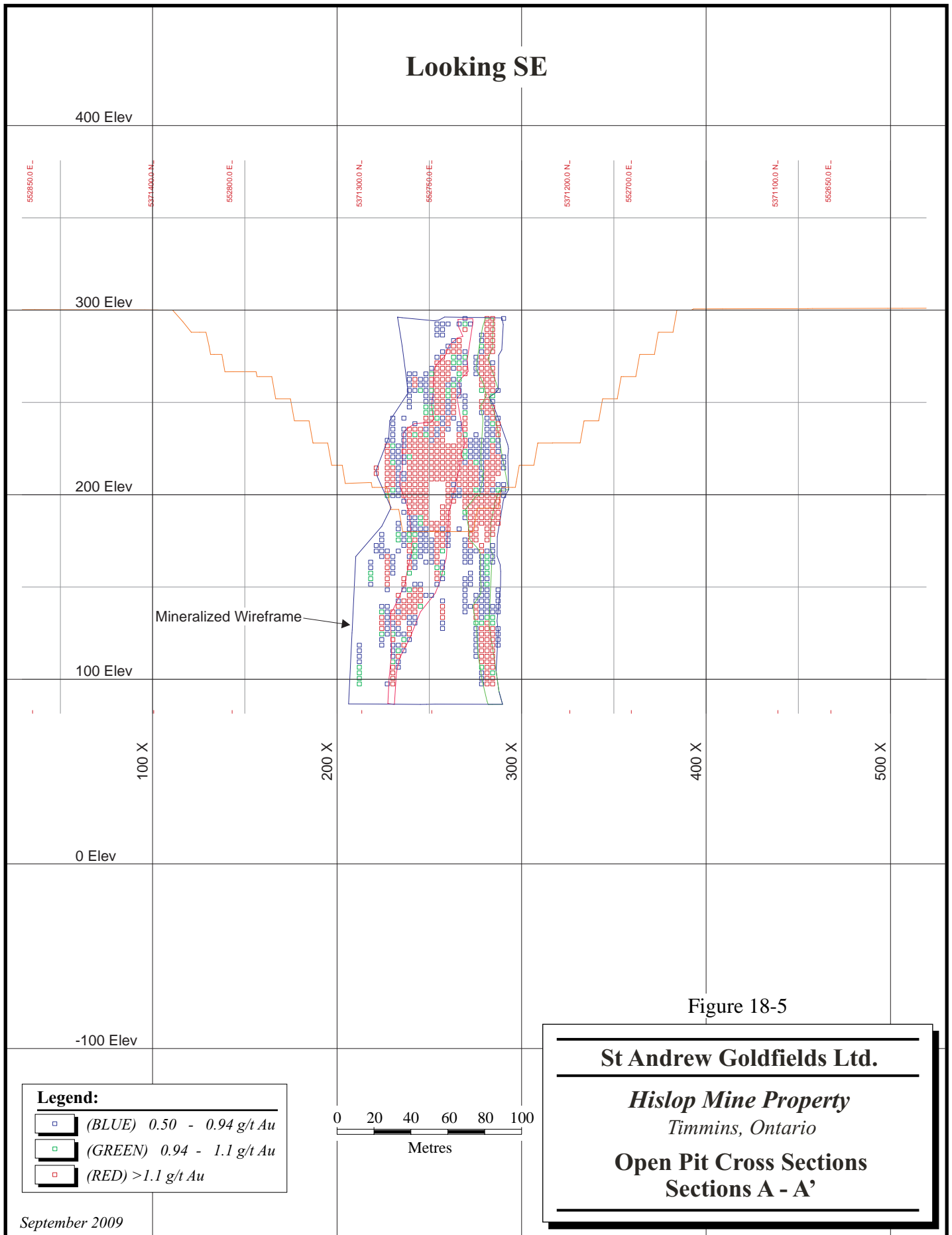


**St Andrew Goldfields Ltd.**

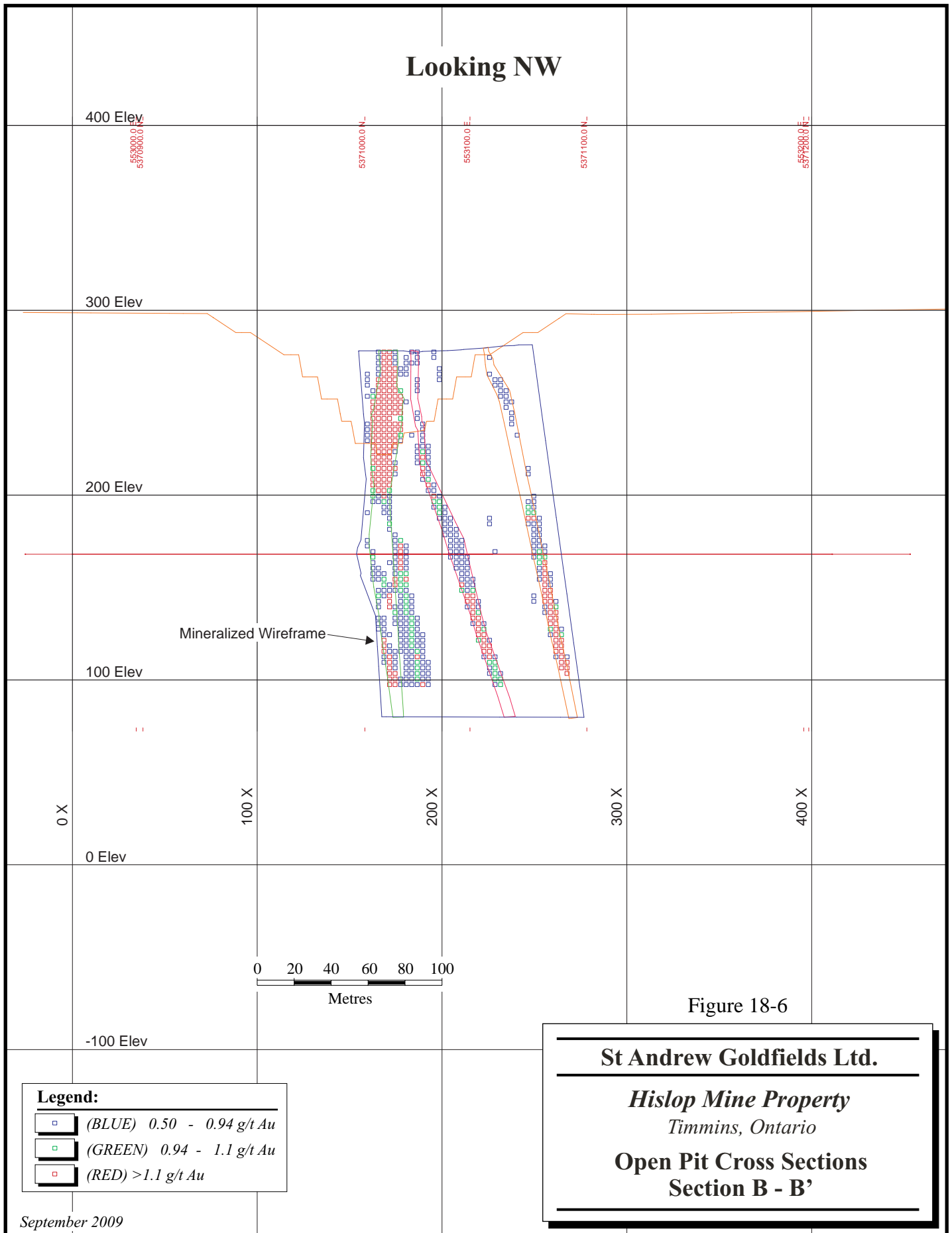
*Hislop Mine Property*  
*Timmins, Ontario*

**Open Pit Longitudinal Section**

September 2009







***DILUTION AND EXTRACTION***

Scott Wilson RPA developed a wireframe representing the potentially mineable zones on a typical bench. Tonnes and grade were reported within this wireframe and compared against the resource model to estimate dilution and extraction.

For the purpose of estimating Mineral Reserves, Scott Wilson RPA has applied 15% dilution at 0.50 g/t Au and 90% extraction.

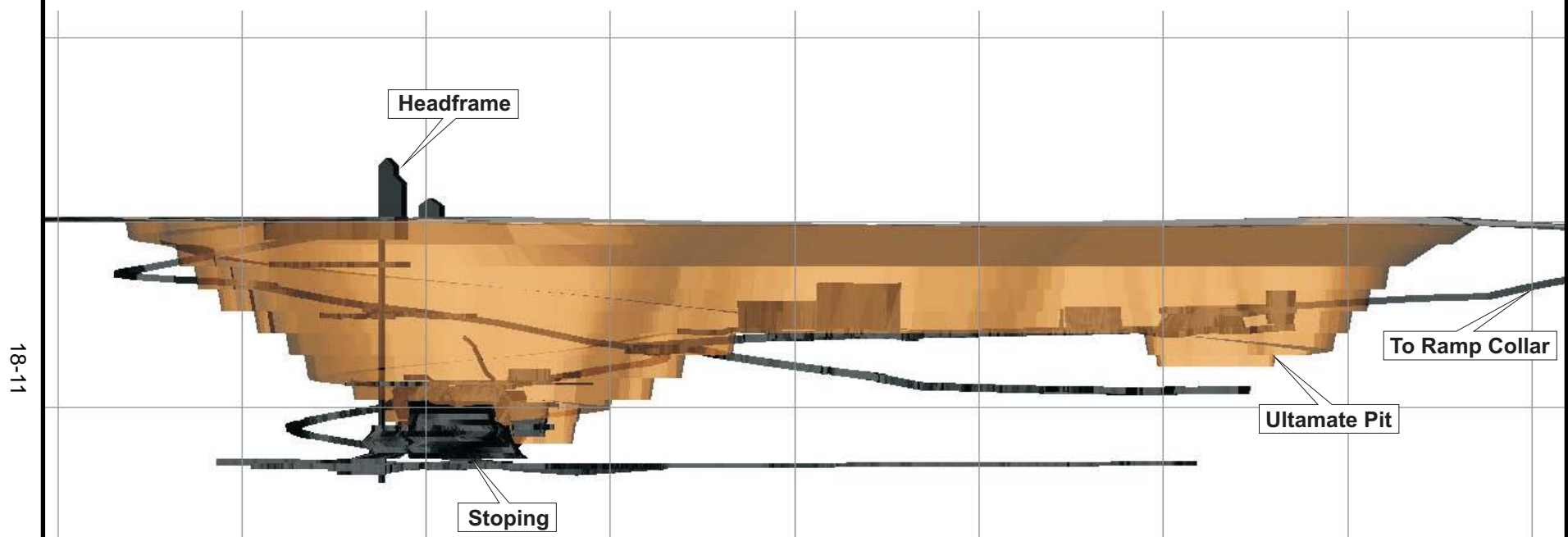
***UNDERGROUND WORKINGS***

There are existing underground development workings and some stopes within the volume to be exploited by the open pit. The development workings include a shaft, ramps, development drifts, and some empty stopes. All of the workings have been surveyed in the past, the locations are included in the resource models, and the volumes have been excluded from resource estimates. As the underground access ways have all been blocked, there is no way to access and examine the underground workings. An isometric view of the open pit showing the underground excavations is shown in Figure 18-7.

Mining will progress through a number of underground workings, and the proposed plan is to drill ahead with the production drills in order to confirm the location of these voids. This drilling would be carried out at least one bench in advance to provide sufficient crown pillars and to permit time for mine planning. Blasting will be carried out to open these voids in such a manner as to allow filling of the voids with blasted rock. This will mitigate safety hazards for men or equipment in the pit, and provide for optimum separation of ore and waste and maximum recovery of ore. Additional mine planning will be required for those areas where the workings are expected to be encountered within the pit.

Scott Wilson RPA recommends that SAS clearly identify the locations of underground workings on all mine plans and sections. A set of procedures should be developed to ensure that such locations are monitored so that definition drilling is carried out in advance of mining through any workings. This is particularly important around the larger openings, such as the former stopes.

Looking NE



18-11

Figure 18-7

**St Andrew Goldfields Ltd.**

*Hislop Mine Property  
Timmins, Ontario*

**Location of Existing  
Underground Workings**

**GEOMECHANICS****ROCK SLOPES**

Pit slopes have been designed based upon a study and report prepared by Dr. P. Hughes (St Andrew, 2009) and a review of that report by Dr. R. Pakalnis (2009). The report was based on a review of existing reports and photographs of the existing west pit, and an analysis of the core from the most recent diamond drilling campaign, which included two oriented core drill holes that were drilled specifically for geotechnical analysis.

The rock properties were reviewed, and conclusions from the review are summarized in Table 18-3. Rock mass properties were also assessed, as summarized in Table 18-4.

**TABLE 18-3 ROCK PROPERTIES**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

Rock Type	SG	UCS (MPa)	Tensile (MPa)	Cohesion (MPa)	Friction Angle	Young's Modulus (GPa)	Poisson's Ratio
Andesite	2.84	163.47	25.96	35	35°	73.21	0.28
Syenite	2.65	253.62	20.86	30	32°	76.49	0.31
Breccia	2.69	197.63	17.72	40	36°	87.22	0.25
Talc Chlorite Schist	2.84	35.79	3.6	4.5	25°	35.82	0.29

From St Andrew, 2009

**TABLE 18-4 ROCK MASS PROPERTIES**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

Unit	Location	RQD	Q Rating	RMR
Altered Basalt	East decline	82	4.56	82
Talc Chlorite Schist	East decline	75	4.69	49
Greywacke	West decline	85	56.67	87
Syenite	West Decline	95	42.22	82
Andesite	Main decline	90	22.50	74

From St Andrew, 2009

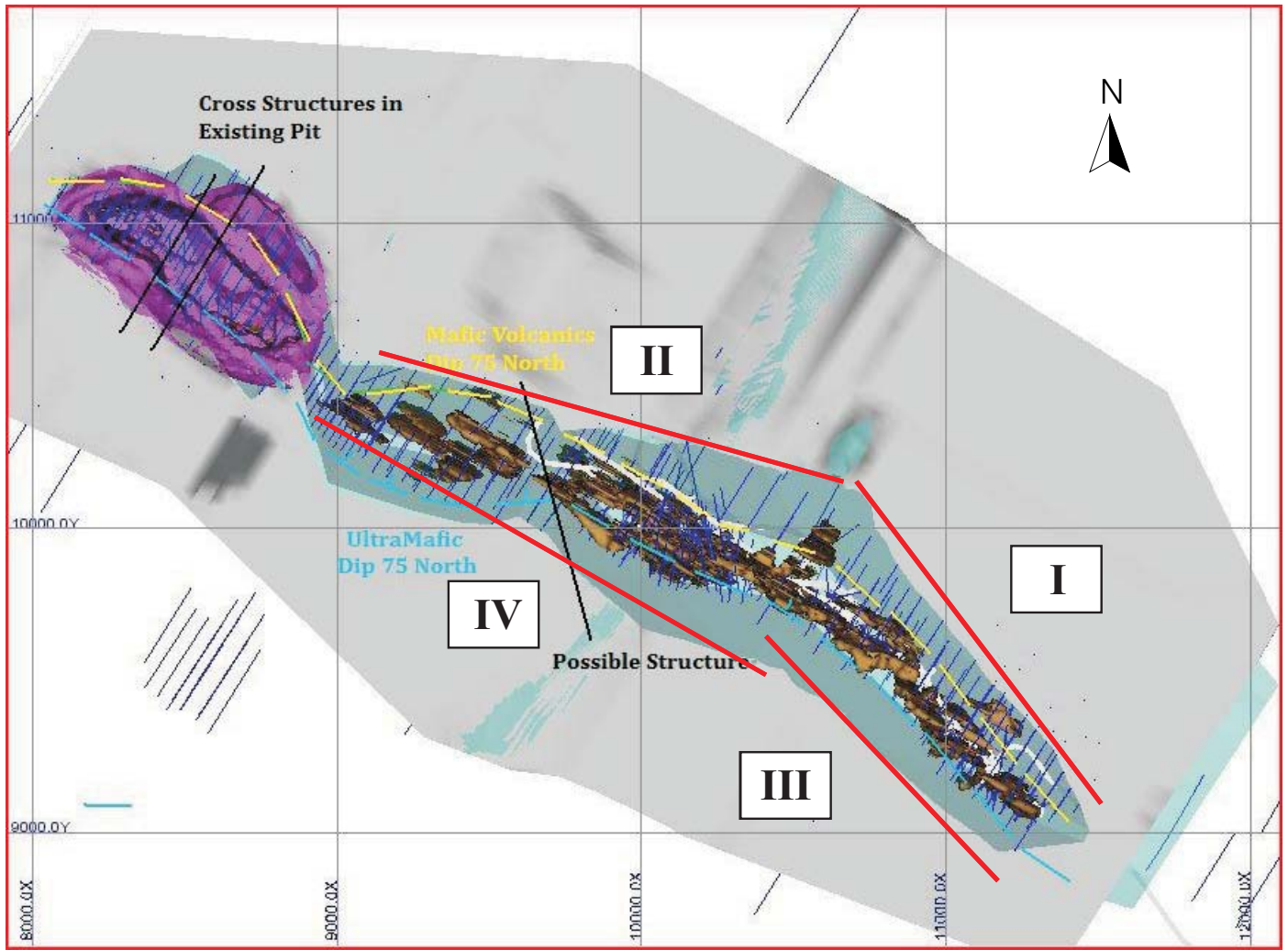
There is no provision for groundwater based on comments that previous pit walls were drained by the dewatering of the pit. Hughes notes that the water level in the existing pit provides a reference for groundwater elevation in the area.

Geotechnical logging of two diamond drill holes was completed, in addition to the collection of representative samples for the purpose of direct shear testing on natural discontinuities. Six samples were used for direct shear testing (ASTM- 5607-08) at the University of British Columbia's Mining Engineering Department. The shear test results were received after the initial slope design and are available for future overall design of the pit slopes.

A structural geology domain model was compiled from published data, mapping and geotechnical logging of drill holes, and a kinematic analysis was undertaken to investigate the possible toppling, planar and wedge failure that may occur based on the orientation of the discontinuities with respect to the pit walls. The kinematic analysis was completed for the general dip direction of the pit walls in each of the design sectors shown in Figure 18-8. The end walls were not considered as there will be little exposure in the narrow pit.

The results of the above analyses were used in determining the inter-ramp pit slope. The individual benches can be designed to be steeper than the inter-ramp pit angle, with the understanding that localized failure is possible. However, by ensuring a proper bench width, these failures would remain on the benches and pose a limited risk to the working level. Individual bench angles should be decided upon during detailed design and are typically governed by blasting techniques and operational constraints. Scott Wilson RPA notes that the pit should have benches set at standard intervals that would act as a catchment for localized bench failures and can be used to mitigate rock fall hazards.

For this analysis, a 12 m high bench height will be used as a typical industry standard. The individual bench face angle is assumed to be 80°.



Design Sector	Location	Dip Direction	Recommended Inter-ramp Angle
I	Hanging wall	200	50
II	Hanging wall	200	49
III	Foot wall	200	48
IV	Foot wall	200	47

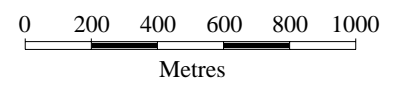


Figure 18-8

**St Andrew Goldfields Ltd.**  
*Hislop Mine Property*  
*Timmins, Ontario*  
**Pit Slope Design Sectors**

September 2009

The kinematic analysis concludes that wedge failures will govern the inter-ramp pit design. If the walls are designed to an inter-ramp slope less than the potential failure angle, the failure plane will not daylight, largely eliminating the risk of wedge failure. Although the potential of planar failure exists, these failures occur at a failure angle that is less than the potential wedge failures and will not govern the pit design.

The toppling failure analysis is localized to the individual benches and is unlikely to govern inter-ramp pit slope design due to the limited depth of the pit, joint spacing, and strength of rock. Should toppling become an issue on the bench level, investigation into large scale flexural toppling that would affect inter-ramp pit stability should be completed.

From the results of the kinematic analysis, recommendations are given for the inter-ramp pit slope angle in Table 18-5. Bench height and face angle were assumed to be 12 m and 80°, respectively, based on common practice. It is recommended that these bench widths be maintained as they serve the purpose of catchments for the localized bench failures. The recommended inter-ramp bench widths are shown in Table 18-6 based on the calculations presented in Figure 18-9.

**TABLE 18-5 RECOMMENDED INTER-RAMP PIT ANGLES**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

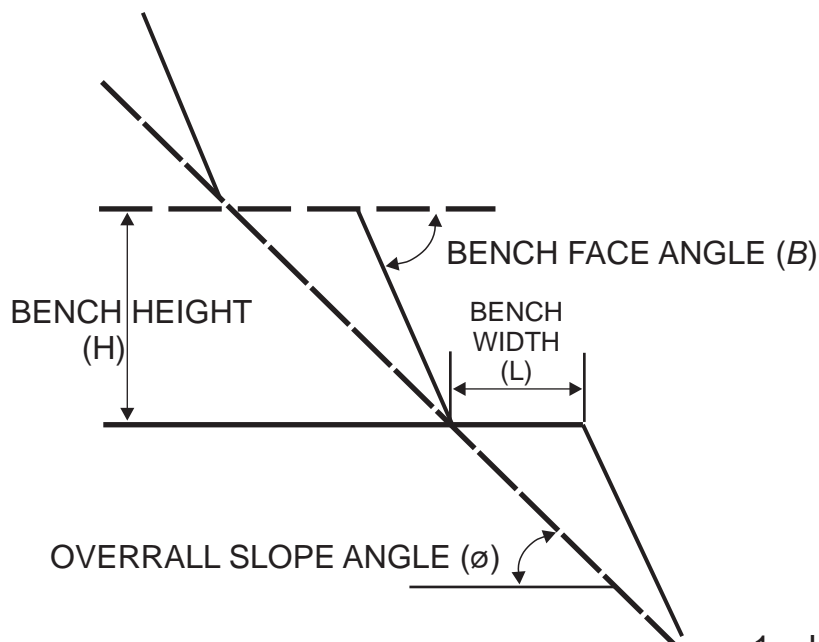
Design Sector	Location	Controlling Failure	Inter ramp Bench Angle
I	Hanging wall	Wedge	50°
II	Hanging wall	Wedge	49°
III	Foot wall	Wedge	48°
IV	Foot wall	Wedge	47°

**TABLE 18-6 RECOMMENDED BENCH WIDTHS**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

Design Sector	Location	Inter ramp Bench Angle	Bench Angle	Bench Height (m)	Recommended Bench Width (m)
I	Hanging wall	50°	80°	12	8.0
II	Hanging wall	49°	80°	12	8.3
III	Foot wall	48°	80°	12	8.7
IV	Foot wall	47°	80°	12	9.1

**RELATIONSHIP**

- A. OVERALL SLOPE ANGLE ( $\phi$ )
- B. BENCH FACE ANGLE ( $B$ )
- C. BENCH WIDTH ( $L$ )
- D. BENCH HEIGHT ( $H$ )



$$1. L = \frac{\sin(B - \phi) \times H}{\sin \phi \times \sin(180 - B)}$$

$$2. \phi = \tan^{-1} \frac{H \times \tan B}{(L \times \tan B) + H}$$

Figure 18-9

**St Andrew Goldfields Ltd.**

*Hislop Mine Property  
Timmins, Ontario*

**Bench Width Calculation**



As noted by Hughes, the previous open pit mine has slopes that are steeper than the recommended inter-ramp pit slope angles. Figure 18-10 shows the values of the inter-ramp pit slope angles at various points in plan view; the slope angles were calculated from cross sections provided by SAS. These values should be considered the steepest possible inter-ramp pit angles, and should only be used if thorough geotechnical work proves that they are stable.

Hughes and Pakalnis note that:

- The final wall slope design recommendations range from 47° to 50°, and is based upon dry conditions (dewatered). This should be assessed in the field as potential instability may result if slopes are saturated.
- The influence of underground workings will have to be assessed prior to mining in the proximity, and would largely result in operational and stability concerns.
- If structure differs from that designed, it must be identified, analyzed and design modified.
- The results are preliminary for prefeasibility purposes and must be reassessed upon further exposure.

The rock slopes developed in this analysis are based on the preliminary report by Hughes (St Andrew, 2009). The wall angles do have a significant impact upon the pit design in this small narrow pit and an increase in the overall wall slopes could result in more ore production and/or reduced waste stripping requirements. Scott Wilson RPA recommends that additional review of the slope stability aspects be undertaken including additional mapping of the structure that is exposed in the existing pit and consideration of design alternatives such as increasing the spacing between safety berms from 12 m to 18 m. Scott Wilson RPA further recommends that the initial mining walls be excavated to provide additional geotechnical information and to demonstrate the capability of producing stable walls as designed.

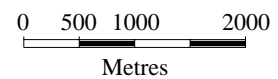
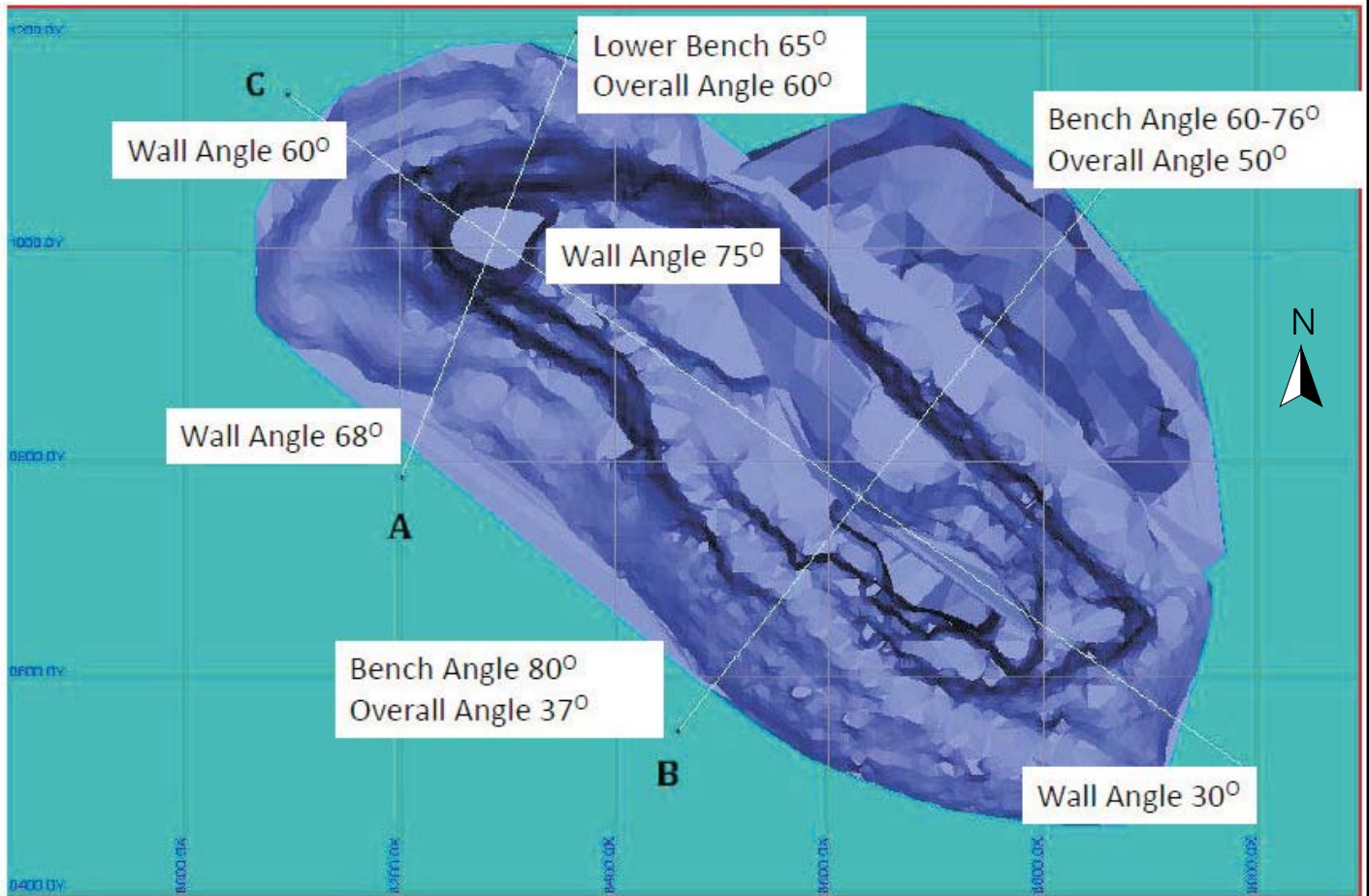


Figure 18-10

*Previous pit bench angles.*

*Note:*

*Wall angle refers to areas where a high wall was used instead of a bench.*

**St Andrew Goldfields Ltd.**

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*Hislop Mine Property*  
Timmins, Ontario

**Pit Slope in Existing Pit**

**OVERBURDEN SLOPES**

Overburden slopes have been designed with a 12 m high face sloped at 1.5H:1V, followed by a five metre wide berm to generate a maximum overall face angle of approximately 28° where a full 12 m of overburden exists. The slope design is based on a 1999 report by Acculab Engineering and Testing Ltd. which included a review of the overburden slopes. The analysis was based upon samples collected from overburden adjacent to the existing pit (Acculab, 1999).

Scott Wilson RPA recommends that additional study be completed to more accurately determine the material characteristics for the overburden and to define appropriate slope angles for the overburden material. The groundwater conditions should also be considered as the existing analysis assumes that the slopes are drained.

**WASTE OVERBURDEN DUMPS**

The waste dump is planned to be located to the south of the East Pit, as shown on Figure 18-11. The dump will be built in lifts with set backs to provide a 3H:1V overall slope which is consistent with the closure plan for the site. Without consideration for waste diverted to roads and yards, the waste dump will be approximately 400 m wide by 1,000 m long and 40 m high. Based on the same criteria, the overburden dump will be approximately 200 m wide by 800 m long and 40 m high.

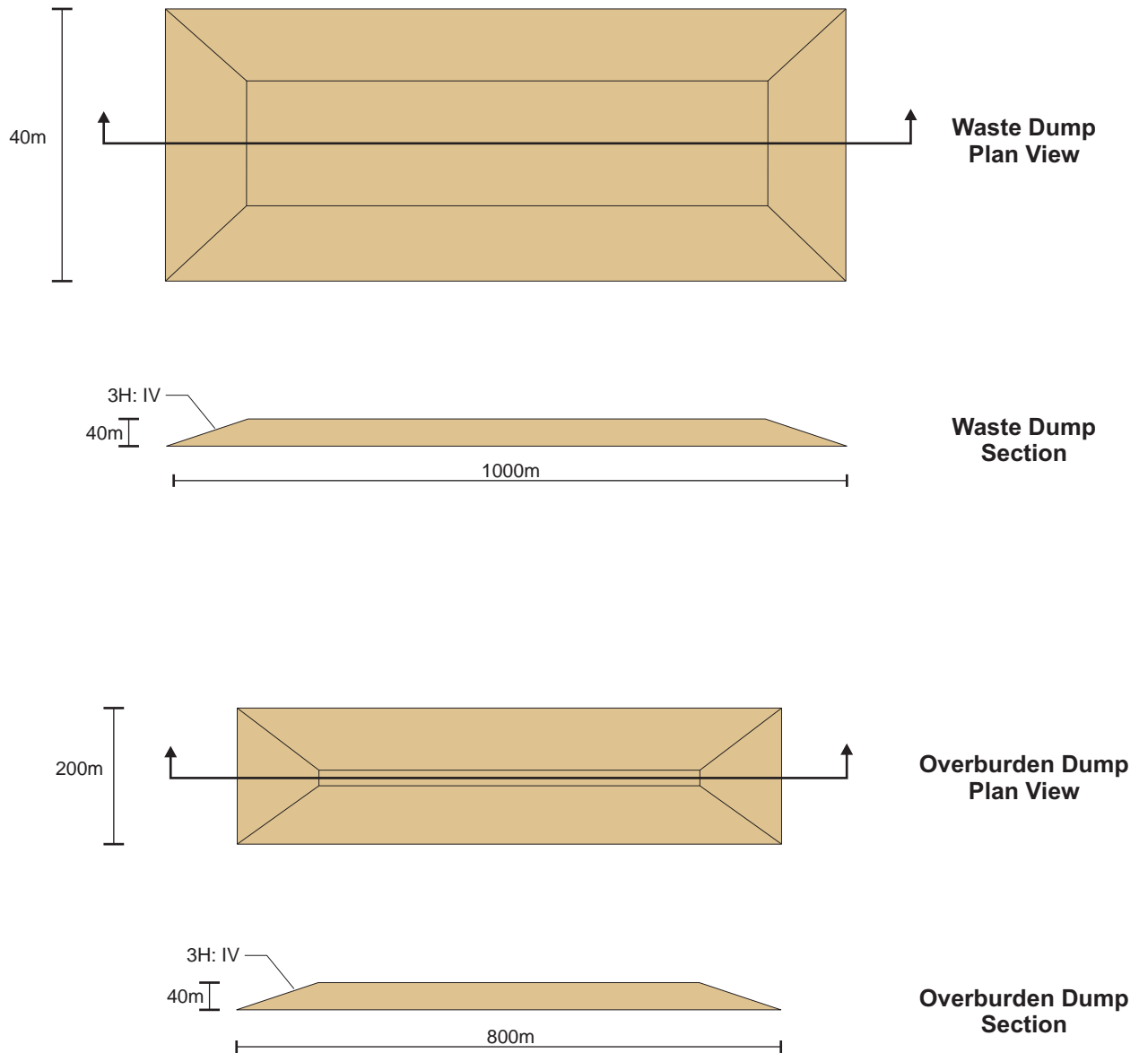


Figure 18-11

**St Andrew Goldfields Ltd.**

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*Hislop Mine Property*  
Timmins, Ontario

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**Waste and Overburden Dumps**

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**GRADE CONTROL**

Grade control activity will be carried out by SAS technical personnel. Blasthole sample analyses will be used to assess the gold grades for blasted material, and the blasted rock will be identified and sorted while loading to generate an ore stream, a low grade ore stream, and a waste stream. The low grade ore cut-off grade will vary over time depending on the costs and the short term gold price used at any given time.

It will be necessary to develop a protocol for blasthole sampling, organize a process and schedule for getting samples delivered to the assay laboratory at the Holt Mill, and obtain analytical results in a timely manner.

Until a good understanding of the ore separation is established, Scott Wilson RPA recommends that ore only be loaded on the dayshift. However, there are periods in the mine life when there will only be ore available for mucking and ore will have to be loaded on day and night shifts.

**ORE HAULAGE**

The crushed ore haul route to the Holt Mill is primarily along Highway 101 east. The area is sparsely populated and there are no communities between the Project and the Holt Mill. At the Hislop site, there is the option of travelling east off of the site to Highway 572 and then north to Highway 101, or west to a local road and then north to Highway 101. Route 572 has a narrow bridge with load restrictions and Route 572 is more likely to be impacted by load restrictions in the spring.

Therefore, the proposed haulage route is to the west along Tamarac Road, and then north to Highway 101. Scott Wilson RPA recommends that SAS communicate with local officials and local residents, and take action to reduce dust and defray the maintenance costs so that spring load restrictions are not a serious imposition on the operation.

**INFRASTRUCTURE**

There is minimal infrastructure required for the Hislop operation. The technical personnel will work from the nearby SAS office in Matheson, and there will be no

requirement for company maintenance facilities. A building for the planned 24 hour manned security gate will be required.

Site roads, a crusher pad, a contractor's yard and stockpile pads will be prepared using waste from the initial open pit development.

Pumps will be purchased for the removal of water from the East Pit. The East Pit dewatering is planned to discharge to the existing, partially water filled West Pit from whence the water will be pumped to the 25,000 m<sup>3</sup> capacity settling pond prior to discharge to the environment. There will be approximately 100 hp required for pumping operations and the pump load will remain relatively low until dewatering of the main pit is required.

Site electrical requirements for pumps and service buildings will be supplied from the existing electrical service on site. The site feed is 27 kV to a 200 A service. This can be upgraded to 600 A service with the addition of a pole mounted transformer bank. The upgrade to 600 A service is expected to be sufficient to supply power for the planned activity at the Project.

Communications between equipment operators and technical and supervisory personnel will utilize short range two way radios, and cellular telephones will be used for communication off site.

## **MINE EQUIPMENT**

All of the mine mobile equipment will be supplied by a contractor who will also be responsible for the appropriate maintenance facilities for his equipment. The pit ramps have been designed to accommodate 40 tonne capacity trucks to limit the impact of the ramp size on the pit design.

Ore loading in wide areas could be done with an excavator or wheel loader. In areas where ore limits are restrictive, the use of the larger front end loader is not recommended.

An estimate of the appropriate fleet required to handle the combined ore and waste production is outlined in Table 18-7.

**TABLE 18-7 TYPICAL MINE EQUIPMENT REQUIREMENTS**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Unit Type	Fleet	Comment
Excavator 3 m <sup>3</sup> class	1	Ore loading
Wheel loader 10 t capacity	1	Waste and overburden loading
40 tonne haul trucks	6	Ore and waste
Dozer	2	Pit and dump maintenance
Road grader	1	Road maintenance
Water truck	1	Road maintenance
Blast hole drill	2	Blast hole drilling
Explosives truck	1	Explosives loading

The removal of overburden may be undertaken with larger equipment if available. As there are no permanent ramps developed in the overburden, the haul truck limitation related to ramp size is not an issue in the overburden.

## MINERAL PROCESSING

The ore from the Hislop operation will be milled at the SAS Holt Mill. The Holt Mill is located 52 km east of the Hislop pit alongside Highway 101 east. Ore will be crushed using contracted equipment at the Project site and transported by highway trucks to the Holt Mill.

The Holt Mill was constructed in 1988, originally designed for a throughput of 1,360 tpd. Expansions in 1988 and 2001 increased the throughput to 2,500 tpd and 3,000 tpd, respectively. There is no crusher at the Holt Mill.

Surface ore storage is comprised of a total of 4,900 tonnes in three silos, 900 tonnes in the Holt headframe bin and two other separate storage bins (1,000 tonnes and 3,000 tonnes). Ore can be delivered to the mill from the Holt Mine by conveyor or from a separate surface dump that enters a 100 tonne hopper and then can be fed to either of the

two storage bins. Ore from Hislop will enter the mill via the surface dump bin. The dump area will be modified to provide suitable space for semi-trailer units.

The grinding circuit consists of a 5.0 m diameter by 6.1 m long Allis Chalmers ball mill, converted to a SAG mill, a 4.0 m diameter by 5.5 m long Allis Chalmers ball mill, and a 3.6 m diameter by 4.9 m long tertiary ball mill. All are operating in series and in a closed circuit. The details of the grinding circuit are shown below in Table 18-8. The grinding circuit is controlled by an expert system and fuzzy logic.

The primary cyclone cluster consists of six 15 in. Krebs D15B cyclones. A secondary cyclone cluster consist of twelve 10 in. Krebs gMAX cyclones with an Outokumpu PSI-200 online analyzer. The secondary cyclone cluster feeds a 90 ft. Eimco thickener. The thickener underflow feeds six CIL tanks. The tank system is conventional gravity flow for slurry with counter-current carbon advancement.

**TABLE 18-8 HOLT MILL DATA**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

<b>Grinding Mills Data</b>	<b>SAG Mill</b>	<b>Secondary Ball Mill #1</b>	<b>Tertiary Ball Mill #2</b>
Diameter (m)	5	4	3.6
Length (m)	6.1	5.5	4.9
Motor (hp)	3,400	1,650	1,250
Ball Charge (%)	8-12	45	40
Grinding Media Size	5" Balls	2" Balls	1" slugs
Media Consumption (kg/tonne)	0.75	0.30	0.45
RPM	13.9	16.2	17.25
Critical Speed (%)	72.5	76.5	71
Circulating Load (%)	10-15	350	225
Power Draw (kWh)	2,250	1,250-1,450	750-900
Lifters	Polymet	Rubber	Rubber
Liners	Polymet	Rubber	Rubber
Discharge Grates (mm)	18 – 30 mm X 40 mm	Overflow Mill	Overflow Mill

Precious metal stripping is performed in batch operations, advancing 2.7 tonnes of loaded carbon through a 4 ft. x 8 ft. Simplicity screen. Carbon is transferred to an adsorption column where a Zadra process is utilized as the gold elution method. Barren



solution is circulated through two shell and tube heat exchangers and a 360 kW electric inline heater. The resulting pregnant solution is pumped from the solution tank to an electrowinning cell. The gold precipitate is further refined using a 125 kW Inductotherm furnace and the doré bars are poured in a seven mould cascade arrangement. After stripping, the carbon is regenerated in a rotary kiln, quenched, screened and returned to the process. Carbon fines are collected in a tank, filtered in a Perrin press, and packaged for sale.

## **METALLURGY AND PROCESSING**

The process flow sheet is shown in Figure 18-12. The 3,000 tpd capacity plant is planned to be operated at less than the rated capacity, with feed from the Holloway-Holt Project and the Hislop Mine. Initially, the mill is planned to operate with 1,500 tpd from Hislop and additional feed from the Holloway-Holt Project.

Newmont reported the grinding mills at the Holt Mill generated a grind of 75% minus 45  $\mu$  at the rate of 3,000 tpd. Taking the past work index of 21 kWhr/t and using Bond's grinding formula, the Holt grinding circuit could yield a product that has a  $P_{80}$  of 28  $\mu$  at 2,500 tpd. For maximum recovery, Scott Wilson RPA recommends that the Holt circuit be used to grind to the finest practical particle size.

The Holt plant has a design retention time of 24 hours operating at 3,000 tpd, which equates to 29 hours at 2,500 tpd.

The average recovery from the finer grind and longer retention leach tests was weighted 85% for samples CIL-7 and CIL-8 and 15% for sample CIL-9, reflecting the approximate proportion of the different ore types to yield a weighted average recovery of 84.5%. The weighted average residue grade was 0.32 g/t Au (see Table 16-5). Scott Wilson RPA has assumed a plant recovery of 84.5% for the Hislop ore and a residue grade of 0.34 g/t Au based upon the average grade from the leach tests.

Scott Wilson RPA recommends that SAS consider the use of oxygen in the circuit to assist in leaching, and notes that the recovery estimate could be better defined if the recovery for each ore type was applied to the quantity of that ore type to be milled for any given period.

Minor amounts of Hislop material have been processed at the Holt Mill, and there are few if any records of the mill performance with Hislop feed.

A more complete description of the Holt Mill is contained in the Scott Wilson RPA 2008 Technical Report on the Holloway-Holt Project.

#### ***METALLURGICAL ACCOUNTING***

Scott Wilson RPA notes that there are inconsistencies in the 2007 and 2008 mill production data, and that records from different SAS offices do not match. This is considered to be a matter of poor record keeping and inconsistent application of monthly metallurgical balance procedures. As the processing is planned to be done by comingling the ores from the three deposits, the metallurgical accounting records may be reviewed by outside parties and should be maintained in a sound consistent manner. Scott Wilson RPA recommends that, prior to the restart of processing operations, a detailed outline of the monthly metallurgical accounting procedures be prepared, including the identification of sample locations, a sample calculation sheet, and an approval process.

#### **LABORATORY**

SAS is re-establishing an analytical laboratory to service the Holt Mill as well as the Holloway, Hislop, and Holt mining operations. The laboratory is expected to be operational in the fourth quarter of 2009.



**TAILINGS DISPOSAL**

The tailings storage facility is located 2.5 km south of the Holt process facilities and is described in detail in the Scott Wilson RPA 2008 Technical Report on the Holloway-Holt Project. The tailings storage facility is subdivided into four separate areas to receive the mill tailings and treat the solution that results from the milling of up to 3,000 tpd. The tailings impoundment is shown in Figure 18-13. The current plans for the Holt Mill include the processing of 3.4 M tonnes of ore from the Holloway and Holt mines plus 1.9 M tonnes from Hislop for a total of 5.3 M tonnes.

Golder Associates Ltd. (Golder) developed all of the tailings dam designs, and has carried out the annual dam safety inspections. Most recently in June 2008, Golder prepared a deposition plan for the restart of the Holt Mill. The Tailings Management Facility (TMF) is divided into a series of four basins, including the North Basin, Southwest Basin, Southeast Basin, and Polishing Pond. There are five stages of TMF development with associated permitted water levels and tailings levels. Golder also outlines a number of deposition criteria in its deposition modelling, which needs to be incorporated into the operating plans.

Golder calculated the ultimate storage capacity of the tailings storage facility to be 1.43 Mt in the Southwest basin and 2.17 Mt in the Southeast Basin. There is space for the deposition of 0.7 M t in the Southwest Basin before the dam heights must be increased. Golder also developed the water management plan to be used with the deposition plan.

Two construction phases (Operating 2 and Operating 3) are proposed to provide the necessary storage capacity. Operating 2 will be required before the second winter of operation and Operating 3 will be required a year later.

Golder made a number of recommendations related to the tailings facility and studies pertaining to the final design of the facility and the nature of the tailings (Golder, 2009).

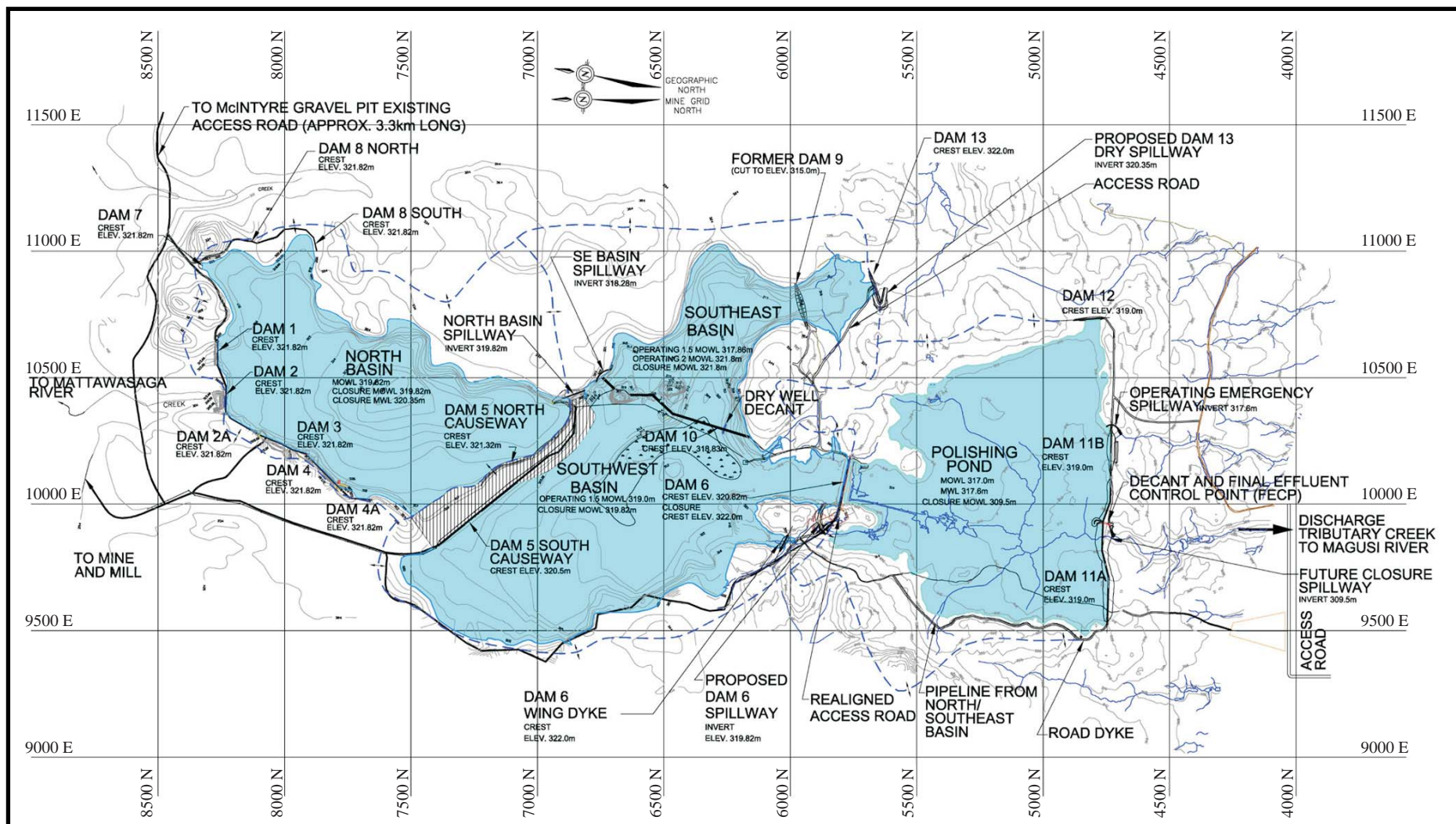


Figure 18-13

**S. Andrew Goldfields Ltd.**

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*Hislop Mine Property*  
*Timmins, Ontario*

**Holt Mine**  
**Tailings Management Facility**

18-29

**UPDATED TAILINGS IMPOUNDMENT SURVEY**

Subsequent to the Golder report, a bathymetric survey of the existing tailings was completed by Corriveau J.L. & Assoc. Inc. (Corriveau, 2008), and a revised volume estimate was prepared for SAS (Table 18-9).

**TABLE 18-9 TAILINGS CAPACITY BASED ON 2008 BATHYMETRIC SURVEY**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

<b>Impoundment Area</b>	<b>Survey Volume (Mm<sup>3</sup>)</b>	<b>Survey Tonnage (Mt)</b>	<b>Golder Tonnage (Mt)</b>
<b>Current with restriction due to transformer location</b>			
Southwest Basin	1.5	2.0	0.7
Southeast Basin	-	-	-
<b>Total</b>	<b>1.5</b>	<b>2.0</b>	<b>0.7</b>
<b>Current with transformer relocated</b>			
Southwest Basin	2.9	3.8	n/a
Southeast Basin	-	-	n/a
<b>Total</b>	<b>2.9</b>	<b>3.8</b>	<b>n/a</b>
<b>Ultimate with no restrictions</b>			
Southwest Basin	2.9	3.8	1.4
Southeast Basin	1.9	2.5	2.2
<b>Total</b>	<b>4.8</b>	<b>6.3</b>	<b>3.6</b>

The difference in volume estimates is related to the accuracy of the bathymetric survey used in the analysis. The work completed by Corriveau is based on a complete survey of the dams and surface of the deposited tailings. The Golder estimate is based upon a partial bathymetric survey, the original topography, and the quantity of tailings deposited since the dams were started. The most recent survey is considered to be the most accurate estimate of the remaining tailings impoundment capacity. This survey indicates that, with the planned dam construction, there is sufficient tailings capacity for the Hislop mineral reserves along with the Holloway and Holt planned tailings. SAS should refine their tailings management plans in order to accurately predict timing and cost for future tailings management facility construction.

**GOLDER 2008 DAM SAFETY INSPECTION**

Golder carried out an inspection of the Holt tailings facility on May 27, 2008, and reported the results in its report dated July 30, 2009. Golder state that “on the whole, the dams are performing well. A few points were noted during the inspection. One of these

points, (i.e. the settlement of the crest of Dam 10) is considered serious: however, it has been addressed by temporarily reducing the MOWL's [maximum operating water level] in the adjacent basins." Golder concludes that "based on the observations made during the site inspection, ... all dams are currently performing adequately".

SAS site management consider that the Corriveau volume estimates are an appropriate estimation and are consistent with their field observations. Scott Wilson RPA recommends that SAS complete a detailed review of the Corriveau volume estimates and the actual dam elevations compared to the datum used by Corriveau. SAS should provide such information to their tailings dam engineer that there can be agreement on the remaining capacity of the tailings impoundment, required operating conditions, and construction stages to meet the production requirements.

## **LIFE OF MINE PLAN**

The Hislop LOMP was developed based upon the maximum material movement of 400,000 tonnes per month (tpm). A starter pit was developed to provide a steady stream of ore to the plant at the design rate of 1,500 tpd of ore. At the owner's request, the processing of ore was delayed until the fourth month of the Project and ore mined previous to that time was stockpiled. Overburden stripping was also pulled forward into the first three months of the schedule, though there remains some stripping to be completed later in the Project life.

The costs for waste and overburden stripping in the first three months of the schedule were considered to be capital costs. Mining continues for a 38 month period at the end of which there is a 418,000 tonne stockpile of ore ready to be processed. The current schedule has a shortfall of up to 480 tpd (average 250 tpd) over the period from month 16 to month 20. Scott Wilson RPA recommends that more planning be undertaken to reduce this potential shortfall compared to the desired plan production rate.

The mining schedule envisions mining operations continuing at a relatively steady rate of 400,000 tpm over the life of the open pit.

## **MARKETS**

The principal commodity from the Hislop ore is gold in doré, which is freely traded at prices that are widely known. Prospects for sale of any production are virtually assured. Scott Wilson RPA used an average gold price of US\$849.90 per ounce for the Base Case. These prices were used on the basis that the operation would be reopened in the near future. The closing price of gold as posted in Kitco on September 11, 2009, was US\$1,005.10 per ounce.

The average exchange rate for \$C:\$US used by Scott Wilson RPA in this analysis was 0.86. The exchange rate as published by the Bank of Canada as the noon rate on September 11, 2009 was C\$1.00 = US\$0.93.

## **CONTRACTS**

There are no specific contracts related to the Hislop deposit in place at this time. Contracts for the planned site security, mining, crushing, and ore haulage will need to be negotiated. Minor contracts for items such as communications and power may need to be completed.

SAS is in the process of restarting the Holloway-Holt Project and the Holt Mill, and there are certain contracts related to those activities.

## **ENVIRONMENTAL CONSIDERATIONS**

The Hislop site is subject to both Ontario provincial regulations and Federal Metal Mines Effluent Regulations (MMER) regulations. The Hislop site has operated under these requirements in the most recent operations.

## **PIT DEWATERING**

There is a Certificate of Authorization (CoA) for the Hislop Settling Pond which outlines the permitted facilities and discharge. The discharge from the settling pond is



limited to 1.9 m<sup>3</sup>/min based on 12 hours of operation per day. Previous operations were suitably dewatered with this rate and the expectation is that the existing CoA will provide sufficient dewatering capacity for the existing pit. Amendments have been submitted to account for the larger area of the proposed pit.

## ROCK CHARACTERIZATION

Rock samples have been collected and characterized with respect to their acid generation and metal leaching characteristics. There are several ore and waste samples which were tested in 1999 and 2000. Additional samples were collected and tested in 2006, and a set of samples were collected in 2009 from the drill core. The most recent sampling program was aimed at collecting sufficient samples to characterize the rock types based on the estimated quantity of each of the different rock types expected to be encountered while mining. Analysis of all of the test data will be completed by an environmental consultant when all of the results are received. An initial review of the data and a preliminary analysis are presented below.

The guidelines for the evaluation of neutralization potential ratios (NPR) from acid base accounting (ABA) test work as recommended by Price (1997), are summarized in Table 18-10.

**TABLE 18-10 CRITERIA FOR EVALUATION OF ARD POTENTIAL  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Potential	Criteria	Comment
Likely	NPR < 1	Likely acid generating, unless sulphide minerals are non-reactive
Possible (uncertain)	1 < NPR < 2	Possibly acid generating if NP is insufficiently reactive or is depleted at a rate faster than sulfides
Low	2 < NPR < 4	Not potentially acid generating unless significant preferential exposure of sulphides along fracture planes, or extremely reactive sulphides in combination with insufficiently reactive NP
None	NPR > 4	

Another guideline for the evaluation of acid generation from rock is: If the net neutralization potential (NNP) is greater than 20 kg CaCO<sub>3</sub> per tonne, then the material is considered to be non-acid generating. If the NNP is less than -20 kg CaCO<sub>3</sub> per tonne, then the material is considered to be a potential acid generator. In between those values, there may be a need for additional testing to confirm the expected behaviour of the rock.

Rock samples were collected from the ultramafic metavolcanic rock unit (UM), the mafic metavolcanic rock unit (VMO), the mafic metavolcanic with hematite alteration (VMOAHEM) rock unit, and the syenite intrusive (ISO) rock unit. The test results were reviewed by Blue Heron Solutions for Environmental Management Inc. and reported in their July 2009 report.

In the ISO, there were 18 samples of which two had an NPR of less than 1, three had an NPR between 1 and 2, and 11 had an NPR in excess of 4. The lowest NNP was -14 kg CaCO<sub>3</sub> per tonne. As a result, there may be portions of the ISO unit that require identification and monitoring to ensure that the material is not exposed on a rock dump. In general, this material is non-acid generating.

There were 31 samples in the UM unit, of which only one had an NPR less than 2. This unit appears to be non-acid generating material.

There were 26 samples in the VMO unit, of which two samples had an NPR of less than 2 and one sample had an NPR between 2 and 4. The balance of the samples had an NPR in excess of 4. This unit appears to be non-acid generating material.

There were 25 samples from the VMOAHEM unit, of which one sample had an NPR of less than 2 and seven samples had an NPR between 2 and 4. The balance of the samples had NPR in excess of 4. This unit appears to be non-acid generating material.

The analysis of the test data indicated that there is a low potential for the rock to generate acidity. Leaching of the O.Reg. 560/94 Schedule 1 parameters was shown to be low in comparison to screening criteria. Additional sampling was not recommended until

mining commences. Monitoring of the drainage from the existing rock dumps was recommended as a field test of the drainage characteristics.

The ore samples used in the leach tests were subjected to ABA analysis, as shown in Table 16-7. The NPR for all samples was in excess of 4.5, indicating low potential for acid generation.

## **MINE CLOSURE PLAN**

An amendment to the Hislop Mine closure report entitled “Closure Plan Hislop Mine Extension Project, St Andrew Goldfields Ltd.” has been prepared by Golder for SAS (Golder, 2008). This report has been distributed and discussed with regulatory officials and local First Nation representatives. There is an existing permit for the discharge of mine waters from an open pit.

Previous underground and open pit mining activities by SAS between 1990 and 2000 were covered by a closure plan which had been accepted by the Ministry of Northern Development and Mines in 1993, followed by an amendment that was filed by SAS in 1999. In December 2000, the site entered a State of Inactivity, which was reported to the Director of Mine Rehabilitation on October 26, 2000. A small scale open pit “pushback” mining operation was carried out in 2007 under the previous closure plan. Following the completion of this activity, the mine was again placed in a State of Inactivity.

The proposed mining activity will include an extension of the existing open pit along strike to the southeast. Overburden and waste rock will be stored in the existing dump sites, which would be expanded to accommodate the additional quantities of rock. Preliminary geochemical characterization of existing waste rock stockpiles located southwest of the open pit indicates that waste rock is not anticipated to generate acidic drainage. The proposed project would require minimal additional infrastructure.

Water pumped from the open pit during mining will be discharged through the existing Settling Pond. Effluent discharged through the calibrated v-notch weir will flow

northeastwards through natural drainage channels and muskeg before meeting the receiver, the Pike River. Effluent discharge from the Settling Pond will comply with effluent limits prescribed by Municipal/Industrial Strategy for Abatement (MISA, O. Reg.560/94) and the Settling Pond Certificate of Authorization. The effluent limits were calculated as to achieve Provincial Water Quality Objectives (PWQO) in the receiving waters of the Pike River.

Final closure activities will be carried out to achieve the following objectives:

1. Prevent reasonably foreseeable personal injury or property damage as a result of closing this project, and
2. Restore the site to its former use or condition, or to an alternate use or condition acceptable to the Director of Mine Rehabilitation.

Following a decision to close the Project, a notice of project status will be submitted to the Director of Mine Rehabilitation. A safe setback line will be established around the pit perimeter and it will be marked by a wall of boulders to prevent inadvertent access. The final open pit will be allowed to flood by removal of the pumping system.

Any remaining ore will be hauled off site for processing. Sub-ore grade stockpiles may be left at the site after closure, and run-off from these piles will be monitored. The top surface of the stockpiles will be regraded to ensure drainage to several discrete discharge points. Runoff and toe seepage will be diverted to the open pit via a drainage ditch. To the extent possible, stockpiled topsoil stripped from the open pit will be used for post-closure regrading and revegetation. The remaining overburden in the overburden stockpile will be regraded to ensure positive drainage to discrete drainage points. The surface of the regraded pile will be seeded and allowed to naturally revegetate.

The dykes forming the Settling Pond will be breached to allow for the restoration of natural drainage. A small residual pond will allow for the growth of reeds, which will deter the release of accumulated sediments.

Any soil impacted by spilled hydrocarbons will be cleaned up following closure. To prevent access to the site by recreational vehicles, a cut will be made through the mine access road near its junction with Highway 572.

The post-closure environmental impacts of the Hislop Open Pit Extension Project are anticipated to be small owing to the limited scale of the Project, which will not involve any permanent buildings, milling operations, or tailings areas. All temporary facilities, scrap, and equipment will be removed from the site.

A post-closure monitoring program has been developed as part of the closure plan. Golder has estimated the closure costs and post closure monitoring program to be \$414,000 and \$167,000, respectively (Golder, 2008).

## **TAXES**

Scott Wilson RPA has relied on SAS for guidance on applicable taxes, royalties, and other government levies or interests applicable to revenue or income from the Project. SAS has sufficient tax pools to shelter the income and mining tax exposure on this Project.

## **CAPITAL AND OPERATING COST ESTIMATES**

### **CAPITAL COST ESTIMATE**

The capital expenditures for the Project, totalling approximately \$11.0 million, are shown in Table 18-11. A 25% contingency has been included in the capital cost estimate. Total capital during the three month pre-production period amounts to \$4.0 million. Scott Wilson RPA notes that the cost estimate includes capitalized operating costs for overburden stripping, waste mining and ore mining over the first two years of the mine life.

**TABLE 18-11 CAPITAL COST ESTIMATE**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Item	Cost Estimate (\$ '000)
Overburden Stripping	2,734
Waste Mining	6,130
Ore Mining and Stockpiling	329
Mobilization	500
Site roads – to dumps and to back road	50
Crusher area	10
Gates	5
Security shack/small office	10
Survey gear/software	25
Computer/printer – eng and geo	8
Radios	1
Weigh scale	15
Power line movement	25
Pumps	75
Energize power line	5
Load out at Holt area	50
Pick ups (2)	60
Closure	580
Contingency (25%)	355
<b>Total</b>	<b>10,967</b>

Under current taxation regulations, the waste and overburden stripping, which must be completed before “commercial” production is attained, must be considered as a capital cost. The capitalized preproduction stripping for the Project was considered to be the first three months of stripping. At the end of three months, the ore production rate is expected to exceed 2/3 of the planned capacity of the mine.

The closure cost estimate is described in the environment section. In view of the short project life and the minimal company facilities at the site, there has been no allowance for sustaining capital. There has been no allowance for additional diamond drilling or other exploration at the Hislop site. Capital costs associated with the reopening of the Holloway-Holt Project have not been included in this analysis.

**OPERATING COST ESTIMATE**

Operating costs were developed from a combination of budgetary quotations from contractors for the mining, crushing, and hauling of ore to the Holt Mill, SAS operating budgets for the Holt Mill, and an estimate of the general and administrative (G&A) costs for the Hislop Project.

Scott Wilson RPA used the lowest budgetary estimates for mining, crushing, and haulage to estimate operating costs, but then adjusted the overburden stripping estimate downwards and the crushing and haulage costs upwards based upon subsequent review of the various estimates.

Tables 18-12, 18-13, and 18-14 summarize the cost estimates for mining, processing, and G&A, respectively.

**TABLE 18-12 HISLOP MINING COST ESTIMATE**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

Item	Units	Cost Estimate (\$)
Overburden Stripping	Per m <sup>3</sup>	4.25
Drill and Blast Waste	Per tonne	1.51
Drill and Blast Ore	Per tonne	1.66
Load and Haul	Per tonne	1.14
Crushing	Per tonne	2.25
Haul to mill	Per tonne	6.50

**TABLE 18-13 HISLOP PROCESSING COST ESTIMATE**  
St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada

Item	Cost (\$/t milled)
Labour	3.63
Spares and supplies	3.95
Reagents & Grinding Media	3.43
Power	5.81
<b>Total</b>	<b>16.82</b>

**TABLE 18-14 HISLOP G&A COST ESTIMATE**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Item	Cost Estimate (\$/month)
Roads and ore handling	31,500
Site security	15,000
Pumping	10,000
Utilities	1,000
Management	6,000
Geology	12,000
Engineering	7,000
Other	7,500
<b>Total cost per month</b>	<b>90,000</b>
<b>Total cost per tonne milled</b>	<b>2.00</b>

Scott Wilson RPA notes that the Project is sensitive to operating costs. As a result, Scott Wilson RPA recommends that the mine design be reviewed if negotiations with contractors result in operating cost estimates that are more or less favourable than the estimates used in the current study.

## **MANPOWER**

The estimated manpower for the Hislop operation and ore haulage is shown in Table 18-15. The mining operation may operate on a two or three shift basis depending upon the contractor's operating philosophy. However, ore mining is planned for dayshift unless there is nothing but ore to be loaded.



**TABLE 18-15 MANPOWER SUMMARY**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Area		Manpower
Loader Operators	contractor	3
Truck drivers	contractor	10
Dozers/Services	contractor	2
Drillers	contractor	2
Blasters	contractor	1
Crushing plant	contractor	3
Maintenance	contractor	4
Ore haul to Holt	contractor	10
Geologist	SAS	1
Engineer/Survey	SAS	1
<b>Total</b>		<b>37</b>

Based on a two shift mining operation, the day shift crew will comprise approximately 22 persons on site.

## OPPORTUNITIES FOR IMPROVEMENT

There are additional opportunities to increase the gold production from the Hislop deposit that should be evaluated and implemented if warranted.

Mineral Resources have been identified beneath the existing pit located west of the shaft, but detailed planning for the pushbacks required to access and exploit these resources has not been undertaken as part of this study. The preliminary Whittle optimization indicated that a potential pushback and deepening of the existing pit could generate approximately 20,000 ounces of gold production. Scott Wilson RPA recommends that SAS review the optimization results and resources beneath the existing pit and consider the preparation of plans for the exploitation of additional resources at the Hislop site.

There are also small near surface pods of Mineral Resources which have been identified in the resource estimate, but no planning for the extraction of these small pods was undertaken in this study.

There are existing workings in the pit area, and there are resources that extend beneath the open pit. It may be viable and beneficial to develop a plan for the extraction of a 10 m to 15 m thick sill beneath the final pit bottoms using underground mining methods. Conceptually, the Project would include a short ramp from the pit wall to a level beneath the pits. An undercut drift would be driven in ore along strike over the full length of the pit. Uppers drilling would be used to drill off a sill to be recovered by retreat blasting and remote load-haul-dump (LHD) mucking. Pillars would be left in waste zones to ensure ground stability, if such requirements were identified over the course of development. No mining parameters such as costs, dilution, and extraction have been developed for such mining operation, but the concept warrants additional study.

Low grade material that does not meet the pit discard grade criteria but contains sufficient gold to cover haulage and processing costs should be stockpiled so that it is available for potential future milling as incremental feed to the Holt Mill, or as economic mill feed in a high gold price environment.

## **ECONOMIC ANALYSIS**

A pre-tax Cash Flow Projection has been generated from the Life of Mine production schedule and capital and operating cost estimates, and is summarized in Table 18-16. A summary of the key criteria is provided below.

### **ECONOMIC CRITERIA**

#### **REVENUE**

- 1,500 tpd from open pit (525,000 tpa).
- Mill recovery of 84.5% in the Holt Mill.
- Gold at refinery 99.7% payable.
- Average exchange rate C\$1.00 = US\$0.86.
- Average metal price: US\$850 per ounce gold.
- NSR includes doré refining, transport, and insurance costs.

- 4% NSR applied to revenue.
- Revenue is recognized at the time of production.

**COSTS**

- Preproduction period: 3 months.
- Mine life: 4 years.
- Life of Mine production plan as summarized in Table 18-16.
- Mine life capital totals \$11.0 million.
- Average total operating cost over the mine life is \$42.54 per tonne milled.

TABLE 18-16 PRE-TAX CASH FLOW SUMMARY

YEAR		-1	1	2	3	4	TOTAL
<b>PRODUCTION</b>							
Ore Mined	tonnes	117,633	412,442	704,340	677,729	-	1,912,145
Mine Grade	g/t	1.92	2.16	2.28	2.52	-	2.32
Au Feed Oz	ozs	7,277	28,677	51,618	54,885	-	142,457
Waste Mined	tonnes	585,104	3,634,541	3,878,435	1,811,387	-	9,909,466
Overburden	m3	258,459	384,899	94,818	723,737	-	1,461,914
Ore milled	tonnes	-	525,000	487,936	525,000	374,209	1,912,145
Grade	g/t	-	2.11	2.25	2.48	2.46	2.32
Ounces	ozs	-	35,620	35,300	41,916	29,622	142,457
Au Recovery	%	84.50%	84.50%	84.50%	84.50%	84.50%	84.50%
Au Produced	ozs	-	30,099	29,828	35,419	25,030	120,376
Refinery Recovery	%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%
Au Recovered	ozs	-	30,008	29,739	35,312	24,955	120,015
<b>REVENUE</b>							
Au Price	US\$/oz	-	950.00	850.00	800.00	800.00	849.90
Exchange Rate	US\$/C\$	-	0.90	0.85	0.85	0.85	0.86
Gross revenue	C\$ (000)	-	31,676	29,739	33,235	23,487	118,137
Refining	C\$ (000)	-	60	60	71	50	241
Smelter Revenue	C\$ (000)	-	31,615	29,679	33,164	23,437	117,896
Royalty	C\$ (000)	-	1,265	1,187	1,327	937	4,716
Net Revenue	C\$ (000)	-	30,351	28,492	31,838	22,500	113,180
<b>OPERATING COSTS</b>							
Strip OB	C\$ (000)	-	-	403	3,076	-	3,479
Mining Waste	C\$ (000)	-	7,416	7,914	4,800	-	20,130
Mine Ore	C\$ (000)	-	1,155	1,972	1,898	-	5,025
Crush & Haul	C\$ (000)	-	4,594	4,269	4,594	3,274	16,731
Milling	C\$ (000)	-	8,831	8,207	8,831	6,294	32,162
SG&A	C\$ (000)	-	1,050	976	1,050	748	3,824
Total Operating Cost	C\$ (000)	-	23,045	23,741	24,248	10,317	81,352
Unit Operating Cost	\$/t milled	-	43.90	48.66	46.19	27.57	42.54
Unit Cost per Ounce	US\$/oz	-	689	677	582	350	583
OPERATING PROFIT	C\$ (000)	-	7,305	4,750	7,590	12,183	31,829
<b>CAPITAL COSTS</b>							
Overburden Stripping	C\$ (000)	1,098	1,636	-	-	-	2,734
Waste Mining	C\$ (000)	1,551	2,215	2,364	-	-	6,130
Ore Haulage and Stockpiling	C\$ (000)	329	-	-	-	-	329
Mobilization	C\$ (000)	500	-	-	-	-	500
Mine	C\$ (000)	339	-	-	-	-	339
Mill	C\$ (000)	-	-	-	-	-	-
Camp	C\$ (000)	-	-	-	-	-	-
Exploration	C\$ (000)	-	-	-	-	-	-
Mine Closure	C\$ (000)	-	-	-	-	580	580
Contingency	25%	210	-	-	-	145	355
Total capital costs	C\$ (000)	4,027	3,851	2,364	-	725	10,967
<b>PRE-TAX CASH FLOW</b>							
Incremental	C\$ (000)	(4,027)	3,454	2,386	7,590	11,458	20,861
Cumulative	C\$ (000)	(4,027)	(573)	1,814	9,404	20,861	
<b>COST PER OUNCE</b>							
Operating	US\$	-	731	714	617	385	621
Capital	US\$	-	-	-	-	-	79
Total	US\$	-	731	714	617	385	700
PRE-TAX INTERNAL RATE OF RETURN (IRR)	%	99.1%					
<b>PRE-TAX NET PRESENT VALUE (NPV)</b>							
0.0%	C\$ million	20.9					
5.0%	C\$ million	17.2					
7.5%	C\$ million	15.7					

**CASH FLOW ANALYSIS**

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals \$20.9 million over the mine life, and simple payback occurs after approximately 1.5 years.

The Total Cash Cost is US\$621 per ounce of gold. The mine life capital unit cost is US\$79 per ounce, for a Total Production Cost of US\$700 per ounce of gold. Average annual gold production during operation is 30,000 ounces per year.

The Pre-tax Net Present Value (NPV) at a 5% discount rate is \$17.2 million, and the Pre-tax Internal Rate of Return (IRR) is 99.1%.

Using a gold price of US\$950/ounce and an exchange rate of 0.85 for the life of the Project the pre-tax undiscounted cash flow would be \$36.2 million, the pre-tax NPV at a 5% discount rate would be \$30.4 million, and the pre-tax IRR would be 158.4%.

**SENSITIVITY ANALYSIS**

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities to:

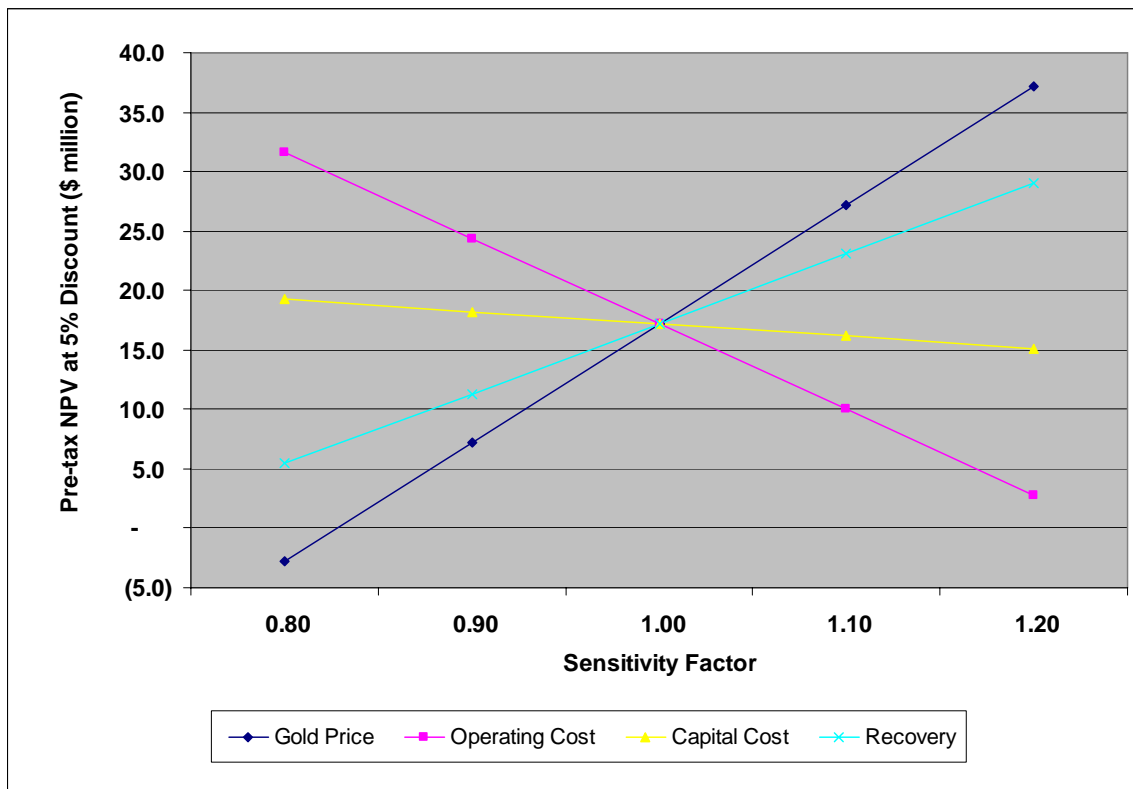
- Gold price, exchange rate, head grade and recovery
- Operating costs
- Capital Costs
- Metallurgical recovery

The sensitivity of the Project pre-tax NPV at 5% discount is shown in Table 18-17 and Figure 18-14.

**TABLE 18-17 SENSITIVITY ANALYSIS**  
**St Andrew Goldfields Ltd. – Hislop Project, Ontario, Canada**

Sensitivity Factor		0.80	0.90	1.00	1.10	1.20
Gold Price	US\$/oz	680	765	850	935	1,020
Operating Cost	\$/t milled	34.04	38.29	42.54	46.80	51.05
Capital Cost	\$ '000	8,774	9,870	10,967	12,064	13,161
Recovery	%	74.5%	79.5%	84.5%	89.5%	94.5%
<b>Pre-tax NPV @ 5% Discount</b>						
Gold Price	\$ million	(2.8)	7.2	17.2	27.2	37.2
Operating Cost	\$ million	31.6	24.4	17.2	10.0	2.8
Capital Cost	\$ million	19.3	18.2	17.2	16.2	15.1
Recovery	\$ million	5.4	11.3	17.2	23.1	29.0

**FIGURE 18-14 SENSITIVITY ANALYSIS**



## 19 INTERPRETATION AND CONCLUSIONS

Scott Wilson RPA provides the following conclusions with regard to the Mineral Reserve development at the Hislop Project. For detailed recommendations related to the Mineral Resources, the reader is referred to the August 6, 2009 Technical Report by Scott Wilson RPA.

The June 2009 Hislop Project Mineral Resources estimated by SAS using a 0.94 g/t Au cut-off grade total 6.66 million tonnes of Indicated Mineral Resources at an average grade of approximately 1.98 g/t Au and 5.34 million tonnes of Inferred Mineral Resources at an average grade of approximately 1.80 g/t Au.

The September 1, 2009 Mineral Reserves are estimated by Scott Wilson RPA to be 1.9 million tonnes of Probable Mineral Reserves at an average grade of approximately 2.3 g/t Au and containing 142,000 ounces of gold. The Mineral Reserves are included within the stated Mineral Resources. In Scott Wilson RPA's opinion, these Mineral Resource and Mineral Reserve estimates are prepared in accordance with CIM definitions and are NI 43-101 compliant.

The Mineral Reserves are amenable to open pit mining and processing at the Holt Mill for the recovery of gold. The Mineral Reserves are based upon the Mineral Resources within an optimized pit design and include 15% dilution at a grade of 0.5 g/t Au and 90% extraction. The Mineral Reserves are based upon a gold price of US\$800 per ounce less a 4% NSR and an exchange rate of 0.85 (C\$:US\$). The average total operating cost per tonne of ore milled over the life of the Project is \$42.54.

A production schedule was generated based upon the production of 1,500 tonnes of ore per day from open pit mining. The Project cash flow was estimated based upon:

- Mill recovery of 84.5% in the Holt Mill.
- Gold at refinery 99.7% payable.
- Average exchange rate: C\$1.00 = US\$0.86.
- Average metal price: US\$850 per ounce gold.

- 4% NSR applied to revenue.
- 3 month preproduction period.
- Mine life capital: \$11.0 million.
- Average operating cost over the mine life is \$42.54 per tonne milled.

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals \$20.9 million over the mine life, and simple payback occurs after approximately 1.5 years.

The Total Cash Cost is US\$621 per ounce of gold. The mine life capital unit cost is US\$79 per ounce, for a Total Production Cost of US\$700 per ounce of gold. Average annual gold production during operation is 30,000 ounces per year. The Pre-tax Net Present Value (NPV) at a 5% discount rate is \$17.2 million, and the Pre-tax Internal Rate of Return (IRR) is 99.1%.

Using a gold price of US\$950/ounce and an exchange rate of 0.85 for the life of the Project the pre-tax undiscounted cash flow would be \$36.2 million, the pre-tax NPV at a 5% discount rate would be \$30.4 million, and the pre-tax IRR would be 158.4%.

Mining continues for a 38 month period, at the end of which there is a 418,000 tonne stockpile of ore remaining to be processed. The current schedule has a shortfall of up to 480 tpd (average 250 tpd) over the period from month 16 to month 20.

Scott Wilson RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues that would materially affect the Mineral Reserve estimate.



## 20 RECOMMENDATIONS

Scott Wilson RPA recommends that SAS continue the development of the Hislop Mineral Reserves with a view to advancing the Project to production and increasing the SAS gold production through exploitation of projected excess capacity at the Holt Mill. The following recommendations pertain to the Mineral Reserves and the reader is referred to the August 6, 2009 Scott Wilson RPA Technical Report with regard to recommendations related to the Mineral Resources.

Scott Wilson RPA provides the following comments and recommendations:

- Identify the locations of underground workings on all mine plans and sections and develop procedures to ensure that such locations are monitored and that definition drilling is carried out in advance of mining through any workings.
- Assess pit slope recommendations in the field upon exposure, including consideration for the influence of underground workings and differences in rock structure, and modify the open pit design accordingly. Groundwater conditions should also be considered as the existing analysis assumes that the slopes are drained.
- Additional study should be completed to more accurately determine the material characteristics for the overburden, and to define appropriate slope angles for the overburden material.
- For ore haulage to the Holt Mill, SAS should communicate with local officials and local residents, and take action to reduce dust and to defray the maintenance costs, so that spring load restrictions are not a serious imposition on the operation.
- Ore grinding should be completed to the finest practical particle size to maximize metallurgical recovery.
- The use of oxygen should be considered in the process circuit to assist in leaching.
- SAS should refine their tailings management plans in order to accurately predict timing and cost for future tailings management facility construction.
- Additional rock characterization sampling is not required until mining is underway as the analysis of samples indicates a low potential to generate acidity.

- Additional engineering work should be completed to optimize the production schedule and reduce the shortfalls in the current plan.
- Prepare bid documents for the activities to be contracted and solicit bids for the work.
- Evaluate the bids compared to the estimates within this prefeasibility report to determine whether the mine design should be reviewed on the basis of the final contractor bids.
- Additional work should be completed to evaluate the potential to exploit additional resources beneath the existing open pit.
- Prior to the restart of processing operations, a detailed outline of the monthly metallurgical accounting procedures should be prepared, including the identification of sample locations, a sample calculation sheet, and an approval process.

To advance the project, Scott Wilson RPA recommends that SAS carry out the work as listed in Table 20-1.

**TABLE 20-1 PROPOSED WORK PROGRAM AND BUDGET**  
**St Andrew Goldfields Ltd. - Hislop Mine Property, Ontario, Canada**

Item	Cost (C\$)
Preparation of contract documents for Hislop mining, crushing and ore transport	15,000
Tailings facility construction schedules	20,000
Metal Leaching Analyses	20,000
Geotechnical Evaluation of Steeper Slopes	20,000
Review of Mine Design	50,000
<b>Subtotal</b>	<b>125,000</b>
Contingency	25,000
<b>Total</b>	<b>150,000</b>

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## 22 DATE AND SIGNATURE PAGE

This report titled “Technical Report on a Preliminary Feasibility Study of the Hislop Project, Ontario, Canada” and dated September 28, 2009, was prepared and signed by the following authors:

**(Signed & Sealed)**

Dated at Toronto, Ontario  
September 28, 2009

Wayne W. Valliant, P.Geo.  
Principal Geologist

**(Signed & Sealed)**

Dated at Toronto, Ontario  
September 28, 2009

R. Dennis Bergen, P.Eng.  
Associate Principal Mining Engineer

## 23 CERTIFICATE OF QUALIFIED PERSON

### WAYNE W. VALLIANT

I, Wayne W. Valliant, P.Geo., as an author of this report entitled “Technical Report on a Preliminary Feasibility Study of the Hislop Project, Ontario, Canada” prepared for St Andrew Goldfields Ltd. and dated September 28, 2009, do hereby certify that:

1. I am Principal Geologist with Scott Wilson Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
2. I am a graduate of Carleton University, Ottawa, Ontario, Canada in 1973 with a Bachelor of Science degree in Geology.
3. I am registered as a Geologist in the Province of Ontario (Reg.# 1175). I have worked as a geologist for a total of 36 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Review and report as a consultant on more than thirty mining operations and projects around the world for due diligence and resource/reserve estimation
  - General Manager of Technical Services for corporation with operations and mine development projects in Canada and Latin America
  - Superintendent of Technical Services at three mines in Canada and Mexico
  - Chief Geologist at three Canadian mines, including two gold mines
4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.
5. I visited the Hislop Project on May 26, 2009.
6. I am responsible for the preparation of items 3-15 and 17 (Mineral Resources) and collaborated with my co-author on Items 1 and 2 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.
8. I co-authored a previous report on the Hislop property entitled “Technical Report on the Hislop Project, Ontario, Canada”, prepared for St Andrew Goldfields Ltd. and dated August 6, 2009.
9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 28<sup>th</sup> day of September, 2009

**(Signed & Sealed)**

Wayne W. Valliant, P. Geo.



**R. DENNIS BERGEN**

I, Raymond Dennis Bergen, P.Eng., as an author of this report entitled “Technical Report on a Preliminary Feasibility Study of the Hislop Project, Ontario, Canada” prepared for St Andrew Goldfields Ltd. and dated September 28, 2009, do hereby certify that:

1. I am an Associate Principal Mining Engineer engaged by Scott Wilson Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
2. I am a graduate of the University of British Columbia, Vancouver, B.C., Canada, in 1979 with a Bachelor of Applied Science degree in Mineral Engineering. I am a graduate of the British Columbia Institute Technology in Burnaby, B.C. Canada, in 1972 with a Diploma in Mining Technology.
3. I am registered as a Professional Engineer in the Province of British Columbia (Reg.# 16064) and as a Licensee with the Association of professional Engineers, Geologists and Geophysicists of the Northwest Territories (Licence L1660). I have worked as an engineer for a total of 30 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Practice as a mining engineer, production superintendent, mine manager, Vice President of Operations and a consultant in the design, operation and review of mining operations.
  - Review and report, as an employee and as a consultant, on numerous mining operations and projects around the world for due diligence and operational review related to project acquisition and technical report preparation, including:
    - Engineering and operating superintendent at the Con gold mine, a deep underground gold mine, Yellowknife, NWT, Canada
    - Contribute to the Independent Report on the Reopening of the Cantung Mine at Tungsten, NWT, Canada
    - General Manager in Charge of the Reopening of the Cantung Mine, NWT, Canada
    - Detailed diligence review of the ERG Tailings Recovery Project, Ontario, Canada
    - VP Operations in charge of the restart of the Golden Bear Mine, BC, Canada
  - Mining engineer in underground gold and base metal mines.
  - Consulting engineer working on project acquisition and project design.
  - Mine Manager at three different mines with open pit and underground operations
  - Vice President of Operations responsible for an operating gold mine, development of a feasibility study for a project in Costa Rica and project review and evaluation related to project acquisition for numerous projects around the world including the successful acquisition of mines in Mexico and Australia and an interest in a mine in Argentina.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.
5. I have visited the Hislop Project on two occasions, with the most recent visit on February 24 and 25, 2009.
6. I am responsible for the preparation of Items 16, 18, 17 (Mineral Reserves), 20, and 21 and collaborated with my co-author on Items 1 and 2 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.
8. I co-authored a previous report on the Hislop property entitled "Technical Report on the Hislop Project, Ontario, Canada", prepared for St Andrew Goldfields Ltd. and dated August 6, 2009.
9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 28<sup>th</sup> day of September, 2009

**(Signed & Sealed)**

Raymond Dennis Bergen, P.Eng.