

Sandstone Gold Project, Western Australia

# Drilling confirms extensions of high-grade gold mineralisation at the historic Oroya Mine

First pass RC drilling intersects up to 37 g/t above historical workings

## Highlights

- Alto is pleased to announce its maiden ~2,000m RC drilling program at the historic Oroya Mine has intersected high-grade gold mineralisation both above and below the historical workings and along strike.
- Wide-spaced step out drilling has validated the geological model targeting extensions of the Sandstone reef and confirmed remnant mineralisation in <u>unmined</u> areas of the old workings.
- Mineralisation confirmed to extend north-west of the open-pit, along with down-dip extensions of the Main Reef.
- Drill results from this initial shallow program include:
  - o 3m @ 13.8 g/t gold from 65m, including 1m @ 37.1 g/t gold from 66m (SRC894) Main Reef
  - o 6m @ 1.3 g/t gold from 41m, including 1m @ 5.5 g/t gold from 41m (SRC895) Juno
  - o 3m @ 2.8 g/t gold from 104m, including 1m @ 7.6 g/t gold from 104m (SRC899) NW Extension
  - o **1m @ 5.4 g/t gold** from 113m (SRC900) NW Extension
  - o 5m @ 1.1 g/t gold from 126m, including 1m @ 3.4 g/t gold from 128m (SRC892) Main Reef Extension
- The north-west extension of the Sandstone Main Reef is a priority target area with relatively limited drilling.
- Follow up drilling planned targeting further high-grade gold mineralisation
- These results support historical unmined results below the shallow Oroya pit (mined to 60m depth) including:
  - o 23m @ 6.2 g/t gold from 87m, incl. 2m @ 55.9 g/t gold from 89m (NT5020R) NW Extension
  - o 8m @ 17.9 g/t gold from 69m, incl. 1m @ 137.0 g/t gold from 73m (NT5026R) Main Reef
  - o 9m @ 14.6 g/t gold from 42m, incl. 1m @ 120.0 g/t gold from 42m (MSGC1312) Juno/Main Reef
  - o 6m @ 8.3 g/t gold from 49m, incl. 2m @ 23.2 g/t gold from 51m (MSGC0886) Main Reef
  - o **13m @ 3.1 g/t gold** from 22m, incl. **2m @ 11.9 g/t gold** from 28m (MSGC0933) Juno
- The Oroya Mine produced **220,000oz at 16.5 g/t gold** from underground mining between 1904-1920 and a further ~25,000oz at 2.3 g/t gold from open pit mining from 1994-1995.
- An **update to the current open-pitable 635,000oz** @ **1.6** g/t gold resource for the Sandstone Gold Project is on track for delivery this March quarter.

#### Alto's Managing Director, Matthew Bowles said:

This is the first time the historic Oroya Mine has seen any drilling in over 15 years and we are pleased the results have successfully confirmed extensions of the reef, both to the north-west beyond the north end of the pit, and down dip to the west, validating our targeting model.

We are excited to see gold mineralisation in a number of holes from this initial wide-spaced drill program, demonstrating the reef remains mineralised and we look forward to commencing a follow up drill program in the coming weeks.

While our focus firmly remains on growing our current 635,000 ounce shallow gold resource, with an updated mineral resource coming this quarter, Oroya is an outstanding high-grade gold target within our Sandstone Gold Project.

**Alto Metals Limited** 

Suite 9, 12-14 Thelma Street West Perth, Western Australia 6005 T: +61 8 9 381 2808 admin@altometals.com.au www.altometals.com.au Issued Shares: Share Price: Market Capitalisation:

613m \$0.072 \$44m Ƴ in

@altometalsItd AltometalsItd

ASX: AME



## Initial results from first-pass RC drilling program at the historic high-grade Oroya Mine

**Alto Metals Limited** (ASX: AME) (Alto or the Company) is pleased to announce that its maiden RC drilling program at the historic high-grade Oroya Mine, located within the Company's 100% owned Sandstone Gold Project, has intersected high-grade gold mineralisation along strike and down dip of historical workings.

This initial wide-spaced step out drilling has successfully confirmed the geological model, targeting extensions of the Sandstone Main reef and unmined mineralisation to the north-west beyond the north end of the pit, along with extensions down dip to the west. The drilling has also provided greater geological understanding of the reefs for future drill targeting.

A total of 13 Reverse Circulation (RC) holes for approximately 2,000m have been completed in this first phase of drilling. Drilling was completed at three initial target areas based on preliminary geological interpretation and structural review.

# This is the first time Oroya has had any drilling in over 15 years and the Company considers this first pass program has successfully demonstrated:

- Mineralisation remains open for over 200m along strike to the North-West, beyond the end of the pit;
- High-grade mineralisation remains at the main Sandstone and Juno reefs; and
- Potential to extend the strike extension of Oroya South mineralisation.

#### Main Sandstone Reef & Juno Reef

Eight RC holes were drilled at the main Sandstone Reef and the unmined Juno Reef, targeting both remnant mineralisation and extensions of the main reef, with significant results including:

o 8m @ 1.3 g/t gold from 43m, including 2m @ 2.7 g/t gold from 43m; and

3m @ 13.8 g/t gold from 65m, including 1m @ 37.1 g/t gold from 66m (SRC894) - Juno / Main Reef

- o 6m @ 1.3 g/t gold from 41m, including 1m @ 5.5 g/t gold from 41m (SRC895) –Juno
- o 5m @ 1.1 g/t gold from 126m, including 1m @ 3.4 g/t gold from 128m (SRC892) Main Reef Extension

Refer to Figures 5, 7 and 8 and Table 3 for further results.

SRC894 intersected the main high-grade reef at the predicted interval, above the historical workings, returning **3m@ 13.8 g/t gold** incl. **1m @ 37.1 g/t gold** and SRC892 and SRC893 both intersected mineralisation extending strike by 160m.

Previous <u>unmined</u> results from both the main Sandstone Reef, above and below historical workings, and the unmined Juno reef, directly below the open pit include:

- o 9m @ 14.6 g/t gold from 42m, incl. 1m @ 120.0 g/t gold from 42m (MSGC1312) Juno
- o 6m @ 8.3 g/t gold from 49m, incl. 2m @ 23.2 g/t gold from 51m (MSGC0886) Main Reef
- o **13m @ 3.1 g/t gold** from 22m, incl. **2m @ 11.9 g/t gold** from 28m (MSGC0933) Juno

Planned follow up exploration activities includes further step out and down dip drilling to test extension of existing mineralisation, in addition to closer spaced drilling to validate historical results for geological modelling.



1.7 g/t 37.1 g/t 2.7 g/t Figure 1: RC drill chips from mineralised zone of Sandstone reef in SRC894 of 3m @ 13.8 g/t gold from 65m, including 1m @ 37.1 g/t gold from 66m



#### Oroya NW Extension

Four RC holes were drilled north-west of the historical open pit, which has had limited drilling to date, targeting interpreted extensions of the Sandstone Main Reef.

Previous unmined results immediately north-west of the Oroya open-pit include:

- o 23m @ 6.2 g/t gold from 87m, incl. 2m @ 55.9 g/t gold from 89m (NT5020R) NW Extension
- o 6m @ 3.5 g/t gold from 53m incl. 1m @ 17.1 g/t gold from 53m (MSGC0954)
- o 16m @ 1.4 g/t gold from 83m incl. 1m @ 6.6 g/t gold from 87m (NT5022R)

Drilling into the relatively untested NW extension, step-out holes SRC899 and SRC900 collared 60m south and 120m west from historical hole NT5022R, respectively, both successfully intersected mineralisation extending the strike by 140m from the edge of the pit. Results

- o 3m @ 2.8 g/t gold from 104m, including 1m @ 7.6 g/t gold from 104m (SRC899) NW Extension
- o 1m @ 5.4 g/t gold from 113m (SRC900) NW Extension

Refer to Figures 6, 7 and 8 and Table 3 for further results.

Notably, the mineralisation intersected in SRC900 is within a 10m zone of alteration, quartz and mineralisation.

The mineralisation intersected in SRC899 and SRC900 is interpreted as a potential flat lying high-grade splay off the main reef. The second mineralised zone at 216m is interpreted as the continuation of the Main Reef and while the gold tenor is low (2 g/t gold) it indicates the reef remains mineralised.

Planned follow up exploration activities includes further step out drilling to the north-west and closer spaced drilling to test strike and continuity of mineralisation of both the potential splay and main reef.

Two further broad step out holes SRC901 and SRC902 drilled 120m and 200m NW of the pit, confirmed the continuation of the Main Reef, however returned low gold tenor. Further assessment of these holes will be undertaken.



Figure 2: NW Oroya mineralisation in drill chips (SRC900) within an overall 13m zone of alteration, quartz and mineralisation.



#### Oroya South

A total of two RC holes were completed at Oroya South targeting the interpreted southerly extension of the reef. Stepout hole SRC892, drilled ~200m west from the southern end of the pit, successfully intersected gold mineralisation confirming the interpreted continuation of the reef with a result of **5m @ 1.1 g/t gold** from 126m incl. **1m @ 3.4 g/t gold** from 128m. Refer to Table 3 for further results.

Further targeting is planned south of the Oroya pit given the unmined, high-grade historical results and numerous old workings and shafts in the area.



Figures 3 and 4: Historic shafts Oroya South.

#### Geological setting & technical discussion: Oroya Sandstone Reefs

The Oroya Sandstone reefs are variably composed of quartz, quartz-carbonate and brecciated quartz and carbonate altered mafic rock. They occur within sheared country rock with carbonate alteration halos up to 15 metres in width.

The local geology is dominated by metabasalts and metadolerites with thin sedimentary marker beds. This stratigraphy strikes east-west and dips 85 degrees to the south. Cutting across the rock strata are several gold-bearing quartz veins with north- south strike and shallow westerly dips.

Oroya has several branch and subsidiary parallel branches to the main Sandstone Reef of which the Juno structure is the most important. It splits off the main Sandstone Reef at about 60 to 100 metres vertical depth and continues up through the hanging wall saprolite to the near surface. Juno has already been defined over a strike length of 300 metres and typically dips more steeply than the adjacent gently-dipping parts of the Sandstone Reef.

The Juno Branch is characterised by massive quartz up to 12 metres thick, but is generally 1 to 3 metres in thickness and dips west at 30-45 degrees.

The Oroya West reef appears to have a gentle east-dip and may link with the Sandstone reef at depth.

For further details on Oroya refer to ASX announcement *"Multiple high-grade near mine gold targets identified at Hacks & Oroya"* 10 October, 2022.





Figure 5: Section B – B' showing Main Sandstone Reef and Juno Reef (SRC894).



Figure 6: Section A – A' showing NW extension of Main Sandstone Reef (SRC899 & SRC900).



Figure 7. Plan view of Oroya open pit and underground workings, showing stoped and unmined areas and significant historical and recent results.



Figure 8. Long section Oroya open pit and underground workings, showing stoped and unmined areas and significant historical and recent results.



Figure 9: Location of the Oroya, Hacks and Hacks West prospects within the Sandstone Gold Project, Western Australia.





Figure 10: RC drilling on the western side of the historic high-grade Oroya gold mine, Sandstone Gold Project, WA.

#### Follow up drilling and other exploration activities

A follow up RC drilling program at Oroya is planned to commence shortly, to test further high-grade targets identified from the recent drill results and targeting the surrounding unmined areas of the reef remain due to historical mining activities at Oroya focusing only on bonanza style mineralisation.

The rig is planned to then be moved to Indomitable for further extensional drilling.

Work on updating the resource estimate at the Sandstone Gold Project is progressing well and remains on track for release later in the March quarter.

For further information regarding Alto and its 100% owned Sandstone Gold Project, please visit the ASX platform (ASX: AME) or the Company's website at <u>www.altometals.com.au.</u>

This announcement has been authorised by the Managing Director of Alto Metals Limited on behalf of the Board.

#### Matthew Bowles

Managing Director & CEO Alto Metals Limited +61 8 9381 2808

#### **Competent Persons Statement**

The information in this Report that relates to current and historical Exploration Results is based on information compiled by Mr Michael Kammermann, who is an employee and shareholder of Alto Metals Ltd, and he is also entitled to participate in Alto's Employee Incentive Scheme. Mr Kammermann is a Member of the Australian Institute of Geoscientists and has sufficient experience of relevance to the styles of mineralisation and the types of deposits under consideration, and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Kammermann consents to the inclusion in the report of the matters based on the information in the context in which it appears.



#### **Forward-Looking Statements**

This release may include forward-looking statements. Forward-looking statements may generally be identified by the use of forward-looking verbs such as expects, anticipates, believes, plans, projects, intends, estimates, envisages, potential, possible, strategy, goals, objectives, or variations thereof or stating that certain actions, events or results may, could, would, might or will be taken, occur or be achieved, or the negative of any of these terms and similar expressions. which are only predictions and are subject to risks, uncertainties and assumptions which are outside the control of Alto Metals Limited. Actual values, results or events may be materially different to those expressed or implied in this release. Given these uncertainties, recipients are cautioned not to place reliance on forward-looking statements. Any forward-looking statements in this release speak only at the date of issue. Subject to any continuing obligations under applicable law and the ASX Listing Rules, Alto Metals Limited does not undertake any obligation to update or revise any information or any of the forward-looking statements in this release or any changes in events, conditions or circumstances on which any such forward-looking statement is based.

#### **Exploration Results**

The references in this announcement to Exploration Results for the Sandstone Gold Project were reported in accordance with Listing Rule 5.7 in the announcements titled:

#### Multiple high-grade near mine gold targets identified at Hacks & Oroya, 10 October 2022

The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcements noted above.



Figure 11. Location of Sandstone Gold Project within the East Murchison Gold Field, WA



#### Tables 1 & 2: Mineral Resource Estimate for Sandstone Gold Project

Table 1:	Total Mineral	Resource	Estimate f	for Sandstone	Gold Pr	roject
----------	---------------	----------	------------	---------------	---------	--------

JORC 2012 Mineral Resource Estimate for the Sandstone Gold Project as at March 2022						
Classification	Tonnes (Mt)	Grade (g/t gold)	Contained gold (koz)			
Total Indicated	3.0	1.7	159			
Total Inferred	9.4	1.6	476			
TOTAL	12.4	1.6	635			

Updated Mineral Resources reported at a cut-off grade of 0.5 g/t gold. Mineral Resources for Indomitable are reported at a cut-off grade of 0.3 g/t gold. Minor discrepancies may occur due to rounding of appropriate significant figures.

Table 2: Total Mineral Resource Estimate for Sandstone Gold Project (by deposit)

	Indicated			Inferred			Total			
Deposit	Tonnage (Mt)	Grade g/t	Gold (koz)	Tonnage (Mt)	Grade g/t	Gold (koz)	Tonnage (Mt)	Grade g/t	Gold (koz)	
Lord Nelson	1.0	1.8	56	4.3	1.5	211	5.3	1.6	267	
Lord Henry	1.6	1.5	77	0.3	1.2	13	1.9	1.4	90	
Vanguard Camp	0.4	2.0	26	1.9	2.0	124	2.3	2.0	150	
Havilah Camp				1.0	1.5	46	1.0	1.5	46	
Indomitable Camp <sup>a</sup>				1.7	1.3	74	1.7	1.3	74	
Ladybird <sup>b</sup>				0.1	1.9	8	0.1	1.9	8	
TOTAL	3.0	1.7	159	9.4	1.6	476	12.4	1.6	635	

Updated Mineral Resources reported at a cut-off grade of 0.5 g/t gold and are constrained within a A\$2,500/oz optimised pit shells based on mining parameters and operating costs typical for Australian open pit extraction deposits of a similar scale and geology. Mineral Resources for Indomitable (reported at a cut-off grade of 0.3 g/t gold) and Ladybird deposits have not been updated. Minor discrepancies may occur due to rounding of appropriate significant figures.

The references in this announcement to Mineral Resource estimates for the Sandstone Gold Project were reported in accordance with Listing Rule 5.8 in the following announcements:

(a): Indomitable Camp: announcement titled: "Maiden Gold Resource at Indomitable & Vanguard Camps, Sandstone WA" 25 Sep 2018; and

(b): Ladybird: announcement titled: "Alto increases Total Mineral Resource Estimate to 290,000oz, Sandstone Gold Project" 11 June 2019.

(c): Lord Henry, Lord Nelson, Vanguard Camp & Havilah Camp: announcement titled: "Sandstone Mineral Resource increases to 635,000oz of gold" 23 March 2022

The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement noted above and that all material assumptions and technical parameters underpinning the Mineral Resource estimates in the previous market announcement continue to apply and have not materially changed.



# Table 3: Oroya 1m assay results and drill collar information (MGA 94 zone 50)

Liele ID		m Fast	wa Njavsha	ma DI	Dia	Arimaith	m MayDanth	Dresneet	Erom(m)	To(ma)	Interval(m)	A., a/t	a /+*+== 1	Commonto
	Hole_Type	m_East	m_North	m_KL	Dip	Azimiun	m_MaxDepth	Prospect	From(m)	10(m)	interval(m)	Au_g/t	g/t°m_Au	Comments
SRC890	RC	/2/,286	6,901,141	535	-90	0	140	Uroya	115	121	6	0.4	2.4	Oroya
								inci.	115	11/	2	0.6	1.2	
60.004		707.004	6 004 004	500			450	and	119	121	2	0.6	1.2	0
SRC891	RC	/2/,281	6,901,281	536	-90	0	152	Oroya					NSR	Oroya
SRC892	RC	/2/,132	6,901,484	540	-90	0	152	Oroya	0	1	1	0.3	0.3	Oroya
								and	79	80	1	0.2	0.2	
								and	126	131	5	1.1	5.3	
								incl.	128	129	1	3.4	3.4	
SRC893	RC	727,160	6,901,514	540	-60	40	146	Oroya	0	1	1	0.2	0.2	Oroya
								and	64	66	2	0.5	1.1	
								and	105	106	1	1.0	1.0	
								and	115	116	1	0.3	0.3	
SRC894	RC	727,279	6,901,535	540	-90	0	98	Oroya	43	51	8	1.3	10.0	Oroya
								incl.	43	45	2	2.7	5.4	
								and	65	68	3	13.8	41.5	
								incl.	66	67	1	37.1	37.1	
								and	71	72	1	0.2	0.2	
SRC895	RC	727,256	6,901,675	540	-60	40	98	Oroya	0	2	2	0.3	0.5	Oroya
								and	36	37	1	0.3	0.3	
								and	41	47	6	1.3	8.1	
								incl.	41	42	1	5.5	5.5	
								and	49	50	1	0.3	0.3	
								and	64	67	3	0.4	13	
								incl	64	65	1	0.8	0.8	
								and	72	73	1	0.7	0.7	
SRC896	RC	727 184	6 901 632	540	-80	40	110	Orova	0	1	1	03	0.3	Orova
5110050	ne	727,104	0,501,052	540	00	40	110	and	94	95	1	15	1.5	oroya
								and	00	100	1	0.2	0.2	
SBC 897	RC .	727.068	6 901 722	540	-90	0	200		170	176	6	0.2	2.7	Orova
51(0057	ne	727,000	0,501,722	540	50	0	200	incl	175	176	1	15	1.5	Oloya
SPC909	PC	777 120	6 001 700	540	-90	40	152	Orova		2	2	0.6	1.3	Orova
31/2030	NC.	121,129	0,901,799	540	-80	40	152	and	54	55	2	0.0	0.2	Uluya
								and	54	55 61	2	0.2	0.2	
								dilu	59	61	2	0.4	0.0	
								inci.	59	100	1	0.5	0.5	
								anu	108	109	1	0.0	0.0	
								and	116	118	2	0.3	0.7	
								and	131	136	5	0.4	2.1	
								inci.	131	132	1	0.6	0.6	
686000		707 400	6 004 000	<b>5 10</b>				and incl.	134	136	2	0.7	1.3	0
SRC899	RC	/2/,102	6,901,923	540	-90	0	200	Oroya	0	1	1	0.2	0.2	Oroya
								and	69	70	1	0.2	0.2	
								and	104	107	3	2.8	8.3	
686000		707.044	6 004 000	5.40			222	inci.	104	105	1	7.6	7.6	0
SRC900	RC	/2/,041	6,901,922	540	-90	0	230	Oroya	0	2	2	0.5	0.9	Oroya
								incl.	0	1	1	0.5	0.5	
								and	108	109	1	1.3	1.3	
								and	112	114	2	2.9	5.8	
								incl.	113	114	1	5.4	5.4	
								and	116	117	1	0.2	0.2	
								and	216	218	2	1.4	2.8	
								incl.	217	218	1	2.0	2.0	
SRC901	RC	727,015	6,902,205	540	-90	0	143	Oroya	0	2	2	0.2	0.5	Oroya
								and	98	100	2	0.3	0.5	
SRC902	RC	727,076	6,902,141	540	-90	0	240	Oroya	0	1	1	0.3	0.3	Oroya
								and	59	60	1	0.7	0.7	
								and	74	79	5	0.4	2.2	
								incl.	75	78	3	0.5	1.6	

Note: 0.2 g/t cut-off, may include up to 4m < 0.2 g/t Au as internal dilution.



Criteria	Commentary
Sampling	• Samples were collected by reverse circulation drilling (RC), rotary air blast drilling (RAB), and diamond drilling
tecnniques	
	Herald Resources Limited (Herald)
	• All KAB samples were collected in 4m composites using one scoop from each 1m sample heap, with the majority of significant intersections >0.2ppm Au re-sampled at 1m intervals and sent to the laboratory for aqua regia AAS
	gold determination with a lower detection limit of 0.02ppm Au.
	<ul> <li>All dry RC samples were split at 1m intervals using a 3-tier riffle splitter, with the excess collected in plastic bags and left on site. Wet samples were generally grabbed by hand – samples were also collected in 2m or 4m composites which were sent to the laboratory for initial analysis. For samples returning significant results the corresponding 1m resplits were sent for further analysis. 1m resplits were collected for all 4m composites returning &gt;0.20ppm Au. Herald RC samples were assayed by 50g fire assay.</li> </ul>
	Western Mining Corporation Limited (WMC)
	• Percussion Reverse Circulation (RC) drilling was used to collect samples over 1m intervals via a cyclone and riffle splitter unless the sample was too damp or puggy in which case the sample was grabbed from throughout the bag.
	• From the bulk 1m RC samples, a sample was collected then submitted to the laboratory for analysis.
	• WMC drill assays were assayed at a WMC laboratory using their own aqua regia style of analysis with a lower detection limit of 0.02ppm Au.
	WMC diamond drilling (NQ) was also used to obtain samples.
	Troy Resources NL (Troy)
	RC samples were passed directly from the in-line cyclone through a rig mounted multi-tier riffle splitter.
	• Samples were collected in 1m intervals into bulk plastic bags and 1m 3kg calico bags (which were retained for later use).
	• From the bulk samples a 5m composite sample was collected using a split PVC scoop and then submitted to the laboratory for analysis.
	• Where anomalous gold zones were detected, 1m re-split samples were collected and submitted to the laboratory.
	Samples were collected by reverse circulation (RC) drilling by Alto
	<ul> <li>RC samples were passed directly from the in-line cyclone through a rig mounted cone splitter or multi-tier riffle splitter. Samples were collected in 1m intervals and 1m calico splits.</li> </ul>
	<ul> <li>The bulk sample was placed directly onto the ground and the samples were sent directly to MinAnalytical Laboratory Services Ptv Ltd ("MinAnalytical").</li> </ul>
	<ul> <li>Field duplicate samples were collected using a second calico bag on the drill rig cyclone.</li> </ul>
Drilling	Herald RAB drill holes were drilled by Grimwood Davies and Bostech Drilling.
techniques	Herald RC drill holes were mostly drilled by Strange Drilling and used a hollow hammer, face sampling bit.
	WMC RC drilling was by roller bit or hammer using a cross over sub.
	• It is not known what type of RC rig was used by Troy.
	• DD (NQ size) was carried out by WMC using a Longyear 38 rig.
	• Alto RC drilling program used a KWL 350 drill rig with an onboard 1100cfm/350psi compressor and a truck mounted 1000cfm auxiliary and 1000psi booster.
	The face sampling hammer had a nominal 140 mm hole.
Drill sample recovery	• WMC noted on the logging sheets where samples were wet. Comments on recovery were also noted on the logging sheets where relevant.
	The WMC diamond drill holes include comments on recovery and core loss.
	• Alto sample recovery was estimated as a percentage and recorded on field sheets prior to entry into the database.
	• Alto has no quantitative information on Troy or Herald RAB and RC sample recovery. There were no reported sample recovery issues.
	No relationship between recovery and grade has been identified.

# JORC Code, 2012 Edition Table 1 – Section 1 Sampling Techniques and Data



Criteria	Commentary
Logging	<ul> <li>WMC drill logging was reported on log sheets with laboratory assay data typically for each metre. The historical graphical hardcopy logs and other geoscientific records available for the project are of high quality and contain significant detail.</li> <li>The WMC logging was commentary based with no specific geological codes used for events such as top of fresh rock, base of oxidation etc. However, the logging and descriptions are of sufficient quality that the lithologies drilled can be correlated with later logging carried out by Herald and Troy, and Alto's geological logging codes.</li> <li>Detailed logging codes were used for the Herald and Troy drill holes.</li> <li>Alto RC drill chips were sieved from each 1m bulk sample and the geology logged using detailed logging codes.</li> <li>Washed drill chips from each 1m sample were stored in chip trays.</li> </ul>
	• It is considered that drill holes were logged with a sufficient level of detail to support a mineral resource estimate.
techniques and sample preparation	<ul> <li>Sample sizes are appropriate to give an indication or mineralisation.</li> <li>The sampling technique is appropriate for the material and style of mineralization.         <u>WMC</u> <ul> <li>1m RC samples were collected via a cyclone and riffle splitter unless the sample was too damp or puggy in which case the sample was grabbed from throughout the bag.</li> <li>DD core was submitted for intervals considered by the geologist to be mineralised and it is not known whether it was</li> </ul> </li> </ul>
	full core or part core (i.e quarter/half etc). Intervals of no mineralisation were not sampled.
	<ul> <li>No composite sampling was undertaken.</li> <li>WMC drill assays were assayed at a WMC laboratory using their own aqua regia style of analysis with a lower detection limit of 0.02ppm Au.</li> <li><u>Herald</u></li> </ul>
	<ul> <li>All RAB samples were collected in 4m composites using a scoop off each 1m sample heap, with the majority of significant intersections &gt;0.2ppm Au re-sampled at 1m intervals and sent to the laboratory for aqua regia AAS gold determination with a lower detection limit of 0.02ppm Au.</li> </ul>
	<ul> <li>All dry RC samples were split at 1m intervals using a 3-tier riffle splitter, with the excess collected in plastic bags and left on site. Wet samples were generally grabbed by hand – samples were also collected in 2m or 4m composites which were sent to the laboratory for initial analysis. For samples returning significant results the corresponding 1m resplits were sent for further analysis. 1m resplits were collected for all 4m composites returning &gt;0.20ppm Au. Herald RC samples were assayed by 50g fire assay.</li> </ul>
	<ul> <li>Troy samples were sent to Genalysis Laboratory and SGS Australia Pty Ltd (SGS) located in Perth, Western Australia, were responsible for sample preparation and assaying for drill hole samples and associated check assays. The laboratories at the time, were certified to the ISO 9001 requirements for all related inspection, verification, testing and certification activities.</li> </ul>
	• RC samples were assayed using 50g fire assay with AAS finish, and sample sizes were noted as being 2kg.
	<ul> <li><u>Alto</u></li> <li>1m RC samples were transported to MinAnalytical, located in Perth, Western Australia, who were responsible for sample preparation and assaying for all RC drill hole samples and associated check assays.</li> </ul>
	• MinAnalytical are NATA certified for all related inspection, verification, testing and certification activities.
	• Samples submitted for analysis via Photon assay technique were dried, crushed to nominal 85% passing 2mm, linear split and a nominal 500g sub sample taken (method code PAP3502R)
	• The 500g sample is assayed for gold by Photon Assay (method code PAAU2) along with quality control samples including certified reference materials, blanks and sample duplicates.
	Sample sizes are appropriate to give an indication of mineralisation.
	The technique is appropriate for the material and style of mineralization.
Quality of assay data and laboratorv	The Fire Assay method is considered to be a total extraction technique. There are no deleterious elements present which could affect the technique.
tests	The Aqua Regia technique is considered to be a partial extraction technique where gold encapsulated in refractory sulphides or some silicate minerals may not be fully dissolved, resulting in partial reporting of gold content.  There is an information and likely to the initial init
	<ul> <li>There is no information available to Alto to indicate that the gold at the Oroya prospect includes refractory gold.</li> <li><u>WMC and Herald</u></li> </ul>
	Repeat assays were carried out and recorded on the logging sheets.
	• There is no available documentation for the WMC procedures of QAQC protocols however it is known that the



Criteria	Commentary
	laboratory included one repeat analysis, one standard and one blank in each tray of 50 samples.
	<ul> <li>Anomalous assays reported that could not be explained have been removed from the dataset.</li> </ul>
	Troy
	• For Troy RC drilling, an average of 1 field duplicate, 1 blank and 1 standard were submitted for every 50 samples.
	<ul> <li>Troy engaged Maxwell to undertake periodic audit of the exploration QAQC data on a monthly basis.</li> </ul>
	Laboratory Repeat assays were reported for Troy drill assays.
	Alto
	Industry purchased Blanks and Standards and are inserted at a rate of 1 per 25 samples.
	<ul> <li>Field duplicates are inserted by Alto at a rate of 1 every 100 samples. Field duplicates are collected using a second calico bag on the drill rig cyclone.</li> </ul>
	• Laboratory Certified Reference Materials and/or in-house controls, blanks, splits and replicates are analysed with each batch of samples by the laboratory. These quality control results are reported along with the sample values in the final report. Selected samples are also re-analysed to confirm anomalous results.
	Laboratory and field QA/QC results are reviewed by Alto Metals personnel.
Verification of sampling and	• Drilling information pertaining to drilling carried out by WMC, Herald and Troy was compiled by Alto from WA Dept Mines Open File records (WAMEX).
assaying	Data was transferred from WAMEX digital files to Alto's database.
	• The original WAMEX files were generally in excel or text format and were readily imported into Alto's database.
	• For some of the earlier reports (ie WMC) the data was manually entered into Excel then imported into the database.
	• There is a significant amount of historical grade control data from the Herald open pit mining operation at Oroya, which has not yet been reviewed or incorporated into Alto's database.
	Based on the density of drilling it is likely that twinned holes exist however these have not yet been reviewed.
	All significant intersections are reviewed by alternative company personnel.
	• The drilling program included extension and infill drill holes therefore twinned holes were not applicable.
	• Field data is recorded on logging sheets and entered into excel prior to uploading to and verification in Micromine and Datashed.
	Laboratory data is received electronically and uploaded to and verified in Micromine and Datashed.
Location of	All data is reported in GDA 94 zone 50.
data points	<ul> <li>Troy drilling was located with a differential GPS (accurate to &lt;1m).</li> </ul>
	WMC and Herald drill holes were reported using an AMG grid established by contract surveyors.
	Herald reported that all previously reported WMC drilling was checked on the ground.
	There is no available down hole survey data for the Troy, Herald or WMC RC drilling.
	WMC diamond hole logs recorded down hole survey data.
	Alto
	<ul> <li>Alto used handheld Garmin GPS to locate and record drill collar positions, accurate to +/-5 metres (northing and easting), which is sufficient for exploration drilling.</li> </ul>
	• Subsequently RM Surveys (licensed surveyor) carry out collar surveys with RTK GPS with accuracy of +/-0.05m to
	accurately record the easting, northing and RL prior to drill holes being used for resource estimation.
	<ul> <li>Subsequently five surveys (incensed surveys) carry out conar surveys with fire dr 5 with accuracy of 1/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> </ul>
	<ul> <li>Subsequently five surveys (incensed surveys) carry out conar surveys with fire driveys with fire driveys with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> </ul>
	<ul> <li>Subsequently five surveys (incensed surveys) carry out conar surveys with first or 5 with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> </ul>
Data	<ul> <li>Subsequently five surveys (incensed surveys) carry out conar surveys with first or 5 with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> <li>Drill collar spacing is typically at 20m x 20m spacing near the Oroya open pit.</li> </ul>
Data spacing and	<ul> <li>Subsequently five surveys (incensed surveyor) carry out conar surveys with first or 5 with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> <li>Drill collar spacing is typically at 20m x 20m spacing near the Oroya open pit.</li> <li>Deeper RC and diamond holes were drilled to target specific geological target areas and were not drilled on a pattern.</li> </ul>
Data spacing and distribution	<ul> <li>Subsequently five surveys (incensed surveys) carry out conar surveys with first or 5 with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> <li>Drill collar spacing is typically at 20m x 20m spacing near the Oroya open pit.</li> <li>Deeper RC and diamond holes were drilled to target specific geological target areas and were not drilled on a pattern.</li> <li>The drilling was composited downhole for estimation using a 1m interval.</li> </ul>
Data spacing and distribution Orientation	<ul> <li>Subsequently five surveys (incensed surveyor) carry out conar surveys with first or 5 with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> <li>Drill collar spacing is typically at 20m x 20m spacing near the Oroya open pit.</li> <li>Deeper RC and diamond holes were drilled to target specific geological target areas and were not drilled on a pattern.</li> <li>The drilling was composited downhole for estimation using a 1m interval.</li> <li>Drill orientation at Oroya is typically vertical or -60° to 090° which is designed to intersect mineralisation</li> </ul>
Data spacing and distribution Orientation of data in	<ul> <li>Subsequently five surveys (incensed surveyor) carry out conar surveys with first or 5 with accuracy of +/-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> <li>Drill collar spacing is typically at 20m x 20m spacing near the Oroya open pit.</li> <li>Deeper RC and diamond holes were drilled to target specific geological target areas and were not drilled on a pattern.</li> <li>The drilling was composited downhole for estimation using a 1m interval.</li> <li>Drill orientation at Oroya is typically vertical or -60° to 090° which is designed to intersect mineralisation approximately perpendicular. Sampling is therefore considered representative of the mineralised zones.</li> </ul>
Data spacing and distribution Orientation of data in relation to geological structure	<ul> <li>Subsequently normal surveys (neclised surveys) carry out conar surveys with necchacy of 1/2-0.05m to accurately record the easting, northing and RL prior to drill holes being used for resource estimation.</li> <li>Alto has also recorded collar locations using a DGPS from Navaids with an accuracy of +/-0.10m.</li> <li>Downhole surveys are undertaken by the drilling contractor at 30m intervals using a true north seeking gyro.</li> <li>Alto has previously engaged an independent downhole survey company to carry out an audit of downhole surveys and the results were considered satisfactory.</li> <li>Drill collar spacing is typically at 20m x 20m spacing near the Oroya open pit.</li> <li>Deeper RC and diamond holes were drilled to target specific geological target areas and were not drilled on a pattern.</li> <li>The drilling was composited downhole for estimation using a 1m interval.</li> <li>Drill orientation at Oroya is typically vertical or -60° to 090° which is designed to intersect mineralisation approximately perpendicular. Sampling is therefore considered representative of the mineralised zones.</li> <li>Geological and mineralised structures have been interpreted at Oroya from drilling, detailed surface geological mapping, and detailed plans and sections of historical underground workings.</li> </ul>



Criteria	Commentary
security	taken with security of samples during field collection, transport and laboratory analysis.
	<ul> <li>Troy reported that their drill samples were collected in a labelled and tied calico bag. Up to six calico bags are then placed in a larger polyweave bag that is labelled with the laboratory address and sender details and tied with wire. The polyweave bags were picked up by a courier firm who counted the number of polyweave bags before taking them to the Mt Magnet depot. The samples were picked up by the courier's road train and transported to Perth. Upon receipt of the samples the laboratory checked the sample IDs and total number of samples and notified Troy of any differences from the sample submission form.</li> </ul>
	Alto
	• 1m RC drill samples comprised approximately 3 kg of material within a labelled and tied calico bag.
	<ul> <li>Individual sample bags were placed in a larger plastic poly-weave bag then into a bulka bag that was tied and dispatched to the laboratory via freight contractors or company personnel.</li> </ul>
	Sampling data was recorded on field sheets and entered into a database then sent to the head office.
	• Laboratory submission sheets are also completed and sent to the laboratory prior to sample receival.
Audits and reviews	No external audits or reviews have been undertaken at this stage.
	<ul> <li>Alto's Exploration Manager attended the Alto RC drilling program and ensured that sampling and logging practices adhered to Alto's prescribed standards.</li> </ul>
	<ul> <li>Alto's Exploration Manager has reviewed the significant assay results against field logging sheets and drill chip trays and confirmed the reported assays occur with logged mineralised intervals and checked that assays of standards and blanks inserted by the Company were appropriately reported.</li> </ul>

# JORC (2012) Table 1 – Section 2 Reporting of Exploration Results

Item	Comments					
Mineral tenement and land tenure	<ul> <li>Alto's Sandstone Project is located in the East Murchison region of Western Australia and covers approximately 740 km<sup>2</sup> with multiple prospecting, exploration and mining licences all 100% owned by Sandstone Exploration Pty Ltd, which is a 100% subsidiary of Alto Metals.</li> </ul>					
	<ul> <li>To date there have been no issues obtaining approvals to carry out exploration and there are no known impediments to potential future development or operations, subject to relevant regulatory approvals, over the leases where significant results have been reported.</li> </ul>					
	• Royalties include up to 2% of the Gross Revenue payable to a third party, and a 2.5% royalty payable to the State Government.					
Exploration	Gold was first discovered in the Sandstone area in the 1890's.					
done by other parties	<ul> <li>Historical mining was carried out at the Oroya (Oroya Black Range Mine) in the early 1900s with reported production figures of;</li> </ul>					
	Oroya Mine: 420,000t at 16.5 g/t Au for 220,000oz gold.					
	• WMC explored the area between 1981 and 1993 and completed detailed geological mapping, drilling, mineral resource estimation and feasibility studies.					
	• Herald became operator of the project in 1993 and completed drilling, mineral resource estimation, feasibility studies and open pit mining at Oroya in 1994-1995 with reported production figures of;					
	344,548t at 2.27 g/t Au for 25,100oz gold.					
	<ul> <li>Troy became operator in 1999 and completed drilling, and 3D modelling of the historical underground workings.</li> </ul>					
Geology	• The Oroya prospect lies within the central part of the Sandstone Greenstone Belt. Local lithologies are dominated by metabasalt and metadolerite with relatively thin, east-west trending, sub-vertical banded-iron-formation.					
	• Cross-cutting the stratigraphy are numerous gold-bearing quartz veins, including the Oroya reefs, with a north- south strike and shallow westerly dip.					
	• In general, the Oroya reefs range from less than 1 metre to about 3 metres wide and are variably composed of quartz, quart-carbonate and brecciated quartz and carbonate altered mafic rock.					
	<ul> <li>The Oroya mine, hosted in metabasalt, was mined underground over a strike length of about 1 km down to a vertical depth of 140m. Various spur reefs occur branching into the hangingwall and footwall of the main Oroya reef. The most important of these branches is the hangingwall Juno Reef which splits off the Sandstone Reef at about 60-100m vertical depth then continues up through the hangingwall saprolite to the surface</li> </ul>					



Item	Comments
	where it was concealed by soil cover. The Juno Reef dips westward at 30-45° and is developed adjacent to and overlying an unusually flat area of the Sandstone Reef. The miners were aware of the Juno Reef but did not mine it to any great extent. The Juno Reef is up to 12m thick with most drill hole intersections being in the 1-3m range and has a strike length of approximately 300m.
Drill hole	• The locations of all relevant drill holes are shown on various plans in the report.
Information	<ul> <li>Drill hole collar and relevant information for drill holes with significant mineralisation is included in a table in the main report.</li> </ul>
Data aggregation	• Mineralised intervals for historical drilling are reported +1.0 g/t Au and may contain 2 to 4 metres of internal waste (less than 1.0 g/t Au mineralisation).
methods	• Mineralised intervals for Alto drilling are reported +0.2 g/t Au and may contain 2 to 4 metres of internal waste (less than 0.2 g/t Au mineralisation).
Relationship between	• RC drill holes were angled at -60° and designed to intersect perpendicular to the host stratigraphy and interpreted strike and dip of the mineralisation.
mineralisation widths and intercept lengths	• Downhole intercepts are not reported as true widths however are considered to be close to true widths based on the drill orientation and current understanding of the mineralisation.
Diagrams	Relevant sections and plans have been included in the main report.
Balanced	• The locations of all drill holes are shown on various plans in the report.
reporting	• The maximum gold value reported for each hole has been assigned to the drill hole collar.
	• Drill hole collar and relevant information for drill holes with significant mineralisation is included in a table in the main report.
Other	All material exploration information has been included in the report.
substantive	There are no known deleterious elements.
data	<ul> <li>The historical underground workings at Oroya were digitised from historical plans and sections by Troy in 2002. The plans and sections upon which the 3D models were produced are considered to accurately reflect the period for which the majority of production was carried out. Alto has not yet carried out its own audit of the 3D models against the drilling data and geological logs.</li> </ul>
	<ul> <li>Various historical mineral resource estimates have been reported for the Oroya prospect including a mineral resource estimate in 1996 by Herald Resources after open pit mining (reference WAMEX a050037). The mineral resource estimates are not compliant with the JORC 2012 Code and it is unknown whether the mineralisation would be classified as a mineral resource under the JORC 2012 Code.</li> </ul>
Further work	Alto has planned further RC infill and extension drilling.