

ASX:**TMS** tennantminerals.com ASX ANNOUNCEMENT 8<sup>th</sup> February 2023

# Spectacular Drill Hit of 30.5m @ 6.2% Copper and 6.8 g/t Gold at Bluebird

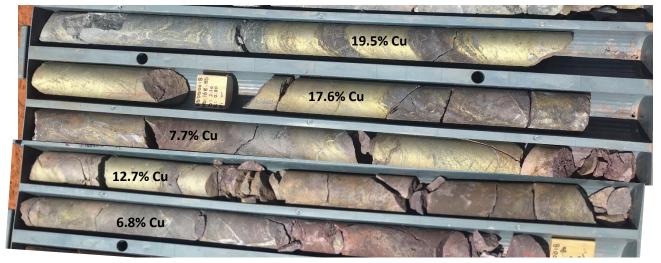
# includes 17.8m @ 11.5 g/t Gold and 16.1m @ 10.5% Copper (Massive Sulphides)

- Thick, true-width, intersections of high-grade copper and gold highlight the potential to expand the Bluebird discovery, which remains open in all directions

- Diamond drillhole BBDD0018 has produced a spectacular, true-width, intersection of highgrade copper and gold at the Bluebird discovery, 40km east of Tennant Creek in the NT:
  - o 30.5m @ 6.2% Cu and 6.8 g/t Au from 153.6m (downhole),

including 17.8m @ 5.2% Cu and 11.5 g/t Au from 153.6m, and,

including **16.1m @ 10.5% Cu** and 0.44 g/t Au from 164.9m.



mage 1: Massive copper-sulphides in BBDD0018<sup>1</sup>, part of very high-grade copper intersection: 16.1m @ 10.5% Cu

- This spectacular gold and copper-sulphide intersection occurs at a similar depth to previous, exceptional, copper-gold intersections at Bluebird, including:
  - BBDD0012: 63m @ 2.1% Cu, 4.6 g/t Au from 153m incl. 40m @ 3.0% Cu, 7.3 g/t Au<sup>2</sup>
  - BBDD0007: 50m @ 2.7% Cu, 0.52 g/t Au from 158m incl. 24m @ 5.0% Cu, 1.0 g/t Au<sup>3</sup>
  - BBDD0013: 40m @ 2.6% Cu, 1.3 g/t Au from 131m incl. 24.5m @ 3.9% Cu, 0.45 g/t Au<sup>4</sup>
  - BBDD-2: 20m @ 0.61% Cu, 8.17 g/t Au, from 157m incl. 4m @ 0.66% Cu, 37.9 g/t Au<sup>3</sup>
- These intersections occur within a thick and shallow-plunging dilational zone which is open along strike to the east and especially to the west, where it becomes shallower.
- New drilling is planned to test shallow extensions of this exceptionally thick and high-grade copper-gold zone, as well as at depth where results are pending from a further five drillholes, including intersections of thick and intense copper mineralisation (descriptions Appendix 1).
- > Drilling will also test other priority targets within the 2.5km Bluebird-Perseverance Corridor.



## **Tennant Minerals Chairman Matthew Driscoll commented:**

"This latest drill-hit from Bluebird is truly spectacular and includes a thick and high-grade gold zone of over 11 grams per tonne, as well as a massive copper-sulphide zone grading over 10 percent copper.

"Drilling is already planned to extend this remarkable new discovery, which lies under shallow cover to the east of the Tennant Creek Mineral Field and continues to grow – in all directions."

"The results are another key step in our strategy to identify multiple, multi-million tonne, high-grade coppergold deposits within the Barkly Tenements, where we aim to establish a stand-alone copper-gold project."

Tennant Minerals Limited (ASX: TMS), is excited to announce a **spectacular, true-width intersection of high-grade copper and gold** from **BBDD0018**<sup>1</sup>, the first diamond drillhole of the recently completed Stage 2 drilling program at the Bluebird discovery (see intersection on longitudinal projection, Figure 1 below).

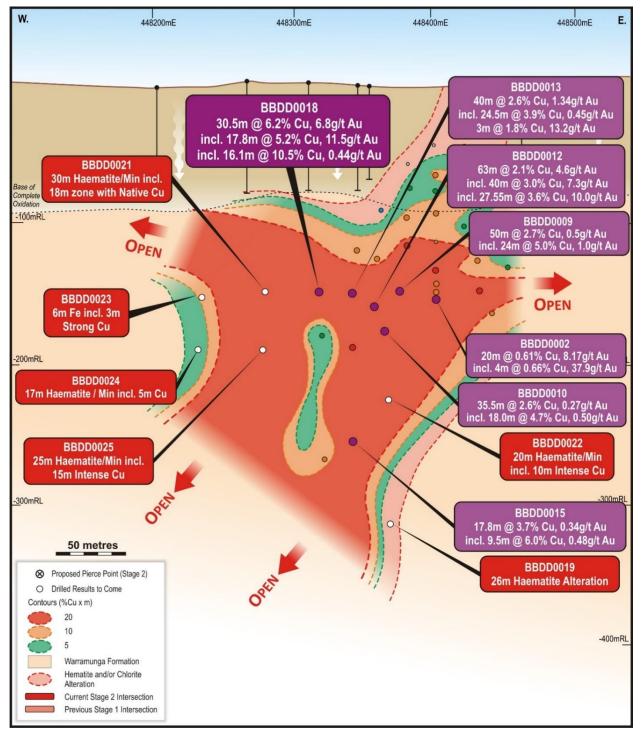


Figure 1: Bluebird discovery, longitudinal projection showing the latest spectacular intersection in BBDD0018



The spectacular BBDD0018 diamond drilling intersection of:

o **30.5m @ 6.2% Cu** and **6.8 g/t Au** from 153.6m (downhole),

includes a high-grade gold zone of 17.8m @ 11.5 g/t Au, 5.2% Cu from 153.6m which extends from the faulted hanging wall side of the brecciated ironstone. The gold zone overlaps with the high-grade copper zone of 16.1m @ 10.5% Cu from 164.9m, which includes massive copper-sulphides (chalcopyrite and chalcocite – see descriptions, Appendix 1) (see Image 1). The copper zone extends to the footwall side of this thick, true-width intersection (see Table 1 for all significant intersections and Table 2 for drilling details).

This new intersection extends the shallow easterly plunging dilational zone to the west, where it becomes shallower and remains open. This zone also includes the extraordinary results from **BBDD0012** of **63.0m @ 2.1% Cu** and **4.6** g/t Au<sup>2</sup> from 153.0m and **BBDD0009**<sup>1</sup>, which intersected **50m @ 2.7% Cu** and **0.52** g/t Au<sup>3</sup> from 158m, which occur at a similar depth below surface (see Figure 1).

Other key intersections within this zone include **BBDD0013**, which intersected **40m** @ **2.6%** Cu and **1.34g/t** Au<sup>4</sup> from 131m, and the previous exceptionally high-grade gold intersection in **BBDD-2** of **20m** @ **0.61%** Cu and **8.17** g/t Au<sup>3</sup>, from 157m (Figure 1).

# The extension of this very-high grade copper-gold zone to the west and to a shallower depth opens up potential for new drilling to deliver more spectacular intersections in this direction (Figure 1).

Further results are pending from drillholes which tested western extensions of Bluebird, as well as at depth (see Figure 1 for pierce-point locations and Appendix 1 for descriptions of mineralisation), including:

- BBDD0021, which intersected a 30m zone of hematite alteration, brecciation and sulphides from 161m downhole, including **18m of intense copper mineralisation** (chalcocite, native copper)<sup>5</sup>.
- BBDD0022, which intersected a 20m zone of hematite alteration/mineralisation from 244m downhole with a **10m zone of intense brecciation and copper mineralisation** (predominantly chalcocite)<sup>5</sup>, and,
- BBDD0025, which intersected a 25m zone of hematite alteration and brecciation from 199m downhole, including **15m of intense copper mineralisation with visible sulphides** (predominantly chalcocite)<sup>6</sup>.

Drillhole	From	То	Interval	Cu%	Au g/t	Ag g/t	Bi %	Co ppm	Fe %	Cut-off
BBDD0018	153.60	184.10	30.50	6.2	6.8	3.6	0.21	216	28.0	0.5% Cu
including	153.60	171.40	17.80	5.2	11.5	3.7	0.33	218	28.7	1.0% Cu
including	153.60	155.00	1.40	2.2	141.8	20.2	3.81	184	27.2	1.0% Cu
& including	164.90	181.00	16.10	10.5	0.44	3.8	0.05	371	27.4	3.0% Cu
including	164.90	171.40	6.50	11.5	0.60	3.0	0.04	515	22.3	5.0% Cu
including	175.00	182.00	7.00	12.8	0.41	4.6	0.06	342	24.2	5.0% Cu

Table 1 below includes all significant intersections in BBDD0018:

Hole #	Dip°	Az Grid°	GRID_E	GRID_N	RL	Mud (m)	DDC (m)	Depth (m)
BBDD0018	-65	0	448,320	7,827,050	332	62.7	184.1	246.8
BBDD0019	-65	0	448,360	7,826,990	332	41.4	406.3	447.7
BBDD0020	-65	0	448,340	7,826,960	332	54.9	77.8	132.7
BBDD0021	-65	0	448,280	7,827,050	332	80.0	211.5	291.5
BBDD0022	-60	0	448,360	7,826,998	332	40.1	336.4	376.5
BBDD0023	-65	0	448,240	7,827,050	332	81.0	174.0	255.0
BBDD0024	-65	0	448,240	7,827,030	332	47.8	204.7	252.7
BBDD0025	-65	0	448,280	7,827,030	332	50.8	256.1	306.9
Total						458.7	1,881.1	2,339.8

Table 2 below includes Bluebird Stage 2 drillhole details:



# ABOUT THE BARKLY PROJECT AND THE BLUEBIRD COPPER-GOLD DISCOVERY

The high-grade Bluebird copper-gold discovery is located within the Company's 100% owned Barkly Project, at the eastern edge of the richly-endowed Tennant Creek Mineral Field (TCMF), which **produced over 5Moz** of gold and over 500kt of copper from 1934 to 2005<sup>7</sup> (see Figure 2 below).

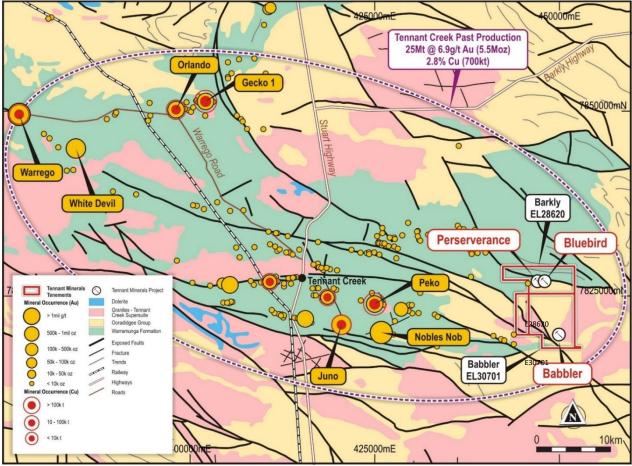


Figure 2: Location of the Barkly Project and major historical mines in the Tennant Creek Mineral Field

The latest diamond drilling intersections in the Stage 2 drilling program (see longitudinal projection of Bluebird discovery, Figure 1) have extended the thick high-grade dilational zone of mineralisation at Bluebird 120m to the west of the Stage 1 high-grade copper-gold intersections previously announced by the Company (total now 240m strike-length and open in all directions)<sup>2,3,4</sup>, which included:

- o 63.0m @ 2.1% Cu and 4.6g/t Au from 153m (down hole) in BBDD0012<sup>2</sup> (448,360mE)
  - including 40.0m @ 3.0% Cu and 7.3g/t Au from 155.0m,
  - including 27.55m @ 3.6% Cu and 10.0g/t Au from 160.45m.
- 50.0m @ 2.7% Cu and 0.52 g/t Au from 158m (down hole) in BBDD0009<sup>3</sup> (448,380mE)
  - including 24.0m @ 5.01% Cu and 1.01 g/t Au from 159m,
  - including 4.3m @ 14.7% Cu and 3.10 g/t Au from 176.6m.

The Stage 1 drilling program, which targeted depth extensions of the Bluebird deposit, produced results including **17.8m** @ **3.7%** Cu, 0.34g/t Au from 277m (incl. **9.5m** @ **6.0%** Cu) in BBDD0015<sup>4</sup>, which indicates proximity to a second dilational (thickened) zone at depth (see representative cross section, Figure 3).

The results of an induced polarisation (IP) program carried out at Bluebird revealed a distinct low-resistivity (high conductivity) and coincident chargeability response, corresponding with the Bluebird mineralisation on the central section 448,360mE (see Figure 3), thus confirming that Bluebird can be detected using IP. This section includes the BBDD0012 intersection of **63m @ 2.1% Cu, 4.6g/t Au<sup>2</sup>** and the IP low-resistivity zone indicates continuity below 400m depth.



Interpretation of the key drilling intersections, utilising structural data from logging of drill core, indicates that the thick and high-grade copper and gold intersections in BBDD0012<sup>2</sup> (Figure 3) and BBDD0013<sup>4</sup>, as well as the massive copper sulphide mineralisation in BBDD0018<sup>1</sup> (**30.5m** @ 6.2% Cu, 6.8 g/t Au – this release) are associated with structures crossing the axis of a shallow-plunging anticline, generating a thick dilational mineralised zone (see representative cross section, Figure 3, below).

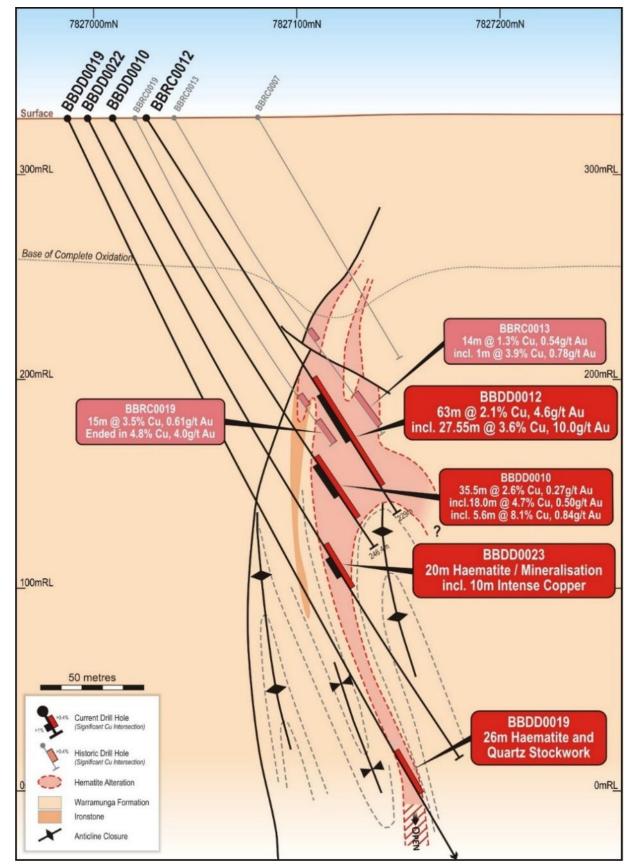


Figure 3: Bluebird cross section 448,360mE showing key intersections and anticlinal dilational "roll-over" zone.



The Stage 2 drilling program at Bluebird built on the successful Stage 1 diamond drilling program. A total of 8 holes for more than 2,339.8m were drilled in Stage 2 (see Table 2), which successfully **extended the Bluebird discovery along strike and at depth, where it remains completely open.** 

Drilling also tested priority targets for extensions/repeats of the high-grade copper-gold zone along strike to the west within the 2.5km Bluebird-Perseverance Corridor<sup>8</sup> (see Figure 4 below).

Three priority, coincident magnetic, gravity and IP low-resistivity targets were selected for initial drilltesting, including **Perseverance North**, **Perseverance** and **Bluebird West**<sup>8</sup> (Figure 4). A multi-purpose (DDH1) rig was utilised to complete eight reverse-circulation (RC) holes with six diamond tails completed into these target zones, for a total of 1981.1m (see Table 3 for drilling details, results pending).

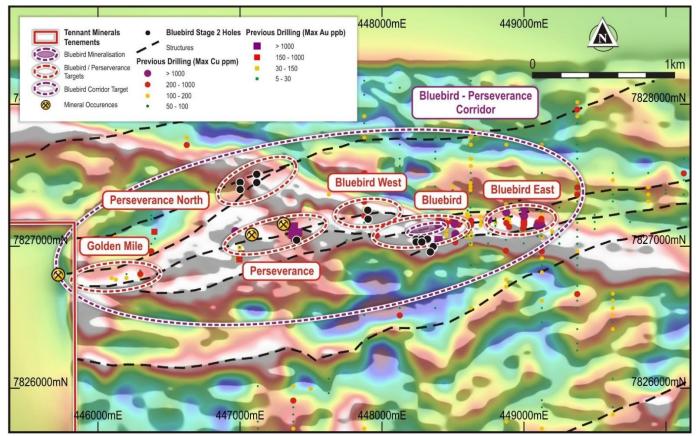


Figure 4: Bluebird-Perseverance zone bouguer gravity image with structures & gravity-magnetic-IP resistivity targets.

**The initial drill testing intersected mineralised and brecciated fault structures in all three target areas**<sup>9</sup>. These are interpreted to lie above iron-stone hosted copper-gold targets previously identified by inversion modelling of gravity and magnetics, as well as associated with IP low resistivity geophysical anomalies.

Following receipt of all results from the recent, very successful, Stage 2 drilling program, a third stage of drilling will be carried out. This drilling will focus on two key target areas:

# i) Bluebird Copper-Gold Discovery:

Deeper drilling to extend and define the Bluebird high-grade copper-gold discovery to the east and west, as well as testing the depth extent to greater than 400m depth, in order to define the multimillion tonne, high-grade copper-gold resource potential of the deposit.

# ii) Priority Targets in 2.5km Bluebird-Perseverance Corridor:

Testing of additional targets generated by the extension and infill IP program and deeper drilling on key sections drilled during the recent program, targeting further high-grade copper-gold discoveries.

These programs are in line with the Company's strategy to identify multiple, multi-million tonne, highgrade copper-gold deposits within the Barkly Project, and become a stand-alone copper-gold producer.



Hole #	Dip°	Az Grid°	GRID_E	GRID_N	RL	RC (m)	DDC (m)	Depth (m)
PNDD0001	-65	0	447,000	7,827,450	330	91.1	149.5	240.6
PNDD0002	-65	0	447,000	7,827,400	330	179.9	148.7	328.6
PNDD0003	-65	0	447,118	7,827,507	330	119.8	120.6	240.4
PNDD0004	-65	0	447,118	7,827,448	330	179.8	129.7	309.5
Bluebird We	st							
BWDD0001	-65	0	447,899	7,827,253	335	120.1	195.4	315.5
BWRC0001	-65	0	447,902	7,827,191	335	186.0	nil	186.0
PVDD0001	-65	0	447,398	7,827,043	335	60.5	180	240.5
PVRC0001	-55	0	447,398	7,827,045	335	120.0	nil	120.0
Total						1057.2	923.9	1981.1

Table 3 below includes Bluebird – Perseverance Priority Targets Stage 2 drillhole details :

Appendix 1 includes descriptions of the geology and mineralisation intersected in selected holes from the bluebird diamond drilling program and Appendix 2 includes JORC Table 1, Sections 1 and 2.

## REFERENCES

<sup>1</sup>28/10/2022. Tennant Minerals (ASX.TMS): "Massive Chalcopyrite Intersected at Bluebird".

<sup>2</sup> 17/08/2022. Tennant Minerals (ASX. TMS): "Bonanza 63m@ 2.1% Copper and 4.6 g/t Gold Intersection at Bluebird".
 <sup>3</sup> 08 March 2022. Tennant Minerals (ASX. TMS): "Spectacular 50m @ 2.70% copper intersection at Bluebird"

<sup>4</sup> 07/09/2022. Tennant Minerals (ASX. TMS): "Up to 54.5% Cu in Massive Sulphides at Bluebird".

<sup>5</sup> 21/11/2022. Tennant Minerals (ASX.TMS): "Drilling Doubles Strike Length of Bluebird Copper Gold".

51/11/2022. Termant Minerals (ASV. TMS). Drining Doubles Stirke Length of Bluebird Copper Oold .

<sup>6</sup> 14/12/2022. Tennant Minerals (ASX.TMS): "Intensely Copper-Mineralised Drill-Hits Extend Bluebird"
 <sup>7</sup> Portergeo.com.au/database/mineinfo. Tennant Creek - Gecko, Warrego, White Devil, Nobles Nob, Juno, Peko, Argo.
 <sup>8</sup> 25/08/2022. Tennant Minerals (ASX. TMS): "Standout Geophysical Targets to Replicate Bluebird Cu-Au Discovery".

<sup>9</sup> 24/01/2023. Tennant Minerals (ASX. TMS): "Mineralised Structures at Key Copper-Gold Targets"

#### \*\*\*ENDS\*\*\*

#### For enquiries please contact:

Matthew Driscoll	Stuart Usher	Andrew Rowell
Non-Executive Chairman	Company Secretary	White Noise Communications
<b>M</b> : +61 (0) 417 041 725	<b>M</b> : +61 (0) 499 900 044	M: +61 (0) 400 466 226

#### CAUTIONARY STATEMENT REGARDING FORWARD LOOKING INFORMATION

This release contains forward-looking statements concerning Tennant Minerals Ltd. Forward-looking statements are not statements of historical fact and actual events and results may differ materially from those described in the forward-looking statements as a result of a variety of risks, uncertainties and other factors. Forward-looking statements are inherently subject to business, economic, competitive, political and social uncertainties and contingencies. Many factors could cause the Company's actual results to differ materially from those expressed or implied in any forward-looking information provided by the Company, or on behalf of, the Company. Such factors include, among other things, risks relating to additional funding requirements, metal prices, exploration, development and operating risks, competition, production risks, regulatory restrictions, including environmental regulation and liability and potential title disputes.

Forward looking statements in this release are based on the company's beliefs, opinions and estimates of Tennant Minerals Ltd as of the dates the forward-looking statements are made, and no obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments.



## **COMPETENT PERSONS DECLARATION**

The information in this report that relates to exploration results is based on information compiled and/or reviewed by Mr Jonathon Dugdale. Mr Dugdale is the Technical Advisor to Tennant Minerals Ltd and a Fellow of the Australian Institute of Mining and Metallurgy ('FAusIMM'). Mr Dugdale has sufficient experience, including over 35 years' experience in exploration, resource evaluation, mine geology, development studies and finance, relevant to the style of mineralisation and type of deposits under consideration 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, Minerals Resources and Ore Reserves. Mr Dugdale consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.

## ASX LISTING RULES COMPLIANCE

In preparing this announcement the Company has relied on the announcements previously made by the Company as listed under "References". The Company confirms that it is not aware of any new information or data that materially affects those announcements previously made, or that would materially affect the Company from relying on those announcements for the purpose of this announcement.



## Appendix 1. Visual estimates of mineralisation intersected in BBDD0018, 21, 22 and BBDD0025:

## Cautionary note regarding visual estimates:

In relation to the disclosure of visual mineralisation in the tables below, the Company cautions that visual estimates of oxide, carbonate and sulphide mineralisation material abundance should never be considered a proxy or substitute for laboratory analyses. Laboratory ICP-MS and ICP-OES analyses are required to determine widths and grade of the elements (e.g., copper, Cu) associated with the visible mineralisation reported from preliminary geological logging. The Company will update the market when laboratory analytical results are received and compiled.

BBDD001	8 Summary	/ Log					
From	То	Zone	Lithology & alteration/mineralisation				
0	62.7	Hanging Wall,	PCD Rotary Drill	PCD Rotary Drilling, not yet logged			
		T	Γ				
62.7	73	Hanging Wall	Reddish weath	nered / oxidised	siltstone		
73	145.9		Blue grey bedo localised breco		inor thin sandstone i	nterbeds, minor	
145.9	151.6		siltstone, incre	Grey very fine-grained sandstone and lesser siltstone, increasing fracturing and localised fine quartz vein stockwork			
151.6	164.0	Mineralised Zone'	151.6	164.0	Intense hematite ironstone, weakly magnetic in part, broken & fractured in part.		
164.0	171.0	Mineralised massive	164.0	164.9	Massive chalcocite chalcopyrite	e 90%, after	
	sulphide zone'	164.9	165.4	Siltstone & 90% banded massive chalcopyrite			
			165.4	167.85	Siltstone breccia & chalcopyrite veins		
			167.85	171.0	Massive chalcopy	rite 75% in	
171.0	171.38	Mineralised Zone'	171.0	171.38	Siltstone breccia & chalcopyrite veins		
171.38	175.55	Intermediate Zone	Hematite-stair patches 10%	ned fractured sil	tstone, minor chalco		
175.55	177.0	Mineralised Zone'	silvery grey hard altered siltstone, scattered <b>patchy oxidised</b> <b>chalcopyrite</b> 10% Alteration pervasive but not silica, not magnetic, not chlorite, possibly moderate steely hematite with chalcocite in bands?				
177.0	177.8	Intermediate Zone	Altered siltstone: pervasive steely? alteration, & soft silvery mica/talc				
177.8	184.1	Mineralised Zone'	Hematite ironstone, rubbly in part, disrupted qtz veining, <b>sooty</b> <b>chalcocite</b> in parts up to 20%.				
184.1	246.8	Footwall	Reddish lamin	ated siltstone zones of shear	ed or disrupted qtz –	- carb — chl	



BBDD002	21 Summar	y Log	
From	То	Zone	Lithology & alteration/mineralisation
0	80.0	Hanging Wall,	PCD Rotary Drilling, not yet logged
		·	
80.0	141.6	Hanging Wall	Reddish weathered / oxidised siltstone
141.6	154		Blue grey – purple bedded siltstone, minor thin sandstone interbeds, minor localised brecciation and increasing patchy hematite alteration
154	161		Grey fine-grained siltstone, increasing fracturing and localised fine quartz vein stockwork, moderately brecciated, patchy hematite alteration at base
161	168.6	- Mineralised	Intense hematite ironstone, weakly magnetic in part, broken & fractured in part. Weak quartz veining. Patchy chalcocite 2% with trace chalcopyrite
168.6	178.7	Zone	Dark grey fine-grained siltstones, strongly altered with qtz- carbonate veining. Hematite- jasper alteration with ironstone, crackle and vughy veins. Patchy chalcocite up to 10% with disseminated native copper 1% throughout
178.7	181.5	Mineralised Zone	Hematite ironstone, rubbly in part, disrupted qtz veining, sooty chalcocite in parts up to 20%.
181.5	191.5		Dark grey fine-grained siltstones, strongly altered with qtz- carbonate veining. Hematite- jasper alteration with ironstone, crackle and vughy quartz veins. Patchy chalcocite up to 10% with disseminated native copper 1% throughout
191.5	202.3	Footwall	Grey altered siltstone, mod brecciated, mr platey chloritic alteration. Occasional qtz veining with zones of sheared or disrupted qtz – carb – chl veining or stockwork
202.3	277	Footwall	Reddish laminated siltstone Some 10-30cm zones of sheared or disrupted qtz – carb – chl veining or stockwork, mr alteration halo with veins
277	291.5	Footwall	Reddish laminated siltstone Major 10-30cm zones of sheared or disrupted qtz – carb – chl veining or stockwork, mod alteration halo with veins

BBDD0022	Summary	/ Log	
From	То	Zone	Lithology & alteration/mineralisation
0	40.1	Hanging Wall,	PCD Rotary Drilling, not yet logged
40.1	85	Hanging Wall	Grey/light mauve f-grained siltstones, massive, weathered in patches, some fine qtz veins.
85	114.8		Grey black interbedded siltstones and mudstones, strongly brecciated in part, mod qtz-carb vein fractures and stockwork.
114.8	153.4		Grey/light mauve f-grained siltstones, weathered in patches, some fine qtz veins
153.4	176.37		Grey siltstones, massive, coarser grained downhole
176.37	176.7	Upper Min Zone	Narrow band of siltstones weakly altered grey/pink, brecciated, coarser grained.



BBDD0022	Summary	Log continued	
From	То	Zone	Lithology & alteration/mineralisation
176.7	179		Siltstone grey fine grained, with moderate Qtz veinlets
179	184	Mineralised Zone	Fine grained siltstone with patches of pink/red haematite alteration, weathered dk zones with Native Cu specks, brecciated in part. 1% disseminated native Copper
184	211.62		Fine grained grey siltstones, weak to mod patchy hematite alteration Increased qtz veins downhole and brecciated in parts
211.62	214.5	Weak Mineralised Zone	V. fine grained, dk grey/blk ironstone. Some quartz veining and weak haematite alteration Patchy 1% chalcocite
214.5	225.2		Grey fine-grained siltstones, mod brecciated some mr quartz veining
225.2	244.2		V. fine grained dk grey siltstone, weak haematite alteration
244.2	264.3		Ironstone, black, vuggy, coarse grained, with jasper/ hematite alteration. Visible malachite 2%, disseminated chalcocite 1% - 10%.
264.3	281.8	Footwall	Fine grained red-brown siltstones, interbedded
281.8	287		Silicious, cherty, green/pink, V. fine grained siltstones
287	376.5		Purple siltstone alternating intermittently with highly oxidised fine grained, thinly bedded siltstones. Three cycles of above

BBDD0025	BBDD0025 Summary Log				
From	То	Zone	Lithology & alteration/mineralisation		
0	50	Hanging Wall, PCD Rotary Drilling, not yet logged			
50	85	Hanging Wall	Grey/light mauve f-grained siltstones, massive, weathered in patches, some fine qtz veins.		
85	161.7		Grey black interbedded siltstones and mudstones, strongly brecciated in part, mod qtz-carb vein fractures and stockwork.		
161.7	199		Grey/light mauve fine-grained siltstones, weathered in patches, some fine qtz veins, massive, coarser grained downhole.		
199	205	Haematite/mineral isation	Red siltstone/sandstone with, brecciated, haematite alteration zones, weak qtz veining.		
205	220	Intensely Mineralised Zone	Ironstone, black, vuggy, coarse grained, with jasper/ hematite alteration. Visible malachite 2%, disseminated chalcocite 5% - 15%.		
220	224	Haematite/Minera lisation	Red siltstone/sandstone with, brecciated, haematite alteration, weak qtz veining.		
224	281.8	Footwall	Fine grained red-brown siltstones, interbedded.		
281.8	287		Silicious, cherty, green/pink, Very fine-grained siltstones.		
287	376.5		Purple siltstone alternating intermittently with highly oxidised fine grained, thinly bedded siltstones. Three cycles of above.		



# APPENDIX 2: JORC 2012 Edition, Table 1

# Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>Nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (e.g., 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g., submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul> <li>Exploration results are based on industry best practices, including sampling, assay methods, and appropriate quality assurance quality control (QAQC) measures.</li> <li>Core samples (2021 and 2022) are taken as half HQ3 core and sampled on nominal 1m intervals, with sampling breaks adjusted to geological boundaries where appropriate.</li> <li>Reverse Circulation (RC), 2020 and 2022 program:</li> <li>RC samples of between 3-4kg were sent to the laboratory where they were pulverised to at least 85% passing 75 microns. The pulp sample is then split to produce a sample for analysis.</li> <li>Diamond drill samples submitted to the laboratory are crushed and pulverised followed by a four-acid total digest and multi-element analysis by inductively coupled plasma optical emission spectrometry (ICP-OES) and inductively coupled plasma optical emission spectrometry (ICP-OES) finish.</li> </ul>
Drilling techniques	<ul> <li>Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</li> </ul>	<ul> <li>RC drilling (2020-22) was conducted using a 5<sup>1</sup>/<sub>4</sub>" face sampling hammer, with 2022 holes drilled between -55 and -65 degrees.</li> <li>Rotary mud (RM) drilling (2021 and 2022) was completed with 126mm PCD hammer with holes drilled between -60 and -65 degrees.</li> <li>2021 and 2022 Diamond drillholes were collared using RM drilling and switched to HQ3 approximately 30m before the target position is intersected. All coordinates are quoted in GDA94 datum unless otherwise stated.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>RC sample recovery is monitored by the field geologist. Low sample recoveries are recorded on the drill log. There were no significant sample recovery issues encountered during the drilling program.</li> <li>RM sample recovery was monitored by the site geologist, logged and a sample record was retained for future interpretation. No analysis of rotary mud collars was undertaken.</li> <li>The quality of diamond core samples is monitored by the logging of various</li> </ul>



Criteria	JORC Code explanation	Commentary
		geotechnical parameters, and logging of core recovery and competency.
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>All logging is completed according to industry best practice.</li> <li>RC chips are logged at 1m intervals using a representative sample of the drill chips. Logging records include lithology, alteration, mineralisation, colour and structure.</li> <li>RM chips are logged at 2m intervals using a representative sample of the drill chips. Logging records include lithology, alteration, mineralisation and colour.</li> <li>Detailed diamond drillcore information on lithology, sample quality, structure, geotechnical information, alteration and mineralisation are collected in a series of detailed self-validating logging templates.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being compled</li> </ul>	<ul> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique is considered adequate as per industry best practice.</li> <li>RC samples of 3-4kg are collected at 1m intervals using a cone splitter. The sample size is appropriate for the style of mineralisation and the grain size of the material being sampled.</li> <li>RC samples are dried at the laboratory and then pulverised to at least 85% passing 75 microns.</li> <li>RM samples were not analysed. A sample was retained for future interpretation.</li> <li>Core is cut using an Almonte automated core cutting saw. Half core is taken for sampling.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>sampled.</li> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (e.g., standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e., lack of bias) and precision have been established.</li> </ul>	<ul> <li>All samples were submitted to the Intertek Laboratories sample preparation facility at Alice Springs in the Northern Territory where a pulp sample is prepared. The pulp samples are then transported to Intertek in Perth or Townsville Australia for analysis.</li> <li>Pulp sample(s) were digested with a mixture of four Acids including Hydrofluoric, Nitric, Hydrochloric and Perchloric Acids for a total digest.</li> <li>Analysis of 2020 RC drilling; Cu, Pb, Ag, Bi, Co Ni, Sb have been determined by Inductively Coupled Plasma (ICP) Mass Spectrometry (MS-OES).</li> <li>Analysis of 2021 -22 core drilling; Ag, Al, As,Ba,Bi,Ca,Cd,Ce,Co,Cr,Cu,Fe,K,La,Li,Mg,Mn, Mo,Na,Ni,P,Pb,S,Sb,Sc,Sn,Sr,Te,Ti,Tl,V,W,Zn have been determined by Inductively Coupled Plasma (ICP) Mass Spectrometry (MS-OES).</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>Gold was analysed by Fire Assay with a 25g charge and an ICP-MS finish with a 5ppb Au detection limit.</li> <li>A Field Standard, Duplicate or Blank is inserted every 25 samples. The Laboratory inserts its own standards and blanks at random intervals, but several are inserted per batch regardless of the size of the batch.</li> </ul>
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>All significant intercepts are reviewed and confirmed by at least two senior personnel before release to the market.</li> <li>No adjustments are made to the raw assay data. Data is imported directly to Datashed in raw original format.</li> <li>All data are validated using the QAQCR validation tool with Datashed. Visual validations are then carried out by senior staff members.</li> </ul>
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>All drill hole collars were located with a handheld GPS with an accuracy of +/-5m. At the completion of the drilling program all holes were surveyed by DGPS.</li> <li>Downhole surveys (2020 RC) were taken at 30m intervals using a Reflex single shot camera. The camera records azimuth and dip of hole.</li> <li>Downhole surveys for the 2021 and 2022 diamond drilling were taken at 6-12m intervals by solid state gyro to maintain strong control of drill direction.</li> <li>Survey co-ordinates: GDA94 MGA Zone 53.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing, and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>Data spacing and distribution used to determine geological continuity is dependent on the deposit type and style under consideration. Where a mineral resource is estimated, the appropriate data spacing, and density is decided and reported by the competent person.</li> <li>For mineral resource estimations, grades are estimated on composited assay data. The composite length is chosen based on the statistical average, usually 1m. Sample compositing is never applied to interval calculations reported to market. A sample length weighted interval is calculated as per industry best practice.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul> <li>Orientation of sampling is as unbiased as possible based on the dominating mineralised structures and interpretation of the deposit geometry.</li> <li>If structure and geometry is not well understood, sampling is orientated to be perpendicular to the general strike of stratigraphy and/or regional structure.</li> </ul>



Criteria	JORC Code explanation	Commentary
Sample security	The measures taken to ensure sample security.	<ul> <li>All samples remain in the custody of company geologists and are fully supervised from point of field collection to laboratory drop-off.</li> </ul>
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	<ul> <li>None yet undertaken for this dataset</li> </ul>

# JORC 2012 Edition - Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul> <li>The Company controls two contiguous Exploration Licences, EL 28620 and EL30701 located east of Tennant Creek. All tenure is in good standing at the time of reporting. There are no known impediments with respect to obtaining a licence to operate in the area.</li> </ul>
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Several other parties have undertaken exploration in the area between the 1930s through to the present day including Posgold, Meteoric Resources and Blaze Resources.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>The Barkly Project covers sediments of the Lower Proterozoic Warramunga Group that hosts all of the copper-gold mines and prospects in the Tennant Creek region. At the Bluebird prospect copper-gold mineralisation is hosted by an ironstone unit within a west-northwest striking fault. The ironstone cross cuts the sedimentary sequence that mostly comprises of siltstone.</li> </ul>
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:         <ul> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	<ul> <li>Tables 2 and 3 include drillholes details from the recent Barkly drilling programs.</li> <li>Previous releases by the Company including on 07/09/2022."Up to 54.5% Cu in Massive Sulphides at Bluebird". Include drilling details and previous, Stage 1, intersections.</li> <li>For drilling details of the 2020 RC drilling program refer to Appendix 1 of the ASX announcement of 18 March 2020 by Blina Minerals (ASX: BDI): "High-Grade Copper and Gold Intersected in Drilling program at Bluebird".</li> <li>For drilling details of the 2014 Diamond and RC programs refer to Appendix 1 of the ASX announcement of 24 September 2019 by Blina Minerals (ASX: BDI): "Strategic Acquisition of High-Grade Gold-Copper Project".</li> </ul>
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g., cutting of high grades) and cut-off grades are usually Material and should be stated.</li> </ul>	<ul> <li>All exploration results are reported by a length weighted average. This ensures that short lengths of high-grade material receive less weighting than longer lengths of low- grade material.</li> </ul>



Criteria	JORC Code explanation	Commentary
	<ul> <li>Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>No high-grade cut-offs are applied</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g., 'down hole length, true width not known').</li> </ul>	<ul> <li>Mineralisation at Bluebird is interpreted to be striking east-west true azimuth with a dip of 70-80 degrees towards 180 degrees true azimuth.</li> <li>All holes are drilled as perpendicular as practical to the orientation of the mineralised unit and structure. Intersection lengths are interpreted to be close to true thickness.</li> </ul>
Diagrams	<ul> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul> <li>Refer to Figure 1, a longitudinal projection though the Bluebird mineralisation including pierce point locations. Figure 3 is a representative cross section through the Bluebird deposit. Figures 2 and 4 are plan views showing the location of the Barkly Project and Bluebird prospect respectively.</li> </ul>
Balanced reporting	• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced avoiding misleading reporting of Exploration Results.	<ul> <li>All background information is discussed in the announcement.</li> <li>Full drill results for copper and gold assays for previous drilling are shown in Appendix 1 of the ASX announcement of 18 March 2020, "High-Grade Copper and Gold Intersected in Drilling program at Bluebird".</li> </ul>
Other substantive exploration data	<ul> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<ul> <li>No other data is material to this report.</li> </ul>
Further work	<ul> <li>The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul> <li>Additional drilling is planned to extend mineralisation along strike and in particular to the west and at depth.</li> <li>Further drilling of modelled gravity, drone magnetic and IP data will be carried out to drill target repeats of the high-grade Bluebird copper gold discovery within the 5km Bluebird Corridor.</li> </ul>