



# METALLURGICAL TEST-WORK INITIATED AS POSITIVE GOLD RESULTS CONTINUE TO FLOW FROM NZ BENDIGO-OPHIR PROJECT

- Preliminary metallurgical leach test-work is to commence on fresh sulphide ore sub-composites of crushed diamond drillhole (DD) core from Come-in-Time (CIT), Rise and Shine (RAS) and Shreks East (SRE) prospects along the Rise and Shine Shear Zone (RSSZ).
- Current drilling, targeting down-plunge extensions to existing JORC resources, has intersected significant widths of fresh gold bearing sulphide mineralisation, which is expected to hold 90% of the future available gold resources.
- The metallurgical test-work of 10-day intermittent bottle roll tests (IBRT) are a follow-on step from previous (2018) sulphide 24-hour LeachWELL tests on RC drill chips that averaged 85% gold recovery.

# Previous 2018 sulphide / transition ore 24-hour leach results (RC drill chip, 6mm crush)

- Come-in-Time (CIT)
  - 86% gold recovered.
- Shreks (SHR)
  - $\circ$  84% gold recovered.
- IBRT results will guide further work involving 60-day column leach tests where previous (2018) column test-work on oxide and transition ore reported gold recoveries averaging 73-94%.

# Previous 2018 oxide / transition ore 60-day column leach results (trench / adit rock, 16mm crush)

- Come-in-Time (CIT)
  - 94% gold recovered (oxide ore)
- Shreks (SHR)
  - 77% gold recovered (oxide ore)
  - Rise & Shine (RAS)
    - 73% gold recovered (transition ore)

The current resource extension drilling programme has determined that >90% of available gold will occur in fresh sulphide bearing mineralisation and early leachability tests will help determine gold recovery methodology.

**31 March 2021** Santana Minerals Limited (ASX: SMI) ("Santana" or "the Company") is pleased to announce preliminary metallurgical test-work is to commence on sulphide ore from three prospects, Come-in-Time (CIT), Rise and Shine (RAS) and Shreks East (SRE) within the 100% owned Bendigo-Ophir Project ("the Project").

This test-work, at ALS Metallurgy Laboratory in Perth WA, designed and to be supervised by Kappes, Cassiday and Associates Australia (KCAA) has been advanced as a consequence of continuing positive results from the current drilling programme and is important for early development of the Project.

Commenting on the commencement of metallurgical test-work Executive Director Dick Keevers said:

"Our current diamond core and RC drilling have provided substantial indication of the extension of the gold mineral resources at Bendigo – Ophir, to the level that we are pleased to recommence metallurgical test work, building on the successful testing completed by Matakanui Gold in 2018. Our plan now is to concentrate on testing the amenability of our sulphide bearing gold mineralisation to heap leach gold recovery, using drill core from the first 3 diamond drill holes recently completed. It is already clear that more than 90% of the gold resources will be contained within the fresh sulphide zone, which will be formally defined when our current resources update study is completed."



# Resource Extension Drilling & Diamond Drilling (DD) Sulphide Ore Intercepts

In November 2020, the Company embarked on a 4,500-metre resource extension drilling programme of reverse circulation (RC) and DD holes targeting down-plunge mineralization from existing 252Koz JORC inferred resources (ASX announcement on 3<sup>rd</sup> November 2020).

The first three DD holes (MDD001-MDD003) at CIT, RAS and SRE prospects (Figure1) which span 4km of RSSZ strike, intersected significant gold mineralization in shallow sulphide ore from 62-65 metres below collar (ASX announcement on 23<sup>rd</sup> March 2021).

## Significant composite DD core assays and mineralization styles include:

- MDD001 Come-in-Time (CIT)
  - 11m @ 0.86g/t Au from 62m (shear and stockwork veins)
- MDD002 Rise & Shine (RAS)
  - o 18m @ 1.97g/t Au from 65m (stockwork veins)
  - o Including 10m @ 3.36g/t Au from 73m
  - With 2m @ 14.00g/t Au from 81m (1m @ 16.2g/t & 1m @ 11.8g/t)
  - MDD003 Shreks East (SRE)
    - 19m @ 0.75g/t Au from 64m (shear and stockwork veins)
    - Including 8m @ 1.22g/t Au from 75m



Figure 1 Diamond Drillhole (DD) intercepts / metallurgical sample locations

Sulphide mineralization within the Rise and Shine Shear zone (RSSZ) is expected to provide the bulk (>90%) of the large tonnage low-grade ore where sighter LeachWELL tests on 6mm crush RC chips in 2018 showed encouraging gold recoveries averaging 85%. Earlier work at SGS Metallurgy facility in Perth WA on oxide / transition ore from trenches and adits was designed and supervised by Kappes, Cassiday and Associates Australia (KCAA). This test-work involved progressive evaluation from initial (sighter) 24-hour LeachWELL bulk leachable gold (BLEG), 10-day intermittent bottle roll tests (IBRT), followed by agglomeration / percolation trials and 60-day column test-work. These test-work results showed Bendigo-Ophir transition and near-surface oxide ores to be amenable to heap leach recovery.



## 2018 oxide / transition ore gold leachability conclusions

The metallurgical investigations which culminated in the 60-day column test-work showed the amenability of the ores to leaching with KCAA concluding *"the oxide CIT and SHR (ALV) mineralization is highly amenable to heap leach processing while the oxide / transition mix from RAS is also considered a good to very good heap leach candidate".*(Matakanui Gold Ltd, Bendigo-Ophir Project, Review of Preliminary Metallurgical Testwork for Heap Leach Processing, September 2018, Kappes, Cassiday and Associates Australia).

Two of the composites (CIT and RAS) exhibited rapid leach kinetics with >85% of the final gold extraction achieved within 10 days, which further improve heap leach potential. SHR leaching was slower with 60% of final gold extraction after 10 days but leaching was continuing at a relatively high rate of 1% per week when the test-work ended. KCAA noted that this is typical of ores containing relatively coarse gold. Laboratory reagent consumption was low and there was no evidence of slumping or permeability issues during the column tests.

KCAA scaled laboratory column test results to simulate field recoveries (Figure 2 from KCAA Figure 4-1) with lab results discounted 3-4%, and resultant field recoveries and cycles (assuming an 8-metre lift) are as follows:

CIT	90%	leach cycle 120 days
RAS	70%	leach cycle 200 days
SHR(ALV)	75%	leach cycle 200 days



Figure 2 (KCAA figure 4-1 Projected Field Recovery Curve for Bendigo-Ophir ores at 16mm)

Following this oxide / transition ore leach amenability test-work, fresh sulphide ore RC drill chip samples were submitted to SGS Kalgoorlie in late 2018 for 24-hour LeachWELL bulk leachable gold (BLEG) sighter test-work to determine leach amenability of deeper transition / sulphide ores.

#### 2018 sulphide / transition ore gold leachability results

Gold leachability of transition / sulphide ore as determined by the LeachWELL tests on 6mm crush RC chip samples was also very good and mirrored the gold recoveries determined by 60-day column test-work on oxide / transition 16mm crush. Whilst crush sizes and test-work methodology differ the results do indicate that the gold is "free milling" but liberation crush size cannot be assumed

CIT	86%	average of 9 samples, 11.5 – 64 metres below surface
SHR	84%	average of 11 samples, 9 – 32 metres below surface

The sulphide / transition ore RC drill chip samples represented a range of gold grades and depths from Come-in-Time (CIT) and Shreks (SHR) prospects (Table 1).



### Table 1: 2018 Sulphide / Transition ore gold leach results (24-hour LeachWELL Bottle Roll)

Prospect	20122018	Au	Au(R)	Au Tail	Au Tail(R)		Total_Au	%_Recovery
	METHOD	LWL69M	LWL69M	LWL69M	LWL69M			
	LDETECTION	0.01	0.01	0.01	0.01			
	UDETECTION	1000	1000	1000	1000	Depth		
	UNITS	PPM	PPM	PPM	PPM	m		
CIT	MG03515	0.65	-	0.11	-	11.5	0.76	85.5%
CIT	MG03514	1.97	-	0.12	-	16.4	2.09	94.3%
CIT	MG03516	0.47	-	0.34	-	19.5	0.81	58.0%
CIT	MG03512	0.63	-	0.04	-	33.8	0.67	94.0%
CIT	MG03513	0.58	-	0.03	-	34.8	0.61	95.1%
CIT	MG03517	0.90	-	0.18	-	38.5	1.08	83.3%
CIT	MG03518	0.62	-	0.14	-	48.5	0.76	81.6%
CIT	MG03519	2.50	-	0.20	-	49.5	2.70	92.6%
CIT	MG03520	0.98	-	0.14	-	64.5	1.12	87.5%
SHR	MG03503	0.78	-	0.05	-	9.0	0.83	94.0%
SHR	MG03504	0.63	-	0.05	-	10.0	0.68	92.6%
SHR	MG03505	1.05	-	0.09	-	10.0	1.14	92.1%
SHR	MG03509	0.38	-	0.17	-	12.0	0.55	69.1%
SHR	MG03506	0.62	-	0.04	-	12.0	0.66	93.9%
SHR	MG03510	0.41	0.46	0.17	-	14.0	0.58	70.7%
SHR	MG03507	0.51	-	0.04	-	15.0	0.55	92.7%
SHR	MG03508	0.29	-	0.09	-	16.0	0.38	76.3%
SHR	MG03511	0.66	-	0.20	-	18.0	0.86	76.7%
SHR	MG03502	0.40	-	0.08	-	20.0	0.48	83.3%
SHR	MG03501	0.38	-	0.10	-	32.0	0.48	79.2%

KCAA reviewed the transition / sulphide LeachWELL results and concluded that gold leachability was excellent showing little variation in gold recovery with either depth (Figure 3) or head grade (Figure 4).









In November 2020, the Company recommenced resource extension drilling and with the positive gold grades and thick intercepts in potential sulphide ore down-plunge from existing resources, KCAA have been engaged to design and supervise an initial IBRT programme to be conducted at ALS Metallurgy in Perth. This test-work will commence in April and provide follow-on and more detailed insights into the leachability of sulphide ores established through LeachWELL sighter tests in 2018.

# 2021 sulphide ore gold leachability 10-day IBRT Testwork

For the preliminary 2021 leach test-work >370kg of crushed core has been made available. KCAA has designed a programme for 6 sub-composite samples of fresh sulphide ore to undergo 10-day IBRT tests. If leach amenability is confirmed (with continuing gold extraction at the end of the 10-days), follow-on 60-day column test-work will be scheduled for 3 further sub-composites (~30kg each) representative of the three deposits, CIT, RAS and SRE (Table 2).

Samples selected to span a range of gold grades from DD holes MDD001, MDD002 and MDD003 crushed core will undergo particle size determination (PSD) prior to the IBRT tests. The crushed large diameter PQ core (<2mm P<sub>80</sub>) samples are laboratory crush surplus ore from cut ½ diameter PQ core returned from the analytical laboratory after gold assays (FAA505).

Deposit	Hole no	from	to	Size	Sample Id	Subcompo #	Wt, kg	g/t Au	Round 1 Tests	Wt, kg	g/t Au	Round 2 Tests
Come-in-Time (CIT)	MDD001	63	64	1/2 PQ	MG05321							
		64	65	1/2 PQ	MG05322							
		65	66	1/2 PQ	MG05323							
		66	67	1/2 PQ	MG05324							
		67	68	1/2 PQ	MG05325	CSC02	40.66	1.07	IBRT	30.00	1.07	Column?
		68	69	1/2 PQ	MG05326							
		69	70	1/2 PQ	MG05327							
		70	71	1/2 PQ	MG05328							
		71	72	1/2 PQ	MG05329							
		69	70	1/2 PQ	MG09095							
		70	71	1/2 PQ	MG09096	RSC04	19.44	0.48	IBRT			
		71	72	1/2 PQ	MG09097							
		72	73	1/2 PQ	MG09098							
		73	74	1/4 PQ	MG09099							
		73	74	1/4 PQ	MG09100							
Disa & Shina		74	75	1/2 PQ	MG09101							
	MDD002	75	76	1/2 PQ	MG09102	RSC05	46.36	0.68	IBRT	56.76	2.02	Column?
(RA3)		76	77	1/2 PQ	MG09103							
		77	78	1/2 PQ	MG09104							
		78	79	1/2 PQ	MG09105							
		79	80	1/2 PQ	MG09106							
		81	82	1/4 PQ	MG09108							
		81	82	1/4 PQ	MG09120	RSC06	10.96	13.99	IBRT			
		82	83	1/2 PQ	MG09109							
	MDD003	68	69	1/2 PQ	MG09163							
		69	70	1/4 PQ	MG09164							
		69	70	1/4 PQ	MG09180							
		70	71	1/2 PQ	MG09165							
		71	72	1/2 PQ	MG09166	SSC08	48.68	0.41	IBRT			
		72	73	1/2 PQ	MG09167							
		73	74	1/2 PQ	MG09168							
Shreks East		74	75	1/2 PQ	MG09169							
(SRE)		75	76	1/2 PQ	MG09172					43.44	0.80	Column?
		76	77	1/2 PQ	MG09173							
		77	78	1/2 PQ	MG09174							
		78	79	1/2 PQ	MG09175							
		79	80	1/2 PQ	MG09176	SSC09	34.76	1.54	IBRT			
		80	81	1/2 PQ	MG09177							
		81	82	1/2 PQ	MG09178							
		82	83	1/2 PQ	MG09179							

Table 2: 2021 Sulphide ore Leach Test-work - 10-day IBRT (Round 1) and 60-day column test (Round 2)



# Come-in-Time (CIT) – Drillhole MDD001 sub-composite (CSC02)

RSSZ mineralization to be tested is 9 metres at a representative grade of 1.07g/t from an 11m zone @ 0.86g/t Au (min 0.25g/t cut-off) intersected immediately below the Thomson's Gorge Fault (TGF) at 62m. Gold is associated with both arsenopyrite rich shear / breccia and quartz stockwork veins.

# Rise & Shine (RAS) - Drillhole MDD002 sub-composites (RSC04, RSC05 & RSC06)

RSSZ footwall schist (approximately 15 metres below the TGF) is to be tested in three sub-composites of 15 metres from a broad 18m zone @ 1.97 g/t Au from 65m. The sub-composites represent a range of grades from low (0.48 g/t) to high (13.99g/t) associated with high angle quartz veins and brecciation.

## Shreks East (SRE) - Drillhole MDD003 sub-composites (SSC08 & SSC09)

RSSZ mineralization to be tested is 16 metres of a 19-metre zone @ 0.75g/t Au from 64m, immediately below the TGF. A 10-metre lower grade (0.41g/t) sub-composite (SSC08) dominated by shears occurs above a 6-metre higher-grade (1.54g/t) sub-composite (SSC09) associated with high-angle veining / faulting.

# Key takeaways and Forward Programme

Past metallurgical work in 2018 demonstrated the leach amenability of Bendigo-Ophir gold mineralization and the 2021 preliminary metallurgical programme designed by KCAA will advance the understanding of gold leachability characteristics of a growing inventory of sulphide bearing gold mineralization intercepts from the current drilling programme.

This early work will determine utilization of further DD core to provide additional material for follow-on laboratory metallurgical work to begin optimization of gold recovery methodology / circuitry.

The announcement has been authorised for release to the ASX by the Board.

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#### About Santana Minerals Limited Bendigo-Ophir Project

The Bendigo-Ophir Project is located on the South Island of New Zealand within the Central Otago Goldfields. The Project is located ~90 kilometres northwest of Oceana Gold Ltd (OGC) Macraes Gold Mine (Figure 8).

The Project contains a JORC Inferred Resource of 252K ounces gold (uncut), estimate based on drill results to 2018 which the Company interprets has the potential to be expanded and developed into a low cost per ounce heap leach operation, with ore from bulk tonnage open pits.



Figure 8 Bendigo-Ophir Project in the Otago Goldfield, ~90km NW of Macraes

The Bendigo-Ophir resources occur in 3 deposits (Figure 2) that are inferred to extend in a northerly direction within the RSSZ and the Company embarked on diamond drilling (DD) and reverse circulation (RC) drilling programmes in November 2020. The immediate objective is to increase the existing resources by drill testing the down plunge extensions of known mineralisation. The Company is focusing on advanced precious metals opportunities in NZ and Mexico and a database update with resource modelling has commenced with a view to progressively upgrade the Bendigo-Ophir JORC resources for a new estimate by mid-year.

# **Current Disclosure - Competent Persons Statement**

The information in this report that relates to Exploration Results is based on information compiled by Mr Richard Keevers, a Competent Person who is a Fellow of The Australasian Institute of Mining and Metallurgy. Mr Keevers is a Director of Santana Minerals Limited and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which is being undertaken 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.' Mr Keevers consents to the inclusion in this report of the matters based on his information in the form and context in which it appears. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified.

#### Previous Disclosure - 2012 JORC Code

Information relating to Mineral Resources, Exploration Targets and Exploration Data associated with the Company's projects in this announcement is extracted from the following ASX Announcements:

 ASX announcement titled "Diamond Drill Core Reveals Material Gold Mineralisation at Multiple Bendigo-Ophir Prospects" dated 23<sup>rd</sup> March 2021.

#### **Forward Looking Statements**

Forward-looking statements in this announcement include, but are not limited to, statements with respect to Santana's future plans, strategy, activities, events or developments the Company believes, expects or anticipates will or may occur. By their very nature, forward-looking statements require Santana to make assumptions that may not materialize or that may not be accurate. Although Santana believes that the expectations reflected in the forward-looking statements in this announcement are reasonable, no assurance can be given that these expectations will prove to have been correct, as actual results and future events could differ materially from those anticipated in the forward-looking statements. Accordingly, viewers are cautioned not to place undue reliance on forward-looking statements. Santana does not undertake to update publicly or to revise any of the included forward-looking statements, except as may be required under applicable securities laws.