ASX Release

4 March 2024

New Mineralisation Intersected at Pigiput – Sorowar Trend at Simberi

Highlights

- Assays received for resource definition drill hole SDH525 defines new broad mineralisation along the targeted trend between Pigiput and Sorowar ore bodies and outside any current Inferred Resource area:
  - **SDH525: 24 m @ 1.3 g/t Au from 105 m, 22 m @ 1.6 g/t Au from 147 m, 21 m @ 4.0 g/t Au from 176 m, including 1m @ 59.4 g/t Au from 187 m.**
- Assays received for four other resource definition diamond drill holes of the 32-hole, 7,200-metre program (*refer ASX release Simberi Resource Definition Drilling Update January 23, 2024*) include:
  - **SDH517: 15 m @ 2.1 g/t Au from 177 m;**
  - **SDH523: 53 m @ 0.9 g/t Au from 127m, including 7 m @ 1.5 g/t Au from 147 m, and 13 m @ 1.4 g/t Au from 160 m;**
  - **SDH524: 43 m @ 1.8 g/t Au from 95 m, including 23 m @ 2.6 g/t Au from 98 m, including 4 m @ 9.4 g/t Au from 103 m.**
- All 15 resource definition drill holes at the Sorowar-Pigiput Trend are now complete with assay results for eight holes (SDH526, 529 to 531, 533 to 534 and 537 to 538) expected to be returned in April.
- Drill holes SDH533 and SDH534 (each with assays pending) have tested the same targeted northwest trend defined by hole SDH525 over a 200m strike length with similar mineralisation to hole SDH525 logged in each. Assay results are anticipated in early April 2024.
- Four planned exploration diamond drill holes for 1,255 metres have been prioritised at Sorowar-Pigiput to test the full 470 metre long strike extent of this interpreted potential northwest striking, moderate southwest dipping mineralisation up to 100m down dip from the current Inferred Resource limits.

St Barbara Limited ("**St Barbara**" or the "**Company**") (ASX: SBM) is pleased to announce that the resource definition drilling is complete for the Sorowar-Pigiput Trend portion of the 24 hole, 4,700-metre diamond drill program at the Simberi Operations in Papua New Guinea (PNG). Assays results have been received for another five resource definition diamond drill holes to bring the total to seven holes for which assays have now been received.

Managing Director and CEO Andrew Strelein said *"The Simberi team have done a great job to complete the resource definition holes on schedule for incorporation of assay results into the planned Mineral Resource and Ore Reserve update at the end of Q4 where we are targeting an upgrade of 1Moz from Inferred to Indicated.*

"The assay results for hole SDH525 however is very encouraging with three broad intercepts in a new mineralised zone between Pigiput and Sorowar pits, but outside any current Mineral Resource. We are prioritising follow-up holes to test the extension along an interpreted potential 470 metre strike length."

To date 19 resource definition drill holes have been completed for 3,926.2 metres including all 15 Sorowar-Pigiput holes and four Pigibo holes. Five remaining Pigibo resource definition drill holes for 845 metres remain to be drilled. The next stage of drilling includes eight exploration diamond drill holes (four at Sorowar-Pigiput and four at Pigibo) for 2,795 metres testing for new mineralisation located down dip of Inferred Resources. Due to the encouraging assay results from drill hole SDH525 located outside the current Inferred Resource, the four Sorowar-Pigiput exploration diamond drill holes have been prioritised with two diamond drill rigs currently completing these holes.

Assay results for all seven resource definition diamond drill holes completed to date is set out below in Table 1.

Figure 1 below shows the location of the respective open pits on the main mining lease (ML 136) and Figure 2 shows the locations of the planned and completed diamond drill holes including both resource definition and metallurgical sample holes.

Significant assays for the five resource definition diamond holes included:

- SDH517: 15 m @ 2.1 g/t Au from 177 m;
- SDH523: 53 m @ 0.9 g/t Au from 127m, including 7 m @ 1.5 g/t Au from 147 m, and 13 m @ 1.4 g/t Au from 160 m;
- SDH524: 43 m @ 1.8 g/t Au from 95 m, including 23 m @ 2.6 g/t Au from 98 m, including 4 m @ 9.4 g/t Au from 103 m;
- SDH525: 24 m @ 1.3 g/t Au from 105 m, 22 m @ 1.6 g/t Au from 147 m, 21 m @ 4.0 g/t Au from 176 m, including 1m @ 59.4 g/t Au from 187 m.

Figure 3 shows the location of all 15 Pigiput-Sorowar resource definition drill holes, the location of significant assay results for the seven holes received to date and the eight holes with pending results. In addition, all Sorowar metallurgical drill holes and significant assay results are displayed. The location of four exploration holes at the Pigiput-Sorowar Trend are also shown.

Figure 4 provides a cross-section with the results of diamond hole SDH525 below the 0.25 g/t Au grade shell and Sorowar pit shell. Figure 3 shows where this cross-section sits relative to the other completed resource definition holes and planned exploration holes.

The significant results in drill hole SDH525 support the exploration model of a ‘productive window’ located at a specific elevation (between +75m RL and -25m RL) where there is generally higher gold grades present.

Drill holes SDH525 (results received and noted above) and drill holes SDH533 and SDH534 (assays pending) have tested the northwest trend below the current Inferred Resource over a 200 metre strike length. Mineralisation in SDH525 is dominantly associated with a monomict andesite shatter breccia which displays angular clast support in a matrix of quartz ± carbonate (see Figure 5). Visual pyrite is estimated between 5 to 10% and is disseminated in the altered clasts and locally within the quartz matrix. Similar mineralisation style has been logged in all three holes SDH525, SDH533 and SDH534. The assay results for holes SDH533 and SDH534 are keenly awaited.

The four upcoming Sorowar-Pigiput exploration holes (see Figure 3) are designed to test for potential additional new mineralisation similar to that intersected in hole SDH525 along the full interpreted 470-metre long, northwest striking, moderate southwest dipping extension to mineralisation up to 100 m down dip from current the Inferred Resource. Drilling is currently underway and expected to be completed in May 2024.

Note: With respect to the visual observation of monomict breccia and the estimate of sulphides recorded in holes SDH533 and SDH534 during logging, it must be cautioned that visual observations and estimates are uncertain in nature and should not be taken as a substitute for appropriate laboratory analysis. Laboratory assay results will be reported when they are received and interpreted.

When combined, selective holes from the 15-hole resource definition drill program at Sorowar-Pigiput combined with the four exploration holes should satisfactorily test this northwest trending target over a 470 metre strike length.

Assay results for the eight remaining resource definition diamond drill holes are expected in April 2024. The aim is to include all 15 Pigiput-Sorowar resource definition diamond holes in the next Resource Estimate scheduled between April and July 2024.

Figures 6, 7, 8 and 9 shows cross-sections with the results of holes SDH523, SDH517, SDH521 and SDH524 respectively. Figure 3 shows where these four cross-sections sit relative to the current and future planned pit outlines for Sorowar and Pigiput.

Figure 10 provides a plan view of Pigibo and shows the location of the four completed holes with assays pending and five remaining resource definition drill holes and four exploration drill holes to be completed.

Figure 1. Simberi Island Site Layout within Mining Lease

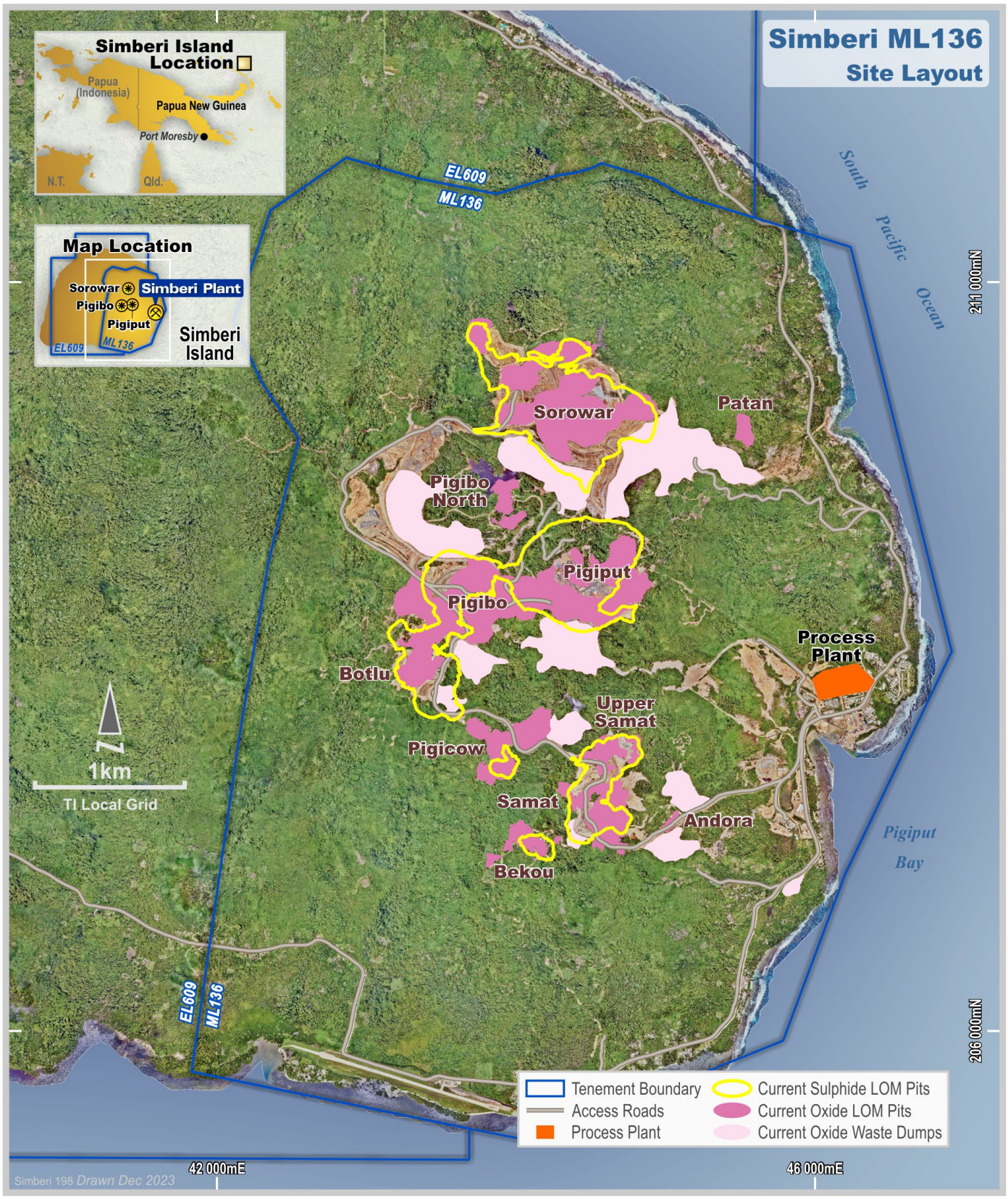


Figure 2. FY24 Completed and Planned Diamond Drilling, Simberi Island, Papua New Guinea

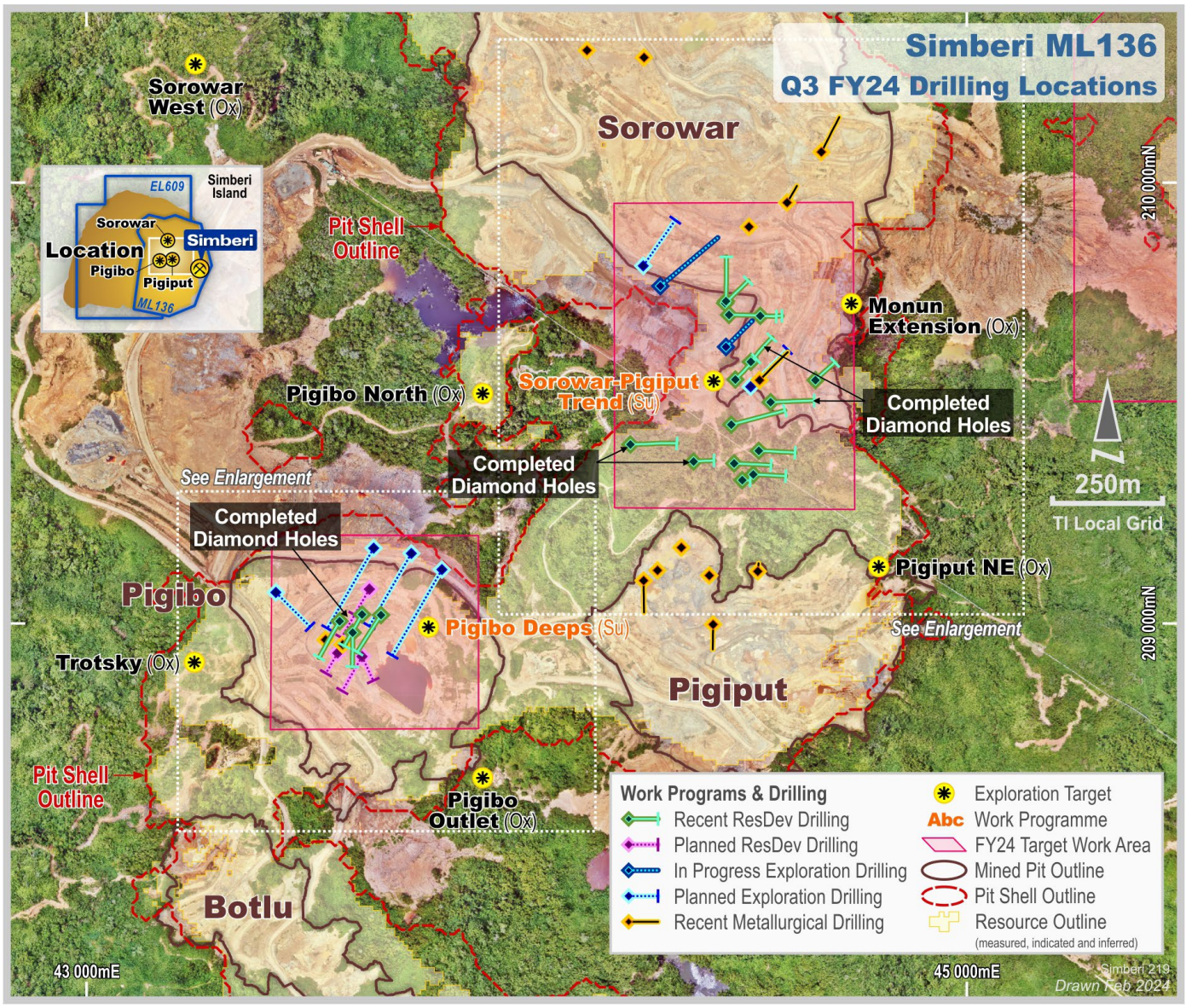


Figure 3. FY24 Completed and Planned Diamond Drilling, Sorowar, Simberi Island

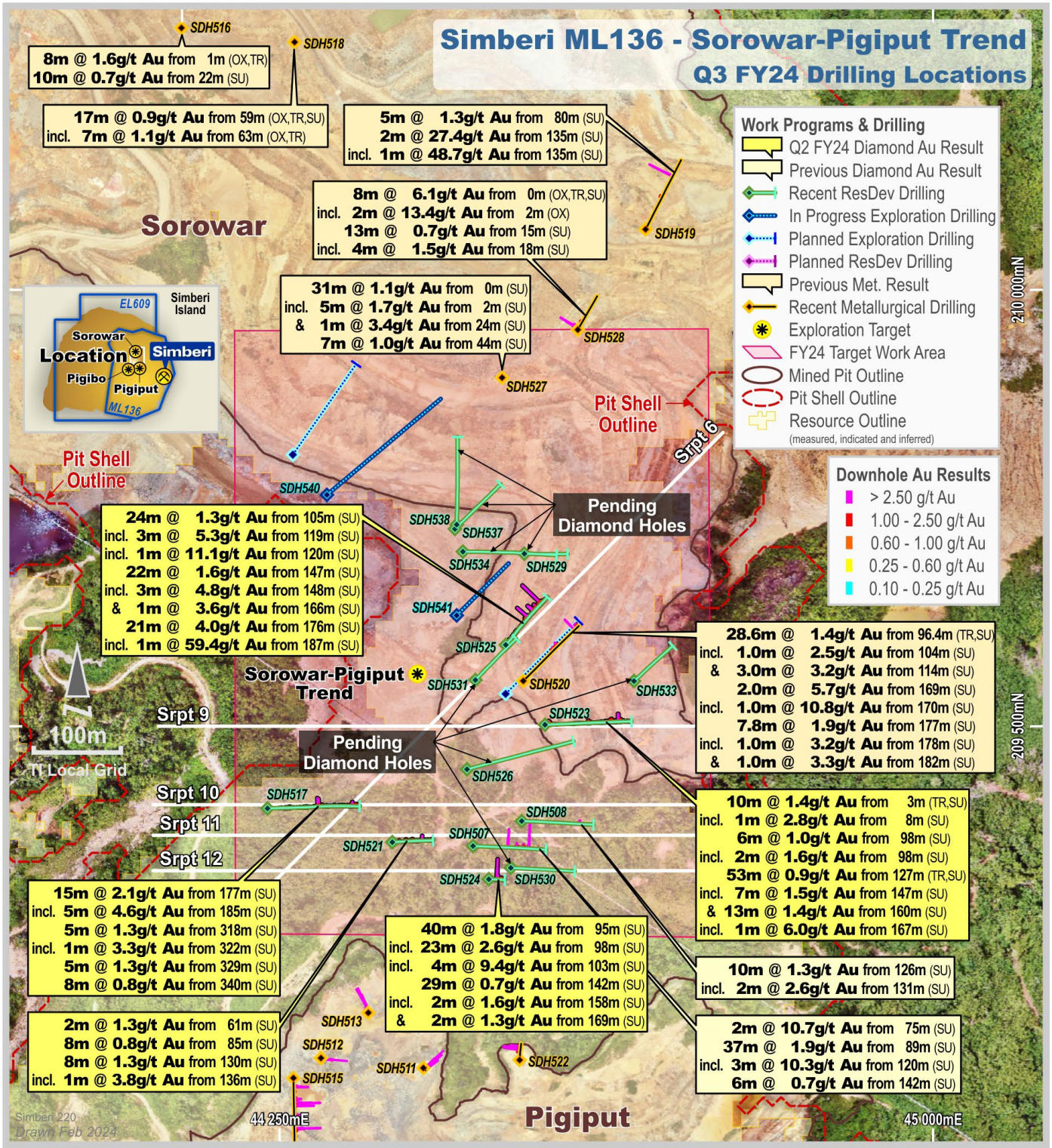


Figure 4. Drill Cross Section Srpt 6: (View Looking Northwest), Sorowar, Simberi Island

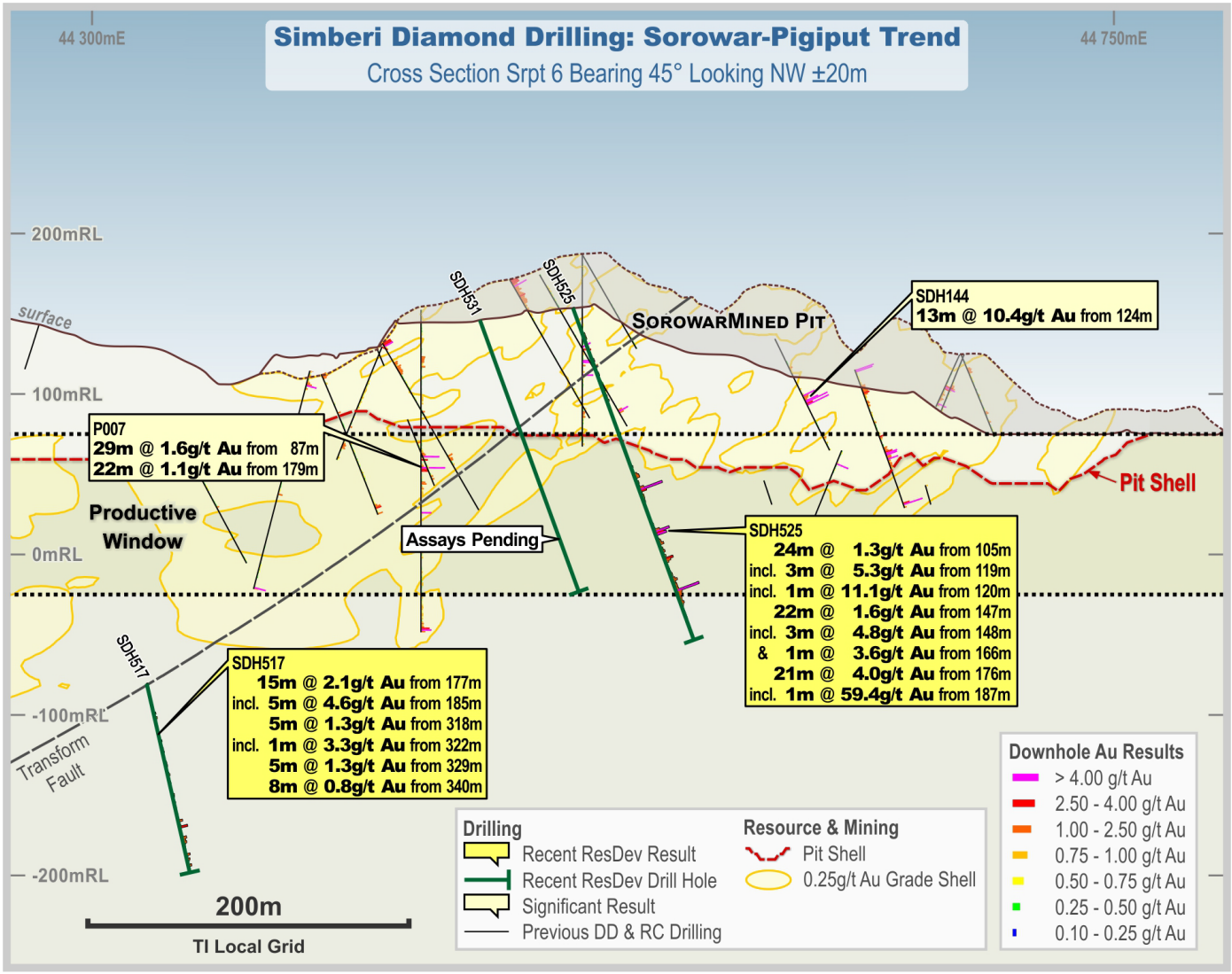
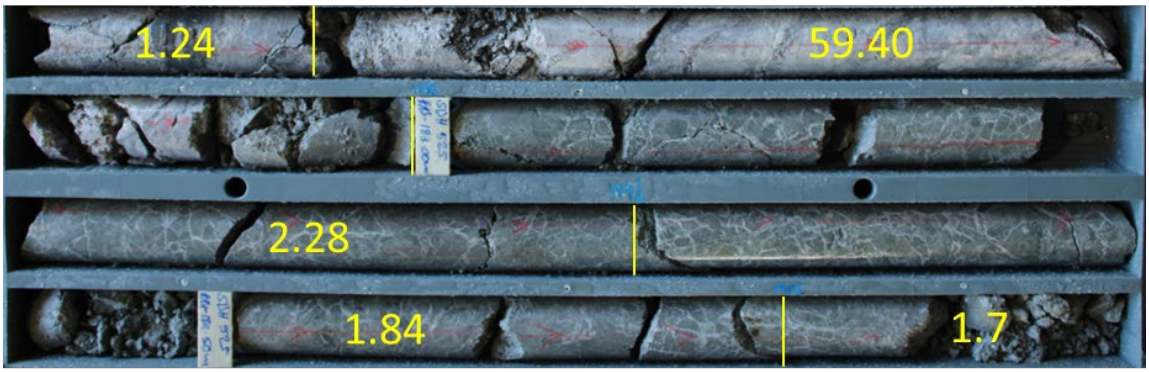
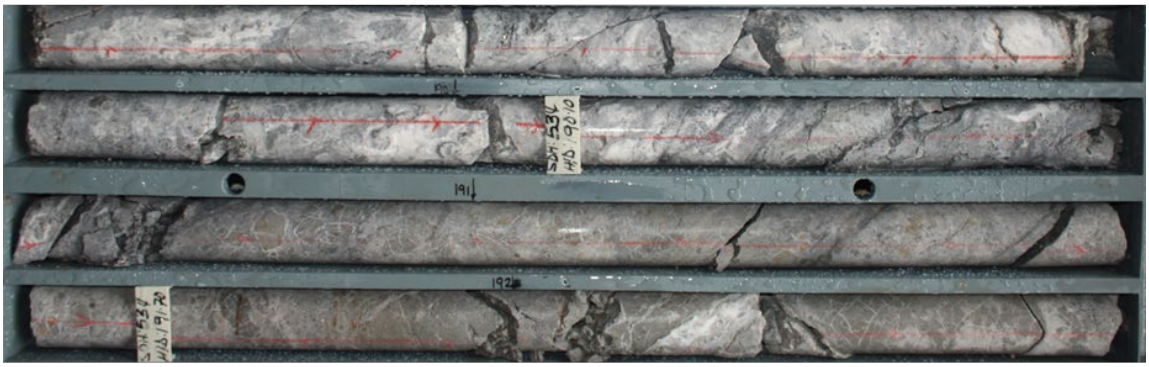


Figure 5. Diamond Drill Core from three Simberi drill holes SDH525, SDH533 and SDH534.



SDH525: 186.7m - 190.3m



SDH534: 188.6m - 192.5m (Assays Pending)

SDH533: 15.9m - 18.9m (Assays Pending)

Mineralisation displayed above in SDH525, SDH534 and SDH533 is dominantly associated with a clast supported shatter breccia comprised of monomict angular andesite clasts in a matrix of quartz ± carbonate. Visual pyrite is estimated between 5 to 10% and is disseminated in the altered clasts and locally within the quartz matrix. Gold grades (in g/t Au) are displayed in yellow text for each metre interval in the upper photo showing core from SDH525. A one metre high-grade intercept of 59.4 g/t Au from 187 m depth is associated with a quartz vein displaying subtle colloform banded textures. A similar style quartz vein is observed at 189m depth in SDH534.

Note: The presence of monomict andesite breccia with 5% to 10% pyrite observed in SDH534 and SDH533, and the presence of a colloform banded quartz vein in SDH534 is a geological observation of non-economic minerals that are possibly associated with gold. It must be cautioned that visual observations and estimates are uncertain in nature and should not be taken as a substitute for appropriate laboratory analysis. Laboratory assay results will be reported when they are received and interpreted. **Laboratory assay results will be reported when they are received and interpreted.**

Figure 6. Drill Cross Section Srpt 9: 209,500 mN (View Looking North), Simberi Island

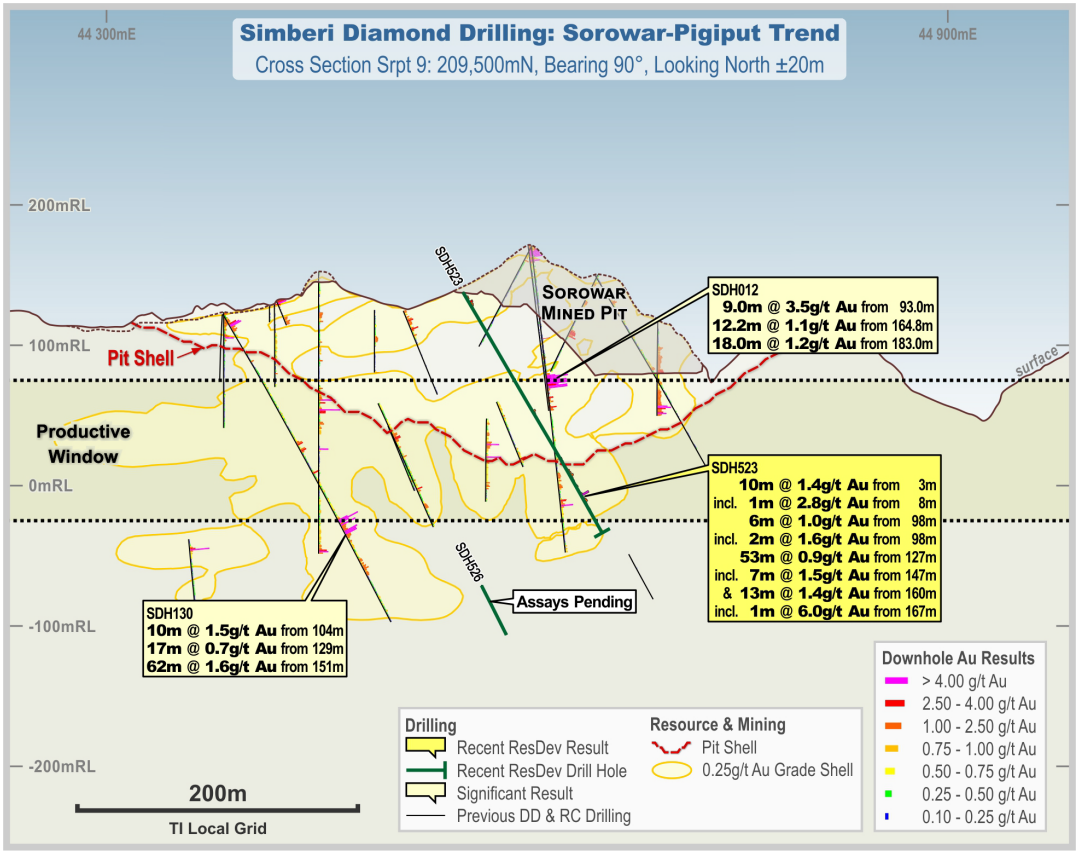


Figure 7. Drill Cross Section Srpt 10: 209,410 mN (View Looking North), Sorowar, Simberi Island

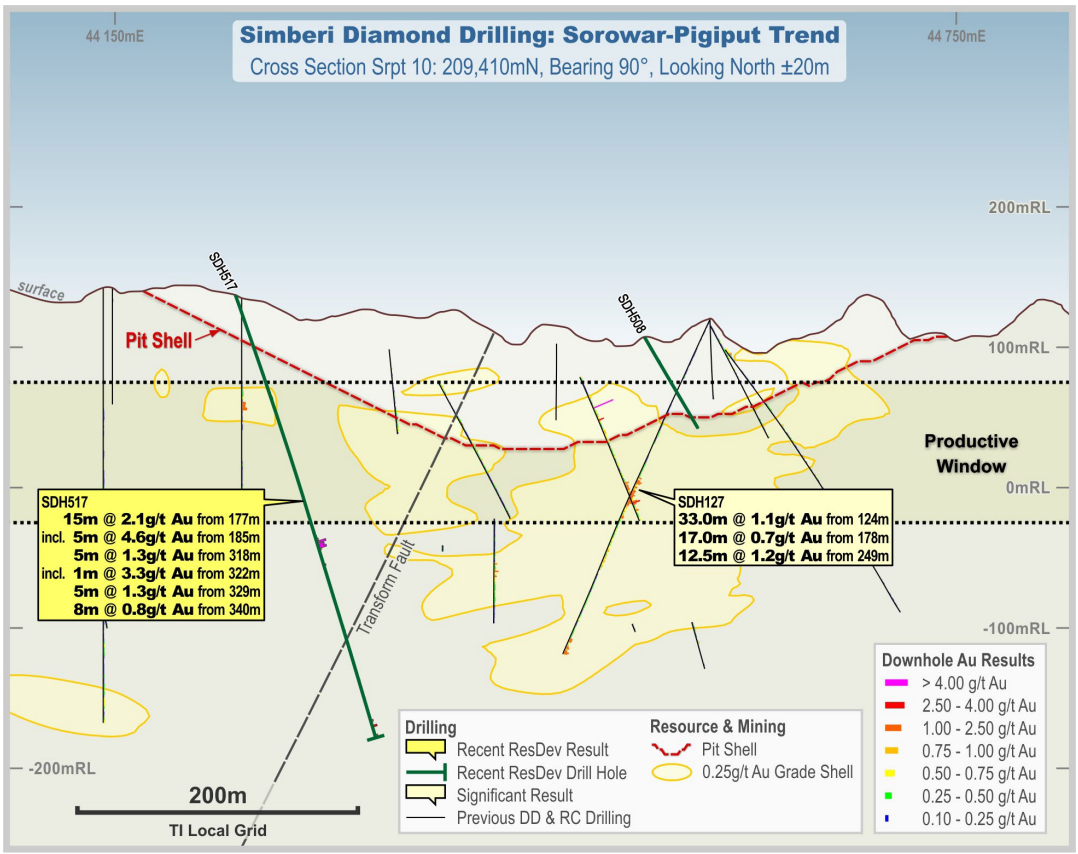


Figure 8. Drill Cross Section Srpt 11: 209,375 mN (View Looking North), Sorowar, Simberi Island

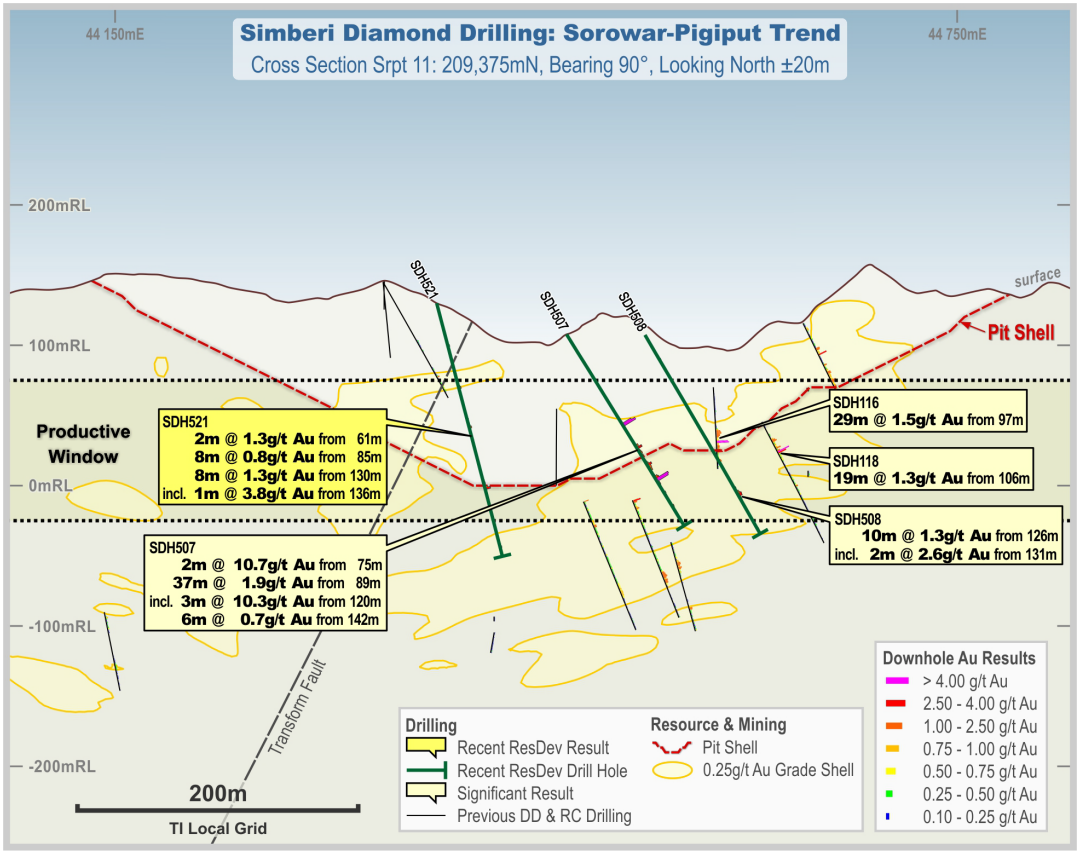


Figure 9. Drill Cross Section Srpt 12: 209,335 mN (View Looking North), Sorowar, Simberi Island

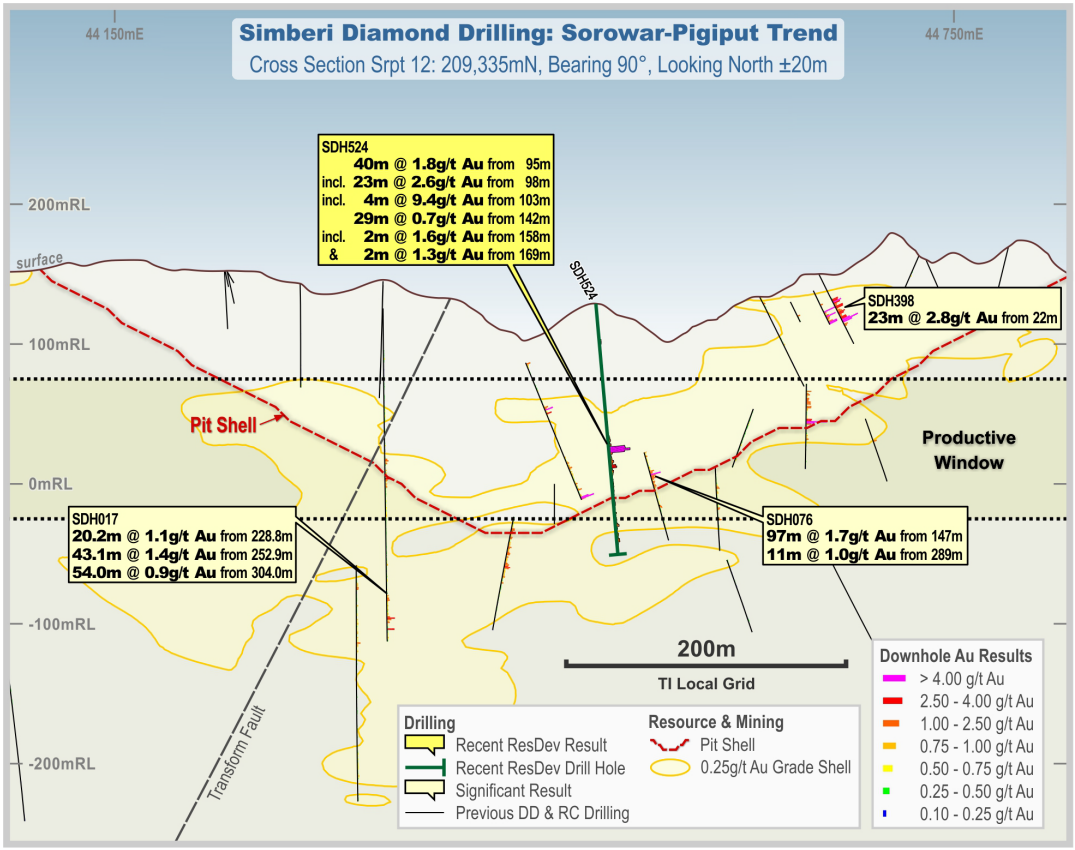


Figure 10. FY24 Completed and Planned Diamond Drilling, Pigibo, Simberi Island

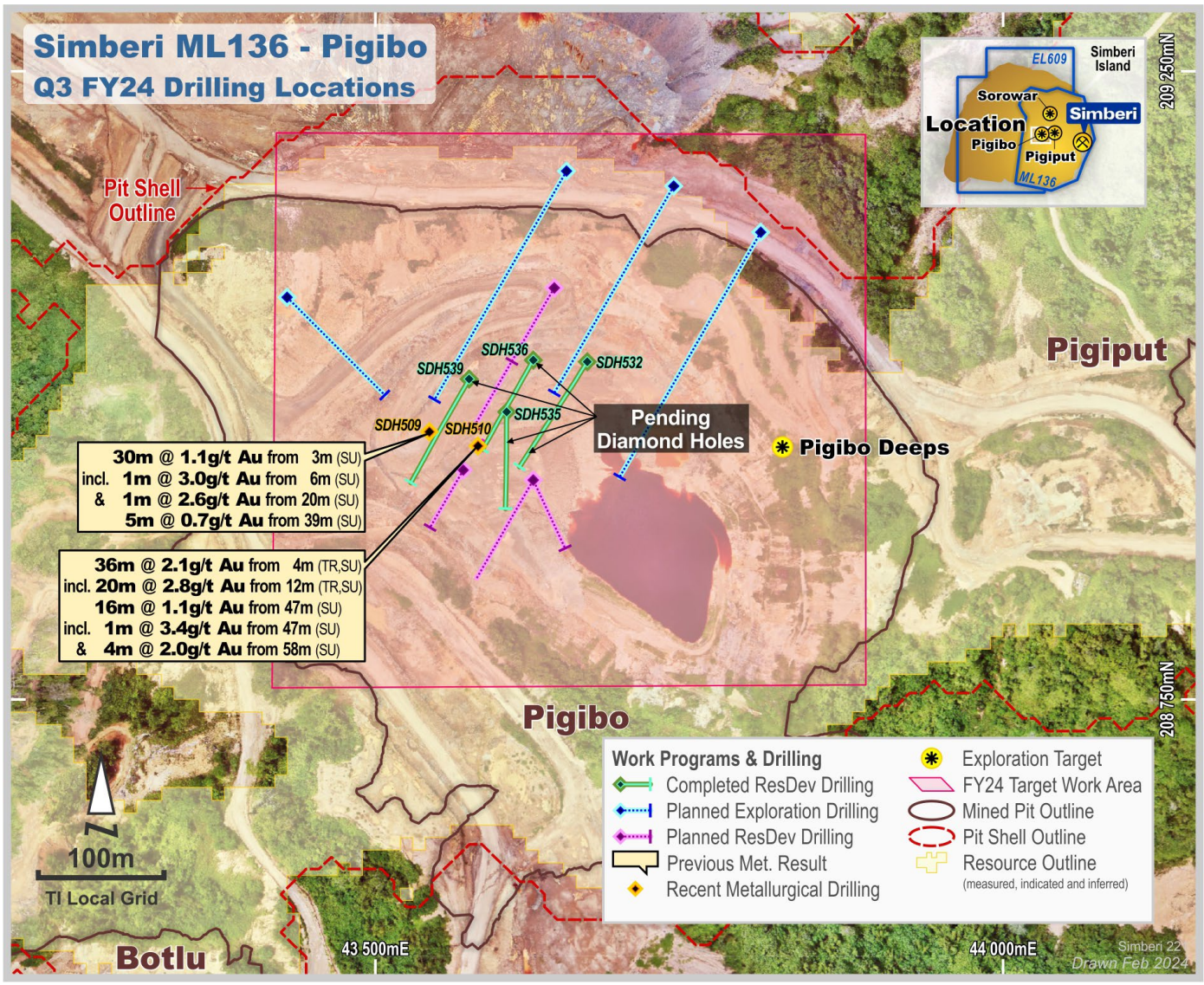


Table 1: Simberi Diamond Drilling Significant Intercepts – Simberi Island, Papua New Guinea

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	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
including						SU	95.0	96.0	1.0	3.8
and						SU	109.0	110.0	1.0	3.3
and						SU	120.0	123.0	3.0	10.3
including						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
including						SU	131.0	133.0	2.0	2.6
SDH517	**209,406**	**44,236**	**137.2**	**-71 / 088**	**352.0**	**SU**	**76.0**	**82.0**	**6.0**	**0.7**
						SU	**177.0**	**192.0**	**15.0**	**2.1**
including						**SU**	**185.0**	**190.0**	**5.0**	**4.6**
						SU	**318.0**	**323.0**	**5.0**	**1.3**
including						**SU**	**322.0**	**323.0**	**1.0**	**3.3**
						SU	**329.0**	**334.0**	**5.0**	**1.3**
						SU	**340.0**	**348.0**	**8.0**	**0.8**
SDH521	**209,367**	**44,379**	**129.9**	**-75 / 086**	**186.3**	**SU**	**61.0**	**63.0**	**2.0**	**1.3**
						SU	**85.0**	**93.0**	**8.0**	**0.8**
						SU	**130.0**	**138.0**	**8.0**	**1.3**
including						**SU**	**136.0**	**137.0**	**1.0**	**3.8**
						SU	**177.0**	**181.0**	**4.0**	**0.7**
SDH523	**209,502**	**44,554**	**137.5**	**-59 / 088**	**198.1**	**TR,SU**	**3.0**	**13.0**	**10.0**	**1.4**
including						**SU**	**8.0**	**9.0**	**1.0**	**2.8**
						SU	**98.0**	**104.0**	**6.0**	**1.0**
including						**SU**	**98.0**	**100.0**	**2.0**	**1.6**
						TR,SU	**127.0**	**180.0**	**53.0**	**0.9**
including						**SU**	**147.0**	**154.0**	**7.0**	**1.5**
and						**SU**	**160.0**	**173.0**	**13.0**	**1.4**
including						**SU**	**167.0**	**168.0**	**1.0**	**6.0**
SDH524	**209,325**	**44,490**	**128.9**	**-85 / 092**	**207.2**	**SU**	**95.0**	**135.0**	**40.0**	**1.8**
including						**SU**	**98.0**	**121.0**	**23.0**	**2.6**
including						**SU**	**103.0**	**107.0**	**4.0**	**9.4**
						SU	**142.0**	**171.0**	**29.0**	**0.7**
including						**SU**	**158.0**	**160.0**	**2.0**	**1.6**
and						**SU**	**169.0**	**171.0**	**2.0**	**1.3**

NOTES:
OX: oxide, SU: sulphide, TR: transitional material
Previously reported intercepts (23/01/2024) are displayed as normal text and new intercepts are highlighted in bold text.

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
SDH525	**209,593**	**44,509**	**153.5**	**-70 / 041**	**220.0**	**TR**	**17.0**	**21.0**	**4.0**	**0.7**
						SU	**105.0**	**129.0**	**24.0**	**1.3**
including						**SU**	**119.0**	**122.0**	**3.0**	**5.3**
including						**SU**	**120.0**	**121.0**	**1.0**	**11.1**
						SU	**147.0**	**169.0**	**22.0**	**1.6**
including						**SU**	**148.0**	**151.0**	**3.0**	**4.8**
including						**SU**	**148.0**	**149.0**	**1.0**	**6.3**
and						**SU**	**166.0**	**167.0**	**1.0**	**3.6**
						SU	**176.0**	**197.0**	**21.0**	**4.0**
including						**SU**	**187.0**	**188.0**	**1.0**	**59.4**

NOTES:
OX: oxide, SU: sulphide, TR: transitional material
Previously reported intercepts (23/01/2024) are displayed as normal text and new intercepts are highlighted in bold text.

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 Table 1 Checklist of Assessment and Reporting Criteria

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

Criteria	Commentary
Sampling techniques	• 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. • 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.
Drilling techniques	• 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.
Drill sample recovery	• Diamond drilling recovery percentages were measured by comparing actual metres recovered per drill run versus metres recorded on the core blocks. Recoveries averaged >98 % with increased core loss present in fault zones and zones of strong weathering/alteration.
Logging	• 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. • All holes are logged in their entirety and data recorded in templated excel workbook prior to being uploaded to the companies secure SQL database.
Sub-sampling techniques and sample preparation	• All diamond drill core was half cored with the lower or left half (looking downhole) submitted for sample preparation and analysis. • 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 <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. • 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. • 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. • 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.
Quality of assay data and laboratory tests	• 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). • 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. • ALS Townsville insert certified standards, replicates, lab repeats and complete sizing checks (1:40) or higher as part of their internal QAQC protocols.
Verification of sampling and assaying	• 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.
Location of data points	• All resource definition and metallurgical 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. • 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.
Data spacing and distribution	• 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. • 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. • Sampling is typically based on one-metre intervals with no compositing applied.
Orientation of data in relation to geological structure	• Drilling is orientated perpendicular to the major structures controlling the distribution of gold mineralisation. The orientation of the drilling ensures unbiased sampling of structures
Sample security	• 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.
Audits or reviews	• No audits or reviews of sampling protocols have been completed.

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

Criteria	Commentary
Mineral tenement and land tenure status	• 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.
Exploration done by other parties	• CRA, BHP, Tabar JV (Kennecott, Nord Australex 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.
Geology	• The Simberi gold deposits are low sulphidation, intrusion related adularia-sericite epithermal gold deposits. The dominant host rocks for mineralisation are andesites, volcaniclastics 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.
Drill hole Information	• 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.
Data aggregation methods	• 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 ≥5.0 g/t Au and ≥1 m down hole. • 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.
Relationship between mineralisation widths and intercept lengths	• Down hole length was reported for all holes. • Simberi lodes display high variability in orientation and complex geometries because of the interplay of veining, brecciation intensity, host lithology and oxidation fronts.
Diagrams	• Included in the body of the report.
Balanced reporting	• Details of all holes material to Exploration Results are reported in intercept tables. This report covers seven holes of a twenty-four hole resource definition drilling program. Assay results from the first two diamond drill holes are reported in Table 1 of the ASX release Simberi Resource Definition Drilling Update January 23, 2024.
Other substantive exploration data	• Included in the body of the report.
Further work	• Included in the body of the report.