

# ASX and Media Release

## Quarterly activities report December quarter 2017

### HIGHLIGHTS

#### Results

- ❖ 10,671 oz gold recovered at AISC of \$1,760/oz for quarter
- ❖ Focus shifted to Challenger Deeps development
- ❖ Guidance for combined Challenger and Tarcoola mining operations for year to 30 June 2018 **60,000 oz**

#### Production

- ❖ Mining Plus engaged to optimise mine planning
- ❖ Challenger mill throughput reduced temporarily due to mill motor failure
- ❖ Pushback at Tarcoola completed in October

#### Exploration

- ❖ Further encouraging gold assays Phase 2 Challenger Deeps drilling program
- ❖ Tarcoola phase 1 RC drilling of near-pit and other ML exploration targets completed with follow up work planned
- ❖ Diamond drilling program commenced on WGCJV Greenwood prospect

#### Corporate

- ❖ \$20m debt financing agreements executed with Byrnes Group
- ❖ WPG Marmota strategic alliance
- ❖ Dispute resolution with Pybar invoked and defence and counterclaim lodged

**30 January 2018**



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## RESULTS AT A GLANCE

Sales and Processing (Challenger Processing Hub)	Units	December Quarter 2017	Year To Date	September Quarter 2017
Total Ore Processed	Tonnes	157,190	324,645	167,455
Grade Processed	g/t Au	2.24	2.27	2.30
Recovery	%	94.1	94.4	94.7
Gold Recovered	Ounces	10,671	22,389	11,718
All-in Sustaining Cost*	\$/Ounce	1,760	1,713	1,641
Gold Sold	Ounces	11,877	22,247	10,370
Average Gold Price Received	\$/Ounce	1,656	1,642	1,625
Sales Revenue Realised**	A\$000's	19,698	36,589	16,891

Challenger Gold Mine Operations Summary	Units	December Quarter 2017	Year To Date	September Quarter 2017
Underground Capital Development	m	785	984	199
Total Underground Development	m	1,426	2,341	914
Underground Ore Mined	Tonnes	105,499	229,061	123,562
Underground Ore Grade**	g/t Au	2.43	2.34	2.27

Tarcoola Gold Mine Operations Summary	Units	December Quarter 2017	Year To Date	September Quarter 2017
Open Pit Waste Mined	bcm	421,945	1,037,804	615,859
Open Pit Ore Mined	Tonnes	66,981	129,119	62,138
Mined Grade	g/t Au	2.18	2.11	2.03
Ore Hauled to Processing Facility	Tonnes	45,196	81,939	36,743

**Notes:** \* AISC in relation to underground mining costs include all lateral development and fixed asset additions other than those associated with permanent infrastructure. AISC in relation to open cut mining activities excludes capitalised waste mining costs. AISC includes an appropriate allocation of head office costs.

\*\* Includes stoping ore, development ore and low grade development ore

## **OPERATIONS**

### **OVERVIEW**

Gold recovered in the quarter was 10,671 ounces at an AISC cost of \$1,760 per ounce.

All-In-Sustaining Cost (AISC) in the quarter was \$1,760 per ounce recovered.

Total revenue from bullion sales was \$19.7 million at an average gold price of \$1,656 per ounce.

Guidance for the combined Challenger and Tarcoola mining operations for the 2018 financial year is 60,000 ounces as a result of the half year results to-date and expected production impacts resulting from the Challenger Deeps development focus.

### **OPERATIONS OPTIMISATION**



#### **WPG and Byrnescut focus on Challenger Deeps**

WPG, Byrnescut and Byrnescut's mining consulting arm Mining Plus commenced work to optimise mining operations at Challenger and Tarcoola along with milling operations at the Challenger processing hub. This study is expected to be finalised during the March 2018 quarter and a revised mining plan will be finalised as an output of this study.

At the Challenger mine the emphasis is to reduce high cost remnant mining in older parts of the mine and to focus more on developing into the virgin Challenger Deeps area, where stoping will commence in February 2018.

Accessing the Deeps area was a key objective when WPG bought the mine almost two years ago, and at last this objective is within sight.

### **CHALLENGER GOLD MINE**

During the December 106,000 tonnes of ore was mined at a grade of 2.43 g/t Au. Stopping tonnes were 68,000 tonnes at a grade of 3.11 g/t Au (previous quarter 2.89 g/t Au) with the balance of production been low grade development material which provided supplementary mill feed and which impacted overall underground grade.

Underground development increased significantly from the previous quarter with 1,426 metres achieved compared to 914 metres in the prior quarter. Capital development was the priority with 785 metres achieved compared to 199 metres in the previous quarter. The Jumbuck decline was advanced into Challenger Deeps with development of the 115 RL level commenced late in the quarter.

**Focus on Challenger Deeps anticipates lower production in short term which will be offset by more sustainable production from the Deeps**

Underground operations in the December quarter were focussed on improving development rates to advance mining in Challenger Deeps. Development rates improved month on month through the quarter and achieved required advance rate in December.

During the quarter, mining stoping operations continued to be hampered by limited access to high grade areas of the mine along with poorer than anticipated stope performance in these remnant areas, with December gold production acutely impacted.

Development to Challenger Deeps was in waste and lower than anticipated ore development grades and tonnes in older mine areas also impacted ounce production.

**TARCOOLA GOLD MINE**

**Completion of pushback during quarter**

The Tarcoola pushback was completed during the quarter with mining progressing through a high proportion of oxide waste strip.



*Figure 1: Tarcoola open pit looking south*

During the December quarter 451,000bcm of material was mined at a strip ratio of 14.7:1. High grade ore mined was 29,000 tonnes at a grade of 3.32g/t Au along with 38,000 tonnes of low grade ore at a grade of 1.33 g/t Au.

Productivity has been impacted by above average seasonal inclement weather that has resulted in 14 lost days of production and has generated wet ground that has impacted blasting operations.

45,000 tonnes was hauled to Challenger which included 31,000 tonnes of high grade material and 14,000 tonnes of low grade material, with the later hauled to off-set underground production deficits in the quarter.

Lower grade mining in the quarter was due to some supergene depletion in transitional rock which was not well defined in grade control modelling and forecasts, however positive gold intercepts and improved reconciled grades from the 120mRL mining bench provide confidence for the ounce forecasts for the coming quarter.

### **CHALLENGER PROCESSING HUB**

Milled tonnes for the quarter were 157,000 @ 2.24 g/t Au with average recovery of 94.1%. This compares to 167,000 tonnes @ 2.30 g/t with an average recovery of 94.7% in the prior quarter. Lower grade feed was utilised in the quarter from both Challenger and Tarcoola to make up throughput tonnes.

The processing plant achieved a good start to the quarter with the throughput per operating hour continuing the upward trend in excess of 700,000tpa throughput. The 900kW Mill 1 motor suffered a terminal failure in October and has been replaced with the smaller 750kW spare motor. This lower power motor is resulting in a coarser grind impacting recoveries along with a lower throughput rate. Two new 900kW motors are on order and are expected to be delivered to site in April.

## **EXPLORATION**

### **CHALLENGER EXPLORATION**

Exploration activities at Challenger for the December quarter focussed on Challenger Deeps, M3/SEZ, lower levels of Challenger West and conceptual near mine exploration targets.



**Bringing new lodes below the shear into geological models**

### **Challenger Deeps**

During the December quarter, exploration drilling continued as part of Phase 2 of the Challenger Deeps drilling program, which commenced in late September 2017. Diamond drill results for the top two fans from the 125 diamond drill cuddy were released on ASX on 26 October and 6 December 2017. Twenty holes were completed for a total of 2,825 metres.

The results for the first six holes on the third fan of the Challenger Deeps program were released to ASX on 10 January 2018.

The current drill fan is expected to be completed in late February when the rig will be repositioned to target M3 and SEZ ore shoots, which are poorly defined within Challenger Deeps below the 215 shear.



Potential high grade near structures in the upper mine areas

**M3/SEZ**

Drilling of the M3/SEZ lodes continued during the December quarter. Thirty six holes for 2,781 metres were completed targeting M3 and SEZ ore shoots on the 1025 and 1095 levels. The majority of the drilling completed in the quarter was stope definition drilling into the SEZ ore shoot above previously mined development drives on the 1025, 1080 and 1095 levels.

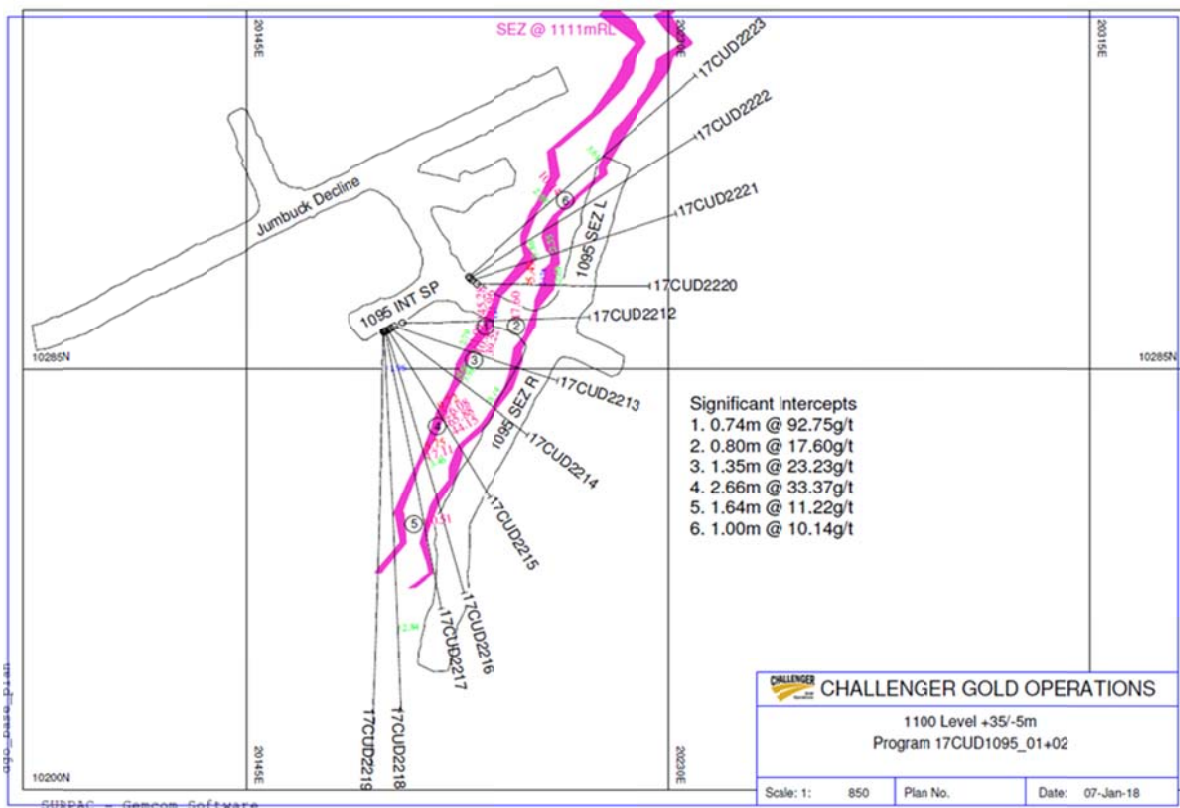


Figure 2: Significant intercepts on SEZ Lode at 1095 Level

1095 Level significant intercepts (true widths) included:

- 17CUD2212 0.32m @ 92.75g/t from 19.40m (SEZ)
- 17CUD2212 0.34m @ 17.60g/t from 26.20m (SEZ)
- 17CUD2213 0.90m @ 23.23g/t from 19.50m (SEZ)
- 17CUD2215 2.37m @ 33.37g/t from 23.00m (SEZ)
- 17CUD2216 1.43m @ 11.22g/t from 27.75m (SEZ)
- 17CUD2223 0.19m @ 10.14g/t from 26.00m (SEZ)
- 17CUD2227 0.90m @ 46.44g/t from 58.06m (M3)
- 17CUD2235 0.29m @ 10.22g/t from 31.00m (SEZ)
- 17CUD2237 0.03m @ 187.59g/t from 46.00m (SEZ)

1025 Level significant intercepts (true width) included:

- 17CUD2257 0.83m @ 13.61g/t from 5.58m (M3)

A full description of drilling details, including table of significant intercepts is included in Appendix 1 of this report.

### Challenger West

During the December quarter, twenty nine holes for 4,198 metres were drilled into the Challenger West ore shoots at the 730, 370 and 170 levels. The purpose of the drilling was to follow up on potential shoot extensions of the CW OD3 shoot above the 710 level, down plunge extension of the CW OD4 shoot below the 370 level and further definition drilling of CW between the 170 and 70 levels.

730 Level significant intercepts (true widths) include:

- 17CUD2174 0.68m @ 25.27g/t from 120.00m
- 17CUD2174 0.90m @ 12.04g/t from 126.10m
- 17CUD2175 1.90m @ 26.42g/t from 104.17m
- 17CUD2186 0.90m @ 10.87g/t from 71.00m

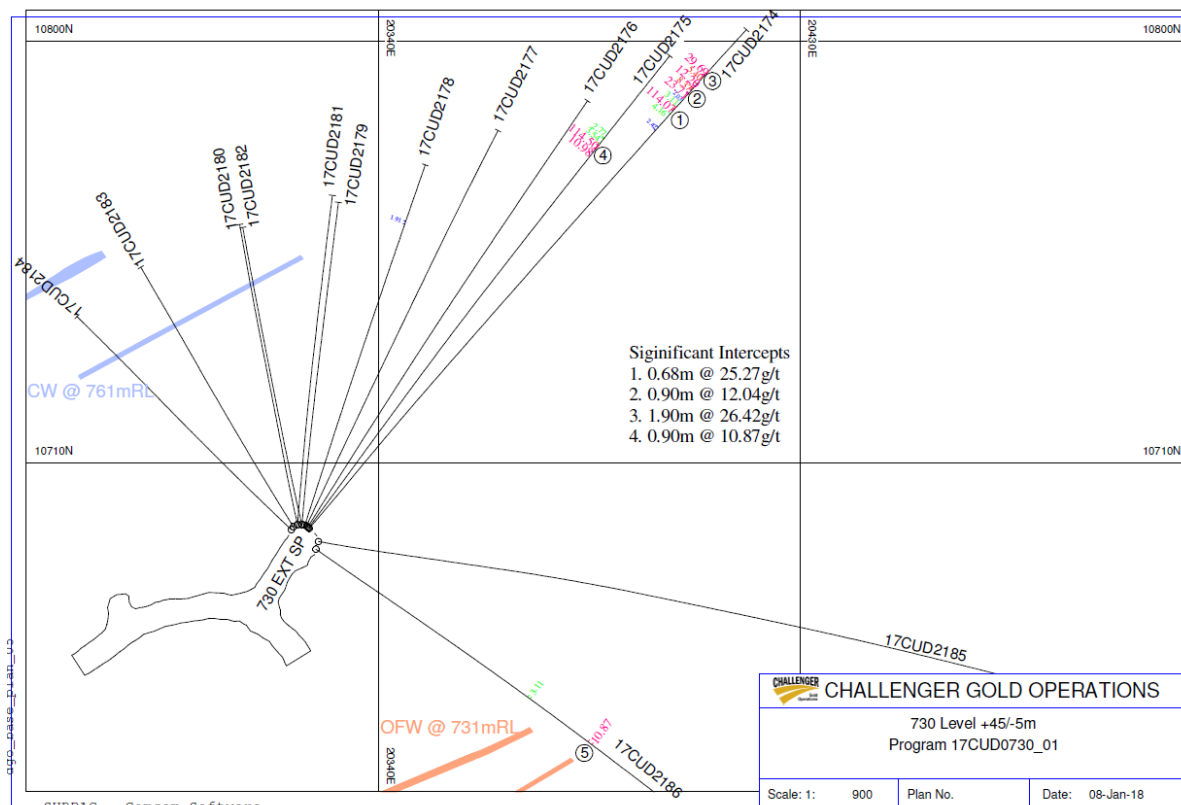


Figure 3: Significant intercepts from the 730 CW drill program

370 Level significant intercepts (true widths) include:

- 17CUD2170 0.38m @ 23.35g/t from 245.30m

There are a number of drill holes with assays not yet received at the end of the quarter from both the 370 and 170 level drilling. These results will be released at a later date.

A full description of drilling details, including table of significant intercepts is included in Appendix 1 of this report.

### Future exploration activities

The focus of future exploration activities at Challenger for the remainder of the financial year will focus on Challenger Deeps, Challenger West, M3/SEZ and near mine exploration targets.

### TARCOOLA EXPLORATION

Results from the first near-pit Reverse Circulation drilling campaign of 54 holes for 2,284m were received in the December quarter and released on ASX on 8 December 2017.

The drilling targeted the continuation of in-pit mineralising controls along strike and included:

1. The east and west extensions of the unconformity controlled Peela Conglomerate High Sulphidation mineralising system at **Morning Star**
2. The north and south extensions of the Perseverance Shear at **Forgotten Prince and SW Eclipse**
3. Diorite contact mineralisation where historic workings have targeted high grade mineralisation at **White Hope**
4. The Southern extension of vein hosted mineralisation in granite at **Wondergraph**

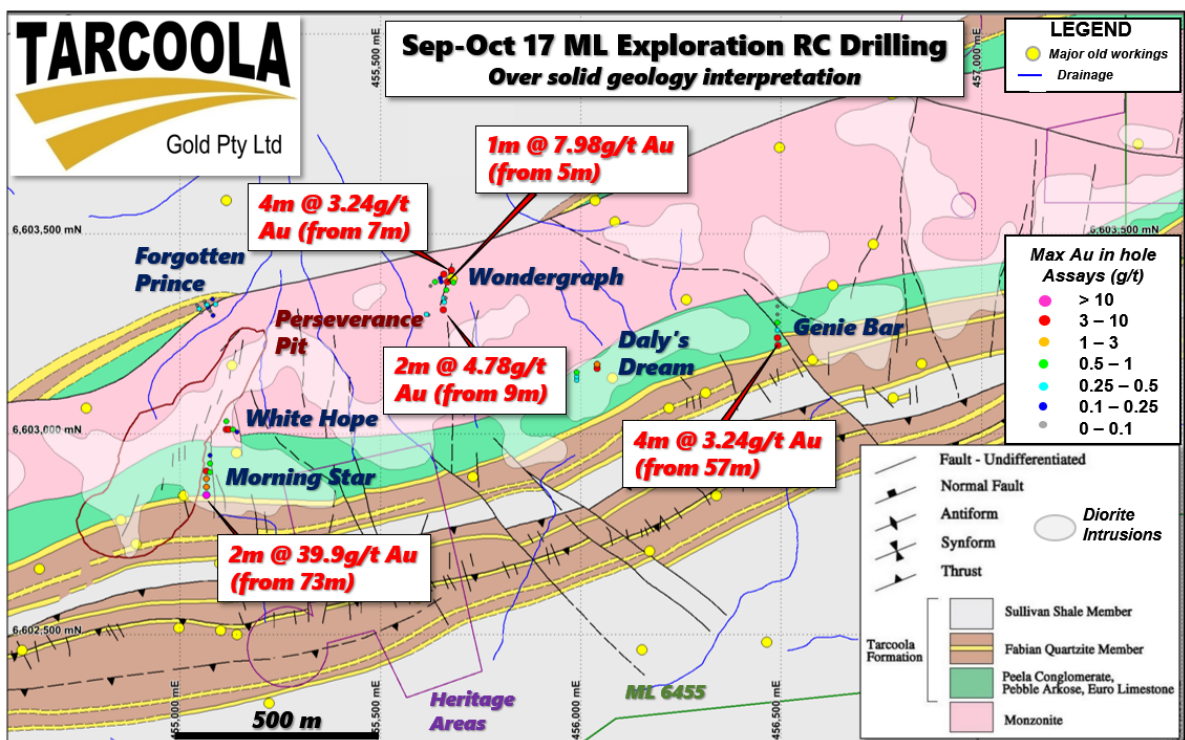


Figure 4: Tarcoola ML Exploration RC Significant intersections and Max Au in hole results



Best Intercepts at the Prospects were:

***Morning Star:***

- ❖ 2m (true width) @ 39.90 g/t Au from 73m in drill hole MS004

***Genie Bar:***

- ❖ 4m (true width) @ 3.24 g/t Au from 57m in drill hole GB002

***Wondergraph:***

- ❖ 2m (true width) @ 3.24 g/t Au from 7m in drill hole WOG001

***White Hope:***

- ❖ 0.5m (true width) @ 4.95 g/t Au from 54m in drill hole WH008

***Daly's Dream:***

- ❖ 3m (true width) @ 1.28 g/t Au from 17m in drill hole DAD004

Further work is planned to follow up these encouraging results which is scheduled to commence in late February following completion of the next grade control drilling campaign.

WPG has 100% of all minerals over an area of 1,201km<sup>2</sup> on EL 5355 and 5254 surrounding the Tarcoola mine and is reviewing exploration targets with potential for further discoveries.

**WESTERN GAWLER CRATON JV (WGCJV)**

The current interests of the parties to the WGCJV are approximately WPG 26%, Tyranna Resources Ltd (Tyranna) 74%, with Tyranna the manager of the WGCJV. Tyranna's strategy is to target the more advanced gold prospects which are situated within 50kms of the Challenger gold processing operations and increase the economic scale of these prospects via focused and extensive exploration drilling.

Tyranna commenced a program of Diamond drilling at the Greenwood Prospect, 37km NNE of Challenger Gold Mine, during the quarter with drilling and results expected to be completed toward the end of the March quarter. This is designed to follow up the high-grade intersections including **22m @ 4.03g/t** gold returned from the most recent Reverse Circulation program (refer ASX announcements 1 November and 13 November 2017).

In addition, Tyranna received results from the program of Reverse Circulation drilling at the Typhoon Prospect, 35km SSW of Challenger Gold Mine, during the quarter, with wide shallow Gold Zones encountered with a peak intersection of **11m @ 2.72g/t** gold (refer to Tyranna's ASX announcement of 18 October 2017).

WPG encourage Tyranna to continue exploring in the WGCJV project area for potential eventual treatment of ore through the Challenger mill.

**TUNKILLIA**

WPG has 100% of all minerals over an area of 1,362km<sup>2</sup> on EL 5670, 5901 and 5790 and is reviewing exploration targets with potential for further discoveries.

## **MUCKANIPPIE, ROBINS RISE, LAKE WOORONG AND PERFECTION WELL**

With WPG's current focus on its gold projects, the Company's efforts were diverted for the quarter from its other South Australian project assets.

There was no substantive work undertaken on these tenements during the quarter, but potential exploration programs have been prepared.

## **CORPORATE**

### **FUNDING**

#### **\$20m secured debt facility executed with Byrnegut Group**

In December 2017 WPG's wholly owned subsidiary Challenger Gold Operations Pty Ltd (CGO) entered into a \$20 million secured debt facility with the Byrnegut Group.

The \$20m facility has been made available for general working capital purposes and CGO will work with the lender and its affiliated mining consulting arm Mining Plus to deliver an optimised mine plan that puts increased emphasis on near term development into the Challenger Deeps area. The facility was subject to customary financial, legal and operational due diligence.

The two year facility carries an interest rate of approximately 20% per annum and will be amortised monthly over the length of the loan. It will provide the funds necessary for continuation of operations at Challenger. The significant improvement in working capital will allow WPG to strengthen its balance sheet leading to a focus on longer term mine planning and development.

### **STRATEGIC ALLIANCE WITH MARMOTA**

During the quarter, WPG and Marmota Limited executed a Memorandum of Understanding (MoU) under which they will investigate ways of cooperating for the development of Marmota's Aurora Tank gold project, should it prove technically feasible and financially viable to do so.

Aurora Tank is approximately 50kms north east of the Challenger gold mine and treatment plant in South Australia. Under the non-binding MoU, the parties will investigate ways for the processing of Aurora Tank gold mineralisation at Challenger, whether by toll treatment, joint venture, profit sharing or other arrangements that they may agree.

### **BOARD CHANGES**

At the conclusion of the AGM in November 2017, Gary Jones, one of the four founding directors and shareholders of WPG, retired from the Board. Gary's input and guidance during his tenure has been invaluable to the Company.

Cornel Parshotam was appointed Technical Director in October 2017. Cornel is an integral part of the executive team responsible for bringing the Tarcoola mine into production, and for the implementation of our turn-around strategy at Challenger. Following the end of the quarter Cornel became a Non-executive Director.

## **PYBAR UPDATE**

On 2 November 2017 WPG's wholly owned subsidiary, Challenger Gold Operations Pty Ltd (CGO), became aware of proceedings being commenced in the South Australian Supreme Court by Pybar Mining Services (Pybar) against it. CGO continues to deny any claims made by Pybar and notified Pybar of an off-setting counter claim for damages and loss arising directly from Pybar's failure to properly perform services in accordance with neither the mining contract nor to an acceptable industry standard. CGO believes Pybar's claim has no merit and intends to vigorously defend any proceedings.

On 8 December 2017, CGO filed its defence of a claim brought by Pybar. The defence, filed in the Supreme Court of South Australia, strongly refutes Pybar's claims and sets out the arguments as to how Pybar's various breaches of contract gave rise to Challenger suffering significant loss and damage in its operations for the consideration of the court.

Independently of its defence, CGO has filed claims against Pybar exceeding \$9 million (plus GST) for losses including in respect of costs overruns, damage to property, losses caused by improper mining practices, and for recovery of overcharges.

A directions hearing was held on 17 January 2018 and the parties were ordered to mediate the matter before the potential commencement of court proceedings.

## **HEDGING**

During the quarter the Company closed forward sales positions of 3,527 ounces with forward prices averaging \$1,662 per ounce.

At the end of the quarter the Company had open forward positions of 11,723 ounces with forward prices averaging \$1,668 per ounce. The Company intends to enter into further hedging arrangements in the current quarter.

## **FINANCIAL POSITION**

As at 31 December 2017 the Group had cash at bank of \$23.3 million.

## **Further Information**

*For further information please contact WPG's Chief Executive Officer, Wayne Rossiter on (02) 9251 1044.*

## **Forward-Looking Statements**

This document may include forward-looking statements. Forward-looking statements include, but are not limited to statements concerning WPG's planned activities, including but not limited to mining and exploration programs, and other statements that are not historical facts. When used in this document, the words such as "could", "plan", "estimate", "expect", "intend", "may", "potential", "should" and similar expressions are forward-looking statements. In addition, summaries of Exploration Results and estimates of Mineral Resources and Ore Reserves could also be forward looking statements. Although WPG believes that its expectations reflected in these forward-looking statements are reasonable, such statements

involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements.

## **Competent Person Statements**

### **CHALLENGER**

#### **Exploration activities**

The Challenger exploration activities and results contained in this report are based on information compiled by Mr Kurt Crameri and Paul Wittwer.

Kurt Crameri is a Member of the Australasian Institute of Mining and Metallurgy. He is a Senior Project Geologist and Mining Engineer and a full time employee of WPG Resources Ltd. He has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code & Guidelines). Kurt Crameri has consented in writing to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Paul Wittwer is a Member of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. He is a Senior Project Geologist and a full time employee of WPG Resources Ltd. He has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code & Guidelines). Paul Wittwer has consented in writing to the inclusion in this report of the matters based on his information in the form and context in which it appears.

### **TARCOOLA**

#### **Exploration activities**

The Tarcoola exploration activities and results contained in this report are based on information compiled by Mr Paul Wittwer.

Paul Wittwer is a Member of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. He is a Senior Project Geologist and a full time employee of WPG Resources Ltd. He has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code & Guidelines). Paul Wittwer has consented in writing to the inclusion in this report of the matters based on his information in the form and context in which it appears.

## Appendix 1

### Significant Intercepts Challenger

#### Drill Data

Exploration Diamond Drill hole Details (Local Grid)							Intercept Details					
Hole ID	Collar mN	Collar mE	Collar mAHD	Dip	Grid Azi	Hole Length	From (m)	To (m)	Interval (m)	True Width (m)	Au (g/t)	Shoot
17CUD2170	11013.93	21021.88	369.814	-1	267	291	245.30	246.00	0.70	0.38	23.35	CW
17CUD2174	10696.15	20325.31	731.485	13	40	145	120.00	122.05	2.05	0.68	25.27	CW
							126.10	128.80	2.70	0.90	12.04	CW
17CUD2175	10696.31	20325.21	731.655	15	36	131	104.17	109.00	4.83	1.90	26.42	CW
17CUD2186	10691.7	20326.75	730.725	0	125	251	71.00	72.00	1.00	0.90	10.87	OFW
17CUD2212	10294.38	20176.32	1100.765	30	90	43	19.40	20.14	0.74	0.32	92.75	SEZ
							26.20	27.00	0.80	0.34	17.60	SEZ
17CUD2213	10293.62	20174.69	1099.968	30	110	40	19.50	20.85	1.35	0.90	23.23	SEZ
17CUD2215	10292.84	20173.46	1099.801	27	150	45	23.00	25.66	2.66	2.37	33.37	SEZ
17CUD2216	10292.67	20173.07	1099.64	25	165	61	27.75	29.39	1.64	1.43	11.22	SEZ
17CUD2223	10303.64	20189.57	1099.346	21	48	66	26	27	1.00	0.19	10.14	SEZ
17CUD2227	10296.75	20166.89	1098.386	-12	318	87	58.06	59.00	0.94	0.90	46.44	M3
17CUD2235	10302.87	20190.71	1097.952	-10	77	65	31.00	32.00	1.00	0.29	10.22	SEZ
17CUD2237	10303.43	20189.82	1098.128	-7	57	93	46.00	46.70	0.70	0.03	187.59	SEZ
17CUD2257	10418.81	20270.68	1026.543	10	130	90	5.58	6.48	0.90	0.83	13.61	M3



## Significant Intercepts Tarcoola

### Drill collar detail

Exploration Reverse Circulation Drill hole Details (GDA94 Zone 53)							
Hole_ID	Prospect	Collar mE	Collar mN	Collar mAHD	Dip	True Azi	Hole Length (m)
MS001	Morning Star	455065	6602907	162	-70	315	50
MS004	Morning Star	455065	6602848	166	-70	315	78
WH007	White Hope	455115	6603012	154	-60	90	78
WH008	White Hope	455122	6603012	154	-60	90	72
GB001	Genie Bar	456491	6603241	162	-60	0	54
GB002	Genie Bar	456492	6603221	163	-60	0	72
DAD004	Daly's Dream	456040	6603164	163	-60	0	42
WOG001	Wondergraph	455677	6603410	142	-60	90	30
WOG002	Wondergraph	455658	6603400	142	-60	90	30
WOG006	Wondergraph	455666	6603380	143	-60	90	30
WOG013	Wondergraph	455656	6603310	144	-60	90	18
FP004	Forgotten Prince	455071	6603315	143	-60	150	42

## Significant Intercepts Tarcoola

### Drill assay results

Prospect	Hole ID	m From	m To	Interval (m)	True Width (m)	Au (g/t)	Au (g/txm)
Morning Star	MS004	73	75	2	2	39.90	79.80
	<i>including</i>	74	75	1	1	67.68	67.68
Morning Star	MS001	33	34	1	1	3.45	3.45
White Hope	WH007	64	65	1	0.5	4.05	2.03
White Hope	WH008	54	55	1	0.5	4.95	2.48
Genie Bar	GB001	26	27	1	1	3.15	3.15
Genie Bar	GB001	44	47	3	3	1.48	4.44
Genie Bar	GB002	52	53	1	1	4.52	4.52
Genie Bar	GB002	57	61	4	4	3.24	12.96
	<i>including</i>	58	60	2	2	5.85	11.70
Daly's Dream	DAD004	15	16	1	1	3.06	3.06
Daly's Dream	DAD004	17	20	3	3	1.28	3.84
Wondergraph	WOG001	7	11	4	2	3.24	6.48
	<i>including</i>	7	8	1	0.5	8.23	4.12
Wondergraph	WOG002	22	23	1	0.5	3.36	1.68
Wondergraph	WOG006	5	6	1	0.5	7.98	3.99
Wondergraph	WOG013	9	11	2	1	4.78	4.78
	<i>including</i>	10	11	1	0.5	8.65	4.33

Significant intersections (>3 g/t x m down hole are reported only), using a 0.5g/t cut off

## Challenger

### JORC Code, 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 style="list-style-type: none"> <li>Nature and quality of sampling (eg 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 (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>Underground BQ drill core is whole core sampled, ranging from 0.3m to 1.3m sample intervals.</li> <li>Each sample is crushed to 4mm and pulverised to 75 microns through the PAL (pulverising aggressive leach) process. In the PAL process, each sample is pulverised in an aqueous solution with cyanide bearing assay tabs and a collection of assorted ball bearings. Each sample is processed in the PAL for one hour, resulting in an Au_CN complex bearing liquor and remnant pulverised sample.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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 style="list-style-type: none"> <li>Underground diamond drilling is undertaken by Challenger Gold Operations. Challenger Gold operates three LM75 underground drill rigs with separate power pack running BQ triple tube wireline gear.</li> <li>No diamond core was oriented.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>All drill core is presented as whole core in core trays by Challenger Gold drillers. Core blocks are inserted at the end of every run. Any core loss is noted by the diamond driller on an additional core block if required.</li> <li>Any core loss is discussed with the drillers in a process of constant improvement to maximise returns. In the case of core loss, generally only fine material is lost through grinding. Any discrepancies between</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>the measured length of the core and that of the core blocks are identified and recorded in logging as gaps in the lithology and also in the geotechnical logging.</p> <ul style="list-style-type: none"> <li>Unless a mineralised leucosome is ground away, there is no sample bias due to fines loss.</li> </ul>
Logging	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>All drill core is geologically logged (lithology, mineralisation, structure) and geotechnically logged (Q value – rock quality) down to cm-scale. (Any leucosome greater than 0.20m in length is recorded as a separate lithology.</li> <li>The logging is quantitative in nature as lithology percentages and compositions are recorded and all geotechnical logging relies on measurements for the calculation of Q values.</li> <li>All core is digitally photographed, one core tray per photo, with photos stored on site server for reference.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <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 sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Samples taken from BQ underground core are full core sampled.</li> <li>The sample is submitted to the site laboratory for analysis. All samples are dried at a maximum temperature of 90 degrees Celsius to drive off moisture that would interfere with splitting the sample. After drying, samples are crushed using a Boyd Crusher to approximately 4mm in size and then split through a rotary sample splitter to produce a sub-sample. The crusher is cleaned regularly, with barren material (bricks) crushed through it to ensure no smearing prior to the sample run being crushed. Each reject sample is retained for resampling if required.</li> <li>Each sample can be tracked by its sample number through the entire laboratory process and results for the original samples and all QAQC samples are presented in digital form to the site geologists.</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>Assaying at Challenger is completed using the PAL process (pulverising aggressive leach). This process effectively replicates the process in the Challenger mill. Each sample is pulverised in aqueous solution with cyanide bearing assay tabs and a collection of assorted ball bearings. Each sample is processed in the PAL for one hour, resulting in an Au_CN complex bearing liquor and remnant pulverised sample. The pulverised material is 95% passing 75 microns, the ideal</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li><i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i></li> </ul>	<p>liberation size for gold at Challenger.</p> <ul style="list-style-type: none"> <li>Every twentieth sample is duplicated for the original sample bag (re-split) to produce a duplicate. Every sample run (53 samples) will contain at least two duplicates, a blank and a standard (prepared by Gannet Holdings Pty Ltd). These are to ensure that the sub-sampling is representative, that the PAL is correctly cleaned between sample runs and that the PAL is pulverising the samples correctly for full gold extraction.</li> <li>Following PAL processing, the samples are individually decanted, centrifuged and prepared for analysis in an AAS by solvent separation using DIBK (20 minutes). The sample is then aspirated through the AAS to produce a reading. The AAS is calibrated for each sample run using analytical reagent prepared standards (of 1.0, 5.0, 10.0 and 20.0 g/t Au) from Rowe Scientific. Each sample is adjusted for sample weight in Labman software to produce the gold grade in ppm. These grades are presented to site Geologists in MS Excel .csv spread sheets.</li> <li>For each sample job; blanks, standards and duplicates are examined to ensure that the blanks are below detection (0.01ppm), the standards are within 8% (experimental accuracy) and that the duplicates are 'reasonable' with respect to the nugget effect of the Challenger deposit. Any sample jobs that fail these checks will be re-analysed from re-splits of the original samples. In addition, all the blanks, standards and duplicates are examined quarterly to ensure that the laboratory is maintaining overall operating standards.</li> </ul>
<i>Verification of sampling and assaying</i>	<ul style="list-style-type: none"> <li><i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li><i>The use of twinned holes.</i></li> <li><i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li><i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>Significant intercepts were verified by Challenger Mine Geologists and the Senior Mine Geologist. Any significant intercepts in exploration drilling and selected significant intercepts from underground production diamond drilling are submitted to Genalysis at least annually for external analysis. This analysis is undertaken by SP-02 or SP-03 sample preparation followed by partial fire assay using a 50 gram charge (FA50). These results are compared to the original PAL results to ensure that the site analyses are repeatable. While the two analysis processes are different, a correlation 0.95 has been achieved for the last comparison completed in September 2017</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>• No twinned holes were drilled</li> <li>• All core logging data is captured digitally on company laptop computers and stored on the site server, which is backed up daily. All sample information is recorded both in the relevant logs/face sheets and in sample submission forms that are submitted to the laboratory (on and off site). This allows checking that all samples are present and accounted for by laboratory staff. Assay results are generated as MS Excel .csv files that are stored on the site server and are manually merged with the primary logging/face sheet information. This merged data (logs, collar information and assays) are all imported to the site Diamond Drilling Database in MS Access for use in Surpac. All information imported to the database is checked by the importer in MS Access and Surpac to ensure the correct location/display of data. Ongoing checks are carried out by the entire technical team as the data is used.</li> <li>• The only modification of assay data, following creation by Labman software is altering of results below detection, &lt;0.01g/t Au, to 0.001g/t Au, averaging of duplicate results to produce an 'au_plot' grade for plotting and application of c80, c140 and c180 cut-offs to the primary data. All of these modifications are undertaken using the merged data in MS Excel (using standard forms), prior to importing to MS Access</li> </ul>
<p><i>Location of data points</i></p>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All surveys on site are carried out by qualified Surveyors using a Total Station Leica theodolite from known wall stations determined from surface stations located by GPS. Surveying in this manner provides three dimensional collar co-ordinates and development pickups to mm-scale accuracy. Drill hole collars are surveyed in the same way as the rest of the workings with collar dip and azimuth determined by surveying a rod that fits into the drill holes. The collar surveys are transmitted electronically to the site Geologists who merge this information into the MS Excel logs for each drill hole. Down hole surveying of underground diamond drill core is undertaken with a single-shot electric down hole compass/camera at a minimum of every 30m down hole.</li> <li>• All survey data is stored as local Challenger Mine Grid.</li> <li>• Challenger Mine Reduced Level (RL) = AHD + 1000m so AHD 193m</li> </ul>

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		<p>level = 1193mRL.</p> <p>Transformations between AMG and local grids: origin, azimuth AMG origin and azimuth conversions are based on the following coinciding points.</p> <p>AMG84 Co-ordinates</p> <table border="1" data-bbox="1232 454 1971 614"> <thead> <tr> <th>Station Name</th> <th>mN</th> <th>mE</th> <th>mAHD</th> </tr> </thead> <tbody> <tr> <td>CH10</td> <td>6693784.890</td> <td>363338.265</td> <td>194.97</td> </tr> <tr> <td>CH20</td> <td>6693917.900</td> <td>363657.477</td> <td>50.069</td> </tr> <tr> <td>Origin</td> <td>6693379.301</td> <td>363699.494</td> <td>194.410</td> </tr> <tr> <td>Flat Battery</td> <td>6693411.735</td> <td>363510.463</td> <td>194.314</td> </tr> </tbody> </table> <p>Challenger Mine Grid co-ordinates</p> <table border="1" data-bbox="1232 678 1892 837"> <thead> <tr> <th>Station Name</th> <th>mN</th> <th>mE</th> <th>mAHD</th> </tr> </thead> <tbody> <tr> <td>CH10</td> <td>10524.890</td> <td>19860.005</td> <td>1194.977</td> </tr> <tr> <td>CH20</td> <td>10499.951</td> <td>20204.989</td> <td>1050.069</td> </tr> <tr> <td>Origin</td> <td>10000.000</td> <td>20000.000</td> <td>1194.410</td> </tr> <tr> <td>Flat Battery</td> <td>10114.083</td> <td>19845.777</td> <td>1194.314</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Challenger Mine Grid North 0° = 329.0° MAGNETIC</li> <li>• Challenger Mine Grid North 0° = 333° 14'41"AMG (grid bearing + 26°45'19" = AMG bearing)</li> <li>• Challenger Mine Grid 31° = Magnetic North 0°</li> <li>• Topographic control is taken from the surface stations (above) and traversed to the operating areas through the use of wall stations.</li> </ul>	Station Name	mN	mE	mAHD	CH10	6693784.890	363338.265	194.97	CH20	6693917.900	363657.477	50.069	Origin	6693379.301	363699.494	194.410	Flat Battery	6693411.735	363510.463	194.314	Station Name	mN	mE	mAHD	CH10	10524.890	19860.005	1194.977	CH20	10499.951	20204.989	1050.069	Origin	10000.000	20000.000	1194.410	Flat Battery	10114.083	19845.777	1194.314
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<p>Data spacing and distribution</p>	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Underground drilling is drilled at either 20m horizontal or from 20 to 100m vertically spaced fans. Holes are designed to intersect the lodes at 15 to 25m spacing along strike, as close to perpendicular to the strike of the lodes with fold closures specifically targeted. Underground and surface drilling is adequate to broadly define the lodes for the purposes of level planning.</li> </ul> <p>The diamond drill program from the 1095 Level was designed for stope delineation and the orientation of the holes in this drill program was to increase confidence in the strike extent of the SEZ ore shoot. Some of the holes drilled are at a low angle to the SEZ ore shoot from</p>																																								

Criteria	JORC Code explanation	Commentary
		<p>the available drill sites.</p> <ul style="list-style-type: none"> <li>No sample compositing of underground diamond drilling has been applied</li> </ul>
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>The orientation of underground drill holes are designed to be as perpendicular to the lode system as possible. During any grade calculation (be it production or resource) these structure parallel drill holes are examined for their effect on the final grade result, and where appropriate, excluded from the grade calculations, thus reducing the effect of any sample bias.</li> </ul>
<i>Sample security</i>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>Samples are submitted to the site laboratory as soon as practical after sampling in individually numbered calico sample bags (labelled CUD for diamond drilling). Analysis is not undertaken until all descriptive paperwork is correctly submitted for the samples. From acceptance of the samples, each sample is tracked on site through Labman software to ensure that each assay is correctly matched with its sample. Any discrepancy between submitted samples and the paperwork is identified and may result in the entire sample job being resampled from original material prior to analysis. External laboratories utilise their own systems for sample tracking.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>Data reviews are undertaken on an ongoing basis by site Geologists while using the data. Any errors identified (either by staff, MS Access or Surpac) is queried and corrected as a part of a program of continual improvement.</li> <li>Lab audits are done annually, showing that operating procedures for sample management, QAQC and result consistency are being adhered to.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <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</li> </ul>	<ul style="list-style-type: none"> <li>All exploration was undertaken within the current Challenger Mine Lease ML6103. The underlying Exploration Licence EL5661 comprises 687 square kilometres within the Woomera Prohibited</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>settings.</i></p> <ul style="list-style-type: none"> <li>• <i>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.</i></li> </ul>	<p>Area, straddling the Mobella and Commonwealth Hill pastoral leases.</p>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li>• <i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Previous exploration and mining activities at Challenger Gold Mine have been conducted by Dominion Gold (1995-2010) and Kingsgate Consolidated (2010-2016)</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li>• <i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Challenger occurs within the Mulgathing Complex of the Gawler Craton and the area is characterised by Archaean to mid-Proterozoic gneissic country rock. Original granulite facies metamorphism is overlaid by retrograde amphibolite facies recrystallization around 1650 - 1540 Ma (Tomkins, 2002). Saprolitic clays extended to 50 m depth within the ore zone, reflecting a deeper base of oxidation. High-grade gold mineralisation is associated with coarse-grained quartz veins with feldspar, cordierite and sulphides dominated by arsenopyrite, pyrrhotite and lesser telluride. These veins are interpreted as migmatites that have undergone partial melting, with this melting reflecting a precursor hydrothermal alteration event (McFarlane, Mavrogenes and Tomkins, 2007). Three main types of leucosome/vein styles have been defined: <ol style="list-style-type: none"> <li>1. quartz dominant veins, which may be remnant pre-metamorphic mineralised veins</li> <li>2. polysilicate veins, which are dominant in the main ore zones and host the majority of the mineralisation</li> <li>3. Pegmatitic veins, which are unmineralised, late stage, with cross-cutting relationships.</li> </ol> <p>The gold mineralisation is structurally controlled through emplacement of the partial melt into relatively low-strain positions. McFarlane, Mavrogenes and Tomkins (2007), using Monazite geochronology proposed a 40 Ma period between 2460 and 2420 Ma of repeated high-temperature events.</p> <p>The Challenger Structure can be defined as a laterally extensive shear zone with shoots that plunge 30° to 029° (AMG). These ore shoots are defined by leucosome veins, which are characteristically ptymatically folded. The small-scale folding is parasitic to the overall</p> </li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>larger scale folding that can be interpreted from drill core. The folding is interpreted as pre peak metamorphism along with gold mineralisation. Post-folding, the Challenger shoots were subjected to extreme WNW-ESE shortening and extension directed shallowly to the NE.</p> <p>Reference: Androvic, P, Bamford, P, Curtis, J, Derwent, K, Giles, A, Gobert, R, Hampton, S, Heydari, M, Kopeap, P and Sperring, P, 2013. Challenger Gold Mine, Australasian Mining and Metallurgical Operating Practices, AusIMM. 1097-1112.</p>
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>• <i>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:</i> <ul style="list-style-type: none"> <li>○ <i>easting and northing of the drill hole collar</i></li> <li>○ <i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li>○ <i>dip and azimuth of the hole</i></li> <li>○ <i>down hole length and interception depth</i></li> <li>○ <i>hole length.</i></li> </ul> </li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix 1 to this report.</li> </ul>
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>• <i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</i></li> <li>• <i>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.</i></li> <li>• <i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<ul style="list-style-type: none"> <li>• For all results at Challenger Gold Mine, a low cut-off of 0.01g/t Au is applied (limit of detection), these results are replaced with 0.001g/t Au in the drilling database to flag that they are below detection. The assay result is stored as au_plot in the database and variable top cuts of c80g/t, c140g/t and c180g/t are used where required. No upper grade truncation is used for significant intercepts.</li> <li>• Reported mineralised intercepts are based on consistent zones of mineralisation greater than 5 g/t and intervals over 0.3 metres.</li> <li>• No metal equivalent values have been used.</li> </ul>
<i>Relationship between mineralisation widths and</i>	<ul style="list-style-type: none"> <li>• <i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li>• <i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All mineralisation widths are reported as estimated true width down hole as all underground drilling is designed to be as perpendicular to the lodes as possible. As this exploration is entirely for resource development, any significant intercepts used in lode modelling are</li> </ul>



Criteria	JORC Code explanation	Commentary
<i>intercept lengths</i>	<ul style="list-style-type: none"> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<p>constrained by the resulting model, producing a de-facto true width for further calculations.</p> <ul style="list-style-type: none"> <li>The dip of the SEZ lode at 40-45 degrees does impact the thickness of drill intersections report. Drill holes 17CUD2223 and 2237 were planned as low angle holes to the strike of the orebody and the estimated true width versus downhole intercept width in Appendix 1 of the main report show this occurrence.</li> </ul>
<i>Diagrams</i>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Diagrams have been included in the main body of the report.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>The results recorded in Table 1 show significant intercepts greater than 5g/t. The assay results reported range between &lt;0.01 and 298.07g/t gold.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Visible gold was logged in the following drill holes: 17CUD2175 at 106.51m, 17CUD2212 at 19.45m, 17CUD2213 at 20.50m, 17CUD2215 at 24.26m and 17CUD2237 at 46.05m.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (eg 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 style="list-style-type: none"> <li>Planned underground drilling for the current financial year focuses on infilling the lower levels of the Challenger West resource, further definition drilling of M3 and SEZ lodes, lateral conceptual exploration targets and drilling of Challenger Deeps to extend the mine life.</li> </ul>

## Tarcoola

### JORC Code, 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 style="list-style-type: none"> <li>Nature and quality of sampling (eg 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 (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>RC drill holes are 122mm diameter and samples every metre are taken directly off the drill rig cyclone splitter at a 1/8 split</li> <li>Each sample is crushed to 4mm and pulverised to 75 microns through the PAL (pulverising aggressive leach) process. In the PAL process, each sample is pulverised in an aqueous solution with cyanide bearing assay tabs and a collection of assorted ball bearings. Each sample is processed in the PAL for one hour, resulting in an Au_CN complex bearing liquor and remnant pulverised sample.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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 style="list-style-type: none"> <li>Reverse Circulation, 122mm diameter</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> </ul>	<ul style="list-style-type: none"> <li>Cyclone has a cutter to separate samples – drilling is paused at each metre</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <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>	<p>when the sample is taken and recommenced when the new bag is put on</p> <ul style="list-style-type: none"> <li>No sample bias is expected.</li> </ul>
Logging	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Each metre in the program is individually sieved and geologically logged (lithology, mineralisation, alteration) down to m-scale, not just mineralised intervals</li> <li>The logging is quantitative in nature as lithology percentages and compositions are recorded</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <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 sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Samples taken from the cyclone splitter are all dry</li> <li>The sample is submitted to the Challenger Mine site laboratory for analysis. All samples are dried at a maximum temperature of 90 degrees Celsius to drive off moisture that would interfere with splitting the sample. After drying, samples are crushed using a Boyd Crusher to approximately 4mm in size and then split through a rotary sample splitter to produce a sub-sample. The crusher is cleaned regularly, with barren material (bricks) crushed through it to ensure no smearing prior to the sample run being crushed. Each reject sample is retained for resampling if required.</li> <li>Each sample can be tracked by its sample number through the entire laboratory process and results for the original samples and all QAQC samples are presented in digital form to the Tarcoola and Challenger site geologists.</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <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</li> </ul>	<ul style="list-style-type: none"> <li>Assaying at Challenger is completed using the PAL process (pulverising aggressive leach). This process effectively replicates the process in the Challenger mill. Each sample is pulverised in aqueous solution with cyanide bearing assay tabs and a collection of assorted ball bearings. Each sample is processed in the PAL for one hour, resulting in an Au_CN complex bearing liquor and remnant pulverised sample. The pulverised material is 95% passing</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>applied and their derivation, etc.</i></p> <ul style="list-style-type: none"> <li>• <i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i></li> </ul>	<p>75 microns, the ideal liberation size for gold at Challenger.</p> <ul style="list-style-type: none"> <li>• Every twentieth sample is duplicated for the original sample bag (re-split) to produce a duplicate. Every sample run (53 samples) will contain at least two duplicates, a blank and a standard (prepared by Gannet Holdings Pty Ltd). These are to ensure that the sub-sampling is representative, that the PAL is correctly cleaned between sample runs and that the PAL is pulverising the samples correctly for full gold extraction.</li> <li>• Following PAL processing, the samples are individually decanted, centrifuged and prepared for analysis in an AAS by solvent separation using DIBK (20 minutes). The sample is then aspirated through the AAS to produce a reading. The AAS is calibrated for each sample run using analytical reagent prepared standards (of 1.0, 5.0, 10.0 and 20.0 g/t Au) from Rowe Scientific. Each sample is adjusted for sample weight in Labman software to produce the gold grade in ppm. These grades are presented to site Geologists in MS Excel .csv spread sheets.</li> <li>• For each sample job; blanks, standards and duplicates are examined to ensure that the blanks are below detection (0.01ppm), the standards are within 8% (experimental accuracy) and that the duplicates are 'reasonable' with respect to the nugget effect of the Tarcoola deposit. Any sample jobs that fail these checks will be re-analysed from re-splits of the original samples. In addition, all the blanks, standards and duplicates are examined quarterly to ensure that the laboratory is maintaining overall operating standards.</li> <li>• A portion of the samples were submitted to Genalysis laboratories in Wingfield SA for analysis. Sample preparation was either the SP-02 or SP-03 method (Dry and pulverize) followed by lead collection fire assay using a 50 gram charge (FA50) and read by ICP-OES (OE04 - 0.005ppm detection limit).</li> </ul>
<p><i>Verification of sampling and assaying</i></p>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Significant intercepts were verified by the Senior Mine Geologist and Senior Project Geologist. Significant intercepts in Tarcoola exploration drilling (greater than 0.5g/t) are submitted to Genalysis for external analysis. This analysis is undertaken by SP-02 or SP-03 sample preparation (Dry and pulverize) followed by lead collection fire assay using a 50 gram charge (FA50) and read by ICP-OES (OE04 - 0.005ppm detection limit). These results are compared to the original PAL results to ensure that the site analyses are repeatable. While the</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>two analysis processes are different, a reasonable correlation is expected.</p> <ul style="list-style-type: none"> <li>No twinned holes were drilled</li> <li>All logging data is captured digitally on company laptop computers and stored in a dropbox cloud. All sample information is recorded both in the relevant logs and in sample submission forms that are submitted to the laboratory (on and off site). This allows checking that all samples are present and accounted for by laboratory staff. Assay results are generated as MS Excel .csv files that are stored on the site server and are manually merged with the primary logging information. This merged data (logs, collar information and assays) are all imported to the site Diamond Drilling Database in MS Access for use in Surpac. All information imported to the database is checked by the importer in MS Access and Surpac to ensure the correct location/display of data. Ongoing checks are carried out by the entire technical team as the data is used.</li> <li>The only modification of assay data, following creation by Labman software is altering of results below detection, &lt;0.01g/t Au, to 0.005g/t Au, undertaken using the merged data in MS Excel (using standard forms), prior to importing to MS Access</li> </ul>
<i>Location of data points</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>Specification of the grid system used.</i></li> <li><i>Quality and adequacy of topographic control.</i></li> </ul>	<ul style="list-style-type: none"> <li>All surveys on site are carried out by qualified personnel using the site Leica C515 DGPS, providing collar co-ordinates to cm-scale accuracy in the same datum (GDA94 zone 53) as the rest of the site. Collar dip and azimuth were not surveyed but the drill rig is lined up on surveyed azi lines. The collar surveys are transmitted electronically to the site Geologists who merge this information into the MS Excel logs for each drill hole. Down hole surveys were not completed.</li> <li>No local Reduced Level (RL) is used, just the Australian Height Datum (AHD)</li> <li>Topographic control is good with the survey system used</li> </ul>
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> <li><i>Data spacing for reporting of Exploration Results.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drill spacing is nominally 20m spaced collars, but can vary depending on the target</li> <li>No sample compositing of RC drilling has been applied</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>Whether sample compositing has been applied.</li> </ul>	
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>The orientation of RC drill holes are designed to be as perpendicular to the lode system as possible.</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>Samples are submitted to the site laboratory as soon as practical after sampling in individually pre-numbered calico sample bags (labelled TRC for RC drilling). Analysis is not undertaken until all descriptive paperwork is correctly submitted for the samples. From acceptance of the samples, each sample is tracked on site through Labman software to ensure that each assay is correctly matched with its sample. Any discrepancy between submitted samples and the paperwork is identified and may result in the entire sample job being resampled from original material prior to analysis. External laboratories utilise their own systems for sample tracking.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>Data reviews are undertaken on an ongoing basis by site Geologists while using the data. Any errors identified (either by staff, MS Access or Surpac) is queried and corrected as a part of a program of continual improvement.</li> <li>Lab audits are done annually, showing that operating procedures for sample management, QAQC and result consistency are being adhered to.</li> </ul>

## Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>All exploration was undertaken within the current Tarcoola Mine Lease ML6455. The underlying Exploration Licence EL5355 comprises 1183 square kilometres, on the Wilgena pastoral lease, part of which is within the Woomera Prohibited Area.</li> </ul>



Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>Abundant previous exploration and mining activities at Tarcoola have been conducted since discovery of the field in 1893, but more recent work (since 1995) by Mungana Goldmines, Stellar Resources, Anglo Gold and Grenfell Resources was used. Due diligence and resurveying of drill holes etc. was completed by Mungana and all information is considered accurate.</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Tarcoola Project covers a portion of the north-western Gawler Craton centred over the historic Tarcoola goldfield, where Archaean and Proterozoic rocks form the basement to an extensive cover of Phanerozoic sediments. The Archaean basement has been extensively deformed, whereas the Proterozoic rocks have been weakly to moderately deformed.</li> <li>At Perseverance (current Tarcoola open pit mine), gold mineralisation is hosted within sedimentary rocks of the Tarcoola Formation and granite, both of Proterozoic age. The granite is variably in fault contact with or unconformably overlain by the sediments, which consists of conglomerate, limestone, sandstone, siltstones, and shale. A suite of later intrusions (Lady Jane Diorite) cut both the sedimentary rocks and the granite.</li> <li>Mafic high level intrusives associated with the 1590Ma Hiltaba Magmatic Event are considered to control the spatial setting of both gold and base metal mineralisation.</li> <li>Three deformation events have been recognised in the area. D1 is characterised by open folding and NNW-directed thrusting, responsibly for the southerly dip of the sedimentary package at Perseverance. Steeply dipping NW and NE trending brittle faults developed during D2. These structures host and control the gold mineralisation in the Tarcoola Ridge area. The third deformation event (D3) is represented by the late E-W trending barren quartz veins.</li> <li>Gold has locally been remobilised and enriched in the weathering profile. The base of complete oxidation occurs typically 10-40m below surface, and the base of partial oxidation occurs at a depth of ~20-60m.</li> <li>Within the primary zone, sericite-quartz-pyrite alteration zones are spatially associated with the mineralisation, and overprint earlier hematite-magnetite</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>alteration. An outer halo of chlorite (+/-leucoxene and pyrite) is developed. Pyrite, galena and sphalerite are the main associated sulphide minerals, with subordinate amounts of chalcopyrite bornite and/or arsenopyrite noted.</p> <ul style="list-style-type: none"> <li>• Veins can be discrete or form wider stockwork zones, and are surrounded by broader quartz-sericite alteration envelopes which can host lower grade background halos of mineralisation. Dispersed supergene mineralisation in the oxide zone can be largely detached from veining.</li> <li>• For more detail see: Budd, A &amp; Skirrow, R, 2007. The Nature and Origin of Gold Deposits of the Tarcoola Goldfield and Implications for the Central Gawler Gold Province, South Australia. Economic Geology, 2007.</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <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 style="list-style-type: none"> <li>• See Appendix 1 to this report.</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <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 style="list-style-type: none"> <li>• For all results from the Challenger Gold Mine laboratory, a low cut-off of 0.01g/t Au is applied (limit of detection), these results are replaced with 0.005g/t Au in the drilling database to flag that they are below detection. No upper grade truncation is used for significant intercepts.</li> <li>• Reported mineralised intercepts are based on consistent zones of mineralisation greater than 3 g/t x m using 0.5g/t cut off and intervals &gt; 1 metre.</li> <li>• No metal equivalent values have been used.</li> </ul>
Relationship between	<ul style="list-style-type: none"> <li>• These relationships are particularly important in the reporting of</li> </ul>	<ul style="list-style-type: none"> <li>• All mineralisation widths are reported as true widths but in general drilling is</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>mineralisation widths and intercept lengths</i>	<p><i>Exploration Results.</i></p> <ul style="list-style-type: none"> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</i></li> </ul>	<p>designed to be as perpendicular to the lodes as possible. If this exploration ultimately leads to a resource, any significant intercepts used in lode modelling are constrained by the resulting model, producing a de-facto true width for further calculations.</p>
<i>Diagrams</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Diagrams have been included in the main body of the report.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li><i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i></li> </ul>	<ul style="list-style-type: none"> <li>The assay results received for this drilling range from &lt;0.005 to 67.68ppm gold.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Gold intersections occur within various geological features including quartz veins, on diorite contacts, breccia, conglomerate and granite.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li><i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li><i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>Further drilling is planned to follow up promising results</li> </ul>