

19 October 2017

ASX Limited Level 40, Central Park 152-158 St George's Terrace Perth WA 6000

# LODGEMENT OF SEPTEMBER 2017 QUARTERLY REPORT, QUARTERLY UPDATE PRESENTATION AND INVESTOR CONFERENCE CALL AND WEBCAST

I am pleased to attach the following items for immediate release to the market:

- 1. September 2017 Quarterly Activities Report
- 2. September 2017 Quarterly Update Powerpoint Presentation

In addition, a teleconference and live webcast on the September 2017 Quarterly Report will be held for the investment community at 10.00am (AWST) / 1.00pm (AEST) today.

The webcast and synchronised slide presentation is available through the Company's website or through BRR Media.

Live date: Thursday, 19 October 2017

Access this webcast at: http://webcasting.boardroom.media/broadcast/59d2d99c43412343aeab2af4 http://www.sandfire.com.au

Yours sincerely,

Matt Fitzgerald Chief Financial Officer and Company Secretary

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ASX Announcement

19 October 2017

# QUARTERLY REPORT

For the period ended 30 September 2017

# Highlights

#### Production & Operations

Contained metal production	September 2017 Quarter	FY2018 Guidance
Copper (t)	15,258	63,000 - 66,000
Gold (oz)	10,669	35,000 - 38,000
C1 cost (US\$/Ib)	0.95	1.00 – 1.05

- Strong mine production and milling rates maintained for the Quarter. C1 costs impacted by copper production at the lower end of the normal operating range, and high gold production increasing by-product credits.
- Successful commissioning of rougher column cell delivered positive uplift in normalised copper recovery, in part offsetting the impact of elevated talc in C1 stope ore during the quarter.
- FY2018 production guidance maintained: 63-66kt Cu and 35-38koz gold at C1 US\$1.00-1.05/lb.

#### **Development Projects**

- Site works continuing at Monty, with the first cut completed into the portal to establish access to the new underground mine.
- Draft Operating Permit received for the 78%-owned Black Butte Copper Project in central Montana, USA, formally concluding the "Completeness & Compliance" review and marking the commencement of the Environmental Impact Statement ("EIS"), the final stage of permitting.

#### Exploration

- Group Mineral Resource estimate completed, incorporating DeGrussa, Monty, Black Butte, Thaduna, Green Dragon and Temora Projects. Together, these projects contain an estimated 1.9Mt of copper, 2.7Moz of gold and 15.8Moz of silver (see separate ASX Announcement released today).
- Multi-pronged exploration programs continuing across Sandfire's Greater Doolgunna Project which, including Joint Venture and Farm-in Agreements, now covers a total area of 5,846km<sup>2</sup>.
- Further extensive RC, Aircore and diamond drilling completed at the Springfield Project targeting the Monty, Monty South, Monty North East and Southern Volcanics areas. Detailed ground-based IP survey completed over the Monty deposit and Monty NE aircore anomaly.
- A further drilling program is planned for the fourth quarter to target higher grade zones at the Donnington Prospect in New South Wales
- Drilling is continuing in northern Queensland at the Ionised prospect with encouraging indications for zinc mineralisation

#### Corporate

- Sandfire increased its ownership of the high-grade Black Butte Copper Project in central Montana, USA to 78.1% following the acquisition of the 16.9% stake in Tintina Resources (ASX: TSX-V: TAU) held by fellow shareholder Electrum Global Holdings L.P.
- Group cash on hand as at 30 September 2017: \$117 million.

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## 1.0 SAFETY PERFORMANCE

The Total Recordable Injury Frequency Rate (TRIFR) for the Sandfire Group at the end of September was 6.4 (June Quarter: 4.9). Recordable injuries include those that result in any days away from work (Lost Time Injuries), of which there were none in the Quarter, and those where an employee or contractor cannot perform all or any part of their normal shift (Restricted Work Day Injuries), as well as any injury that requires services that only a medical practitioner can provide (Medical Treatment Injuries).

Safety systems development continues to focus on the prevention of incidents and improving the safety culture of both employees and contractors, with principal hazard management a key theme.

#### 2.0 OPERATIONS OVERVIEW

Copper production for the September Quarter was 15,258 tonnes (June Quarter: 17,092 tonnes). C1 cash operating costs for the Quarter were US\$0.95/lb (June Quarter: US\$0.95/lb).

Mine production for the Quarter was 437,136 tonnes grading 3.79% Cu. During the Quarter, production was sourced from all lenses at DeGrussa.

A total of 413,834 tonnes of ore grading 4.05% Cu was milled for the September Quarter, with copper recovery averaging 91.1%.

#### 3.0 MINING & PRODUCTION

#### 3.1 Overview

September 2017 Quarter – Production Statistics		Tonnes	Grade (% Cu)	Grade (g/t Au)	Contained Copper (t)	Contained Gold (oz)
Concentrator	Mined	437,136	3.79	1.60	16,573	22,549
	Milled	413,834	4.05	1.73	16,747	23,097
	Production	62,743	24.32	5.29	15,258	10,669

**Note:** Mining and production statistics are rounded to the nearest 0.1% Cu grade and 0.1 g/t Au grade. Errors may occur due to rounding. Production Statistics are subject to change following reconciliation and finalisation subsequent to the end of the Quarter.

#### 3.2 Underground Mining

During the Quarter, production was sourced from all lenses at DeGrussa with the mine remaining in balance between production and back-fill. Work also continued on the main underground pump stations, which have now been commissioned and acceptance testing has commenced.

#### 3.3 **Processing**

Mill throughput in the September Quarter was as planned with planned maintenance shut-downs completed in August and September, as well as normal operational issues.

Copper recovery for the September Quarter was impacted by elevated talc in the ore feed from the C1 deposit, which is forecast to continue through to December. Talc will float naturally and downgrades the concentrate. To offset this impact to concentrate grade, less composite particles are accepted to the concentrate stream, resulting in a recovery reduction.

The successful commissioning of the rougher column cell during the Quarter delivered a positive uplift in copper recovery in line with expectations, with a ~1.4% improvement (based on comparable Cu:S ratio ore and averaging talc levels).

#### 3.4 Projects

The solar farm returned to full-scale power generation during the Quarter, with no limitations except for the shorter days expected for this time of the year. Solar production will now increase over the coming months as the days start to get longer.

Additional equipment is being installed to increase the rate of back-filling at the DeGrussa Underground Mine to match the production plan of the mine. This equipment will be operational early in the December 2017 Quarter.

#### 3.5 Guidance – FY2018

Targeted copper production for FY2018 remains unchanged with production expected to be within the range of 63-66,000 tonnes of contained copper metal with gold production within the range of 35-38,000 ounces. Headline C1 cash operating costs are expected to be within the range of US\$1.00-1.05/lb.

C1 costs impacted by copper production at the lower end of the normal operating range. High gold production and an increasing gold price assisted by-product credits, offset in part by a strengthening AUD.

#### 4.0 SALES AND MARKETING

#### 4.1 Copper Concentrate Shipments

A total of 52,487 dry metric tonnes of concentrate containing 12,664 tonnes of copper (12,134 tonnes payable) and 8,245 ounces of gold (7,650 ounces payable) was sold for the Quarter. 5 shipments were completed from Port Hedland and Geraldton.

#### 5.0 DEVELOPMENT PROJECTS

#### 5.1 Monty Copper-Gold Project

The development team at the Monty copper-gold mine achieved a significant milestone during the Quarter, taking the first cut into the portal to establish access to the new underground mine.



Figure 1: The Monty decline portal

This was exactly in line with the target date which the team set 15 months ago and marks another important step in the development plan for the Monty.

The first cut into the portal marks the beginning of the underground mine development proper, and it will now take approximately one year before the first underground ore is accessed.

#### 5.2 DeGrussa Oxide Copper Project

Test work conducted during the Quarter focused on the use of glycine in the processing route. Preliminary work adopting an agitated leach flowsheet resulted in slower-than-expected leaching, and as a result the agitated leach circuit required to treat the oxide material would be capitally prohibitive.

Therefore, a move back to a heap leach flowsheet is required. Three samples are currently being column tested using two different binder addition rates to determine the metallurgical response of heap leaching the DeGrussa oxides using glycine.

#### 5.3 Black Butte Copper Project, USA (Sandfire: 61%)

Sandfire holds a 78% interest, via North American-listed company Tintina Resources (TSX.V: TAU), in the premier, high-grade Black Butte Copper Project, located in central Montana in the United States. The project is located close to existing road, power and rail infrastructure, with the ability to access a residential workforce located nearby and competitive sources of materials and power. Located on private ranch land, the Black Butte Project copper resource consists of three flat-lying sedimentary hosted copper deposits which have been extensively drilled by Tintina (over 53,000m of diamond drilling).

An Updated Technical Report and Preliminary Economic Assessment (PEA) completed by Tintina in July 2013 was based on reported NI 43-101 Measured and Indicated Resources totalling 15.7Mt grading 3.4% Cu, 0.1% Co and 14g/t Ag for 533,600t of contained copper and Inferred Resources totalling 2.3Mt grading 2.8% Cu, 0.09% Co and 14g/t Ag for 63,500t of contained copper (calculated using a 1.6% copper cut-off grade) for the Johnny Lee Upper Zone and Lowry deposits, and a 1.5% Cu cut-off for the Johnny Lee Lower Zone. This makes Black Butte one of the top-10 undeveloped copper projects worldwide by grade.

The PEA confirmed that the deposit has the potential to underpin a robust underground mining operation with forecast life-of-mine production of ~30,000tpa of copper-in-concentrate over a mine life of ~11 years, based on total mill throughput of 11.8 million tonnes at an average head grade of 3.1% Cu.



Figure 2: The community of White Sulphur Springs, near the Black Butte Copper Project (left); exploration drilling at the main Johnny Lee deposit at Black Butte

During the Quarter, Tintina received a draft operating permit for the Black Butte Project, marking another important step in its continued progress towards development.

The draft operating permit, which has been received from the Montana Department of Environmental Quality (MT DEQ) Hard Rock Mining Bureau, formally concludes the "Completeness & Compliance" review and marks the commencement of the Environmental Impact Statement ("EIS"), the final stage of permitting.

Tintina received formal notification from the MT DEQ that the project is now considered to be "Complete and Compliant" in accordance with all State rules and regulations relating to the operating plan, which has been developed to a very high level of detail for the proposed underground mine and surface processing facilities.

The MT DEQ is now finalising the selection of an independent third-party contractor to prepare a comprehensive EIS, which will include all procedural and substantive elements of the Montana Environmental Policy Act. The EIS is expected to take approximately one year to complete.

Once completed, the EIS will result in a Final Record of Decision (ROD), allowing construction and development of the underground mine to commence on private ranch land in Meagher County.

In addition to the draft operating permit, the Montana Public Service Commission has approved an agreement between Fergus Electric Cooperative and NorthWestern Energy to provide power to the Black Butte Copper project.

Fergus Electric will construct a new 100-kV transmission line and sub-station, which will draw from an existing NorthWestern transmission facility. Under the terms of the agreement, Tintina will be responsible for the total cost of construction of the new power transmission line.

## 6.0 EXPLORATION

#### 6.1 Overview

Sandfire continues to progress a tightly focused, multi-disciplinary exploration campaign to test for extensions to the known cluster of VMS deposits at DeGrussa and Monty, and to unlock the broader potential of the Doolgunna region for additional VMS and structurally-hosted copper deposits. Key components of the Company's exploration activity at Doolgunna during the September Quarter included:

- RC drilling along-strike from the Monty deposit to confirm the current interpretation of the Monty host horizon and infill the DHEM pattern in the area.
- RC drilling within the Vulcan and Vulcan West Prospect areas to test areas of geochemical anomalism identified in AC drilling.
- Continuation of the major AC drilling program at the Enterprise Metals farm-in project to aid geological interpretation and provide quality geochemical coverage of the interpreted Karalundi Formation, which hosts the DeGrussa and Monty copper-gold deposits.
- Infill AC drilling at the Homestead prospect over lithogeochemical anomalies identified in first pass drilling.

The aggregate exploration metres drilled on Sandfire's wholly-owned and JV tenements during the September 2017 Quarter are summarised below:

Project	AC/RAB Drilling (m)	RC Drilling (m)	UG Diamond Drilling (m)	Surface Diamond Drilling (m)	Total Drilling (m)
Doolgunna (SFR 100%)	3,434	394	-	-	3,828
Ned's Creek (SFR 100%)	-	-	-	-	-
Springfield JV (SFR 70%)	-	1,804	-	-	1,804
Enterprise JV (Earn-in)	60,794	2,743	-	-	63,537
TOTAL Q1FY2018	64,228	4,941	-	-	69,169

# 6.2 Greater Doolgunna

The Greater Doolgunna Project, which includes the Talisman Joint Venture, the Ned's Creek Project, the Enterprise Metals Farm-in and the Great Western Exploration Farm-in, provides an aggregate contiguous exploration area of 5,846km<sup>2</sup>. This includes over 90km of strike extent in host VMS lithologies. Much of this stratigraphy is obscured beneath transported cover and requires systematic aircore (AC) drilling to test the bedrock geochemistry and identify prospective areas.

#### 6.2.1 Springfield Joint Venture – 70% Sandfire

The Springfield JV Project comprise the Springfield, Halloween and Halloween West Projects, which abut Sandfire's DeGrussa-Doolgunna tenements. The projects are being explored under a Joint Venture agreement with Talisman Mining Limited (ASX: TLM) under which Sandfire has earned 70%. All exploration expenditure at the Talisman Projects is now being jointly funded by Sandfire and Talisman on a 70:30 basis.

Exploration programs planned or currently in progress in the Springfield Joint Venture area include:

- Deep diamond drilling along-strike from the Monty deposit targeting potential mineralisation within the interpreted host sediment sequence;
- RC drilling targeting narrow prospective sediment horizons in the Southern Volcanics Prospect area;
- Ongoing down-hole Electromagnetic (DHEM) surveying of deep RC and DDH holes; and
- Infill AC drilling within the Homer Prospect area.

The discovery of the high-grade Monty deposit bolsters the eastern Bryah Basin as a highly prospective exploration district with excellent potential for additional VMS discoveries.

#### **Regional RC and AC Geochemistry Programme**

Regional RC drilling continued at the Springfield Project throughout the reporting period. A total of five RC drill holes were completed for an aggregate advance of 1,804m, targeting the Monty, Monty South, Monty North East and Southern Volcanics.

Drilling completed at Monty NE, Monty South and within the Southern Volcanics trend targeted bottom-of-hole (BOH) litho-geochemical anomalies identified in previous air-core drilling. The three holes completed at these targets (TLRC0070, TLRC0071 and TLRC0073) did not return any significant Cu mineralisation.

The two RC drill holes completed at Monty West (TLRC0069 and TLRC0072) were designed to confirm the position of the Monty host stratigraphy to the west of the Mataro Fault which is interpreted to truncate the Monty mineralisation. The host horizon was successfully intersected in both holes, confirming the interpreted position of host stratigraphy to the north of previous interpretations.

With the addition of this new geological information, Sandfire completed a reinterpretation of this area including a review of the orientation of the Mataro Fault structure. This work included detailed re-logging of RC and diamond drill core in the area, including TLDD0114 which was drilled to provide a deep downhole electromagnetic (DHEM) survey platform below the existing Monty Cu-Au mineralisation.

The review resulted in a significant steepening of the interpreted dip of the Mataro Fault. As a consequence, the deep diamond drill hole TLDD0114 is now interpreted to intersect the host stratigraphy to the west of the Mataro Fault structure. The DHEM survey of TLDD0114 is now interpreted to have provided geophysical coverage off-hole of TLDD0114 and immediately to the west of the Mataro Fault.

There were no geochemical or geophysical indicators observed in the existing RC or deep diamond drilling completed to date.

#### **IP Survey**

In addition to the recent drilling activities, other exploration was focused on the completion of a detailed review of the ground-based IP orientation survey over the Monty deposit and Monty NE aircore anomaly.

The survey consisted of an orientation survey, comprising two lines across Monty NE for 1.8km of data, and four lines across the Monty deposit for 7.8km of data.

The trial IP survey over the Monty deposit confirmed that mineralisation at Monty is sufficiently polarisable to produce a measurable signal from surface. However, from a targeting perspective, the presence of secondary anomalies significantly reduces confidence in IP as a targeting tool.

The survey of the Monty NE air-core anomaly, returned a clear, although weak anomalous chargeable response with a corroborating low resistivity. The limited amount of data (in the area makes the interpretation of the geometry of the response difficult.

The anomaly is currently interpreted to be associated with an east-west striking fault structure. RC drilling is planned for the December Quarter to test this anomaly.

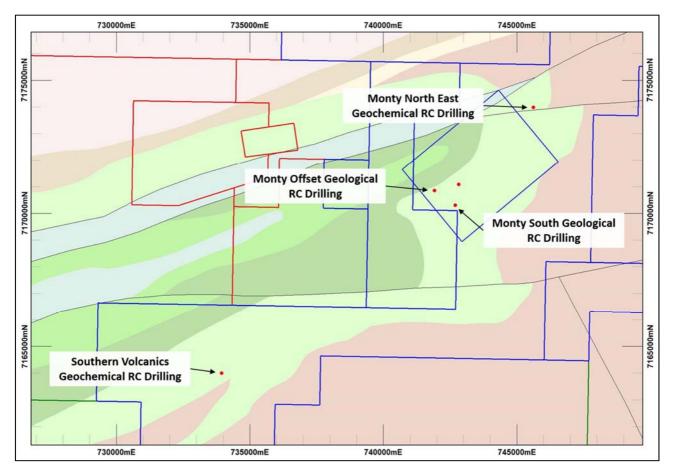


Figure 3: Completed drilling across the SFR-TLM Joint Venture tenements during the Quarter

#### 6.2.2 Doolgunna Project – 100% Sandfire

Regional RC and AC drilling continued at the Doolgunna Project during the September Quarter, focused on the Homestead prospect.

RC drilling targeted a geochemical anomaly within the Karalundi Formation. This drilling intersected foliated and chloritic dolerite and siltstone with minor disseminated sulphides in small intervals. A small to moderate shear zone is interpreted to be the result of the geochemical anomalism and is supported by the first pass and infill AC drilling in the immediate area surrounding DGRC893.

AC drilling was designed to test geology in close proximity to geochemical targets before committing to RC drilling. This drilling encountered mostly dolerite and minor sediments with varying degrees of foliation and shearing throughout much of the small infill AC programme. The anomalism that these drill holes were targeting is interpreted to be structurally controlled and not indicative of VHMS mineralisation.

Three infill AC drill holes intersected carbonaceous sediments, coincident with litho-geochemical anomalism. Follow-up RC drilling has been planned to test these sediments horizons to determine if they are similar to the sediments intersected at the recent Homestead FLEM/MLEM/DHEM geophysical target.

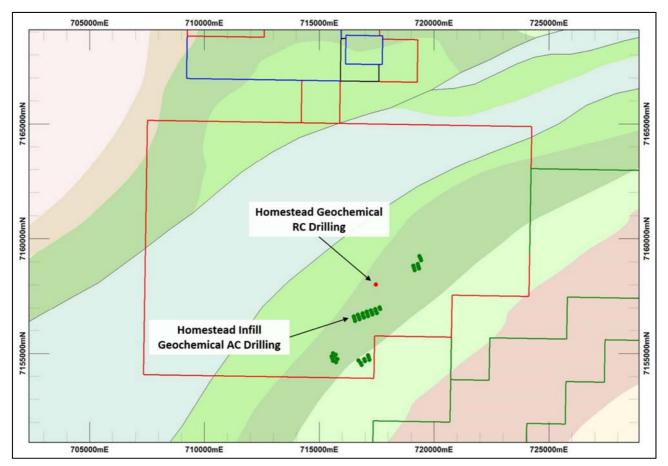


Figure 4: Completed drilling across the SFR Doolgunna tenements during the Quarter.

## 6.2.3 Enterprise Project

Sandfire entered into a Farm-in Agreement with Enterprise Metals Limited (ASX: ENT) in October 2016 to earn up to a 75% interest in Enterprise's Doolgunna Project, which adjoins Sandfire's Doolgunna tenements to the south. The Enterprise tenements cover over 60km of strike of the southern boundary of the Bryah Basin and the northern part of the Yerrida Basin. The southern Bryah Basin contains the Narracoota/Karalundi Formations which host the DeGrussa and Monty copper-gold deposits. The Company considers that the Enterprise tenements offer the potential for new copper-gold discoveries.

Regional RC and AC drilling continued at the Enterprise Project throughout the September Quarter.

At the Vulcan prospect, RC drilling targeted the prospective horizon along the base of the Karalundi Formation, as well as testing a VTEM and a geochemical anomaly.

Ongoing drilling has further highlighted the complexity and prospectivity of the area. The Karalundi Formation within these prospects likely contains multiple horizons with VMS potential at differing stratigraphic levels.

Aircore drilling was also undertaken at the White Well and Ruby Well prospects.

At White Well, AC drilling comprised 308 drill holes for a total advance of 24,249m, with a further 204 drill holes completed at Ruby Well for a total advance of 15,075m.

Geological interpretation of both of these prospects has commenced.

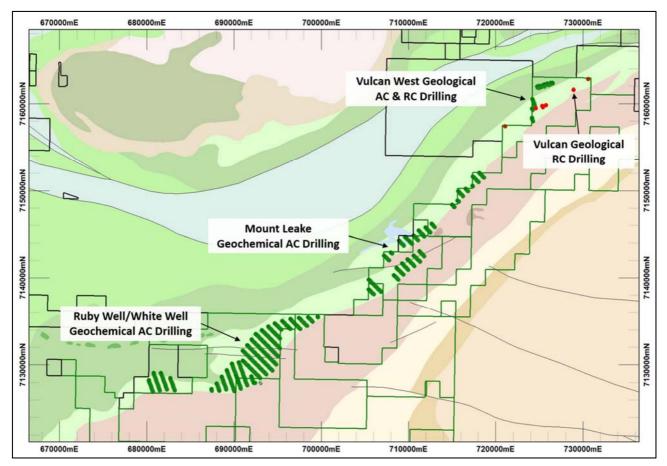


Figure 5: Drilling at the Enterprise Project during the Quarter.

# 6.2.4 Ned's Creek Project (including Thaduna)

The Ned's Creek Project comprises over 900km<sup>2</sup> of prospective geology and surrounds the historical Thaduna Project, which is located 40km east of DeGrussa and represents the largest copper resource in the Doolgunna-Bryah Basin Region outside of Sandfire's DeGrussa-Doolgunna Project.

No work was undertaken at Ned's Creek during the September Quarter, and no restart is anticipated until later in the year.

## 7.0 AUSTRALIAN EXPLORATION

Sandfire has a number of exploration interests and joint ventures around Australia exploring for base and precious metals. The exploration programs are focused on prospective terranes with the potential for discovery of a significant new deposit that can be developed.



Figure 6: Sandfire's Eastern Australian Projects.

#### 7.1 New South Wales Projects

A number of 100%-owned project areas are held in the Lachlan Fold Belt of New South Wales which are prospective for porphyry copper-gold mineralisation as found at Northparkes (China Moly), Cadia (Newcrest) and Cowal (Evolution). A farm-in agreement to earn up to 80% is held with Gold Fields Australasia Pty Ltd on the Marsden South Project.

#### 7.1.1 Temora Exploration (100% Sandfire)

The Donnington Prospect is located in Late Ordovician volcanics on the eastern margin of the Rain Hill monzodiorite batholith Alteration associated with the venting of hydrothermal fluids along this batholith margin. The porphyry-style mineralisation is associated with chlorite-sericite-magnetite altered diorites and andesitic volcanics.

Exploration at Temora during the quarter has focused on understanding the extent of the newly-discovered Donnington copper-gold mineralisation.

Results have been received for the drilling completed earlier in the year. Detailed logging and petrological analysis has confirmed a central core zone with potassic alteration associated with intrusive dykes within a broad phyllic altered system. The system is potentially offset by structures and is open in all directions.

A follow up drilling program targeting the higher copper and gold grade core zones is planned for next quarter.

Table 1: Intercepts from the Donnington Prospect and nearby Punch prosp	pect.

Prospect	Hole Number	Easting (m)	Northing (m)	total depth (m)	azimuth	dip	Depth From (m)	Interval (m)	Cu (%)	Au (g/t)
Donnington	TMMRD006	534602	6218740	460	90	-60		125	0.32	0.46
	including						314	44	0.41	0.62
	and						364	28	0.39	0.61
	TMMRD010	534598	6218842	451	90	-60	325	2	0.24	0.18
	TMMRD011	534633	6218638	472	90	-60		77	0.44	0.65
	including						426	24	0.87	1.38
	TMMRD012	534662	6218104	436	90	-61		11	0.2	0.21
	TMMRD014	534676	6218582	772	91	-75		26	0.19	0.22
							468	34	0.24	0.28
							517	17	0.19	0.25
							540	40	0.26	0.36
							587	34	0.25	0.33
							628	36	0.25	0.24
	including						641	5	0.51	0.38
							748	8	0.15	0.26
	TMMRD015	534495	6218740	595	91	-61		25	0.31	0.48
	including						398	16	0.36	0.59
							420	12	0.36	0.62
							491	22	0.24	0.39
	including						499	9	0.3	0.52
	TMMRD016	534730	6218657	508	102	-60	245	21	0.24	0.21
							301	48	0.21	0.2
							354	15	0.3	0.22
							387	10	0.24	0.27
Punch	MHACD208	534533	6219084	250	90	-60	64	15	0.11	0.32
	TMMRD013	534398	6219141	385	90	-60	196	10	0.17	0.23

Reported Mineralisation at >0.3 % CuEq (Cu x 0.55 Au), including at >0.5 % CuEq with up to 3m internal dilution. Intercepts <10 m excluded Hole collars at 236mRL in MGA94 zone 55.

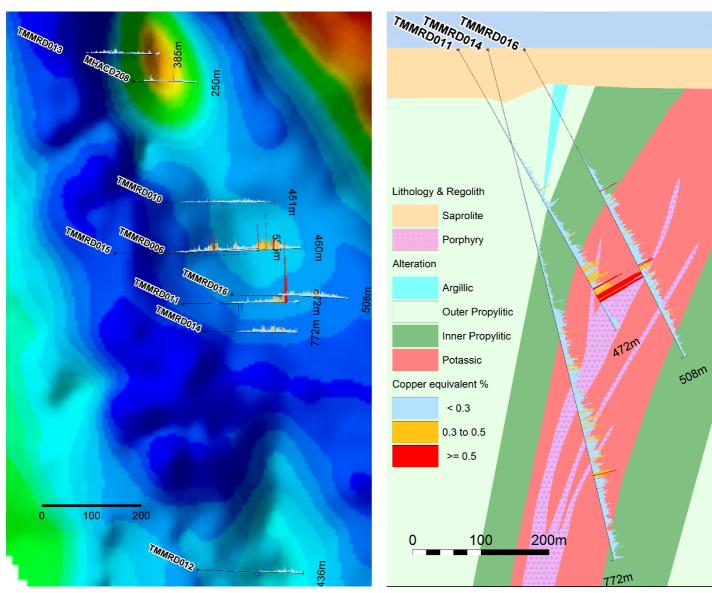


Figure 7: Location of diamond drilling completed at the Donnington and Punch prospects on regional aeromagnetics.

Figure 8: Section 6218640N with interpreted geology and alteration.

# 7.2 Borroloola Project

The Borroloola Project is located north of the McArthur River Mine (Xstrata), and is prospective for base metals and sedimentary manganese. Sandfire has signed two farm-out agreements to advance the Borroloola Project. The Batten Trough JV covering the eastern portion of the tenements is under an option and joint venture agreement with MMG Exploration Pty Ltd, which can earn up to an 80% interest. The Borroloola West JV covering the western portion is under an agreement with Pacifico Minerals Ltd, which has now earned a 51% interest in the Project and Sandfire is a contributing 49% JV partner.

At the Borroloola West JV, a program of diamond drilling was completed to test for major primary copper and zinc-lead mineralisation at the Mariner and Coppermine Creek prospects. Assay results are expected in the December Quarter.

A significant drilling program has continued at the Batten Trough JV by the operators MMG Exploration. Drilling has focussed on the Rosie Creek zinc prospect with testing of the prospective Barney Creek sub-basin at depth.

#### 7.3 Queensland Projects

A number of projects are held in the eastern succession of the Mount Isa region south and east of Cloncurry in northwest Queensland which are prospective for Broken Hill type (BHT) lead-zinc-silver deposits such as the Cannington deposit (South 32) and the Ernest Henry iron oxide-copper-gold (IOCG) deposits (Xstrata). A Joint Venture is held over the Altia project with Minotaur Exploration Ltd (ASX: MEP) with the right to earn 80%.

A drilling program is underway at the lonised Prospect, south of the Eloise mine site. A combined RC and diamond program has tested a number of isolated magnetic targets under shallow cover. Strong alteration associated with a Banded Iron Formation (BIF) is typical of BHT style systems with minor sphalerite intersected in a number of holes. A later pyrite-pyrrhotite and minor chalcopyrite mineralisation overprints the system. Downhole EM and a trial EM survey is underway to target further drilling.

Exploration during the quarter will continue to test targets at Strathfield, Cannington West and Ionised prospects under shallow cover. A ground EM survey will be carried out at Wilgunya testing the conductor previously identified in drilling.

#### 8.0 CORPORATE

#### 8.1 Increased stake in Tintina Resources Inc (TSX-V: TAU; "Tintina")

Sandfire increased its ownership of the high-grade Black Butte Copper Project in central Montana, USA during the Quarter through the acquisition of a 16.9% stake in North American-listed Tintina Resources Inc held by fellow shareholder Electrum Global Holdings L.P. The acquisition takes Sandfire's holding in Tintina from 61.2% to 78.1%.

The acquisition of this strategic stake from Tintina's second-largest shareholder further consolidates Sandfire's ownership position of one of the world's premier high-grade undeveloped copper projects.

The Black Butte Copper Project is a key part of Sandfire's longer term strategic growth pipeline, with the latest acquisition continuing its strong corporate, financial and strategic support of Tintina since its original acquisition of a 36% stake by way of a share placement in 2014.

The purchase price for Electrum's holding, comprising 54,632,580, shares, is C\$0.13 per share for a total purchase price of C\$7.1 million (A\$7.1 million), representing a 15% premium to the 5-day volume weighted average price (VWAP) of Tintina shares on the TSX-V. This acquisition takes Sandfire's total investment in Tintina to A\$31 million.

Sandfire has also confirmed it will subscribe for its full 78% entitlement in the recently announced 5-for-9 rights issue being undertaken by Tintina at C\$0.06 per share. The rights issue, if fully subscribed, will raise gross proceeds of C\$10.8 million (A\$11.0 million).

The proceeds of the rights issue will be used to advance permitting and pre-development activities at the Black Butte Copper Project.

#### 8.2 Management Update

During the Quarter, Sandfire advised that Martin Reed, who has held the position of interim Chief Operating Officer since August last year, will be stepping down from the role but has agreed to continue to provide ongoing input and assistance to the Company on a consulting basis.

Experienced mining executive Richard Beazley has been appointed as acting Chief Operating Officer.

Mr Beazley has extensive and wide-ranging operational and management experience across the Australian mining industry. He operates his own mining consultancy company and has held a wide range of senior executive positions previously including as Managing Director of Peak Resources, General Manager Technical Services and Corporate Development and GM Operations with Consolidated Minerals and General Manager with St Barbara and Aditya Birla Minerals.

Sandfire would like to express its gratitude to Mr Reed for his significant contribution to the Company and looks forward to his continued involvement on a consulting basis.

#### 8.3 **Cash position**

Company cash on hand as at 30 September 2017 totalled \$108 million. Group cash on hand as at 30 September 2017 totalled \$117 million.

#### 8.4 Investor Call and Webcast

A teleconference on the Quarterly results will be held for the investment community on 19 October 2017 commencing at 10.00am (AWST) / 1.00pm (AEDT). Investors, brokers, analysts and media can join the teleconference by dialling the following numbers:



Within Australia (Toll Free):	1 800 558 698
Alternate Australia Toll Free:	1 800 809 971
International:	+61-2 9007 3187
Conference ID:	480090

The Quarterly Report and an accompanying slide presentation will be available via the ASX Company Announcements Platform (Code: SFR) as well as at Sandfire's website at www.sandfire.com.au.

A live webcast of the teleconference and synchronised slide presentation will also be available via the BRR Media service website at http://webcasting.boardroom.media/broadcast/59d2d99c43412343aeab2af4.

A recording of the webcast will be available at the same link shortly following the conclusion of the conference call. ENDS

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#### **Competent Person's Statement – Exploration Results Doologunna**

The information in this report that relates to Exploration Results at Doolgunna is based on information compiled by Mr Shannan Bamforth who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Bamforth is a permanent employee of Sandfire Resources and has sufficient experience that is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Bamforth consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Competent Person's Statement – Exploration Results Temora**

The information in this report that relates to Exploration Results at Temora is based on information compiled by Mr Bruce Hooper who is a Registered Professional Geoscientist (RPGeo) of The Australian Institute of Geoscientists. Mr Hooper is a permanent employee of Sandfire Resources and has sufficient experience that is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Hooper consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Competent Person's Statement – Mineral Resources**

The information in this report that relates to Mineral Resources is based on information compiled by Mr Ekow Taylor who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Taylor is a permanent employee of Sandfire Resources NL and 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 Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Taylor consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Competent Person's Statement – Ore Reserves**

The information in this report that relates to Ore Reserves is based on information compiled by Mr Neil Hastings who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Hastings is a permanent employee of Sandfire Resources NL and 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 gualify as Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Hastings consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Exploration and Resource Targets**

Any discussion in relation to the potential quantity and grade of Exploration Targets is only conceptual in nature. While Sandfire is confident that it will report additional JORC compliant resources for the DeGrussa Project, there has been insufficient exploration to define mineral resources in addition to the current JORC compliant Mineral Resource inventory and it is uncertain if further exploration will result in the determination of additional JORC compliant Mineral Resources.

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

Certain statements made during or in connection with this statement contain or comprise certain forward-looking statements regarding Sandfire's Mineral Resources and Reserves, exploration operations, project development operations, production rates, life of mine, projected cash flow, capital expenditure, operating costs and other economic performance and financial condition as well as general market outlook. Although Sandfire believes that the expectations reflected in such forward-looking statements are reasonable, such expectations are only predictions and are subject to inherent risks and uncertainties which could cause actual values, results, performance or achievements to differ materially from those expressed, implied or projected in any forward looking statements and no assurance can be given that such expectations will prove to have been correct. Accordingly, results could differ materially from those set out in the forward-looking statements as a result of, among other factors, changes in economic and market conditions, delays or changes in project development, success of business and operating initiatives, changes in the regulatory environment and other government actions, fluctuations in metals prices and exchange rates and business and operational risk management. Except for statutory liability which cannot be excluded, each of Sandfire, its officers, employees and advisors expressly disclaim any responsibility for the accuracy or completeness of the material contained in this statement and excludes all liability whatsoever (including in negligence) for any loss or damage which may be suffered by any person as a consequence of any information in this statement or any error or omission. Sandfire undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events other than required by the Corporations Act and ASX Listing Rules. Accordingly you should not place undue reliance on any forward looking statement.

#### **JORC Compliance Statement**

A summary of the information used in this release is as follows.

The DeGrussa VHMS (volcanic-hosted massive sulphide) copper-gold deposit is located 900 kilometres north of Perth and 150 kilometres north of Meekatharra in the Peak Hill Mineral Field. The system is hosted within a sequence of metasediments and mafic intrusions situated in the Bryah Basin that have been metamorphosed and structurally disrupted.

The sulphide mineralisation consists of massive sulphide and semi-massive sulphide mineralisation. Primary sulphide minerals present are pyrite, chalcopyrite, pyrrhotite and sphalerite, together with magnetite. The sulphide mineralisation is interpreted to be derived from volcanic activity. The deposit shares characteristics with numerous VHMS deposits worldwide.

DeGrussa is located wholly within Mining Lease 52/1046. This tenement is subject to the Yugunga-Nya (WC99/046) and Gingirana Claims (WC06/002). A Land Access Agreement was executed with both claimant groups in November 2010. Sandfire is required to make royalty payments to the State and affected Native Title Claimants on a periodical basis.

Drilling of the DeGrussa massive sulphide lens (of which there are four defined lenses of mineralisation) and surrounding area is by diamond drill holes of NQ2 diameter core and, to a lesser extent, by Reverse Circulation (RC) face sampling hammer drilling. The nominal drill-hole spacing is less than 80m x 40m in the inferred areas of the Mineral Resource and increases in density as the classification increases to Measured where nominal 13m x 20m drill hole spacing is achieved. Drilling has been by conventional diamond drilling with a small number holes aided by the use of navigational drilling tools. RC drilling was completed with a nominal 140mm face sampling hammer and split on a cone or riffle splitter. Drill-hole collar locations were surveyed using RTK GPS, and all holes were down-hole surveyed using high speed gyroscopic survey tools.

Sampling of diamond core was based on geological intervals (standard length 0.5 m to 1.3 m). The core was cut into half or quarter (NQ2) to give sample weights up to 3 kg. RC samples were 1.0m samples down-hole, with sample weights between 3.5kg and 7kg depending on material type. Field quality control procedures involved assay standards, along with blanks and duplicates. These QC samples were inserted at an average rate of 1:15.

The sample preparation of diamond core involved oven drying, coarse crushing of the core sample down to ~10 mm followed by pulverisation of the entire sample to a grind size of 90% passing 75 micron. A pulp sub-sample was collected for analysis by either four acid digest with an ICP/OES, ICP/MS (multi element) finish or formed into fused beads for XRF determination on base metals and a fire assay for Au.

All reported assays have been length weighted. No top-cuts have been applied. A nominal 0.3% Cu lower cut-off is applied. High grade intervals internal to broader zones of sulphide mineralisation are reported as included intervals.

The attitude of the ore bodies at DeGrussa is variable but there is a dominant southerly dip from ~40 to 90 degrees flat-lying and is drilled to grid west with drill holes inclined between -60 and -90 degrees. As such the dominant hole direction is north and with varying intersection angles all results are clearly defined as either down hole or approximate true width.

Density of the massive sulphide orebody ranges from 2.8g/cm3 to 4.9g/cm3, with an average density reading of 3.7g/cm3. Geotechnical and structural readings recorded from diamond drilling include recovery, RQD, structure type, dip, dip direction, alpha and beta angles, and descriptive information. All data is stored in the tables Oriented Structure, Geotechnical RQD, Core Recovery, Interval Structure as appropriate.

A suite of multi-element assays are completed on each mineralised sample and include all economic and typical deleterious elements in copper concentrates. This suite includes Cu, Au, Ag, Zn, Pb, S, Fe, Sb, Bi, Cd and As.

Regional drilling has been completed using a combination of RC and AC drilling. A majority of the drilling is preliminary in nature and starts with 800m x 100m AC drilling where the geology and geochemistry is revaluated to determine the requirement for follow 400m x 100m drilling. If significant anomalism is identified in the AC drilling then follow up RC drilling will be conducted to determine the opportunity for delineating potentially economic mineralisation. Whist the main aim of the exploration at Doolgunna is to identify additional VHMS mineralisation in some areas of regional land holding it is currently the interpreted that there is shear zones located on the contact between dolerite and sediments hosting auriferous quartz vein stockworks with some coincident copper.

AC and RC regional samples are prepared at Ultra Trace in Perth with the original samples being dried at 80° for up to 24 hours and weighed, and Boyd crushed to -4mm. Samples are then split to less than 2kg through linear splitter and excess retained. Sample splits are weighed at a frequency of 1/20 and entered into the job results file. Pulverising is completed using LM5 mill to 90% passing 75%µm. Assaying is completed using a Mixed 4 Acid Digest (MAD) 0.3g charge and MAD Hotbox 0.15g charge methods with ICPOES or ICPMS. The samples are digested and refluxed with a mixture of acids including Hydrofluoric, Nitric, Hydrochloric and Perchloric acids and conducted for multi elements including Cu, Pb, Zn, Ag, As, Fe, S, Sb, Bi, Mo. The MAD Hotbox method is an extended digest method that approaches a total digest for many elements however some refractory minerals are not completely attacked. The elements are then determined by ICPOES or ICPMS finish. Samples are analysed for Au, Pd and Pt by firing a 40g of sample with ICP AES/MS finish.

# JORC 2012 TABLE 1 – EXPLORATION RESULTS TEMORA

# Section 1: Sampling Techniques and Data

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> </ul>	<ul> <li>Sampling method is half-core sampling of NQ3 or HQ3 core diamond drilling (DD).</li> <li>For RC drilling, samples are rifle split on a 1 metre basis to retain an approximate 3-4kg sample.</li> </ul>
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Sampling is guided by Sandfire protocols as per industry standard.
	<ul> <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>Sample size reduction is through a Jaques jaw crusher to -10mm and all samples Boyd crushed to -4mm and pulverised via LM5 to nominal 90% passing -75µm using wet sieving technique.</li> <li>Samples are assayed using Mixed 4 Acid Digest (MAD) 0.3g charge and MAD Hotbox 0.15g charge methods with ICPOES or ICPMS.</li> <li>Fire Assay is completed by firing 40g portion of the sample with ICPMS finish.</li> </ul>
Drilling techniques	• 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.).	<ul> <li>DD is completed using NQ3 and HQ3 size coring equipment. With a Mud rotary (MR), AC, RC or combination precollar to a maximum depth of 200m. AC drilling is completed to blade refusal, usually ~70m. RC drilling is conducted with a 140mm diameter face sampling hammer.</li> <li>All 2017 drill collars are located using a differential gps receiver.</li> <li>All core where possible is oriented using a gyroscope based orientation tool.</li> <li>Downhole surveying is undertaken using a magnetic single or multi shot survey instrument. Holes numbered TMMRD011 and higher were surveyed with downhole gyro for greater accuracy.</li> </ul>
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	<ul> <li>Diamond core recovery is logged and captured into the database. Core recoveries are measured by drillers for every drill run. The core length recovered is physically measured for each run and recorded and used to calculate the core recovery as a percentage core recovered.</li> </ul>
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	<ul> <li>Appropriate measures are taken to maximise sample recovery and ensure the representative nature of the samples. This includes diamond core being reconstructed into continuous intervals on angle iron racks for orientation, metre marking and reconciled against core block markers.</li> <li>In broken ground core is transferred from the HQ3 splits to PVC pipe then wrapped in plastic fil, to maintain sample integrity.</li> <li>Samples are routinely captured into the central secured database.</li> </ul>
	• 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.	No sample recovery issues have impacted on potential sample bias.
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> </ul>	<ul> <li>Geological logging is completed for all holes and representative across the orebody. The lithology, alteration and structural characteristics of core are logged directly to a digital format following procedures and using Sandfire NL geologic codes. Data is imported into Sandfire NL's central database after validation in LogChief<sup>™</sup>.</li> </ul>

Criteria	JORC Code Explanation	Commentary
	• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	<ul> <li>Logging is both qualitative and quantitative depending on field being logged.</li> <li>All cores are photographed.</li> </ul>
	The total length and percentage of the relevant intersections logged.	All drillholes are fully logged.
Sub-sampling techniques and	• If core, whether cut or sawn and whether quarter, half or all core taken.	• Core orientations are completed where possible and all are marked prior to sampling. Half core samples are produced using an automated core saw. Samples.
sample preparation	• If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	All samples are half-core.
	• For all sample types, the nature, quality and appropriateness of the sample preparation technique.	<ul> <li>All samples are sorted, and weighed. Samples are then crushed to a nominal -4 - 8 mm. Pulverising is completed using LM5 mill to 85% passing 75%µm using wet sieving technique.</li> </ul>
	• Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	<ul> <li>1:20 grind quality checks are completed for 90% passing 75%µm criteria to ensure representativeness of sub-samples.</li> </ul>
	<ul> <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> </ul>	<ul> <li>Sampling is carried out in accordance with Sandfire protocols as per industry best practice.</li> <li>Quarter core field duplicates are taken every 20 samples.</li> </ul>
	Whether sample sizes are appropriate to the grain size of the material being sampled	• The sample sizes are considered appropriate for the Porphyry Copper and Gold as well as epithermal mineralisation types.
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	<ul> <li>Samples are assayed using Mixed 4 Acid Digest (MAD) 0.25g charge methods with ICPOES or ICPMS. The samples are digested and refluxed with a mixture of acids including Hydrofluoric, Nitric, Hydrochloric and Perchloric acids and conducted for multi elements including Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, TI, U, V, W, Y, Zn and Zr.</li> </ul>
		<ul> <li>Samples are analysed for Au by firing a 30g sample with an ICP AES/MS finish. This is a classical FA process and results in total separation of Auin the samples.</li> <li>The analytical methods are considered appropriate for this mineralisation styles.</li> </ul>
	<ul> <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> <li>No geophysical tools are used in the analysis.</li> </ul>
	• 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.	• Sandfire's QAQC protocol is considered industry standard with standard reference material (SRM) submitted on regular basis with routine samples. SRMs and blanks are inserted at a minimum of 5% frequency rate.
Verification of sampling and	The verification of significant intersections by either independent or alternative company personnel.	Significant intersections have been verified by alternative company personnel.
assaying	The use of twinned holes.	None of the drillholes in this report is twinned.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	• Primary data are captured on field tough book laptops using Logchief <sup>™</sup> Software. The software has validation routines and data is then imported into a secure central database.
	Discuss any adjustment to assay data.	• The primary data is always kept and is never replaced by adjusted or interpreted data.

Criteria	JORC Code Explanation	Commentary
Location of data points	• 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.	<ul> <li>All drill collars are located using a DGPS system with sub 1m accuracy.</li> <li>Downhole survey are completed by downhole magnetic single shot or multishot methods at regular intervals.</li> <li>All diamond holes labelled TMMRCD011 and above have been downhole surveyed with a MEMS gyroscopic system by the drill contractor on 10m spacings for improved accuracy.</li> </ul>
	Specification of the grid system used.	Coordinate and azimuth are reported in MGA 94 Zone 55.
	Quality and adequacy of topographic control.	Topographic control was established from dgps readings.
Data spacing and distribution	Data spacing for reporting of Exploration Results.	• Drillholes are spaced at a maximum density 80m x 80m to intersect this mineralisation.
	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.	No resource classification is applied to these results given the early stage of exploration.
	Whether sample compositing has been applied.	No sample compositing have been applied to the Exploration Results.
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	• Drillholes were designed to intersect the geological features at a high angle. The drillholes may not necessarily be perpendicular to the orientation on the intersected mineralisation.
	<ul> <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>No significant orientation based sampling bias is known at this time. The drillholes may not necessarily be perpendicular to the orientation of the intersected mineralisation. All reported intervals are downhole intervals not true widths.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>Appropriate security measures are taken to dispatch samples to the laboratory. Chain of custody of samples is being managed by Sandfire Resources NL. Samples are stored onsite and transported to laboratory by Sandfire employees or a licence transport company in sealed bulka bags. The laboratory receipts received samples against the sample dispatch documents and issues a reconciliation report for every sample batch.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No external audits or reviews of the sampling techniques and data have been completed.

#### Section 2: Reporting of Exploration Results

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> </ul>	The Temora project encompasses El5864, EL6845, EL8397, EL8292 and EL8025 which are wholly owned by Sandfire Resources Limited, with no known third party encumbrances.
	• 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.	All tenements are current and in good standing.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Aside from Sandfire Resources Limited there has been no recent exploration undertaken on the Temora Project.</li> <li>Exploration work completed prior to Sandfire's tenure included AC, RC and Diamond drilling throughout the project. Significant geophysical surveys including IP, Magnetic, EM and gravity Surveys have been completed throughout the history of the tenure by multiple parties. Only AC drilling has previously been completed at the Donnington Prospect.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>The Temora Project lies within the Ordocivian Macquarie Island Arc, which is historically highly prospective for Porphyry copper gold deposits and epithermal gold.</li> <li>The principal exploration targets at the Temora project is a porphyry copper gold system within the Macquarie Arc in NSW.</li> </ul>
Drill hole information	A summary of all information material to the understanding of the exploration results including a tabulation of the following for all Material drill holes: easting and northing of the drill hole collar; elevation or RL (Reduced Level – elevation above sea level in metres); of the drill hole collar; dip and azimuth of the hole; down hole length and interception depth; and hole length. 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.	Refer to Table 1 of this accompanying document.
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>Significant intersections are based on standard intercept of greater than 0.3% Cu equivalent (CuEq) and a high grade intercept of greater than 0.5% CuEq. Intercepts may include up to a maximum of 3.0m of consecutive dilution, with a minimum composite grade of 0.3% Cu.</li> <li>CuEq is based on the formula CuEq = Cu% + 0.55*Au g/t. The underlying values for this are:         <ul> <li>A copper price of A\$3.53/lb and a Cu recovery of 90%</li> <li>A gold price of A\$1,600/Oz and a recovery of 0.75%</li> </ul> </li> <li>The formula is CuEq = Cu% + <u>Au price/31.1035 * Au recovery</u> * Aug/t Cu price * 22.04 * Cu recovery</li> </ul>
	<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> </ul>	<ul> <li>Reported intersections are based on a regular sample intervals of 1m in regular drilling subject to location of geological boundaries.</li> <li>Minimum and maximum sample intervals used for intersection calculation are 0.3m and 1.2m respectively.</li> </ul>
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	<ul> <li>No metal equivalents are used in the intersection calculation.</li> <li>Where core loss occurs; the average length-weighted grade of the two adjacent samples are attributed to the interval for the purpose of calculating the intersection. The maximum interval of missing core which can be incorporated with the reported intersection is 1m.</li> </ul>

Criteria	JORC Code Explanation	Commentary
Relationship between mineralisation widths and intercept	These relationships are particularly important in the reporting of Exploration Results.	• Downhole intercepts of mineralisation reported in this release are from drillholes orientated at a high angle to the predicted mineralisation dip. The drillholes may not necessarily be perpendicular to the mineralised zone. All widths reported are downhole intervals.
lengths	• If the geometry of the mineralisation with respect to the drill-hole angle is known, its nature should be reported.	The geometry of the mineralisation, relative to the drillhole, is unknown at this stage.
	<ul> <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>	All intersections reported in this release are downhole intervals. True widths are not known.
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>	Appropriate maps are included within the body of the accompanying document.
Balanced reporting	<ul> <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>	The accompanying document is considered to represent a balanced report.
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>	Other exploration data collected is not considered as material to this document at this stage. Further data collection will be reviewed and reported when considered material.
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>Further work is planned to define the extent of the discovery. Further step outs will be completed on an 80m grid basis to identify the extent of the mineralisation.</li> </ul>