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23 January 2024

# Simberi Resource Definition Drilling 50% Complete

## Targeting Upgrade of 1 Moz from Inferred to Indicated Mineral Resource

### Highlights

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- St Barbara targeting an upgrade at Simberi of 1 Moz from Inferred Mineral Resource to Indicated Mineral Resource
    - 12 resource definition diamond holes completed so far for 2,348 metres
    - Assay results received for first two diamond holes support the interpreted ore zones between main Pigiput and Sorowar pits
  - Completed 14-hole metallurgical diamond drill program for 1,856 metres
    - Assay results returned for the first 10 holes and first sample material dispatched by air freight
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St Barbara Limited (“**St Barbara**” or the “**Company**”) (ASX: SBM) is pleased to announce that excellent progress has been made with the Simberi metallurgical sample drilling and resource definition programs. Drilling has been progressing slightly ahead of internal schedules, while receipt of assay results has been slower than anticipated.

The resource definition drilling campaign will support the work being carried to convert a target of 1 Moz of the Inferred Mineral Resource to Indicated Mineral Resource. The results will be incorporated into an Updated Mineral Resource and Ore Reserve estimate at the end of FY24.

Managing Director and CEO Andrew Strelein said “We are very excited to now be able to focus both diamond rigs on the completion of the resource definition drilling program. We are targeting the conversion of 1 Moz of Inferred Mineral Resource to Indicated Mineral Resource. The completion of the metallurgical drilling is an important milestone for the 2023/24 campaign. The first batch of sample material was dispatched this week to the selected laboratory in Canada.”

Assay results have begun to be returned. Significant results from the first two resource definition holes include:

- **SDH507: 37 m @ 1.9 g/t Au from 89 m including 3 m @ 10.3 g/t Au from 120 m;**

Assay results have been received for 10 of the 14 completed metallurgical sample diamond holes and include:

- **SDH510: 36 m @ 2.1 g/t Au from 4 m;**
- **SDH511: 8 m @ 10.7 g/t Au from 33 m, 118m @ 1.8 g/t Au from 64 m, including 7 m @ 5.5 g/t Au from 115 m and 10 m @ 3.9 g/t Au from 131 m;**
- **SDH512: 113 m @ 1.7 g/t Au from 79 m, including 32m @ 2.9 g/t Au from 159 m;**
- **SDH513: 37 m @ 7.0 g/t Au from 114 m, including 3 m @ 61.6 g/t Au from 129 m;**
- **SDH515: 29 m @ 3.9 g/t Au from 43 m, including 9 m @ 8.8 g/t Au from 55 m, and 19 m @ 12.6 g/t Au from 105 m including 1 m @ 206 g/t Au from 115 m.**

The full table of available assay results is set out below in Table 1.





**Figure 2. FY24 Completed and Planned Diamond Drilling, Simberi Island, Papua New Guinea**

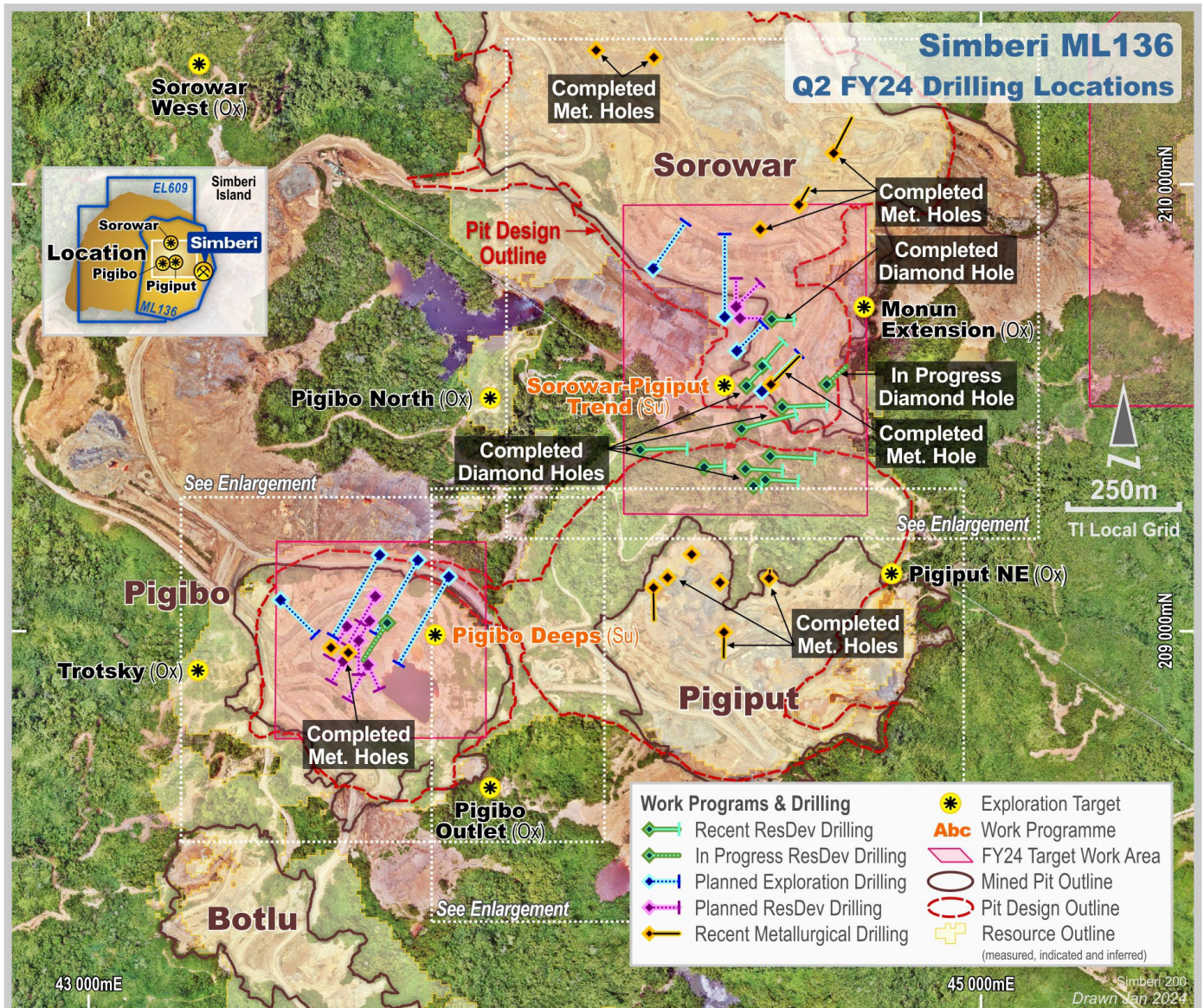






Figure 3. FY24 Completed and Planned Diamond Drilling, Pigiput, Simberi Island

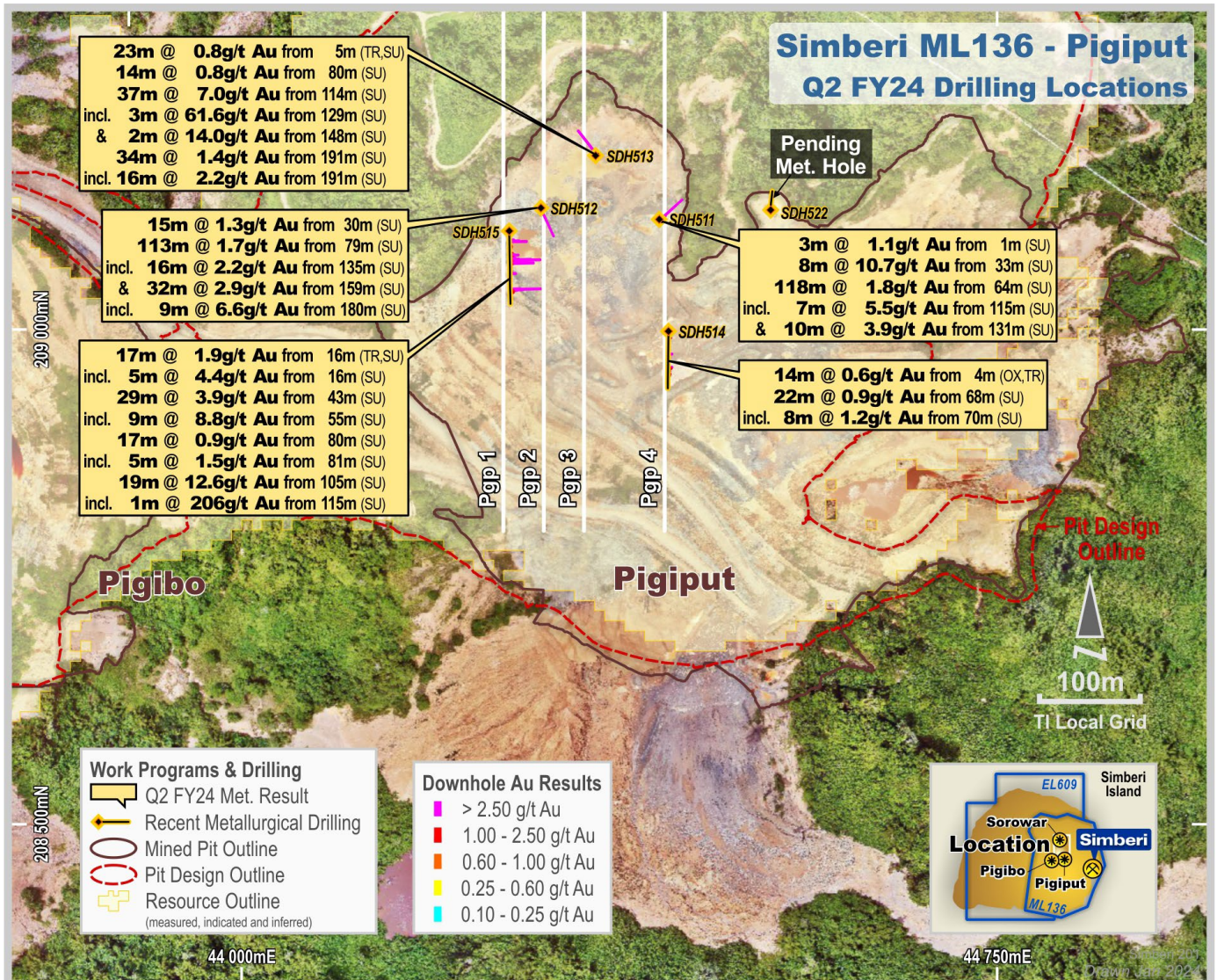






Figure 4. Drill Cross Section Pgp 1: 44,260 mE (View Looking West), Pigiput, Simberi Island

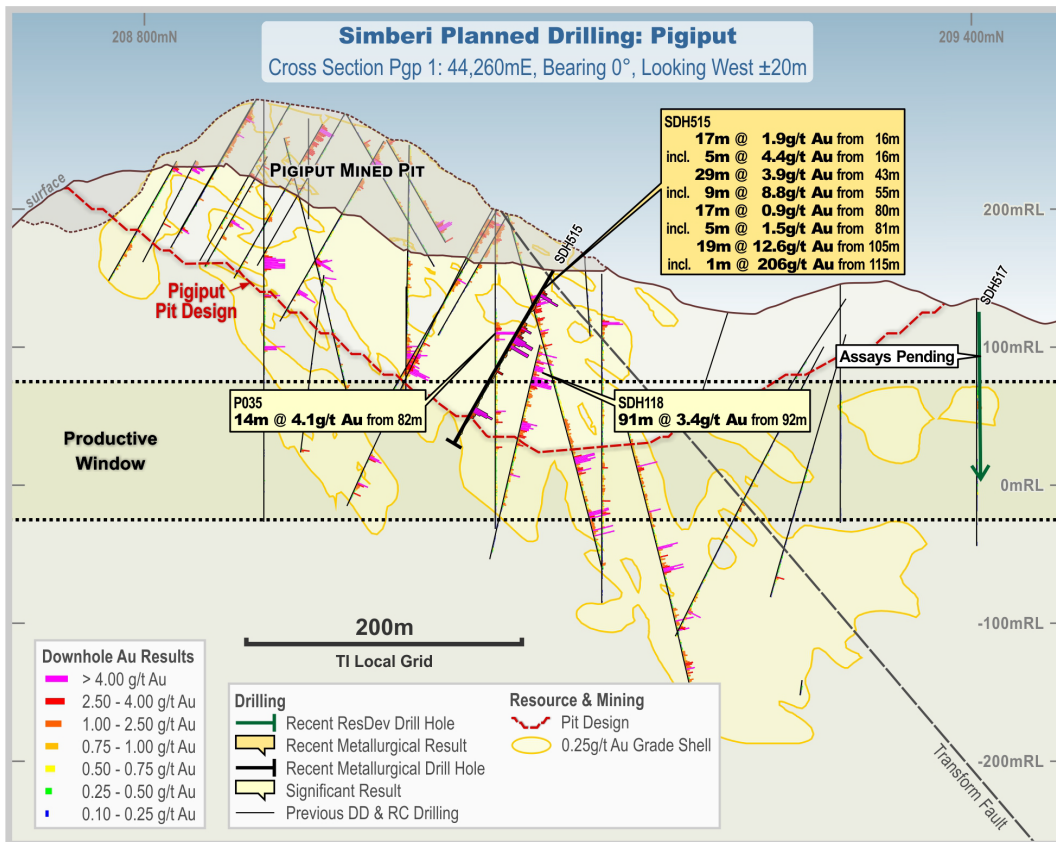


Figure 5. Drill Cross Section Pgp 2: 44,300 mE (View Looking West), Pigiput, Simberi Island

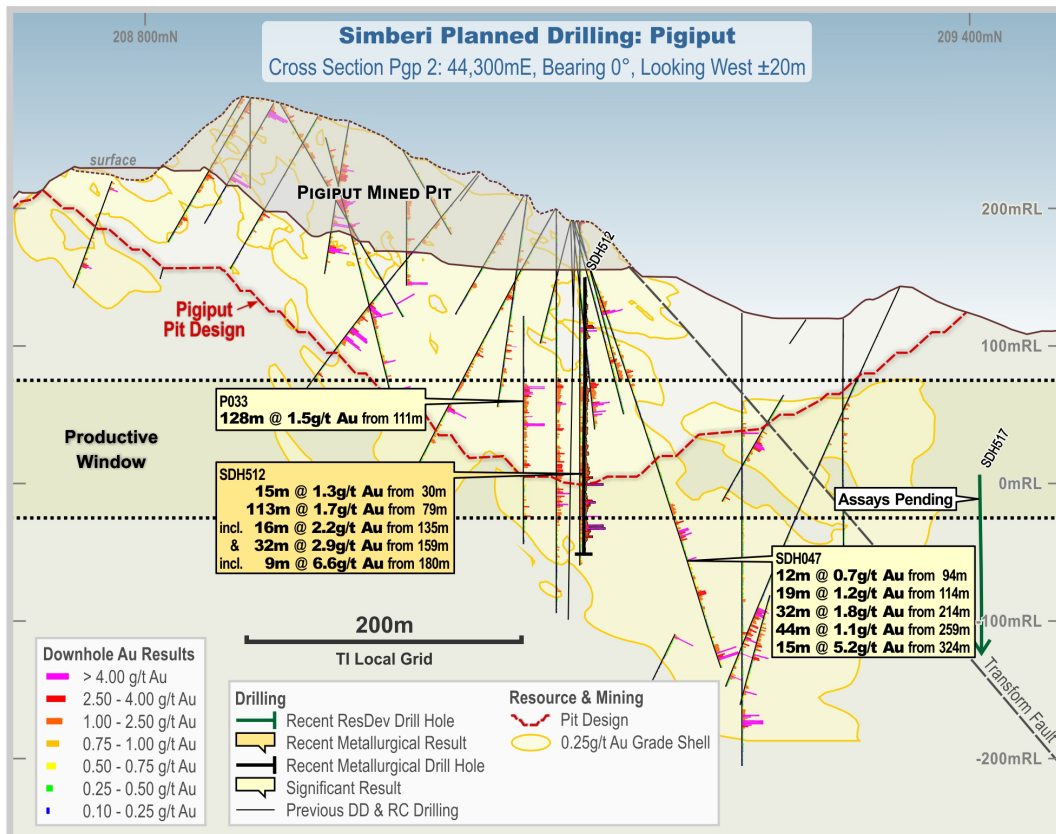






Figure 6. Drill Cross Section Pgp 3: 44,340 mE (View Looking West), Pigiput, Simberi Island

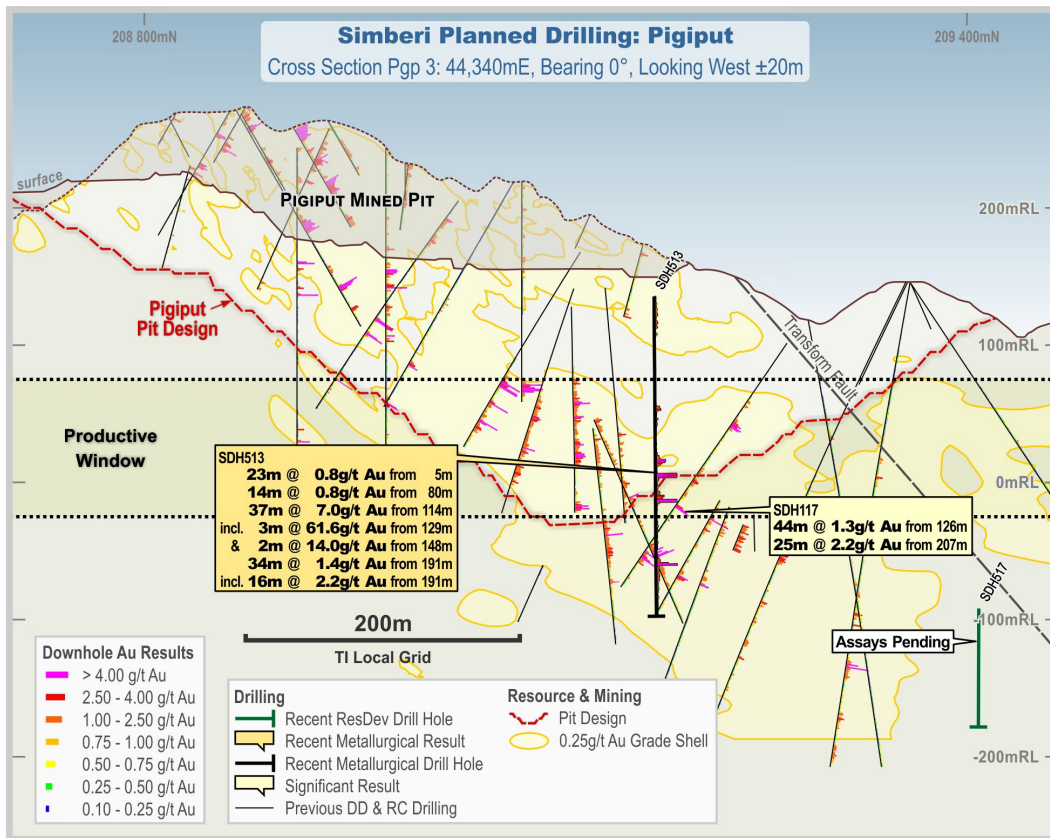


Figure 7. Drill Cross Section Pgp 4: 44,420 mE (View Looking West), Pigiput, Simberi Island

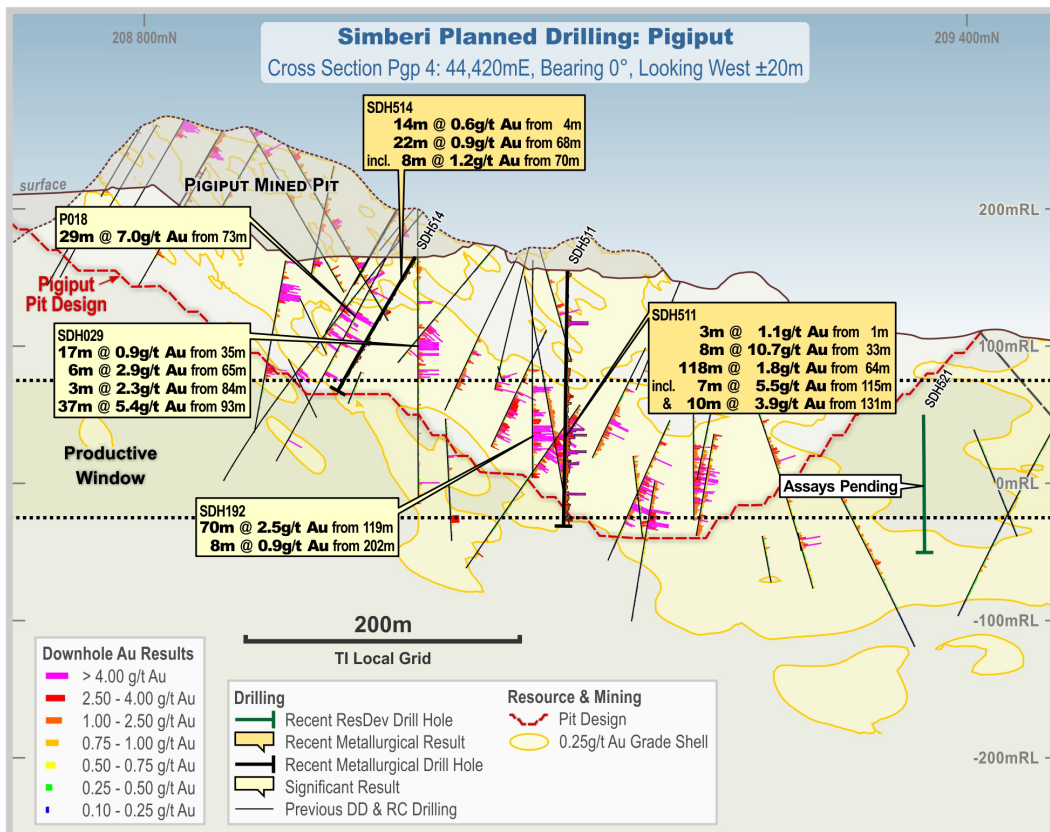






Figure 8. FY24 Completed and Planned Diamond Drilling, Sorowar, Simberi Island

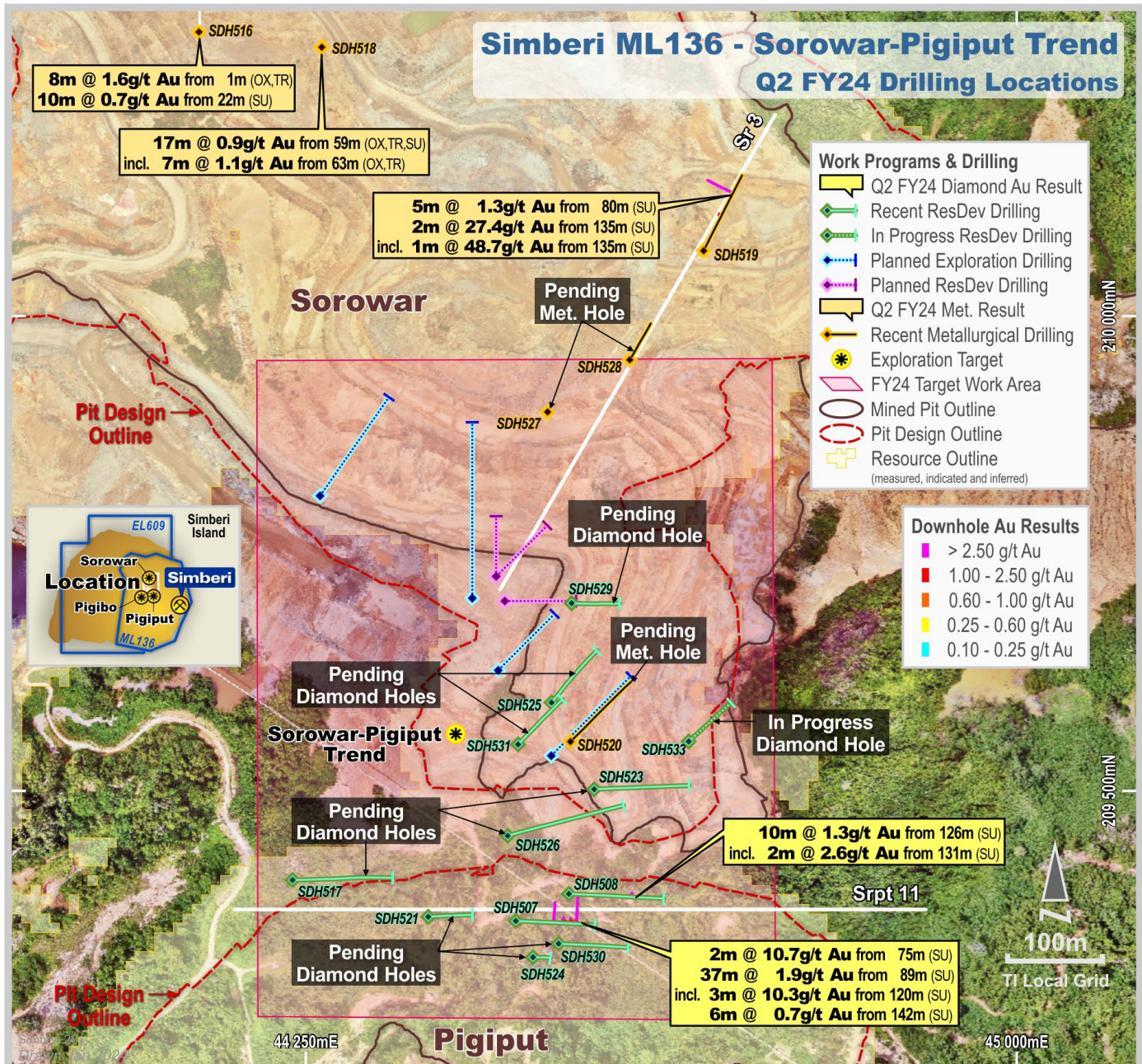






Figure 9. Drill Cross Section Sr 3 (View Looking Northwest), Sorowar, Simberi Island

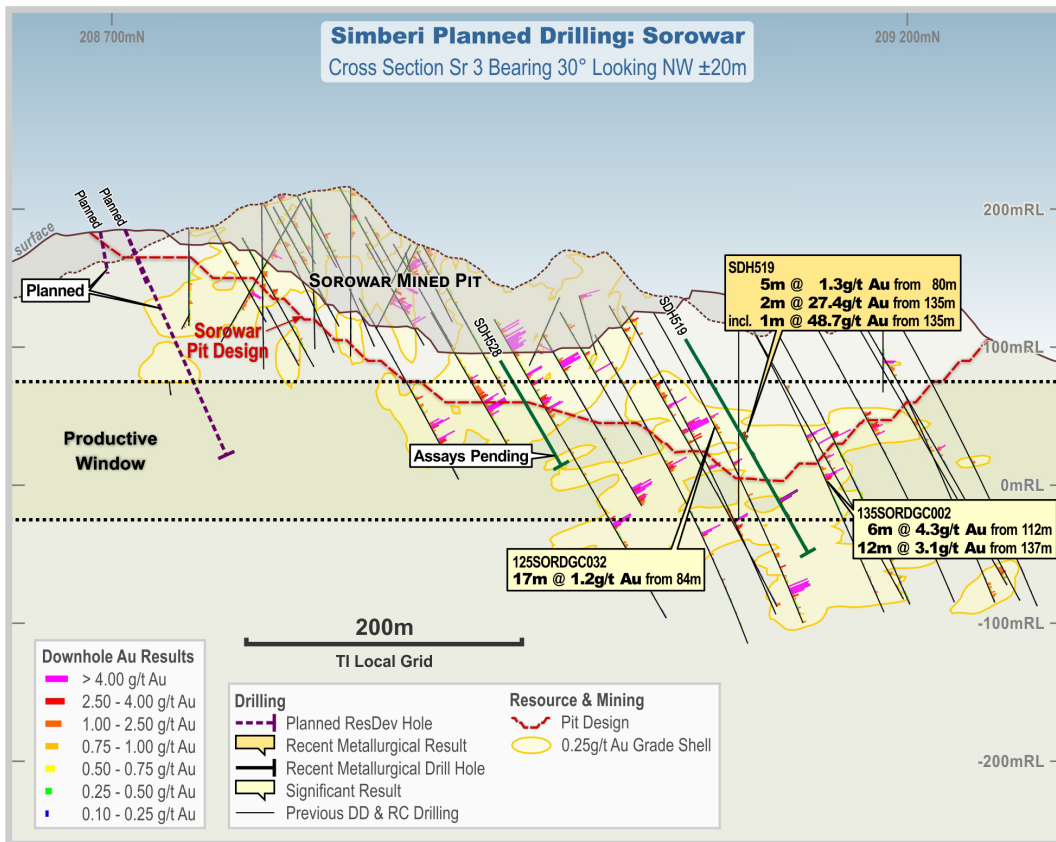


Figure 10. Drill Cross Section Srpt 11 (View Looking North), Sorowar-Pigiput Trend, Simberi Island

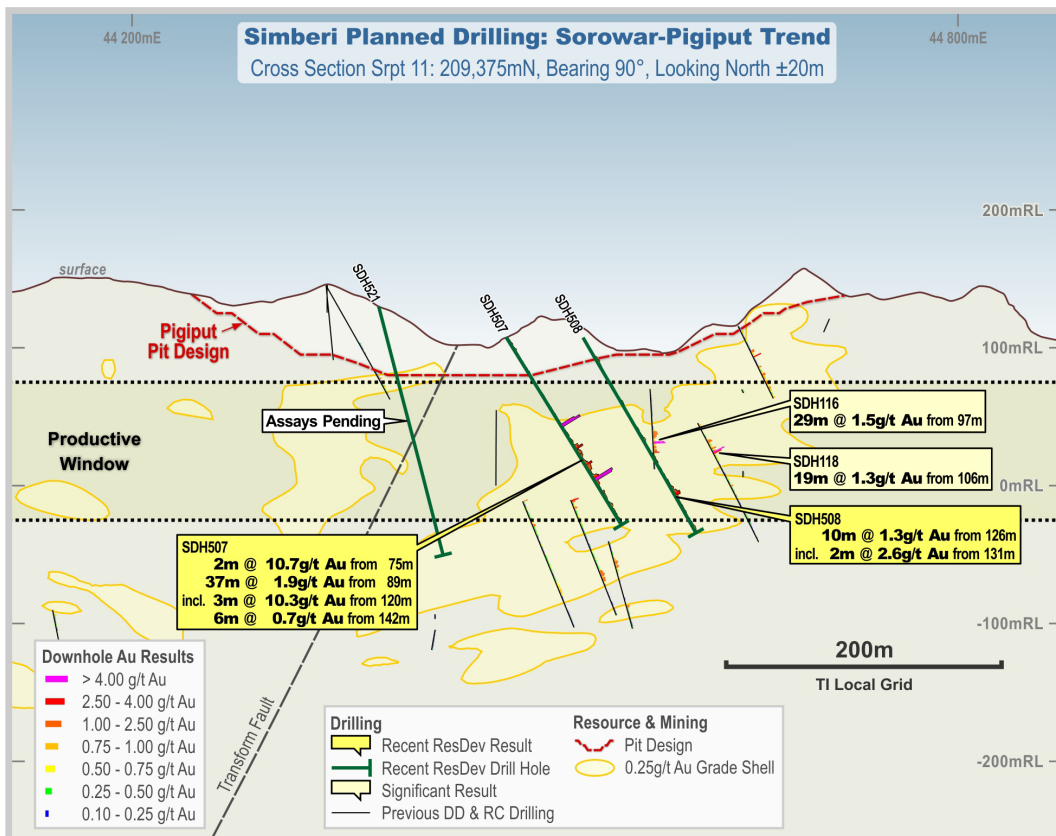






Figure 11. FY24 Completed and Planned Diamond Drilling, Pigibo, Simberi Island

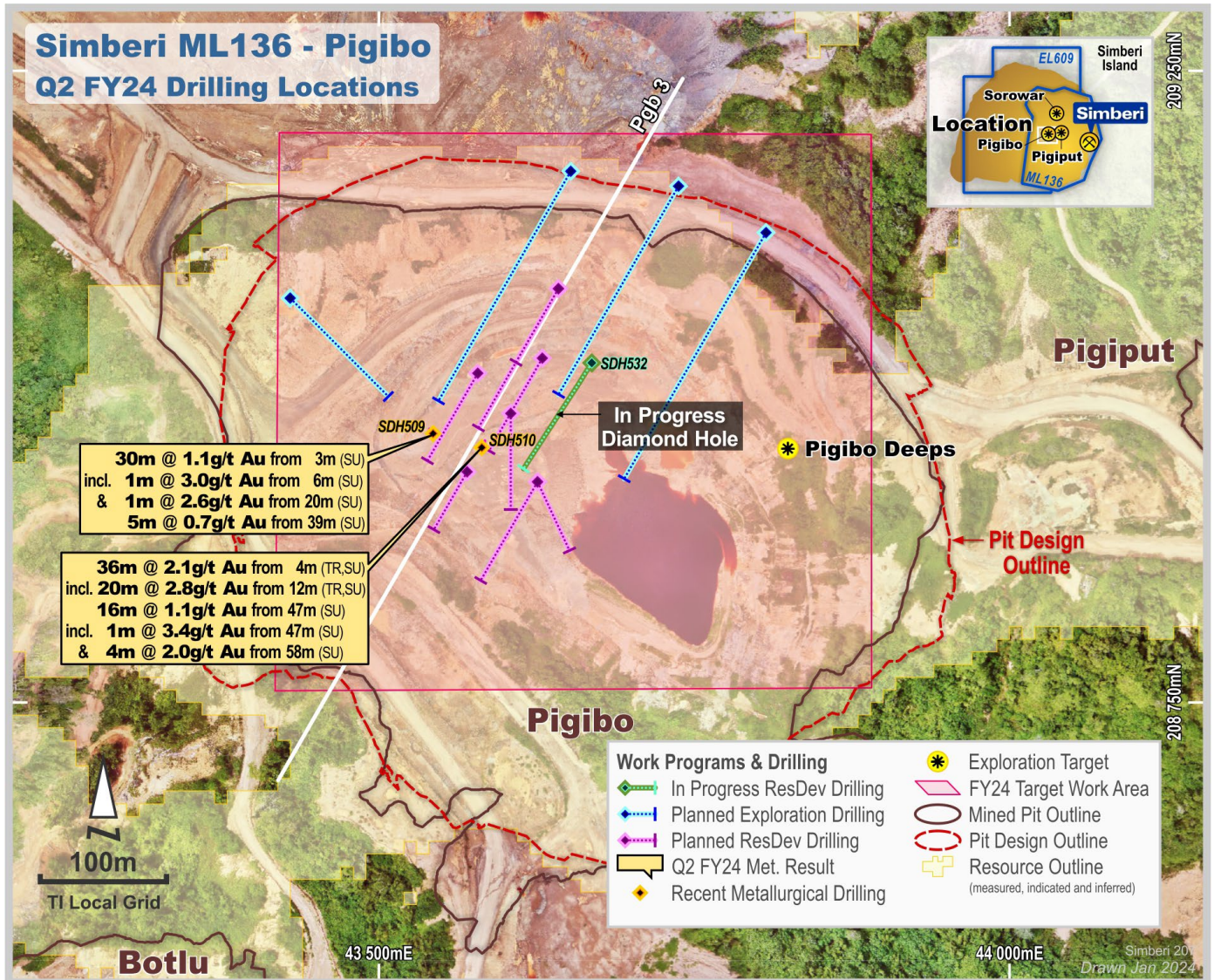
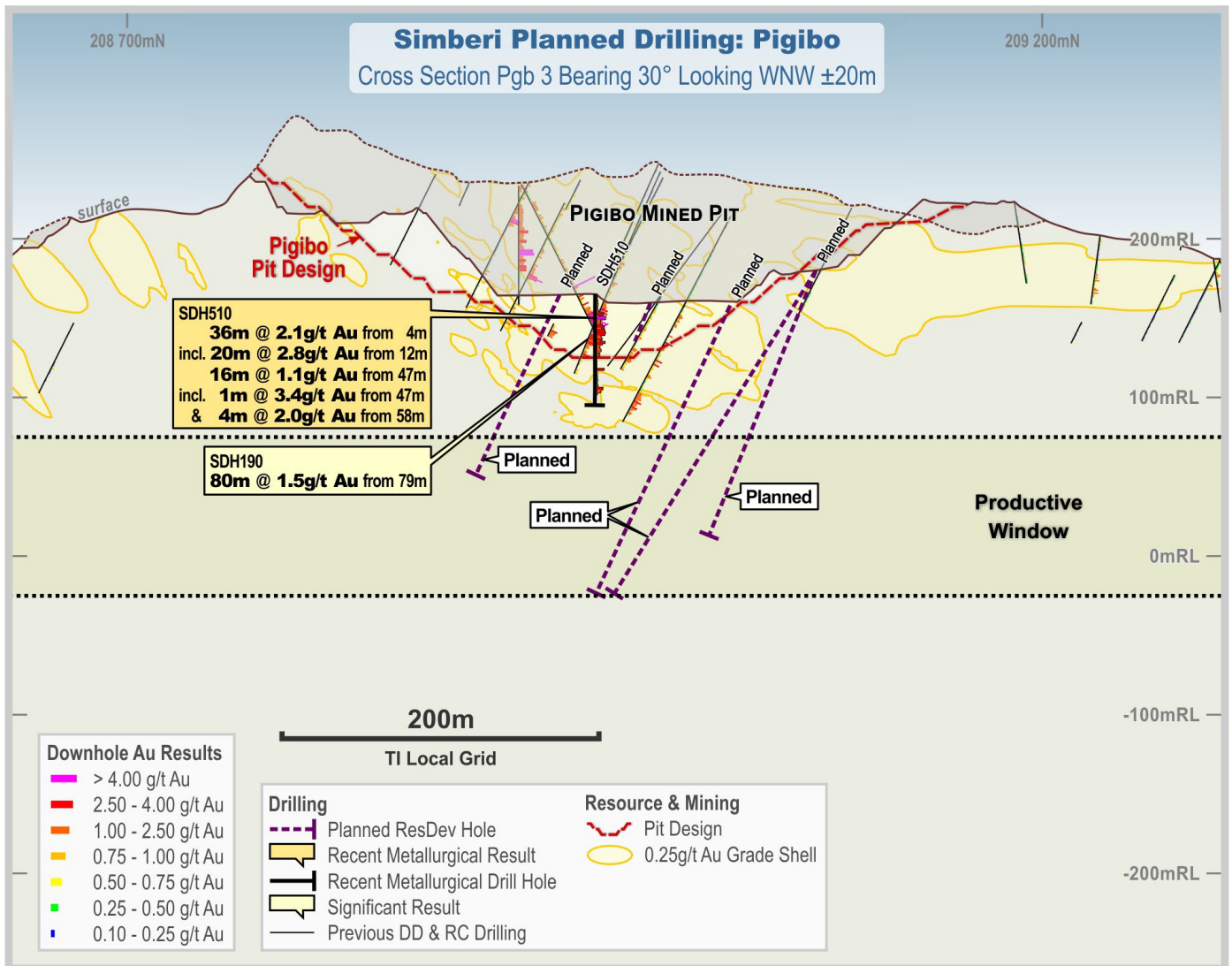






Figure 12. Drill Cross Section Pgb 3 (View Looking West-Northwest), Pigibo, Simberi Island







**Table 1: Simberi Diamond Drilling Significant Intercepts – Simberi Island, Papua New Guinea**

Hole Id	North	East	RL	Dip/ Azimuth	Total Depth	Ore Type	Down-hole Mineralised Intersection			
	m	m	m	degrees	m		From	To	Interval	Gold grade
	m	m	m	degrees	m		m	m	m	g/t Au
SDH507	209,363	44,472	107.7	-58 / 092	160.0	SU	75.0	77.0	2.0	10.7
						SU	89.0	126.0	37.0	1.9
<i>including</i>						SU	95.0	96.0	1.0	3.8
<i>and</i>						SU	109.0	110.0	1.0	3.3
<i>and</i>						SU	120.0	123.0	3.0	10.3
<i>including</i>						SU	121.0	123.0	2.0	14.1
						SU	142.0	148.0	6.0	0.7
SDH508	209,391	44,528	107.3	-59 / 092	163.7	SU	126.0	136.0	10.0	1.3
<i>including</i>						SU	131.0	133.0	2.0	2.6
SDH509	208,963	43,543	160.6	-89 / 047	45.0	SU	3.0	33.0	30.0	1.1
<i>including</i>						SU	6.0	7.0	1.0	3.0
<i>and</i>						SU	20.0	21.0	1.0	2.6
						SU	39.0	44.0	5.0	0.7
SDH510	208,952	43,582	165.0	-89 / 135	70.0	TR,SU	4.0	40.0	36.0	2.1
<i>including</i>						TR,SU	12.0	32.0	20.0	2.8
						SU	47.0	63.0	16.0	1.1
<i>including</i>						SU	47.0	48.0	1.0	3.4
<i>and</i>						SU	58.0	62.0	4.0	2.0
SDH511	209,109	44,415	154.7	-89 / 151	186.0	SU	1.0	4.0	3.0	1.1
						SU	33.0	41.0	8.0	10.7
<i>including</i>						SU	37.0	39.0	2.0	38.8
						SU	64.0	182.0	118.0	1.8
<i>including</i>						SU	91.0	92.0	1.0	3.3
<i>and</i>						SU	115.0	122.0	7.0	5.5
<i>and</i>						SU	131.0	141.0	10.0	3.9
<i>and</i>						SU	162.0	163.0	1.0	12.2
<i>and</i>						SU	170.0	171.0	1.0	2.8
<i>and</i>						SU	181.0	182.0	1.0	3.9
SDH512	209,120	44,297	149.8	-90 / 358	201.1	SU	20.0	23.0	3.0	1.0
						SU	30.0	45.0	15.0	1.3
<i>including</i>						SU	35.0	37.0	2.0	3.5
						SU	79.0	192.0	113.0	1.7
<i>including</i>						SU	135.0	151.0	16.0	2.2
<i>including</i>						SU	145.0	151.0	6.0	3.0
<i>and</i>						SU	159.0	191.0	32.0	2.9
<i>including</i>						SU	162.0	166.0	4.0	3.4

NOTES:

OX: oxide, SU: sulphide, TR: transitional material





**Table 1 Cont: Simberi Diamond Drilling Significant Intercepts – Simberi Island, Papua New Guinea**

Hole Id	North	East	RL	Dip/ Azimuth	Total Depth	Ore Type	Down-hole Mineralised Intersection			
	m	m	m	degrees	m		From	To	Interval	Gold grade
							m	m	m	g/t Au
SDH512 <i>incl</i>	209,120	44,297	149.8	-90 / 358	201.1	SU	180.0	189.0	9.0	6.6
						SU	182.0	183.0	1.0	34.0
SDH513	209,172	44,351	135.4	-89 / 071	233.0	TR,SU	5.0	28.0	23.0	0.8
<i>including</i>						SU	9.0	14.0	5.0	1.0
						SU	80.0	94.0	14.0	0.8
<i>including</i>						SU	80.0	83.0	3.0	2.1
						SU	114.0	151.0	37.0	7.0
<i>including</i>						SU	129.0	132.0	3.0	61.6
<i>and</i>						SU	148.0	150.0	2.0	14.0
						SU	191.0	225.0	34.0	1.4
<i>including</i>						SU	191.0	207.0	16.0	2.2
						SU	194.0	196.0	2.0	9.7
SDH514	208,998	44,424	165.2	-59 / 181	113.0	OX,TR	4.0	18.0	14.0	0.6
						TR,SU	44.0	46.0	2.0	1.6
						SU	68.0	90.0	22.0	0.9
<i>including</i>						SU	70.0	78.0	8.0	1.2
<i>and</i>						SU	83.0	85.0	2.0	1.4
SDH515	209,097	44,266	155.4	-60 / 185	144.5	TR,SU	16.0	33.0	17.0	1.9
<i>including</i>						SU	16.0	21.0	5.0	4.4
						SU	43.0	72.0	29.0	3.9
<i>including</i>						SU	46.0	64.0	18.0	5.7
<i>including</i>						SU	55.0	64.0	9.0	8.8
						SU	80.0	97.0	17.0	0.9
<i>including</i>						SU	81.0	86.0	5.0	1.5
						SU	105.0	124.0	19.0	12.6
<i>including</i>						SU	114.0	122.0	8.0	29.0
<i>including</i>						SU	115.0	116.0	1.0	206
SDH516	210,300	44,137	127.1	-90 / 206	45.0	OX,TR	1.0	9.0	8.0	1.6
<i>including</i>						TR	4.0	5.0	1.0	2.6
						SU	22.0	32.0	10.0	0.7
SDH518	210,284	44,267	143.2	-90 / 064	100.0	OX,TR,SU	59.0	76.0	17.0	0.9
<i>including</i>						OX,TR	63.0	70.0	7.0	1.1
SDH519	210,069	44,670	105.9	-59 / 027	178.6	SU	80.0	85.0	5.0	1.3
						SU	135.0	137.0	2.0	27.4
<i>including</i>						SU	135.0	136.0	1.0	48.7

NOTES:

OX: oxide, SU: sulphide, TR: transitional material.

**Authorised by**

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**Competent Persons Statement**

The information in this report that relates to Exploration Results is based on information compiled by Dr Roger Mustard, who is a Member of The Australasian Institute of Mining and Metallurgy. Dr Mustard is a full-time employee of St Barbara and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Mustard consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Mineral Resources is based on information compiled by Ms. Jane Bateman who is a Fellow of the Australasian Institute of Mining and Metallurgy. Jane Bateman is a full-time employee of St Barbara Ltd and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which she is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Jane Bateman consents to the inclusion in the statement of the matters based on her information in the form and context in which it appears.





## JORC Code Compliance Statements

### JORC Table 1 Checklist of Assessment and Reporting Criteria

#### Section 1 Sampling Techniques and Data – Simberi ML136 (Pigibo, Sorowar and Pigiput)

Criteria	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Diamond Drilling comprised PQ3 (83 mm) and HQ3 (61.1 mm) sized core collected using standard triple tubes. Half core was sampled on nominal 1 metre intervals with the lower or left half (looking downhole) of the core submitted for sample preparation and analysis. Competent core is half cored by an Almonte automated coresaw whereas broken or highly weathered core is manually half cored with a masonry chisel.</li> <li>Half core samples were fully prepared at the company's on-site sample preparation facility on Simberi Island with 150 g to 200 g pulps sent to ALS Laboratory in Townsville for further analysis. Pulp residues are stored in Townsville for six months following assay before disposal.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>Diamond drilling comprised PQ3 (83 mm) and HQ3 (61.1 mm) core recovered using a 1.5 m barrel. Drilling was completed by Quest Exploration Drilling (QED). When ground conditions permit, an ACT Digital Core Orientation Instrument was used by the contractor to orientate the HQ3 core.</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>Diamond drilling recovery percentages were measured by comparing actual metres recovered per drill run versus metres recorded on the core blocks. Recoveries averaged &gt;98 % with increased core loss present in fault zones and zones of strong weathering/alteration.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>Diamond holes are qualitatively geologically logged for lithology, structure and alteration and qualitatively and quantitatively logged for veining and sulphide mineralogy. Diamond holes are geotechnically logged with the following attributes qualitatively recorded - strength, infill material, weathering, and shape. Whole core and half core photography is completed on wet core.</li> <li>All holes are logged in their entirety and data recorded in templated excel workbook prior to being uploaded to the companies secure SQL database.</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>All diamond drill core was half cored with the lower or left half (looking downhole) submitted for sample preparation and analysis.</li> <li>All drill samples are prepared at the company's on-site sample preparation facility. After oven drying for 12 hours, sample material undergoes initial crushing in a Terminator Jaw Crusher to achieve particle size &lt;2mm. For samples weighing in excess of 1kg, a 0.8kg to 1.2kg sample split is taken using a riffle splitter. Crushed samples of ~ 1kg standardized weight are then completely pulverized in an Essa LM2 Pulveriser (90% passing 75 microns). Approximately 200g of pulverised material is retained for assaying using a metal scoop to transfer material into analytical envelopes (pulp packets) before being sent to the ALS lab in Townsville. All reported results are from analysis conducted by ALS.</li> <li>For internal reference, a second pulverized sub- sample (~ 100 grams) is analysed at the site lab using same QAQC reference materials as those sent to ALS lab.</li> <li>Quality control of sample material prepared on site consists of insertion of two (non-certified) blank control samples at the start of each hole, and between each sample, any pulverised residue in the LM2 is discarded and the bowl vacuumed and wiped clean.</li> <li>150 g to 200 g pulp samples are then sent to ALS Laboratory in Townsville for assay via air freight. Pulp residues are stored in Townsville for six months following assay for re-assay if required.</li> </ul>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>Pulps are analysed for Au via 50 g Fire Assay Atomic Absorption Spectroscopy (AAS) finish (Au-AA26 method) and multi-element (Ag, As, S, Fe, Cu, Pb, Zn, Mo and Sb) by Aqua Regia digest followed by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) instrument read (ME-ICP41S method).</li> <li>Selected samples are also assayed for full low level multi-element analysis (Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn and Zr) via 25 g four acid digest and Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) or Inductively Coupled Plasma Mass Spectroscopy (ICP-MS) via (ME-MS61method).</li> <li>QC included insertion of certified reference material (1:20); insertion of in-house blank control material (2 at the start of each job); and the insertion of lab duplicates (1:20 split from the initial jaw crushed material prepared by the site lab. QAQC results were assessed as each laboratory batch was received and again at resource estimation cycles. Results indicate that pulveriser bowls were adequately cleaned between samples.</li> <li>ALS Townsville insert certified standards, replicates, lab repeats and complete sizing checks (1:40) or higher as part of their internal QAQC protocols.</li> <li>Over the duration of the drilling programs St Barbara inserted OREAS standards 61h, 233, 238b, 245, 503e, 601c, 602b, 603c and 607b to match material type and/or grade approximation.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>Sampling data is recorded electronically which ensures only valid non-overlapping data can be recorded. Assay and downhole survey data are subsequently merged electronically. All drill data is stored in a SQL database on secure company server.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>All metallurgical and resource definition drill collars were surveyed by company appointed surveyors using a DGPS in Tabar Island Grid (TIG) which is based on WGS84 ellipsoid and is GPS compatible.</li> <li>All diamond drill holes were downhole surveyed using a Reflex EZ track single shot camera with the first reading at 9, 12 or 18 m and one at 30 m and then approximately every 30 m increments to the bottom-of-the hole where an end of hole survey is also taken.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>Metallurgical diamond drilling was not planned on any particular spacing, rather they were designed to target known mineralisation to return suitable quantities of fresh sulphide ore.</li> <li>Resource definition drilling to define Indicated Mineral Resources is completed on a nominal 30m * 40m pattern. This spacing is adequate to establish both geological and grade continuity for the Mineral Resource and Ore Reserve procedures.</li> <li>Sampling is typically based on one-metre intervals with no compositing applied.</li> </ul>



Criteria	Commentary
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>Drilling is orientated perpendicular to the major structures controlling the distribution of gold mineralisation. The orientation of the drilling ensures unbiased sampling of structures</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>Only company personnel or approved contractors are allowed on drill sites; drill core is only removed from drill site to secure core logging/processing facility within the gated exploration core yard; core is promptly logged, cut, and prepped on site. The samples sent to ALS are stored in locked and guarded storage facilities until receipted at the Laboratory.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>No audits or reviews of sampling protocols have been completed.</li> </ul>

## Section 2 Reporting of Exploration Results – Simberi ML136 (Pigibo, Sorowar and Pigiput)

Criteria	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>SBM has 100 % ownership of the three tenements over the Simberi Islands; ML136 on Simberi Island, EL609 which covers the remaining area of Simberi Island, as well as Tatau Island and Big Tabar Island and 4 sub-block EL2462 which covers part of Tatau and Mapua Islands.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>CRA, BHP, Tabar JV (Kennecott, Nord Australer and Niugini Mining), Nord Pacific, Barrick and Allied Gold have all previously worked in this area. Nord Pacific followed by Allied Gold was instrumental in the discovery and delineation of the 5 main oxide and sulphide deposits at Simberi.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>The Simberi gold deposits are low sulphidation, intrusion related adularia-sericite epithermal gold deposits. The dominant host rocks for mineralisation are andesites, volcanoclastics and lesser porphyries. Gold mineralisation is generally associated with sulphides or iron oxides occurring within a variety of fractures, such as simple fracture in-fills, single vein coatings and crackle brecciation in the more competent andesite units, along andesite/polymict breccia contact margins as well as sulphide disseminations. Deeper holes in the area between Pigiput and Sorowar intersected up to 100m of semi continuous carbonate +/- quartz base metal / Au veining, similar in style to mineralization occurring on Tatau and Big Tabar islands to the south, which are also prospective for Porphyry Cu/Au deposits.</li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li>Drill hole information is included in intercept table outlining collar position obtained by DGPS pickup, hole dip and azimuth acquired from a downhole surveying camera as discussed in section 1, composited mineralised intercepts lengths and depth as well as hole depth.</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>For gold only epithermal mineralisation, broad down hole intercepts are reported as length weighted averages using a cut-off of 0.6 g/t Au, minimum width of 2 m, and a minimum grade*length of 2.5 gmpt (gram metre per tonne). Such intercepts may include material below cut-off but no more than 5 sequential metres of such material and except where the average drops below the cut-off. Supplementary cut-offs, of 1.0 g/t and 2.5 g/t Au may be used to highlight higher grade zones and spikes within the broader aggregated interval. Single assays intervals are reported only where <math>\geq 5.0</math> g/t Au and <math>\geq 1</math> m down hole.</li> <li>Core loss is assigned the same grade as the sample grade; no high-grade cut is applied; grades are reported to one decimal figure and no metal equivalent values are used for reporting exploration results.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>Down hole length was reported for all holes.</li> <li>Simberi lodes display high variability in orientation and complex geometries because of the interplay of veining, brecciation intensity, host lithology and oxidation fronts.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>Diagrams when included, show all drill holes material and immaterial to Exploration Results.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>Details of all holes material to Exploration Results will be reported in intercept tables.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>Included in the body of the report.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li>Included in the body of the report.</li> </ul>