ASX Announcement **27 April 2018**

DEGRUSSA MINE PLAN, ORE RESERVE AND MINERAL RESOURCE UPDATE

Review and successful conversion of Underground Resources underpins mine life extension through until CY2022

Highlights

- **Updated Mine Plan, incorporating the Monty Mine and OSPA (100% basis):**
  - Total **6.6Mt grading 5.0% Cu and 1.7g/t Au for 332,000t of contained copper** and **354,000oz of contained gold**;
  - DeGrussa's 1.6Mtpa concentrator to be fed from DeGrussa at 1.2-1.3Mtpa from mid-CY2019 to allow ore from Monty to be blended in at a rate of 0.3-0.4Mtpa; and
  - Sandfire will purchase Talisman Mining Limited's ("TLM") 30% share of the Monty JV ore under an Ore Sale and Purchase Agreement (OSPA).
- **Updated Underground Ore Reserve, incorporating the Monty Mine (70% basis):**
  - **6.4Mt grading 4.9% Cu and 1.7g/t Au for 311,000t of contained copper** and **342,000oz of contained gold** (including UG ore on surface stockpiles);
  - Updated DeGrussa Ore Reserve net of underground mining depletion and incorporates a revision of mining modifying factors, an update to the C5 Mineral Resource that now includes the C5 "barrier pillar", and a review and successful conversion of previously unconverted Measured and Indicated Mineral Resources in all deposits.
- **Updated Open Pit Ore Reserve:**
  - 2.7Mt grading 1.3% Cu and 0.5g/t Au for 34,000t of contained copper and 46,000oz of contained gold (copper oxide ore stockpiled at surface).
- **Updated Underground Mineral Resource, incorporating the Monty Mine (70% basis):**
  - 5.7Mt grading 6.1% Cu and 2.1g/t Au for 346,000t of contained copper and 376,000oz of contained gold; and
  - Updated DeGrussa Mineral Resource based on mining depletion, sterilisation and resource definition drilling.

Note: DeGrussa stated as at 31 December 2017; Monty stated as at 31 March 2017

Sandfire Resources NL (ASX**: SFR**, "Sandfire") is pleased to announce an updated Mine Plan, Mineral Resource and Ore Reserve for the 1.6Mtpa DeGrussa Copper-Gold Mine. The update includes the DeGrussa, Conductor 1, Conductor 4 and Conductor 5 deposits at DeGrussa as well as the Monty deposit (70% SFR: 30% TLM under the Springfield JV).

The updated Mine Plan, Mineral Resource and Ore Reserve includes the outcomes of a successful review of previously unconverted Measured and Indicated Mineral Resources located in zones which have been technically and economically assessed, resulting in their conversion to Ore Reserves.

This together with an upgrade to the C5 Mineral Resource has resulted in the addition of approximately 1.3Mt grading 3.5% Cu for 46,000t of contained copper to the DeGrussa Ore Reserve. After taking into account underground mine depletion of ~1.6Mt over the past year, the updated Mine Plan, Mineral Resource and Ore Reserve now underpins a mine life out to early-2022, rather than CY2021 previously.

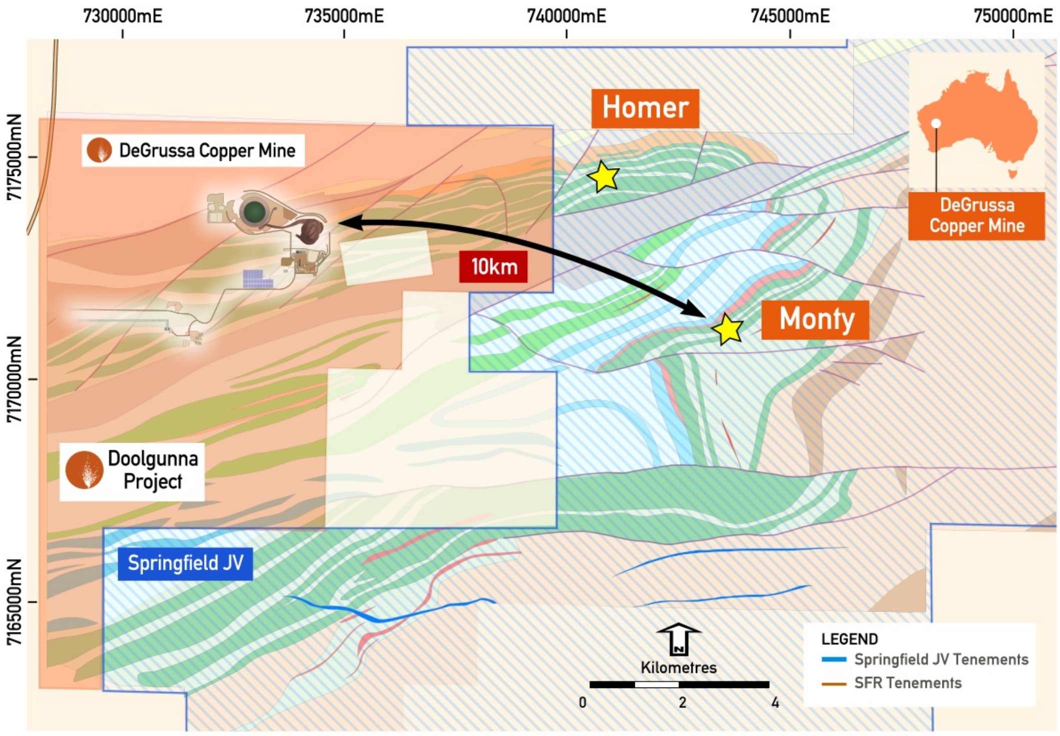

Figure 1 – Monty Copper-Gold Project Location (WA).

Table 1 and Table 2 summarises a combined DeGrussa and Monty Mine Plan, Ore Reserve and Mineral Resource by mining tonnes, key output and orebody (refer Appendix 1 and 2 for full details of the Ore Reserve and Mineral Resource).

Table 1 – DeGrussa and Monty Mine Plan, Ore Reserve and Mineral Resource

DeGrussa and Monty	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)	Monty basis
Mine Plan**	6.6	5.0	1.7	332,000	354,000	100%
Ore Reserve**	9.1	3.8	1.3	346,000	389,000	70%
Mineral Resource*	8.4	4.5	1.6	380,000	423,000	70%

Table 2 – DeGrussa and Monty Mine Plan, Ore Reserve and Mineral Resource by Orebody

DeGrussa and Monty	Tonnes (Mt)	Stockpiles (Mt)	DG (Mt)	C1 (Mt)	C4 (Mt)	C5 (Mt)	Monty (Mt)	Monty basis
Mine Plan**	6.6	<0.1	0.5	2.0	1.8	1.5	0.8	100%
Ore Reserve**	9.1	2.8	0.5	2.0	1.7	1.5	0.6	70%
Mineral Resource*	8.4	2.8	0.4	1.7	1.4	1.4	0.7	70%

Notes:
Calculations have been rounded to the nearest: 1,000t; 0.1% Cu grade; and 1,000t Cu metal and 0.1g/t Au grade; and 1,000oz Au metal. Differences may occur due to rounding.
* Mineral Resource for DeGrussa is based on a 1.0% Cu cut-off and allows for mining depletion and sterilisation as at 31 December 2017. Mineral Resource for Monty is based on a 1.0% Cu cut-off.
** Mine Plan and Ore Reserve include mining dilution and mining recovery

Mine Plan

The Mine Plan is Sandfire's internal plan which schedules forecasted production parameters, operating and capital works programs. It is developed with the assistance of both internal Sandfire employees and external consultants and includes both Mineral Resource and Ore Reserve.

Table 3 below summarises the underground mining and processing plans of the DeGrussa and Monty Mines.

Table 3 – Underground Mine Plan, DeGrussa and Monty (100% basis)

Underground Mine	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
DeGrussa	5.8	4.4	1.7	258,000	315,000
Monty (100% basis)	0.8	9.4	1.5	74,000	38,000
Total	**6.6**	**5.0**	**1.7**	**332,000**	**354,000**

Monty is included in the Mine Plan on a 100% basis. Sandfire holds 70% of Monty under the unincorporated Springfield JV, and has entered into an Ore Sale and Purchase Agreement (OSPA) with Talisman Mining Limited to purchase its 30% of ore mined by the JV – refer Sandfire's ASX announcement "Positive Monty Feasibility Study Paves Way for Development of New High-Grade Copper Mine" released dated 6 April 2017.

The Company continues to incorporate Inferred Mineral Resources from portions of Conductor 1, Conductor 4 and Conductor 5 and Monty into its Mine Plan process due to the geological continuity and high copper grade tenor of these deposits.

Production from the DeGrussa mine is currently sourced from Conductor 1, Conductor 4, Conductor 5 and DeGrussa. The Mine Plan confirms underground mine production continuing at the current rate of 1.6Mtpa until it progressively reduces to allow capacity for ore from Monty to be blended. This strategy will provide alignment of the production profiles of the two mines through to mid-2021. Once the Monty operation is completed, DeGrussa's production rate reduces to approximately 1.0Mtpa until Q1 CY 2022.

Ore Reserve Update

The DeGrussa Ore Reserve has been updated based on the December 2017 Mineral Resource model, depletions, revision to mining modifying factors, review and conversion of previously unconverted underground Mineral Resources, and a review and update of open pit surface stockpiles.

A zone of mineralisation at DeGrussa associated with Conductor 5 adjacent to the Shiraz and Merlot Faults and the water-bearing dolomite unit has been diamond drilled and, as a result of this work is now included in the Mineral Resource, Ore Reserve and Mine Plan.

Previously unconverted Measured and Indicated Mineral Resources as at December 2016 that are generally located at the extremities, in the hangingwall and footwall of the main deposits and are geometrically complex and/or narrow have been technically and economically assessed, resulting in a significant portion being converted to Ore Reserve.

This together with the upgrade to the C5 Mineral Resource are the main contributors to adding approximately 1.3Mt grading 3.5% Cu for 46,000t of contained copper to the DeGrussa Ore Reserve.

Ore Reserves for Monty are as outlined in Sandfire's ASX announcement "Positive Monty Feasibility Study Paves Way for Development of New High-Grade Copper Mine" released dated 6 April 2017, with both summarised and combined in Table 4.

Table 4 – Ore Reserve

DeGrussa Mine Ore Reserve	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Underground Mine (includes stockpiles)	5.8	4.4	1.7	255,000	313,000
Stockpiles (Open Cut)	2.7	1.3	0.5	34,000	46,000
December 2017 – Total	**8.5**	**3.4**	**1.3**	**290,000**	**359,000**

Monty Mine Ore Reserve (70% basis)	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Underground Mine	0.6	8.7	1.4	56,000	29,000
March 2017 – Total	**0.6**	**8.7**	**1.4**	**56,000**	**29,000**

Total Ore Reserve	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Underground Mine (includes stockpiles)	6.4	4.9	1.7	311,000	342,000
Stockpiles (Open Cut)	2.7	1.3	0.5	34,000	46,000
Total	**9.1**	**3.8**	**1.3**	**346,000**	**389,000**

Mineral Resource Update

The DeGrussa Mineral Resource has been updated as at 31 December 2017 based on mining depletions, sterilisation and resource definition drilling. Mineral Resources for Monty are as outlined in Sandfire's ASX announcement "Maiden High-Grade Mineral Resource for Monty VMS Deposit: 99,000t Copper and 55,000oz Gold" released dated 13 April 2016, with both summarised and combined in Table 5:

Table 5 – Mineral Resource

DeGrussa Mineral Resource	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Underground Mine (includes stockpiles)	4.9	5.6	2.1	277,000	338,000
Stockpiles (Open Cut)	2.7	1.3	0.5	34,000	46,000
December 2017 – Total	**7.6**	**4.1**	**1.6**	**311,000**	**384,000**

Monty Mineral Resource (70% basis)	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Underground Mine	0.7	9.4	1.6	69,000	39,000
March 2017 – Total	**0.7**	**9.4**	**1.6**	**69,000**	**39,000**

Total Mineral Resource	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Underground Mine (includes stockpiles)	5.7	6.1	2.1	346,000	376,000
Stockpiles (Open Cut)	2.7	1.3	0.5	34,000	46,000
Total	**8.4**	**4.5**	**1.6**	**380,000**	**423,000**

Management Comment

Sandfire's Managing Director, Mr Karl Simich, said the updated Mine Plan and Ore Reserves reflected the success of diligent work programs completed over the past 6-12 months to re-evaluate key zones of mineralisation within the broader DeGrussa Underground Mineral Resource inventory.

"This work has been undertaken with the aid of improved technical understanding and increased drilling within many of these areas and against the backdrop of continued strength and the strong outlook for the copper market," he said.

"The conversion of a material component of our broader Mineral Resource inventory to Ore Reserves means that our overall mine plan underpins a mine life which now extends into 2022. That is a great result which puts us in a very strong position to continue to take full advantage of the current and anticipated strength in the copper market.

"With our engine room at DeGrussa in great shape, we are continuing to pursue an aggressive exploration campaign across the Greater Doolgunna District, where we have recently expanded our footprint to over 6,600 square kilometres with the Auris Minerals farm-in. A discovery anywhere within this belt will add further value to what we already have at DeGrussa and Monty."

ENDS

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Competent Person's Statement – Mineral Resources DeGrussa

The information in this report that relates to Mineral Resources is based on information compiled by Mr Callum Browne who is a Member of The Australasian Institute of Mining and Metallurgy. Mr. Browne 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 Browne 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 Monty

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 was a permanent employee of Sandfire Resources NL at the time of Mineral Resource compilation 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 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 Hastings consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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.

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.

APPENDIX 1: DeGrussa Mine – Ore Reserve and Mineral Resource as at 31 December 2017

DeGrussa Mine - Underground	Ore Reserve						Mineral Resource*					
Deposit	Reserve category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)	Resource category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
DeGrussa	Proved	0.4	6.0	2.1	26,000	30,000	Measured	0.4	7.2	2.6	28,000	32,000
	Probable	<0.1	4.8	1.1	1,000	1,000	Indicated	<0.1	1.6	1.0	<1000	1,000
							Inferred					
	Total	**0.5**	**5.9**	**2.1**	**27,000**	**31,000**	**Total**	**0.4**	**6.9**	**2.5**	**28,000**	**33,000**
Conductor 1	Proved	1.8	3.9	1.5	69,000	85,000	Measured	1.5	5.4	2.0	81,000	98,000
	Probable	0.3	3.4	1.2	9,000	10,000	Indicated	0.2	1.6	0.4	3,000	3,000
							Inferred	<0.1	4.4	2.0	<1,000	<1,000
	Total	**2.0**	**3.8**	**1.4**	**78,000**	**95,000**	**Total**	**1.7**	**4.9**	**1.8**	**85,000**	**102,000**
Conductor 4	Proved	1.3	4.6	1.6	60,000	66,000	Measured	1.2	6.2	2.1	73,000	78,000
	Probable	0.4	3.8	1.3	16,000	18,000	Indicated	0.1	1.4	0.5	2,000	2,000
							Inferred	0.1	3.6	1.4	4,000	5,000
	Total	**1.7**	**4.4**	**1.5**	**76,000**	**84,000**	**Total**	**1.4**	**5.6**	**1.9**	**79,000**	**85,000**
Conductor 5	Proved	1.2	4.8	2.2	60,000	86,000	Measured	1.2	6.4	2.8	76,000	107,000
	Probable	0.2	4.6	1.8	11,000	14,000	Indicated	0.1	4.0	1.6	5,000	7,000
							Inferred	<0.1	4.4	1.7	1,000	1,000
	Total	**1.5**	**4.8**	**2.1**	**71,000**	**100,000**	**Total**	**1.4**	**6.1**	**2.6**	**82,000**	**115,000**
Stockpiles	Proved	0.1	4.9	1.9	3,000	4,000	Measured	0.1	4.9	1.9	3,000	4,000
Total	**Proved**	**4.8**	**4.5**	**1.8**	**218,000**	**271,000**	**Measured**	**4.3**	**6.0**	**2.3**	**261,000**	**319,000**
	Probable	**1.0**	**3.9**	**1.4**	**37,000**	**42,000**	**Indicated**	**0.5**	**2.2**	**0.8**	**11,000**	**13,000**
							Inferred	**0.1**	**3.8**	**1.5**	**5,000**	**6,000**
	Total	**5.8**	**4.4**	**1.7**	**255,000**	**313,000**	**Total**	**4.9**	**5.6**	**2.1**	**277,000**	**338,000**

DeGrussa Mine – Open Pit	Ore Reserve						Mineral Resource*					
Deposit	Reserve category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)	Resource category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Stockpiles	**Proved**	2.7	1.3	0.5	34,000	46,000	**Measured**	2.7	1.3	0.5	34,000	46,000
	Probable						**Indicated**	-	-	-	-	-
							Inferred	-	-	-	-	-
	Total	**2.7**	**1.3**	**0.5**	**34,000**	**46,000**	**Total**	**2.7**	**1.3**	**0.5**	**34,000**	**46,000**

DeGrussa Mine - Total	Ore Reserve						Mineral Resource*					
Deposit	**Reserve category**	**Tonnes (Mt)**	**Copper (%)**	**Gold (g/t)**	**Contained Copper (t)**	**Contained Gold (oz)**	**Resource category**	**Tonnes (Mt)**	**Copper (%)**	**Gold (g/t)**	**Contained Copper (t)**	**Contained Gold (oz)**
DeGrussa	Proved	0.4	6.0	2.1	26,000	30,000	Measured	0.4	7.2	2.6	28,000	32,000
	Probable	<0.1	4.8	1.1	1,000	1,000	Indicated	<0.1	1.6	1.0	<1000	1,000
							Inferred					
	Total	**0.5**	**5.9**	**2.1**	**27,000**	**31,000**	**Total**	**0.4**	**6.9**	**2.5**	**28,000**	**33,000**
Conductor 1	Proved	1.8	3.9	1.5	69,000	85,000	Measured	1.5	5.4	2.0	81,000	98,000
	Probable	0.3	3.4	1.2	9,000	10,000	Indicated	0.2	1.6	0.4	3,000	3,000
							Inferred	<0.1	4.4	2.0	<1,000	<1,000
	Total	**2.0**	**3.8**	**1.4**	**78,000**	**95,000**	**Total**	**1.7**	**4.9**	**1.8**	**85,000**	**102,000**
Conductor 4	Proved	1.3	4.6	1.6	60,000	66,000	Measured	1.2	6.2	2.1	73,000	78,000
	Probable	0.4	3.8	1.3	16,000	18,000	Indicated	0.1	1.4	0.5	2,000	2,000
							Inferred	0.1	3.6	1.4	4,000	5,000
	Total	**1.7**	**4.4**	**1.5**	**76,000**	**84,000**	**Total**	**1.4**	**5.6**	**1.9**	**79,000**	**85,000**
Conductor 5	Proved	1.2	4.8	2.2	60,000	86,000	Measured	1.2	6.4	2.8	76,000	107,000
	Probable	0.2	4.6	1.8	11,000	14,000	Indicated	0.1	4.0	1.6	5,000	7,000
							Inferred	<0.1	4.4	1.7	1,000	1,000
	Total	**1.5**	**4.8**	**2.1**	**71,000**	**100,000**	**Total**	**1.4**	**6.1**	**2.6**	**82,000**	**115,000**
Stockpiles	Proved	2.8	1.3	0.6	37,000	50,000	Measured	2.8	1.3	0.6	37,000	50,000
							Indicated					
Total	**Proved**	**7.5**	**3.4**	**1.3**	**253,000**	**317,000**	**Measured**	**7.0**	**4.2**	**1.6**	**295,000**	**365,000**
	Probable	**1.0**	**3.9**	**1.4**	**37,000**	**42,000**	**Indicated**	**0.5**	**2.2**	**0.8**	**11,000**	**13,000**
							Inferred	**0.1**	**3.8**	**1.5**	**5,000**	**6,000**
	Total	**8.5**	**3.4**	**1.3**	**290,000**	**359,000**	**Total**	**7.6**	**4.1**	**1.6**	**311,000**	**384,000**

* Mineral Resource is based on a 1.0% Cu cut-off and allows for mining depletion and sterilisation as at 31 December 2017.
Calculations have been rounded to the nearest: 1,000t; 0.1% Cu grade; and 1,000t Cu metal and 0.1g/t Au grade; and 1,000oz Au metal. Differences may occur due to rounding.

Ore Reserve Summary

The DeGrussa Ore Reserve update is based on an updated Mineral Resource as at 31 December 2017, calendar year 2017 mining depletion, a revision of mining modifying factors, technical and economic assessment of Measured and Indicated Mineral Resources that were not converted to Ore Reserves as at 31 December 2016, and a review and update of open pit surface stockpiles.

A zone of mineralisation at DeGrussa associated with Conductor 5 adjacent to the Shiraz and Merlot Faults and the water-bearing dolomite unit has been diamond drilled and is now included in the Mineral Resource, Ore Reserve and Mine Plan.

Previously unconverted Measured and Indicated Mineral Resources as at December 2016 that are generally located at the extremities, in the hangingwall and footwall of the main deposits and are geometrically complex and/or narrow have been technically and economically assessed resulting in a significant portion being converted to Ore Reserve. This along with the C5 Mineral Resource upgrade are the main contributors to adding approximately 1.3Mt, grading 3.5% Cu for 46,000t of contained copper to the DeGrussa Ore Reserve.

Further technical and economic assessment will be completed on the remaining Measured and Indicated Mineral Resources that have not been converted to Ore Reserves as at 31 December 2017. These Mineral Resources are generally located in areas that are still to be mined and are geometrically complex and/or narrow. A summary of these remaining Mineral Resources at various cut-off grades are tabulated below.

DeGrussa Mine – Measured and Indicated Mineral Resource not converted to Ore Reserve

DeGrussa Mine – Underground As at 31 December 2017	Mineral Resource*					
Cu Cut-off Grade	**Resource category**	**Tonnes (Mt)**	**Copper (%)**	**Gold (g/t)**	**Contained Copper (t)**	**Contained Gold (oz)**
1.0% Cu	Measured	0.3	4.7	2.0	16,000	22,000
	Indicated	0.2	1.8	0.7	4,000	5,000
	Total	**0.6**	**3.6**	**1.5**	**20,000**	**27,000**
2.0% Cu	Measured	0.3	5.2	2.1	15,000	20,000
	Indicated	<0.1	3.9	1.6	2,000	2,000
	Total	**0.3**	**5.0**	**2.0**	**17,000**	**22,000**
3.0% Cu	Measured	0.2	5.8	2.2	14,000	17,000
	Indicated	<0.1	5.4	2.1	1,000	1,000
	Total	**0.3**	**5.8**	**2.2**	**15,000**	**18,000**

* Measured and Indicated Mineral Resources not converted to Ore Reserves as at 31 December 2017.
Calculations have been rounded to the nearest: 1,000t; 0.1% Cu grade; and 1,000t Cu metal and 0.1g/t Au grade; and 1,000oz Au metal. Differences may occur due to rounding.

JORC 2012 MINERAL RESOURCE AND ORE RESERVES PARAMETERS - DEGRUSSA COPPER MINE

Section 1: Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
Sampling techniques	*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 downhole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	Sampling boundaries are geologically defined and commonly one metre in length unless a significant geological feature warrants a change from this standard unit.
	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 DeGrussa protocols and Quality Control (QC) procedures as per industry standard.
	Aspects of the determination of mineralisation that are Material to the Public Report.	The determination of mineralisation is based on observed amount of sulphides and lithological differences.
	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.	Diamond drill core sample is first crushed through a Jaques jaw crusher to -10mm, then Boyd crushed to -4mm and pulverised via LM2 to nominal 90% passing -75µm. A 0.4g assay charge is combined and fused into a glass bead with 10.0g flux for XRF analysis. A 40g charge is used for Fire Assay.
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).*	Surface drillholes primarily used NQ2 (50.6mm) core size although a small portion used HQ (63.5mm) core size (standard tubes). All underground drillholes used NQ2 (50.6mm) core size (standard tubes). All surface drill collars are surveyed using RTK GPS with downhole surveying by gyroscopic methods. All underground drill collars are surveyed using Trimble S6 electronic theodolite. Downhole survey is completed by gyroscopic downhole survey. Drill holes are inclined at varying angles for optimal ore zone intersection. All core where possible is oriented using a Reflex ACT II RD orientation tool with stated accuracy of +/-1% in the range 0 to 88°.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery is logged and captured into the database with weighted average core recoveries greater than 98%.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Core is meter marked and orientated to check against the driller's blocks, ensuring that all core loss is taken into account.
	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.

Criteria	JORC Code Explanation	Commentary
Logging Sub-sampling techniques and sample preparation	*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.*	Geological logging is completed for all holes and is representative across the ore body. The lithology, sulphide, alteration, and structural characteristics of core are logged directly to a digital format following standard procedures and using Sandfire DeGrussa geological codes. The reliability and consistency of data is monitored though regular peer review. Data is imported onto the central database after validation in LogChief™.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	Logging is both qualitative and quantitative depending on the field being logged. All cores are photographed.
	The total length and percentage of the relevant intersections logged.	All drill holes are fully logged.
	If core, whether cut or sawn and whether quarter, half or all core taken.	Core orientation is completed where possible and all are marked prior to sampling. Longitudinally cut half core samples are produced using Almonte Core Saw. Samples are weighed and recorded. Some quarter core samples have been used and statistical test work has shown them to be representative.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	No non-core used in Mineral Resource Estimate
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	Sample preparation at the onsite laboratory involves weighing and drying the original sample at 80° for up to 24 hours. All samples are crushed through Jaques crusher to nominal -10mm followed by a second stage crushing through Boyd crusher to nominal -4mm. The sample is split to less than 2kg through a linear splitter and excess retained for metallurgical work. Sample splits are weighed at a frequency of 1:20 and entered into the job results file. Pulverising is completed using LM2 mill to 90% passing 75%µm. Pulp fines test is completed at a minimum of 1:20. A 1.5kg of rock quartz is pulverised at rate of 1:20 samples. Two lots of packets are retained for the onsite laboratory services whilst the pulverised residue is shipped externally to Bureau Veritas laboratory in Perth for further analysis. Sample preparation at the Bureau Veritas laboratory in Perth involves weighing and drying the original sample at 80° for up to 24 hours. Samples are first crushed through a Jaques crusher to nominal -10mm. Second stage crushing is through Boyd crusher to a nominal -4mm. The sample is 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. Pulverising is completed using LM5 mill to 90% passing 75%µm. Grind size checks are completed at a minimum of 1 per batch. 1.5kg of rock quartz is pulverised at every 1:10 sample.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Sandfire DeGrussa has protocols that cover auditing of sample preparation at the laboratories and the collection and assessment of data to ensure accurate steps in producing representative samples for the analytical process. Weekly onsite laboratory audits are completed to ensure the laboratory conforms to standards.
	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.	Duplicate analysis has been completed and identified no issues with sampling representatively. Test work on half-core versus quarter-core has been completed with results confirming that sampling at either core size is representative of the in-situ material.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample size is considered appropriate for the Massive Sulphide mineralisation style.

Criteria	JORC Code Explanation	Commentary
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.*	At the onsite laboratory, a 0.4g assay charge is combined and fused into a glass bead with 10.0g flux for XRF analysis. XRF method is used to analyse for a suite of elements (including Cu, Fe, SiO2, Al, Ca, K, MgO, P, S, Ti, Mn, Co, Ni, Zn, As, and Pb). Samples submitted to Bureau Veritas laboratory in Perth are assayed using Mixed 4 Acid Digest (MAD) 0.3g charge and MAD Hotbox 0.15g charge methods with ICPOES or ICPMS finish. 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, Re, Mn, Co, Cd, Cr, Ni, Se, Te, Ti, Zr, V, Sn, W and Ba. 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 S, Cu, Zn, Co, Fe, Ca, Mg, Mn, Ni, Cr, Ti, K, Na, V are determined by ICPOES, and Ag, Pb, As, Sb, Bi, Cd, Se, Te, Mo, Re, Zr, Ba, Sn, W are determined by ICPMS. Samples are analysed for Au, Pd and Pt using fire assay with a 40g charge and analysed by ICPOES. Lower sample weights are employed where samples have very high S contents. These analytical methods are considered appropriate for the mineralisation style.
	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.	No geophysical tools were used to analyse the drilling products
	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 DeGrussa Quality Control (QC) 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. A minimum of 2% of assays are routinely re-submitted as Check Assays and Check Samples through blind submittals to external and the onsite primary laboratories respectively. Additionally, Umpire Checks are completed on quarterly basis. QC data returned is automatically checked against set pass/fail limits within the SQL database and are either passed or failed on import. On import a first pass automatic QC report is generated and sent to QAQC Geologists for a recommended action. Results of all QC samples for every laboratory batch received are analysed to determine assay accuracy and repeatability. Analysis of pulp residue and coarse reject material shows acceptable repeatability and no significant bias
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Significant intersections have been verified by alternative company personnel.
	The use of twinned holes.	There are no twinned holes drilled for the DeGrussa Mineral Resource.
	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™ 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.*	Sandfire DeGrussa Survey team undertakes survey works under the guidelines of best industry practice. All surface drill collars are accurately surveyed using RTK GPS system within +/-50mm of accuracy (X, Y, Z) with no coordinate transformation applied to the picked up data. There is a GPS base station onsite that has been located by a static GPS survey from two government standard survey marks (SSM) recommended by Landgate. Downhole survey is completed by gyroscopic downhole methods at regular intervals. Underground drilling collar surveys are carried out using Trimble S6 electronic theodolite and wall station survey control. Re-traverse is carried out every 100 vertical meters within main decline. Downhole surveys are completed by gyroscopic downhole methods at regular intervals.
	Specification of the grid system used.	MGA94 Zone 50 grid coordinate system is used.
	Quality and adequacy of topographic control	A 1m ground resolution DTM with an accuracy of 0.1m was collected by Digital Mapping Australia using LiDAR and a vertical medium format digital camera (Hasselblad). The LiDAR DTM and aerial imagery were used to produce a 0.1m resolution orthophoto that has been used for subsequent planning purposes.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	No Exploration Results are included in this release.
	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.	Data spacing of surface drilling is approximately 30m x 40m and underground grade control drilling is approximately 10m x 15m. The distribution are sufficient to establish the degree of geological and grade continuity appropriate for the JORC 2012 classifications applied.
	Whether sample compositing has been applied.	No sample compositing is applied during the sampling process.
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.*	The majority of the drill holes are orientated to achieve intersection angles as close to perpendicular to the mineralisation as practicable.
	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.	No significant sampling bias occurs in the data due to the orientation of drilling with regards to mineralised bodies.
Sample security	*The measures taken to ensure sample security.*	Chain of custody of samples is being managed by Sandfire Resources NL. Appropriate security measures are taken to dispatch samples to the laboratory. Samples are transported to the external laboratory by Toll IPEC or Nexus transport companies in sealed bulka bags. The laboratory receipt received samples against the sample dispatch documents and issues a reconciliation report for every sample batch. Laboratory dumps the excess material (residue) after 30 days unless instructed otherwise. Laboratory returns all pulp samples within 60 days.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	The sampling techniques and data collection processes are of industry standard and have been subjected to multiple internal and external reviews. Cube Consulting Pty completed a review during 13th - 17th October 2016 and found procedures to be consistent with industry standard and appropriate with minor recommendations for enhancement as part of continuous improvement.

Section 2: Reporting of Exploration Results

No Exploration Results are included in this release.

Section 3: Estimation and Reporting of Mineral Resources

Criteria	JORC Code Explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	Sandfire uses SQL as the central data storage system via Datashed™ software front end. User access to the database is regulated by specific user permissions. Only the Database Management team can overwrite data. Existing protocols maximise data functionality and quality whilst minimising the likelihood of error introduction at primary data collection points and subsequent database upload, storage and retrieval points. Data templates with lookup tables and fixed formatting are used for collecting primary data on field Toughbook laptops. The software has validation routines and data is subsequently imported into a secure central database. An IT contracting company is responsible for the daily Server backups of both the source file data on the file server and the SQL Server databases. The selected SQL databases are backed up each day to allow for a full recovery.
	Data validation procedures used.	The SQL server database is configured for optimal validation through constraints, library tables, triggers and stored procedures. Data that fails these rules on import is rejected or quarantined until it is corrected. Database is centrally managed by a Database Manager who is responsible for all aspects of data entry, validation, development, quality control and specialist queries. There is a standard suite of vigorous validation checks for all data.
Site Visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	The Competent Person for this Mineral Resource update is a full time employee of Sandfire Resources NL and undertakes regular site visits.
	If no site visits have been undertaken indicate why this is the case.	Sites visits are undertaken.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Interpretation is based on geological knowledge acquired through data acquisition from the open pit and underground workings, including detailed geological core and chip logging, assay data, underground development face mapping of orebody contacts and in-pit mapping. This information increases the confidence in the interpretation of the deposit.
	Nature of the data used and of any assumptions made.	All available geological logging data from diamond core are used for the interpretations. Interpreted fault planes have been used to constrain the wireframes where applicable. All development drives are mapped and surveyed and interpretation adjusted as per ore contacts mapped. Wireframes are constructed using cross sectional interpretations based on abundance of sulphide minerals (incl. chalcopyrite, pyrite, pyrrhotite, sphalerite and magnetite), lithology, chlorite alteration of host rock and elevate Cu grades (>0.3%).

Criteria	JORC Code Explanation	Commentary
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	The geological interpretation of mineralised boundaries are considered robust and alternative interpretations do not have the potential to impact significantly on the Mineral Resources. Ongoing site and corporate peer reviews, and external reviews, ensure that the geological interpretation is robust.
	The use of geology in guiding and controlling Mineral Resource estimation.	The interpreted mineralisation boundaries are used as hard boundaries during the Mineral Resource estimation.
	The factors affecting continuity both of grade and geology.	The nature of VMS mineralisation style and regional setting have an influence on mineralisation grade and geology. The Shiraz and Merlot faults post-date and off-set mineralisation.
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	All known DeGrussa deposit mineralisation extends from 733500mE to 734785mE, 7172965mN to 7173590mN and 650m below surface. The DeGrussa sulphide lode generally strikes towards NE with a strike length of approximately 230m, very steeply dipping towards the south with a plunge generally trending SW and having a vertical extent of about 180m. The Conductor 1 orebody lies north of DeGrussa and generally strikes ENE dipping approximately 65° to the SE with a high grade plunge trending SW. It has a strike length of about 540m with a vertical extent of 420m. Conductor 4 orebody lies to the east of DeGrussa and Conductor1 and are stratigraphically deeper. They have an overall strike length of 470m and vertical extent of 260m. The upper sulphide lode strikes towards ENE with an approximate dip of 47° to the SE and high grade plunge trending SE. The lower sulphide lode strikes E, dipping approximately 45° to the S with a SW high grade plunge. Conductor 5 orebody is east of Conductor 4 and has a strike length up to 380m and a vertical extent of 470m. The sulphide lode strikes ESE with an approximate dip of 45° to the SSW and high grade plunge trending SE.

Estimation and modelling techniques

The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.

Mineral Resource estimation is completed within Datamine™ StudioRM version 1.3.11.0 software. Three dimensional mineralisation wireframes are completed within Surpac™ software and these are then imported into StudioRM™.

Geostatistical ordinary kriging (OK) is used to estimate the Mineral Resource as it is considered appropriate given the nature of mineralisation and orebody configuration.

The Mineral Resource database is uniquely flagged with mineralisation domain codes as defined by wireframe boundaries and then composited into density weighted 1m lengths and these are used for estimating the Mineral Resource.

Top cuts were applied to isolated high-grade composites prior to estimation where applicable based on review of histograms and statistical analysis of composites.

Variography was completed using Geovariances Isatis software. Variograms for all domains display moderate D1/D2 anisotropy and moderate to strong D1/D3 anisotropy, which was reflected in search parameters. Variograms were modelled with three structures, a nugget and two spherical structures for all domains.

The search parameters are tabulated for each orebody below. Search distances are chosen so that domains were estimated in a single pass. Larger searches are employed for massive sulphide pods and halo mineralisation on the extremities of the orebodies.

C1		Rotation			Max Search	D1/D2	D1/D3	Optimum	Minimum
Element	Domain	Azimuth	Dip	Pitch	Distance	ratio	ratio	Samples	Samples
CU	11 & 12	Dynamic Anisotropy			155	1.6	5.2	20	8
AU	11 & 12	Dynamic Anisotropy			100	2.0	2.5	20	8
AG	11 & 12	Dynamic Anisotropy			120	1.7	4.8	20	8
AS	11 & 12	Dynamic Anisotropy			80	2.7	6.7	20	8
BI	11 & 12	Dynamic Anisotropy			80	2.0	5.3	20	8
FE	11 & 12	Dynamic Anisotropy			130	1.5	4.3	20	8
PB	11 & 12	Dynamic Anisotropy			75	2.1	3.4	20	8
S	11 & 12	Dynamic Anisotropy			140	2.0	4.7	20	8
ZN	11 & 12	Dynamic Anisotropy			90	2.3	3.6	20	8
MGO	11 & 12	Dynamic Anisotropy			140	1.8	7.0	20	8
DENSITY	11 & 12	Dynamic Anisotropy			125	1.3	5.0	20	8
CU	101 - 104	Dynamic Anisotropy			140	2.3	7.0	20	4
AU	101 - 104	Dynamic Anisotropy			120	1.7	8.0	20	4
AG	101 - 104	Dynamic Anisotropy			220	1.7	11.0	20	4
AS	101 - 104	Dynamic Anisotropy			110	2.4	11.0	20	4
BI	101 - 104	Dynamic Anisotropy			340	3.4	11.3	20	4
FE	101 - 104	Dynamic Anisotropy			110	1.6	5.5	20	4
PB	101 - 104	Dynamic Anisotropy			125	1.8	5.0	20	4
S	101 - 104	Dynamic Anisotropy			100	1.7	2.5	20	4
ZN	101 - 104	Dynamic Anisotropy			110	1.8	5.5	20	4
MGO	101 - 104	Dynamic Anisotropy			180	1.6	4.5	20	4
DENSITY	101 - 104	Dynamic Anisotropy			160	1.8	3.2	20	4

C1E		Rotation			Max Search	D1/D2	D1/D3	Optimum	Minimum
Element	Domain	Azimuth	Dip	Pitch	Distance	ratio	ratio	Samples	Samples
CU	21 - 23	Dynamic Anisotropy			160	2.3	8.0	20	6
AU	21 - 23	Dynamic Anisotropy			120	2.0	5.5	20	6
AG	21 - 23	Dynamic Anisotropy			140	1.6	4.7	20	6
AS	21 - 23	Dynamic Anisotropy			130	1.6	6.5	20	8
BI	21 - 23	Dynamic Anisotropy			180	2.0	9.0	20	6
FE	21 - 23	Dynamic Anisotropy			135	1.8	5.4	20	6
PB	21 - 23	Dynamic Anisotropy			110	2.2	5.5	20	6
S	21 - 23	Dynamic Anisotropy			135	1.6	6.8	20	6
ZN	21 - 23	Dynamic Anisotropy			127.5	1.9	4.3	20	6
MGO	21 - 23	Dynamic Anisotropy			130	1.6	6.5	20	6
DENSITY	21 - 23	Dynamic Anisotropy			130	2.2	6.5	20	6
CU	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
AU	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
AG	201 - 204	Dynamic Anisotropy			600	2.0	4.0	20	4
AS	201 - 204	Dynamic Anisotropy			600	2.0	4.0	20	4
BI	201 - 204	Dynamic Anisotropy			600	2.0	4.0	20	4
FE	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
PB	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
S	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
ZN	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
MGO	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4
DENSITY	201 - 204	Dynamic Anisotropy			500	2.0	4.0	20	4

DG		Rotation			Max Search	D1/D2	D1/D3	Optimum	Minimum
Element	Domain	Azimuth	Dip	Pitch	Distance	ratio	ratio	Samples	Samples
CU	31	50	90	70	65	2.6	3.3	20	6
CU	32	230	85	-110	65	2.6	3.3	20	6
AU	32	240	85	90	65	2.6	3.3	20	8
AG	32	235	85	90	108	2.6	3.3	20	6
AS	32	230	85	55	65	2.6	3.3	20	6
BI	32	60	85	-75	150	2.5	3.3	20	6
FE	32	245	85	20	72	2.6	3.3	20	6
PB	32	245	85	70	65	2.6	3.3	20	6
S	32	245	85	20	72	2.6	3.3	20	6
ZN	32	255	85	70	65	2.6	3.3	20	8
MGO	32	240	85	-170	72	2.6	3.3	20	6
DENSITY	32	240	85	20	72	2.6	3.3	20	6
CU	301 & 302	230	85	-15	100	2.5	3.3	20	6
AU	301 & 302	230	85	30	100	2.5	3.3	20	8
AG	301 & 302	240	85	90	165	2.5	3.3	20	6
AS	301 & 302	230	85	75	100	2.5	3.3	20	6
BI	301 & 302	240	85	-40	150	2.5	3.3	20	6
FE	301 & 302	240	85	-40	100	2.5	3.3	20	6
PB	301 & 302	230	85	65	100	2.5	3.3	20	6
S	301 & 302	230	85	170	100	2.5	3.3	20	6
ZN	301 & 302	240	85	140	100	2.5	3.3	20	8
MGO	301 & 302	240	85	-145	100	2.5	3.3	20	6
DENSITY	301 & 302	240	85	150	100	2.5	3.3	20	6

C4		Rotation			Max Search	D1/D2	D1/D3	Optimum Samples	Minimum Samples
Element	Domain	Azimuth	Dip	Pitch	Distance	ratio	ratio		
CU	41	70	47	22.5	160	2.3	8.0	20	6
AU	41	70	47	22.5	120	2.0	5.5	20	6
AG	41	70	47	20	140	1.6	4.7	20	6
AS	41	70	47	22.5	130	1.6	6.5	20	8
BI	41	70	47	22.5	180	2.0	9.0	20	6
FE	41	70	47	22.5	135	1.8	5.4	20	6
PB	41	70	47	22.5	110	2.2	5.5	20	6
S	41	70	47	22.5	135	1.6	6.8	20	6
ZN	41	70	47	22.5	127.5	1.9	4.3	20	6
MGO	41	70	47	22.5	130	1.6	6.5	20	6
DENSITY	41	70	47	22.5	130	2.2	6.5	20	6
CU	42	95	45	135	110	1.6	5.5	20	8
AU	42	95	45	135	120	1.5	4.8	20	8
AG	42	95	45	135	200	1.4	5.0	20	6
AS	42	95	45	140	200	2.0	5.0	20	8
BI	42	95	45	175	320	2.0	8.0	20	6
FE	42	95	45	135	160	2.5	5.3	20	6
PB	42	95	45	-157.5	120	1.8	3.2	20	6
S	42	95	45	135	130	1.4	5.2	20	6
ZN	42	95	45	65	120	2.0	5.3	20	6
MGO	42	95	45	135	160	2.7	6.4	20	8
DENSITY	42	95	45	135	160	2.3	5.3	20	6
CU	43	70	47	22.5	600	2.0	4.0	20	4
AU	43	70	47	22.5	600	2.0	4.0	20	4
AG	43	70	47	20	600	2.0	4.0	20	4
AS	43	70	47	22.5	600	2.0	4.0	20	4
BI	43	70	47	22.5	600	2.0	4.0	20	4
FE	43	70	47	22.5	600	2.0	4.0	20	4
PB	43	70	47	22.5	600	2.0	4.0	20	4
S	43	70	47	22.5	600	2.0	4.0	20	4
ZN	43	70	47	22.5	600	2.0	4.0	20	4
MGO	43	70	47	22.5	600	2.0	4.0	20	4
DENSITY	43	70	47	22.5	600	2.0	4.0	20	4
CU	401 - 405	65	47	180	500	2.0	4.0	20	4
AU	401 - 405	65	47	70	500	2.0	4.0	20	4
AG	401 - 405	65	47	80	600	2.0	4.0	20	4
AS	401 - 405	65	47	90	600	2.0	4.0	20	4
BI	401 - 405	65	47	90	600	2.0	4.0	20	4
FE	401 - 405	65	47	80	500	2.0	4.0	20	4
PB	401 - 405	65	47	100	500	2.0	4.0	20	4
S	401 - 405	65	47	85	500	2.0	4.0	20	4
ZN	401 - 405	65	47	165	500	2.0	4.0	20	4
MGO	401 - 405	65	47	180	500	2.0	4.0	20	4
DENSITY	401 - 405	65	47	80	500	2.0	4.0	20	4

Criteria	JORC Code Explanation	Commentary

C5		Rotation			Max Search	D1/D2	D1/D3	Optimum	Minimum
Element	Domain	Azimuth	Dip	Pitch	Distance	ratio	ratio	Samples	Samples
CU	51	Dynamic Anisotropy			125	2.5	6.3	20	8
AU	51	Dynamic Anisotropy			180	3.0	8.0	20	8
AG	51	Dynamic Anisotropy			351	3.3	8.7	20	6
AS	51	Dynamic Anisotropy			130	1.9	5.2	16	8
BI	51	Dynamic Anisotropy			225	1.8	5.0	20	8
FE	51	Dynamic Anisotropy			150	2.5	6.0	20	6
PB	51	Dynamic Anisotropy			195	1.9	3.3	20	8
S	51	Dynamic Anisotropy			140	2.3	5.6	20	6
ZN	51	Dynamic Anisotropy			180	2.7	5.3	20	8
MGO	51	Dynamic Anisotropy			125	1.8	3.3	20	8
DENSITY	51	Dynamic Anisotropy			120	2.2	4.8	20	6
CU	52	Dynamic Anisotropy			125	2.5	6.3	20	8
AU	52	Dynamic Anisotropy			180	3.0	8.0	20	8
AG	52	Dynamic Anisotropy			351	3.3	8.7	20	6
AS	52	Dynamic Anisotropy			130	1.9	5.2	16	8
BI	52	Dynamic Anisotropy			225	1.8	5.0	20	8
FE	52	Dynamic Anisotropy			150	2.5	6.0	20	6
PB	52	Dynamic Anisotropy			195	1.9	3.3	20	8
S	52	Dynamic Anisotropy			140	2.3	5.6	20	6
ZN	52	Dynamic Anisotropy			120	2.7	5.3	20	8
MGO	52	Dynamic Anisotropy			125	1.8	3.3	20	8
DENSITY	52	Dynamic Anisotropy			120	2.2	4.8	20	6
CU	53	Dynamic Anisotropy			375	2.5	6.3	20	4
AU	53	Dynamic Anisotropy			432	3.0	8.0	20	6
AG	53	Dynamic Anisotropy			562	3.3	8.7	20	4
AS	53	Dynamic Anisotropy			390	1.9	5.2	20	4
BI	53	Dynamic Anisotropy			375	1.8	5.0	20	4
FE	53	Dynamic Anisotropy			450	2.5	6.0	20	4
PB	53	Dynamic Anisotropy			325	1.9	3.3	20	4
S	53	Dynamic Anisotropy			420	2.3	5.6	20	4
ZN	53	Dynamic Anisotropy			240	2.7	5.3	20	4
MGO	53	Dynamic Anisotropy			250	1.8	3.3	20	4
DENSITY	53	Dynamic Anisotropy			360	2.2	4.8	20	4
CU	501 - 504	Dynamic Anisotropy			180	1.8	4.5	16	6
AU	501 - 504	Dynamic Anisotropy			160	2.3	5.3	16	4
AG	501 - 504	Dynamic Anisotropy			510	1.7	5.7	20	4
AS	501 - 504	Dynamic Anisotropy			210	2.6	7.0	16	6
BI	501 - 504	Dynamic Anisotropy			585	2.2	8.7	20	4
FE	501 - 504	Dynamic Anisotropy			170	3.4	8.5	20	6
PB	501 - 504	Dynamic Anisotropy			200	1.8	6.7	16	6
S	501 - 504	Dynamic Anisotropy			180	3.0	9.0	20	6
ZN	501 - 504	Dynamic Anisotropy			160	2.3	5.3	16	6
MGO	501 - 504	Dynamic Anisotropy			270	2.3	4.5	20	4
DENSITY	501 - 504	Dynamic Anisotropy			200	2.9	5.0	20	6

Criteria	JORC Code Explanation	Commentary
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	The new estimates have been checked against the previous estimates. The current Mineral Resource takes into account mine production using wireframe of the mined out open pit outline and CMS data for underground mined out areas as at the end of December 2017.

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td></td><td>The assumptions made regarding recovery of by-products.</td><td>No assumptions are made regarding recovery of by-products during the Mineral Resource estimation.</td></tr>
<tr><td></td><td>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</td><td>Estimates includes deleterious or penalty elements Pb, Bi, Zn, As and MgO</td></tr>
<tr><td></td><td>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</td><td>Data spacing was the primary consideration taken into account when selecting an appropriate estimation block size. The drill hole spacing is approximately 10m x 15m for all domains.
The model geometry are tabulated below.
<table>
<tr><th colspan="4">degdec17d Block Model</th></tr>
<tr><td></td><td>Northing</td><td>Easting</td><td>Elevation</td></tr>
<tr><td>Minimum Coordinates</td><td>7,172,850</td><td>733,250</td><td>1,700</td></tr>
<tr><td>Maximum Coordinates</td><td>7,173,750</td><td>735,250</td><td>2,800</td></tr>
<tr><td>Parent Block Size</td><td>5m</td><td>5m</td><td>5m</td></tr>
<tr><td>Minimum Sub-cell</td><td>1m</td><td>0.5m</td><td>0.5m</td></tr>
</table></td></tr>
<tr><td></td><td>Any assumptions behind modelling of selective mining units.</td><td>No selective mining units are assumed in this estimate.</td></tr>
<tr><td></td><td>Any assumptions about correlation between variables.</td><td>Density is only sampled on a limited but representative number of drillholes throughout the deposit. From the measured density data there exists a strong correlation between density, Fe and S. Before compositing, regression analysis was undertaken to estimate the conditional expectation of density where Fe and S are known for all drill holes by orebody. Where Fe or S were not assayed, a default density of 3.8g/cm3 was applied within the massive sulphide and 2.8g/cm3 for halo mineralisation. Measured density values are preserved with predicted density only used where there is no density data.
The regression formulas are tabulated below
<table>
<tr><th>Lode</th><th>Regression Equation</th></tr>
<tr><td>C1/C1E</td><td>PDENSITY = 2.5077 + (0.0202*FE_PCT) + (0.0237*S_PCT)</td></tr>
<tr><td>DG</td><td>PDENSITY = 2.4304 + (0.0230*FE_PCT) + (0.0226*S_PCT)</td></tr>
<tr><td>C4</td><td>PDENSITY = 2.5176 + (0.0198*FE_PCT) + (0.0224*S_PCT)</td></tr>
<tr><td>C5</td><td>PDENSITY = 2.4781 + (0.0230*FE_PCT) + (0.0215*S_PCT)</td></tr>
</table></td></tr>
<tr><td></td><td>Description of how the geological interpretation was used to control the resource estimates.</td><td>The geological interpretation wireframes correlate with the massive sulphide mineralisation boundaries. The block model is assigned unique mineralisation domain codes that corresponds with the geological domain as defined by wireframes. Geological interpretations are then used as hard boundaries during interpolation where blocks are estimated only with composites having the corresponding domain code.</td></tr>
<tr><td></td><td>Discussion of basis for using or not using grade cutting or capping.</td><td>Top cuts were applied to isolated high-grade composites prior to estimation where applicable based on review of histograms, statistical analysis of composites and consideration of 3D spatial position.</td></tr>
</table>

Criteria	JORC Code Explanation	Commentary
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	The process of validation includes standard model validation using visual and numerical methods: • The block model estimates are checked against the input composite/drillhole data • Swath plots of the estimated block grades and composite mean grades are generated by eastings, northings and elevations and reviewed to ensure acceptable correlation. • Block Kriging Efficiency (KE) and Slope of Regression (ZZ) are used to quantitatively check the estimation quality. Reconciled production data verse Mineral Resource estimate is positive
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Tonnages are estimated on a dry basis.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	Based upon data review a cut-off of 1.0% Cu for massive sulphides appear to be a natural grade boundary between ore and trace assay values.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	The underground mining method is long-hole open stoping (both transverse and longitudinal) with minor areas of jumbo cut and fill or uphole benching in some of the narrower areas. The primary method of backfill is paste fill. The sequence aims for 100% extraction of the orebody. Detailed mine plans are in place and mining is occurring.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	The Ore Reserve estimate is based on an operating 1.6Mtpa process plant producing a 24.5% copper-concentrate that contains gold and silver. Copper recovery models based on Copper:Sulphur ratio were used in the determination of the Ore Reserve estimate. Average weighted LOM copper recovery is 92.5%. Gold recovery was fixed at 43.8%. Silver recovery was fixed at 41.4%.
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	The DeGrussa project is constructed with a fully lined Tailings Storage Facility and all Sulphide material mined from the operation will be processed in the concentrator, eliminating any PAF on the waste dumps.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Bulk density was sampled on a limited (approximately 10%) but representative number of drill holes throughout the deposit. Sample mass was determined by weighing the core in air and sample volume was determined by the Archimedes principle. Within the massive sulphide the density varies approximately between 2.8g/cm3 to 4.9g/cm3, with an average density reading of 3.8g/cm3. To test the methodology and accuracy of the density measurements, regular samples constituting 20% of total measurements are submitted to an independent laboratory for measurements.

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td></td><td>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.</td><td>The procedure used is suitable for non-porous or very low porosity samples, which can be quickly weighed in water before saturation occurs.</td></tr>
<tr><td></td><td>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials</td><td>From the measured density data there exists a strong correlation between density, Fe and S. Before compositing, regression analysis was undertaken to estimate the conditional expectation of density where Fe and S are known for all drillholes by orebody. Where Fe or S were not assayed, a default density of 3.8g/cm3 was applied within the massive sulphide and 2.8g/cm3 for halo mineralisation. Measured density values are preserved with predicted density only used where there is no density data.
The regression formulas are tabulated below
<table>
<tr><th>Lode</th><th>Regression Equation</th></tr>
<tr><td>C1/C1E</td><td>PDENSITY = 2.5077 + (0.0202*FE_PCT) + (0.0237*S_PCT)</td></tr>
<tr><td>DG</td><td>PDENSITY = 2.4304 + (0.0230*FE_PCT) + (0.0226*S_PCT)</td></tr>
<tr><td>C4</td><td>PDENSITY = 2.5176 + (0.0198*FE_PCT) + (0.0224*S_PCT)</td></tr>
<tr><td>C5</td><td>PDENSITY = 2.4781 + (0.0230*FE_PCT) + (0.0215*S_PCT)</td></tr>
</table></td></tr>
<tr><td>Classification</td><td>The basis for the classification of the Mineral Resources into varying confidence categories.</td><td>The Mineral Resource is classified as a function of drillhole spacing and geological continuity. Areas where drilling has been completed on a nominal 10m x 15m pattern, where geological continuity is high and proven through mining are classified as Measured. Areas where drill density is 40m x 40m or less and geological continuity is moderate to high are classified as indicated. Elsewhere where drill density is sparse the resource is classified as Inferred.</td></tr>
<tr><td></td><td>Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</td><td>The Mineral Resource classification has appropriately taken into account data spacing, distribution, reliability, quality and quantity of input data as well as the confidence in predicting grade and geological continuity.</td></tr>
<tr><td></td><td>Whether the result appropriately reflects the Competent Person’s view of the deposit.</td><td>The Mineral Resource estimation appropriately reflects the Competent Person’s view of the deposit.</td></tr>
<tr><td>Audits or reviews</td><td>The results of any audits or reviews of Mineral Resource estimates.</td><td>The process for geological modelling, estimation and reporting of Mineral Resources is industry standard and has been subject to an independent external review. The DeGrussa Mineral Resource Estimate was audited by Cube Consulting Pty in late 2017 to early 2018 as part of SFR’s routine governance practices. The audit assessed SFR’s compliance with reporting under the JORC Code (2012) regime and considered the guidelines and reporting standards stated in the Code. Cube also considered the overall quality of the resource estimate and the main risks associated with the data, process and implementation approach adopted by SFR. The findings from the audit show that the data, interpretation, estimation parameters, implementation, validation, documentation and reporting are all fit for purpose with no material errors or omissions and that SFR have completed the work with a high degree of professionalism. The resource estimate is of high industry standard suitable for both public reporting and internal mine design and scheduling.</td></tr>
</table>

Criteria	JORC Code Explanation	Commentary
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The Mineral Resources has been reported in accordance with the guidelines of the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and reflects the relative accuracy of the Mineral Resources estimates. Resource has been reconciled against mined areas and results indicated appropriate accuracy.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	The DeGrussa Mineral Resource Estimate is a global estimate
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Reconciled production data verse Mineral Resource estimate is positive.

Section 4: Estimation and Reporting of Ore Reserves

Criteria	JORC Code Explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	*Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.*	The Underground Ore Reserves estimate is based on the Mineral Resources estimate as at the 31st December 2017. The estimation and reporting of Mineral Resources is outlined in Section 3 of this Table.
	Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	Mineral Resources are reported inclusive of Ore Reserves.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	The Competent Person for this Ore Reserve statement is a full-time employee of Sandfire Resources NL (SFR), is based in Perth, and undertakes regular site visits.
	If no site visits have been undertaken indicate why this is the case.	Site visits are undertaken as described above.
Study status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*	The DeGrussa mine has been in operation since 2011. Underground stope production commenced in October 2012. The Modifying Factors used in the conversion of Mineral Resources to Ore Reserves are based on operational experience.
Cut-off parameters	*The basis of the cut-off grade(s) or quality parameters applied.*	Three copper only cut-off grades have been calculated and applied as economic cut-offs in the determination of the Ore Reserves. These are based on current and forecasted costs, revenues, mill recoveries and modifying factors, forecast for the life of the mine plan. These cut-off values are: • Full cost cut-off grade (2.0%) – is based on all operating costs associated with the production of copper metal; • Stope incremental cut-off grade (1.7%) - considers material below the full cost cut-off that is accessible; and • Development cut-off grade (0.9%) – considers material that has to be mined in the process of gaining access to fully costed economic material.
Mining factors or assumptions	*The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).*	Ore Reserves have been estimated by generating detailed mining shapes for all areas that contain Measured or Indicated Mineral Resources as well as access development. Internal stope dilution has been designed into the mining shapes and interrogated. External stope dilution and mining recovery factors have been applied post geological block model interrogation to generate final mining diluted and recovered ore tonnage and grade.
	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.	Primary mining methods employed are sub-level open stoping (SLOS) and long-hole open stoping (LHOS) with fill. Primary fill material is paste with minor use of cemented rock fill and rock fill when appropriate. The selected mining methods are considered appropriate for the nature of the defined Mineral Resources.
	The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling.	Stopes to be mined in the short term are assessed on an individual basis using all related local mining, geological and geotechnical experience to date. This includes data gathered from back-analysis of stopes mined to date in adjacent or similar areas. Stopes to be mined in the medium to long term employ geotechnical parameters derived from area mining experience and / or diamond drill core.
	The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).	The Mineral Resource model created to estimate the Mineral Resources as at the 31st December 2017 was used as the basis for stope and development design. No modifications were made to this model for mine design purposes.

Criteria	JORC Code Explanation	Commentary
	The mining dilution factors used.	Internal stope dilution from interrogation of detailed mining shapes against the geological block model ranges from 5% to 60% with a weighted average of 13%. External stope dilution is applied to stopes on an individual basis and is based on mining experience to date. This ranges from 5% to 45% with a weighted average of 8%. External dilution is considered at zero grade.
	The mining recovery factors used.	A mining recovery factor is applied to stopes on an individual basis. The factor is based on mining experience to date and ranges from 80% to 110% with a weighted average of 101%. The factor is applied to diluted stopes.
	Any minimum mining widths used.	A minimum mining width of 3.0m is used based on the nature of the deposit and the equipment fleet employed.
	The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.	The Underground Ore Reserves contain approximately 0.01% of Inferred Mineral Resource. This material is included in mining shapes therefore has mining modifying factors applied. Its inclusion and subsequent impact on economic viability is negligible.
	The infrastructure requirements of the selected mining methods.	DeGrussa is an operating mine and all infrastructure required to service the selected mining methods is in place.
Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* *Whether the metallurgical process is well-tested technology or novel in nature.* *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* *Any assumptions or allowances made for deleterious elements.* *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	The Ore Reserve estimate is based on an operating 1.6Mtpa process plant producing a 24.5% copper-concentrate that contains gold and silver. Copper recovery models based on Copper:Sulphur ratio were used in the determination of the Ore Reserve estimate. Average weighted LOM copper recovery is 92.5%. Gold recovery was fixed at 43.8%. Silver recovery was fixed at 41.4%.
Environmental	*The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	DeGrussa is an operating mine and is compliant with all environmental regulatory requirements and permits.
Infrastructure	*The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	DeGrussa is an operating mine and all infrastructure required for continued operation is in place.

Criteria	JORC Code Explanation	Commentary
Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.* *The methodology used to estimate operating costs.* *Allowances made for the content of deleterious elements.* *The source of exchange rates used in the study.* *Derivation of transportation charges.* *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* *The allowances made for royalties payable, both Government and private.*	DeGrussa is an operating mine and capital costs are generally limited to that required to sustain the operation. Operating costs are based on current contracts and historical averages. No allowances required for deleterious elements (see Market Assessment) Exchange rates are based on consensus forecasts and vary over the life of the mine. The life-of-mine average rate is: • A$ / US$: 0.77 Land freight and port charges are based on existing contracts. Sea freight charges based on Braemar indices. TC / RC based on benchmark. DeGrussa is subject to Government Royalties and Royalties for Native Title. Rates for Government Royalties are: • Copper is 5.0% of net revenue; • Gold is 2.5% of net revenue; and • Silver is 2.5% of net revenue. The Royalty rate for Native Title is: • 0.6% of gross revenue (copper, gold, silver).
Revenue factors	*The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	Commodity prices are based on consensus forecasts and vary over the life of the mine. The life-of-mine average values are: • Copper (US$/t) : $6,761 • Gold (US$/oz) : $1,278 • Silver (US$/oz) : $17.67 A revenue reduction factor of 23.1% has been applied which includes all future estimated and calculated transport, smelting, refining and royalty payments. The factor is based on current costs, payments and charges.
Market assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* *A customer and competitor analysis along with the identification of likely market windows for the product.* *Price and volume forecasts and the basis for these forecasts.* *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	Sandfire is a low cost copper concentrate producer selling into global market for custom concentrates. Pricing is fundamentally on value of contained metals the main metal being copper with gold and small silver credits. The price of copper being set based on the LME which is a mature, well established and publically traded exchange. Sandfire produces a clean concentrate, low in deleterious elements. Sandfire relies upon independent expert publications (CRU, Wood Mac, Metal Bulletin) and other sources (bank reports, trader reports, conferences, other trade publications) in forming a view about future demand and supply and the likely effects of this on both metal prices and concentrate prices. Sandfire concentrate is sold by competitive tender.

Criteria	JORC Code Explanation	Commentary
Economic	*The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	DeGrussa is an operating mine with a focus on operating cash margins. The mine plan created to derive the underground Ore Reserves provides positive cash margins in all years when all modifying factors are applied.
Social	*The status of agreements with key stakeholders and matters leading to social licence to operate.*	DeGrussa is an operating mine and all agreements are in place and are current with all key stakeholders including traditional owner claimants.
Other	*To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* *Any identified material naturally occurring risks.* *The status of material legal agreements and marketing arrangements.* *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	Sandfire has advised that DeGrussa is currently compliant with all legal and regulatory requirements and valid marketing arrangements are in place.
Classification	*The basis for the classification of the Ore Reserves into varying confidence categories.* *Whether the result appropriately reflects the Competent Person's view of the deposit.* *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	Underground Ore Reserves have been derived from a mine plan that is based on extracting the 31 December 2017 Mineral Resources. Proved Ore Reserves have been derived from Measured Mineral Resources. Probable Ore Reserves have been derived from both Measured and Indicated Mineral Resources after consideration of all modifying factors. Part of C4 Measured Mineral Resources have been converted to Probable Ore Reserves on the basis of geotechnical uncertainty associated with mining against the Shiraz fault. The Ore Reserve classification appropriately reflects the competent person's view of the deposit. Approximately 8% of the Underground Probable Ore Reserve has been derived from Measured Mineral Resources.
Audits or reviews	*The results of any audits or reviews of Ore Reserve estimates.*	The Ore Reserve has been peer reviewed internally. The Ore Reserve estimate is in line with current industry standards.

Criteria	JORC Code Explanation	Commentary
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The project is considered robust with the Ore Reserve copper grade of 4.4% Cu significantly higher than the full cost cut-off grade of 2.0% Cu. Approximately 3.0% of the Ore Reserve tonnes which contains 1% of the Ore Reserve contained copper tonnes falls between the development cut-off copper grade of 0.9% Cu and the full cost cut-off grade of 2.0% Cu. There has been an appropriate level of consideration given to all modifying factors, which are established from an operating mine, to support the declaration and classification of Ore Reserves. No statistical or geostatistical procedures were carried out to quantify the accuracy of the Ore Reserve. Underground Ore Reserve tonnes are split 8 % DG, 35 % C1, 29 % C4, 27 % C5 with the remaining in stockpiles. Annual ore production for the LOM approximately aligns with the Ore Reserve split. Approximately 83% of the UG Ore Reserves tonnes are classified as Proved with the remaining 17% classified as Probable.

APPENDIX 2: Monty Mine – Ore Reserve and Mineral Resource

Monty Project Ore Reserve and Mineral Resources are shown in Table 6. Ore Reserves are declared after considering all modifying factors. Ore Reserves are derived from a feasibility Base Case that extracts material from both the Upper Zone and Lower Zone.

Monty Mine - Underground	Ore Reserve*						Mineral Resource* **					
Deposit	Reserve Category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)	Reserve Category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (t)	Contained Gold (oz)
Monty	Proved	-	-	-	-	-	Measured	-	-	-	-	-
	Probable	0.92	8.7	1.4	80,000	42,000	Indicated	1.04	9.3	1.6	97,000	54,000
							Inferred	0.01	20.7	2.7	2,000	1,000
	Total	**0.92**	**8.7**	**1.4**	**80,000**	**42,000**	**Total**	**1.05**	**9.4**	**1.6**	**99,000**	**55,000**
Sandfire Resources NL	Proved	-	-	-	-	-	Measured	-	-	-	-	-
70% Interest	Probable	0.64	8.7	1.4	56,000	29,000	Indicated	0.73	9.3	1.6	68,000	38,000
							Inferred	0.01	20.7	2.7	1,000	1,000
	Total	**0.64**	**8.7**	**1.4**	**56,000**	**29,000**	**Total**	**0.74**	**9.4**	**1.6**	**69,000**	**39,000**
Talisman Mining Ltd	Proved	-	-	-	-	-	Measured	-	-	-	-	-
30% Interest	Probable	0.28	8.7	1.4	24,000	13,000	Indicated	0.31	9.3	1.6	29,000	16,000
							Inferred	0.00	20.7	2.7	1,000	0
	Total	**0.28**	**8.7**	**1.4**	**24,000**	**13,000**	**Total**	**0.32**	**9.4**	**1.6**	**30,000**	**16,000**

* Calculations have been rounded to the nearest: 1,000t; 0.1% Cu grade; and 1,000t Cu metal and 0.1g/t Au grade; and 1,000oz Au metal. Differences may occur due to rounding.
** Mineral Resource estimate for the Monty deposit as of 31 March 2016. SFR ASX release 13 April 2016.
Included within the Ore Reserve is marginal grade material that is currently sub-economic that could become economic in the future. The quantity of this material is 10,000 tonnes at 2.5% Cu for 246 tonnes of copper and 0.6 g/t Au for 200 ounces of gold. This material represents 1% of the Ore Reserve tonnes and less than 1% of the contained copper and gold.

The LOM Plan includes the Lower Zone Ore Reserves and Inferred Mineral Resources. The same modifying factors as considered and used in estimating the Ore Reserves have been applied to the Inferred Mineral Resources. Modified Inferred Mineral Resources account for 20,000 tonnes at 9.4% Cu grade for 1000 copper tonnes of the LOM Plan.

Ore Reserve Summary

The owner and proponent of Monty is an Unincorporated Joint Venture between SFR and TLM. SFR holds a 70% interest in the Joint Venture and is the manager while TLM holds the remaining 30% as minority holder. The Joint Venture is based on three agreements, namely:

- Exploration JV Agreement (EJVA);
- Mining JV Agreement (MJVA); and
- Ore Sale and Purchase Agreement (OSPA).

All three agreements have been signed. The ore sale will be enacted prior to delivery to the existing DeGrussa ROM pad.

The Underground Ore Reserve estimate is based on the Monty deposit Mineral Resource estimate as at the 31 March 2016. The estimation and reporting of the Monty deposit Mineral Resources is outlined in SFR ASX Announcement, dated 13 April 2016. Mineral Resources reported are inclusive of Ore Reserves.
The Ore Reserves are declared based on the outcome of a feasibility study that was completed between June 2016 and April 2017.

The Monty project is a time constrained project that requires its mining life to align with the processing life of the nearby DeGrussa mine. The Ore Reserve must be accessed as early as practical to minimise extraction risk and provide production capacity and flexibility.

The mining method selected as the basis of the Ore Reserves is LHOS with fill. Primary fill material will be Cemented Aggregate Fill (CAF) with unconsolidated rock fill (RF) used where consolidated fill is not required. This method allows for total extraction where economic and provides good extraction flexibility with variable geometry and ground conditions.

An industry accepted empirical stability chart method has been used to determine stope size. Stope size in the Upper Zone (UZ) is constrained because of the influence of rock fracturing and oxidation associated with a significant structure called the Arneis Fault. This fault runs sub-parallel to and in and out of the UZ mineralisation. The level of confidence in stope performance in this zone is considered low. Rock mass conditions in the Lower Zone (LZ) are considered to be fair to very good with mineralisation geometric complexity a primary influence on stope size.

Orebody geometric complexity impacts on internal stope dilution tonnage and ranges from 5% to 90% with an average of 17%. Internal dilution is at zero grade. An external dilution factor is applied to stopes to account for blasting practices and expected local ground conditions. The LZ uses a 3% external dilution tonnage factor at zero grade. The UZ uses a 33% external dilution tonnage factor at an average grade of the Halo Mineral Resource that envelops the massive sulphide.

A mining recovery factor of 95% is applied to all diluted stopes. A minimum mining width of 3.0m has been used which takes account of the selected equipment fleet, productivity requirements and the nature of the mineralisation.

Three copper only break-even grades have been calculated as economic cut-offs in the determination of the Ore Reserves. Gold provides approximately 6% and Silver 1% of the revenue based on payable metal therefore contribute to project economics but do not drive project economics.

Monty ore will be processed at the DeGrussa concentrator and blended with DeGrussa ore. The DeGrussa plant will operate at 1.6 Mtpa and Monty will comprise up to 25% of the ore presented to the plant. The plant will produce a 24.5% copper-concentrate that contains gold and silver. This product will be sold into the global market for custom concentrates.

The Monty orebody is a volcanogenic massive sulphide similar in composition to the nearby DeGrussa orebodies. Testwork on the Monty ore has shown that flotation and comminution characteristics of the ores are similar to DeGrussa ore and Monty can be treated at DeGrussa with high recoveries.

Monty will utilise existing infrastructure and services installed to support mining operations at DeGrussa. Infrastructure requirements specific to Monty is a 14km long access haul road, PAF waste rock storage, ore stockpile, diversion drains and bunds, water storage and event ponds, mining offices, muster/crib room, toilets and first aid treatment, fuel storage and dispensing, service facilities for underground mining equipment, power generators and power distribution, waste water treatment plant with spray fields and communications tower.

The project is considered to be economically robust. The project is most sensitive to copper price, copper grade and exchange rate. Individual variations in copper price (-20%), average copper grade (-15%) and exchange rate (+10%) all produce positive economic outcomes.

All the necessary studies required to complete the various applications for environmental and other statutory approvals have been completed and reported.

All areas of the proposed development have been surveyed in accordance with the Aboriginal Heritage Act 1972 (WA) and any areas of significance have been noted and plotted on development plans.
The Mining Lease M52/1071 over the Monty Project covers all mining and support infrastructure required before being transported to DeGrussa for processing. This lease was applied for 13 July 2016 and was granted 30 March 2017. Miscellaneous License L52/170 is for Monty Haul Road and other infrastructure such as pipelines and power lines, as required. This License was granted 17 February 2017.

Underground Ore Reserves have been derived from a mine plan that is based on extracting the 31 March 2016 Mineral Resources. Probable Ore Reserves have been derived from Indicated Mineral Resources after consideration of all modifying factors.

The UZ is marginally economic therefore is sensitive to changes in the key economic inputs e.g. copper price, copper grade. The UZ contains approximately 15% of the Ore Reserve tonnes and 8% of the Ore Reserve contained copper.

JORC 2012 MINERAL RESOURCE AND ORE RESERVE PARAMETERS - Monty Project

Section 1: Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
Sampling techniques	*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.*	• The Monty Mineral Resource area has been sampled by a combination of diamond (DD), reverse circulation (RC) and aircore (AC) drill holes. • The Mineral Resource evaluation considered only DD data from historic and recent drilling of PQ3, HQ, HQ2, HQ3, NQ2 and NQ core sizes for a total 32,653m. • None of the historic DD drilling intersected mineralisation. These have only been included in the density evaluation of the deposit in the waste zones. • Sampling method used for recent DD drilling is half-core samples of HQ2 and NQ2 core sizes.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	• Sampling and sample preparation method for recent drilling followed guidelines established by Sandfire as per industry standard.
	Aspects of the determination of mineralisation that are Material to the Public Report.	• The determination of mineralisation is based on observed amount of sulphides and lithological differences.
	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.	• DD core samples submitted to the laboratory are stage crushed firstly to -10mm via Jaw Crusher and homogenised through Rotary Splitting Devise (RSD). These are further crushed through Boyd crusher to -4mm to produce less than 2.5kg sub samples which are pulverised using LM2/LM5 mill to 90% passing 75µm. • 0.3g and 0.15g charge portions of the sub-sample are collected and used for Mixed 4 Acid Digest (MAD) and MAD Hotbox methods respectively with ICPOES/MS. • A 40g portion of the sub-sample is used for Pb collection Fire Assay.
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).*	• All DD core used for the Mineral Resource estimation is HQ2 and NQ2 core sizes. 124 drill holes were completed for a total of 32,653m with inclination between -38º to -66º to achieve intersections at the required depth. The minority of the drill holes are almost to the northwest. • All recent DD drill collar locations are surveyed using RTK GPS with downhole surveys completed using high speed gyroscopic survey tools at regular intervals. • All core where possible is oriented using a Reflex ACT II RD orientation tool with stated accuracy of +/-1% in the range 0 to 88°.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	• Diamond core recovery is logged and captured into the database with overall weighted core recoveries greater than 97%.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	• Appropriate measures have been taken to maximise sample recovery and to ensure the representative nature of recent samples. This includes diamond core being reconstructed into continuous intervals on angle iron racks for orientation and reconciled against core block markers. • Samples are routinely weighed and captured into the central database.
	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 known sample recovery issues have impacted on potential sample bias.

Criteria	JORC Code Explanation	Commentary
Logging	*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.*	• 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™.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	• Logging is both qualitative and quantitative depending on the field being logged. • All core is photographed.
	The total length and percentage of the relevant intersections logged.	• All drill holes are fully logged.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	• Core orientation is completed where possible and all are marked prior to sampling. Half core samples are produced using an Almonte or a Corewise Pty Ltd Core Saw. • All samples are weighed and recorded.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• No RC or AC sample is included in this Mineral Resource estimate.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	• Sample preparation for the initial exploration drilling was completed at Bureau Veritas laboratory in Perth and the majority of the infill Mineral Resource drilling were completed at the onsite laboratory: o Sample preparation at the onsite laboratory involves weighing and drying the original sample at 80° for up to 24 hours. Samples are then crushed through Jaques crusher to nominal -10mm followed by a second stage crushing through Boyd crusher to nominal -4mm. Samples are 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 a LM2 mill to 90% passing 75%µm. Pulp fines test is completed at a minimum of 1:20. A 1.5kg barren wash is performed after pulverising each mineralised. Pulversed packets are shipped externally to Bureau Veritas laboratory in Perth for analysis. Coarse rejects are retained for QC checks. o Sample preparation at the Bureau Veritas laboratory in Perth involves weighing and drying the original sample at 80° for up to 24 hours. DD samples are first crushed through a Jaques crusher to nominal -10mm. A second stage crushing is completed via Boyd crusher to a nominal -4mm. Samples are then split to less than 2.5kg through linear splitter and excess retained. Sample splits are weighed at a frequency of 1:20 and entered into the job. Pulverising is completed using a LM5 mill to 90% passing 75%µm. Grind size checks are completed at a minimum of 1 per batch. A 1.5kg barren quartz wash is pulverised after mineralised samples. Coarse rejects are stored and returned to Sandfire.

Criteria	JORC Code Explanation	Commentary
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	• Sandfire has protocols that cover auditing of sample preparation at the laboratories and the collection and assessment of data to ensure accurate steps are used in producing representative samples for the analytical process. Key performance indices include: o Contamination index of 90% (that is 90% blanks pass); o Crush Size index of P95-10mm; Grind Size index of P90-75µm and; o Check Samples returning at worst 20% precision at 90% confidence and bias of 5% or better. • Weekly onsite laboratory inspections are completed to ensure the laboratory conforms to standards. • Additional grind size checks are completed via check laboratories. • The analytical laboratories conduct their own internal QC checks to ensure representativeness of the sub-sampling stages.
	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.	• Sampling is to industry standard. • No field duplicates have been taken.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	• The sample sizes are considered appropriate for the massive sulphide Cu-Ag-Zn mineralisation style.
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.*	• Primary assays are analysed through Bureau Veritas laboratory (Primary laboratory) in Perth using Mixed 4-Acid Digest (MAD) and X-ray fluorescence (XRF) analytical methods: o Base metal and extra element analysis are via MAD ICPOES/MS using 0.3g charge and 0.15g charge MAD Hotbox methods. 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, Re, Mn, Co, Cd, Cr, Ni, Se, Te, Ti, Zr, V, Sn, W and Ba. 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 S, Cu, Zn, Co, Fe, Ca, Mg, Mn, Ni, Cr, Ti, K, Na, V are determined by ICPOES, and Ag, Pb, As, Sb, Bi, Cd, Se, Te, Mo, Re, Zr, Ba, Sn, W are determined by ICPMS. Samples are analysed for Au, Pd and Pt by firing a 40g portion of the sample with ICPMS finish. Lower sample weights are employed where samples have very high S contents. o The XRF analytical protocol comprises the fusion of 0.4g sample into a glass bead with a 9g flux comprising of 1% Tantalum Oxide;12.825 Sodium Nitrate and 0.5% Lithium Bromide) – 66:34 LT;LM+1% Ta. XRF is used to analyse for a suite of elements including Cu, Fe, SiO2, Al, Ca, K, MgO, P, S, Ti, Mn, Co, Zn, As and Pb. XRF results are used for comparative studies only and have not been used for the Mineral Resources estimate. • Selected coarse rejects are analysed through the primary laboratory to test the precision at the initial sample splitting stage. These follow the same analytical protocol described above. • Selected pulp rejects submitted are analysed by Intertek Genalyis Laboratory Services (Check Laboratory) as QC checks against the primary Bureau Veritas laboratory results. Analysis include: o Multi-element 4-Acid Digest with ICPOES/MS instrument finish. In cases where copper concentration exceeds the upper limit of 2% Cu, they are re-assayed by an ore grade ICPOES analytical method. Elements analysed include Ag, Al, As, Ba, Bi, Ca, Cd, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Re, S, Sb, Sc, Se, Si, Sr, Ta, Th, Ti, U, V, W, Y, Zn and Zr;

Criteria	JORC Code Explanation	Commentary
		o Sodium Peroxide Fusion in zirconia crucible with hydrochloric acid. Elements analysed by ICPOES/MS. This method is useful in identifying elements hosted in the minerals that may be resistant to acid digestions. Elements analysed under this method include Ca, As, Cu, Fe, K, Mg, Mn, Pb, S, Si, Ti and Zn; and o 50g Pb collection Fire Assay in new pots with ICPMS finish for Au, Pt and Pd. • A third laboratory, MinAnalytical Laboratory Services Australia (Umpire Laboratory) analysed selected pulp rejects (Umpire Checks) submissions on a quarterly basis. Analysis include: o Multi-element 4-Acid Digest with ICPOES/MS instrument finish for Ag, Al, As, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Te, Ti, V, Zn and Zr; o Sodium Peroxide Fusion in zirconia crucible with hydrochloric acid with ICPOES/MS finish. Elements analysed include Cu, Fe, Si, Al, Ca, K, Mg, S, Ti, Mn and Zn; and o Pb collection Fire Assay for Au, Pt and Pd using specially formulated flux to accommodate a variety of sample matrices. Some reduction in sample charge sometimes occur due to the fusion of difficult sample matrices. • All the analytical methods are considered appropriate for the mineralisation style and the intended purposes.
	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.	• No handheld XRF determined element concentrations have been used in the Mineral Resource estimate.
	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 Quality Control (QC) protocol is considered industry standard with Certified Reference Materials (CRM) submitted on regular basis with routine samples. • CRMs and blanks are inserted at a minimum of 5% frequency rate. A minimum of 2% of assays are routinely re-submitted as Check Samples and Check Assays through blind submittals to the primary and secondary laboratory respectively. Additionally, Umpire Checks are completed on quarterly basis through a third laboratory. • QC data returned is automatically checked against set pass/fail limits within SQL database and are either passed or failed on import on a batch to batch basis. On import a first pass automatic QC report is generated and sent to QAQC Geologists for recommended action. Results of all QC samples for every laboratory batch received are analysed to determine assay accuracy and repeatability. • Only data that demonstrate sufficient accuracy and precision of assays are used for Mineral Resource updates. • The participating laboratories conduct their own internal quality checks including the use of certified reference materials and/or in house controls, blanks and replicates. These quality results are reported along with sample results in the final reports. Sandfire has not verified the laboratory internal QC data.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	• Significant intersections have been verified by alternative company personnel and the Competent Person.
	The use of twinned holes.	• There are no twinned holes drilled for the Mineral Resource.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	• Drill hole data are captured on field tough book laptops using Logchief™ Software. The software has validation routines and data is then imported into a secure central database.

Criteria	JORC Code Explanation	Commentary
	Discuss any adjustment to assay data.	• The primary data for drilling is always kept and is never replaced by adjusted or interpreted data.
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.*	• Collar coordinates for all recent drill holes are accurately surveyed using RTK GPS system within +/-50mm accuracy (X,Y,Z). • Different downhole survey methods are used for the recent drilling including Eastman Single Shot (ESS) and high speed gyroscopic downhole methods (GYRO). The ESS surveys are completed by the drilling companies. GYRO surveys are completed by Surtron Technologies with different sets of instruments. The GYRO surveys completed by SPT GyroTracer Directional™ 42 mm (north seeker) instrument supercedes all other surveys.
	Specification of the grid system used.	• Coordinate and azimuth are reported in MGA 94 Zone 50.
	Quality and adequacy of topographic control.	• Topographic control was established from aerial photography using a series of surveyed control points.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	• No Exploration Results are included in this release.
	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.	• Data spacing and distribution are sufficient to establish the degree of geological and grade continuity appropriate for JORC 2012 classifications applied.
	Whether sample compositing has been applied.	• No sample compositing is applied during the sampling process.
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.*	• All drill holes are oriented to achieve high angles of intersection.
	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.	• No orientation based sampling bias is known at this stage.
Sample security	*The measures taken to ensure sample security.*	• Appropriate security measures are taken to dispatch samples to the laboratory. Chain of custody of samples is being managed by Sandfire. Samples are stored onsite and transported to the laboratory by a licenced 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. • The laboratory stores the excess material (coarse residue) and return to Sandfire after 30 days unless instructed otherwise. • The laboratory returns all pulp samples within 60 days.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	• Sandfire sampling techniques and data collection processes are of industry standard and have been subjected to multiple internal and external reviews. Cube Consulting Pty completed a review during 18th - 20th February 2014 and found procedures to be consistent with industry standard and appropriate with minor recommendations for enhancement as part of continuous improvement.

Section 2: Not applicable

Section 3: Estimation and Reporting of Mineral Resources

Criteria	JORC Code Explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	• Sandfire employs SQL as the central data storage system using Datashed software front end. User access to the database is regulated by specific user permissions. • Existing protocols maximise data functionality and quality whilst minimising the likelihood of error introduction at primary data collection points and subsequent database upload, storage and retrieval points. • The primary data for historic drilling was collected using LogChief™ software. The historic master database was then supplied to Sandfire in SQL format which was then imported into the Sandfire relational SQL drilling database.
	Data validation procedures used.	• Data templates with lookup tables and fixed formatting are used for collecting primary data on field Toughbook laptops. The software has validation routines and data is subsequently imported into a secure central database. • The SQL server database is configured for optimal validation through constraints, library tables, triggers and stored procedures. Data that fails these rules on import is rejected or quarantined until it is corrected. • Database is centrally managed by a Database Manager who is responsible for all aspects of data entry, validation, development, quality control and specialist queries. There is a standard suite of vigorous validation checks for all data. • The supplied historic database was subjected to standard validation checks using SQL and DataShed relational database.
Site Visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	• The Competent Person for this Mineral Resource update is a full time employee of Sandfire Resources NL and undertakes regular site visits.
	If no site visits have been undertaken indicate why this is the case.	• Site visits are undertaken.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	• The interpretation is based only on recent DD drilling on a nominal 40m × 30m spacing outlining Cu-Au-Zn mineralisation associated with massive sulphide and halo-style mineralisation and is based on a fully validated drill data. • Where massive sulphide domain wireframes terminate between drill holes they do not extend more than half way between the mineralised and barren intercepts thus preventing excessive extrapolated of mineralisation. • This interpretation is considered geologically and volumetrically realistic and is considered fit for purpose for estimating Mineral Resources in the Indicated/Inferred categories
	Nature of the data used and of any assumptions made.	• All geological modelling was undertaken using Leapfrog Mining v2.6. In order to model the massive sulphide lenses, points were snapped to contacts between massive sulphide and the surrounding host sequence rocks. Isotropic, implicit interpolation was used to construct surfaces for these contacts. Where required, polylines were used to guide interpolation in a geologically realistic manner and to ensure that the upper and lower contacts converged, and crossed, at drill-indicated terminations of massive sulphide units. The output surfaces included drill hole contact points, such that the surfaces honored all drill hole data. Domaining between upper and lower contacts was undertaken to create solids between contact surfaces. A similar process was used to create the internal halo solids and external halo solids.

Criteria	JORC Code Explanation	Commentary
		• Seven (7) 3D wireframes solids have been modelled that encapsulate the massive sulphide mineralisation. Some of these solids contain internal zones of halo mineralisation. Five (5) internal halo solids have been modelled to constrain these zones.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	• The geological interpretation of the mineralised boundaries are considered robust and alternative interpretations do not have the potential to impact significantly on the Mineral Resources at the time. The interpretation has undergone site and corporate peer reviews ensuring that the geological interpretation is robust.
	The use of geology in guiding and controlling Mineral Resource estimation.	• The interpreted wireframe models are used as hard boundaries for the Mineral Resource estimate.
	The factors affecting continuity both of grade and geology.	• Mineralisation at Monty is contained within a host sequence of sediments (siltstone, sandstone, conglomerate) and basalts in multiple sulphide lenses, at different statigraphic levels, surrounded by disseminated and/or blebby sulphide (halo mineralisation) in chlorite-altered host sequence litho-types. Based on similarities with the DeGrussa deposit, the Monty deposit is interpreted to be a Volcanogenic Massive Sulphide (VMS) deposit that formed during sub-sea floor replacement of host sequence stratigraphy by mineralising hydrothermal fluids. • The host sequence is bounded both above, and below, by dolerite sills. These dolerite sills are interpreted to post-date mineralisation. • The massive sulphide mineralisation typically comprises chalcopyrite ± pyrite ± pyrite ± pyrrhotite ± sphalerite. In isolated areas within the lowermost massive sulphide lense, bornite is present which have been constrained by incorporating continuity characteristics into two sub-domains. These have not been extended beyond 20m (½ drill-spacing) beyond drill intersections. • The regolith profile at Monty comprises transported cover, saprolite (>25% weathering) followed by saprock (<25% weathering). Mineralisation at Monty does not extend to surface, terminating at a depth of approximately 72m from surface. At this depth the regolith comprises saprock (<25% weathering) with weathering affecting the rock mass. This interval only extends for an interval of approximately 10m (to 82m below surface).
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• All known Monty deposit mineralisation extends from 743,400mE to 743,800mE, 7,170,800mN to 7,171,300mN and 600m below surface. • The Monty massive sulphide mineralisation generally strikes northeast and steeply dips to the northwest between 70-85°.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	• The Mineral Resource estimation was completed within Datamine™ Studio 3 Resource Modelling software. • The Mineral Resource database was uniquely flagged with mineralised zone codes as defined by the wireframe boundaries and then composited into 1m density weighted lengths. The composite drill hole data was used for statistical and geostatistical analysis. • Histograms, log-probability plots and mean variance plots were considered in determining the appropriate cut-offs for each mineralised zone. The points of inflexion in the upper tail of the distribution on the log-probability plots as well as their spatial locations were examined to help identify outliers and decide on the treatments applied. All grade values greater than the cut-off grade are set to the cut-off value (capped). • Deterministic high-grade wireframes to restrict the influence of the high-grade bornite intercepts within the massive sulphide were modelled by factoring in the continuity characteristics of the bornite mineralisation using an Indicator Probability approach. • Variography studies included analysing series of fans in three principal directions of horizontal, across-strike vertical and dip planes. The selected strike, plunge and dip

Criteria	JORC Code Explanation	Commentary
		directions were used to locate the three directions for which experimental variogram models were fitted. The nugget variance was modelled first by the use of down-hole variograms based on 1m lag, reflecting the downhole composite spacing. Variograms were estimated by fitting spherical models in the three principal directions using the nugget variance modelled. • Quantitative Kriging Neighbourhood Analysis (QKNA) using goodness of fit statistics was completed to optimise estimation parameters. • Elements estimated include Cu, Au, Ag, Fe, S, Pb and Zn. • Grade estimation of the Monty deposit was completed using the geostatistical method of Ordinary Kriging (OK).
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	• This a maiden Mineral Resource estimate.
	The assumptions made regarding recovery of by-products.	• No assumptions are made regarding recovery of by-products during the Mineral Resource estimation.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	• Estimates includes deleterious or penalty elements Pb, Bi, Zn, As, and MgO.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	• The estimated grades are based on interpolation into three dimensional parent blocks of sizes X=20m by Y=10m by Z=10m sub-blocked into X=1m by Y=1m by Z=1m sizes. Sub-blocks are assigned parent block estimates. • The block size is the optimum based on QKNA and takes into consideration the mineralisation drill hole intercept spacing that are within 40m. • Given that the orientation of mineralisation varies within the Monty deposit and to preserve the orientation of mineralisation, "Dynamic Anisotropy" option of Datamine Studio3™ was used. This option, allows orienting the search volume precisely such that it follows the trend of the mineralisation. • Directional ranges are determined from variogram modelling and are used to constrain the search distances. The search neighborhood strategy implemented involves the use of two estimation search runs with initial short-search set to approximately 75% of the variogram range of the element being estimated (within 40m, in the majority of cases) and extending the sample influence in later runs. To estimate a block, a minimum of 3 and maximum 15 composites are used. • All blocks are interpolated after the second pass. Searches have not exceeded 1½ of the range of continuity. • High grade restriction of the bornite intercept within the massive sulphide zone was achieved by the use of a tightly constrained wireframe that was modelled to respect the continuity characteristics of the bornite mineralisation.
	Any assumptions behind modelling of selective mining units.	• No selective mining units have been assumed in this current Mineral Resource.
	Any assumptions about correlation between variables.	• Within the massive sulphides there is a very good and consistent correlation between Cu, Fe, S and density which has been analysed separately for the top and bottom zones using multiple regression to fit the density, Cu, and S relationship. • Due to multicollinearity issues, Fe was removed from the regression models. • The regressed formula was then applied to the block model estimated S and Cu values to assign densities for each block.

Criteria	JORC Code Explanation	Commentary
		• The bornite sub-domains are assigned their average Archimedean measured core density values due to limited data to fit a regression.
	Description of how the geological interpretation was used to control the resource estimates.	• The block model is assigned unique mineralisation zone codes that correspond with the interpreted geological zones as defined by wireframes. This enabled each mineralisation zone to be estimated separately using only corresponding composite data.
	Discussion of basis for using or not using grade cutting or capping.	• Statistical analysis in conjunction with the spatial configuration of samples were used to assist in identifying outliers and decide on the treatments applied. High-grade restrictions are either as a top-cut or deterministic high grade spatial restriction (bornite sub-domains) to minimise the smoothing of very high-grades in areas not supported by data.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	• Standard model validation is completed using visual and numerical methods: o Checks to ensure the block model is appropriately flagged with domain codes as defined by wireframes; o Assessment of wireframe - block model variance for all domains; o Interrogation of block model on screen comparing individual block model grades with input data values; o Assessment of block model estimate global mean variances to the declustered input data composite mean grades for each mineralised zone; o Assessment of the estimation kriging variance and theoretical slope of regression for individual model blocks within each geological domain to monitor the degree of smoothing and to control conditional bias; o Assessment of swath plots of the estimated block grades and composite mean grades by eastings, northings and elevations; and o Peer reviews. • This is a maiden Mineral Resource estimate; there is no reconciliation data available for use as a check on the estimates.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages are estimated on a dry basis.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	• Based upon data review a notional lower cut-off of 1% Copper appear to be a natural grade boundary between ore and trace assay values.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• It is anticipated that the Monty Mineral Resource will be accessed through underground mining using open stoping and fill methods.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• The current Mineral Resource does not include any matallurgical assumptions. • It is envisaged that the DeGrussa processing plant will be used to treat the ore and preliminary test work reflecting the DeGrussa flowsheet has been completed by ALS Metallurgy on 4 discrete areas identified to date (upper portion, wide high grade zones, narrow very high grade zones and halo style zones). All testing to date has validated that the DeGrussa plant is a viable option for the treatment of the Monty ore with high recoveries expected.

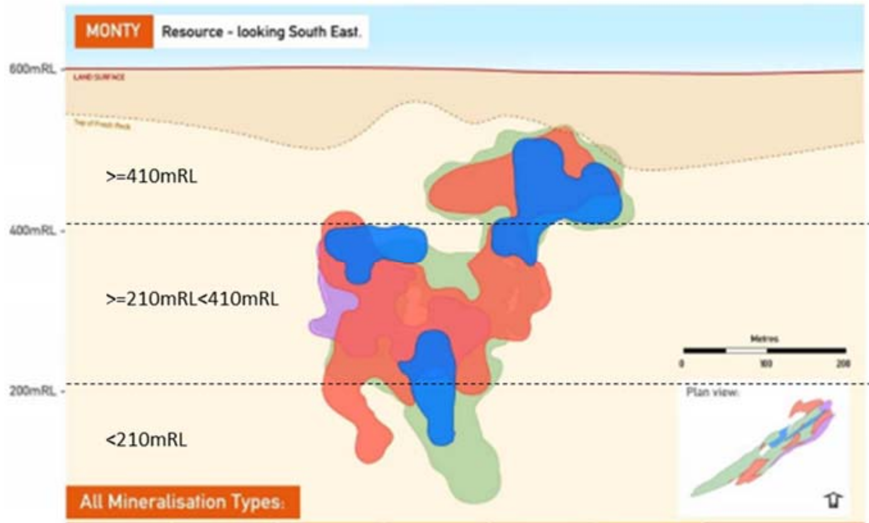
Criteria	JORC Code Explanation	Commentary
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• No environmental assumptions have been made at this stage.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	• Water immersion is the current methodology used in the measurement of densities from DD core. Regular and systematic density measurements are taken on representative number of diamond drill core according to a formal protocol. This data is included in the database. • Overall, a total of 6,307 Archimedian density measurements have been completed within the Mineral Resource area within the sulphide and the non-sulphide bearing rocks for the various weathering profiles. The breakdown is as follows: o A total of 5,993 measurements completed by Sandfire with readings from 1.1 g/cm^3 to 4.7 g/cm^3 averaging at 2.9 g/cm^3 and o A total of 314 density determinations completed historically by Talisman Resources at Monty. These measurements were undertaken in non-sulphide bearing zones with the majority in weathered rock. Measurements range from 1.1 g/cm^3 to 3.1 g/cm^3 averaging at 1.8 g/cm^3. • Within the halo and massive sulphides density varies from 2.4 g/cm^3 to 4.7 g/cm^3, with an average density reading of 3.6 g/cm^3. • Within the non-sulphide bearing waste rocks density varies from 1.1 g/cm^3 to 2.8 g/cm^3, with an average density reading of 2.6 g/cm^3. Following the evaluation of waste rock density data, the following average densities are assigned: o An average density of 1.7 g/cm^3 assigned to the saprolite waste rock; and o An average of 2.8 g/cm^3 assigned to fresh waste rock. • To test the methodology and accuracy of the density measurements, regular samples totalling about 540 samples were submitted to an independent laboratory for measurements. The results of the external checks are very consistent with the Sandfire measurements.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.	• The density determinations have accounted for void spaces, moisture and differences between alteration zones.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	• The regolith profile at Monty comprises transported cover, saprolite (>25% weathering) flowed by saprock (<25% weathering). At approximately 72m below surface, the regolith comprises saprock with weathering affecting the rock mass. This interval only extends for an interval of approximately 10m (to approximately 82m below surface) below which the nature of the saprock changes with weathering only occurring adjacent to fractures but otherwise not affecting the rock mass. Fracture related weathering of the Monty mineralisation extends to depths of up to 185m from surface. • Modelling of top of fresh rock and the base at which oxidation occurs along fractures accounted for these variations and are used in the Mineral Resource evaluation process.

Criteria	JORC Code Explanation	Commentary
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	• The current Mineral Resource has been classified into Indicated and Inferred categories following the guidelines of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012). The classification is based on drill hole orebody intercept spacing, geological confidence, grade continuity and estimation quality. • Indicated Mineral Resources are within areas with drill hole intercept spacing of within 40m by 30m.
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	• The Mineral Resource classification has appropriately taken into account data spacing, distribution, reliability, quality and quantity of input data as well as the confidence in predicting grade and geological continuity.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	• The Mineral Resource reflects the Competent Person's view of the deposit.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	• The Sandfire Monty Database has been subject to an independent data and assay audit. Maxwell Geoservices completed an audit in January 2016 and found the SQL database to be of industry standard, with minor issues noted such as unmatched data, missing data and noted minor schema limitations. • The process for geological modelling, estimation and reporting of Mineral Resources is industry standard and has been subject to an independent external review. Cube Consulting Pty undertook a review of the estimation in April 2016 and found the process to be of industry standard with no fatal issues noted.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	• The Mineral Resource has been reported in accordance with the guidelines of the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and the relative accuracy is reflected in the categorisation into Indicated and Inferred.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	• The statements relates to global estimates of tonnes and grade.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	• At this stage there is no production data to assess the relative accuracy and confidence of the Mineral Resource. The precision of the estimate is globally acceptable assuming that more detailed grade control drilling will be undertaken at the production stage.

Section 4 – Estimation and Reporting of Ore Reserves

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td rowspan="2">Mineral Resource estimate for conversion to Ore Reserves</td><td>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</td><td>The Underground Ore Reserve estimate is based on the Monty deposit Mineral Resource estimate as at the 31 March 2016. This estimate does not contain a Measured Mineral Resource therefore only the Indicated Mineral Resource is available for conversion to an Ore Reserve. The Indicated Mineral Resource constitutes 99% of the total Monty deposit Mineral Resource estimate tonnes and 98% of the total contained copper. The remainder is classified as Inferred Mineral Resource.
A vertical percentage split of tonnage and contained copper of the Indicated Mineral Resource by RL is tabulated below.

Name	RL	Tonnes (%)	Contained Copper (%)
UZ	>=410mRL	22	11
LZ	>=210mRL<410mRL	72	87
LZ	<210mRL	6	2



The estimation and reporting of the Monty deposit Mineral Resources is outlined in a SFR ASX Announcement, dated 13 April 2016.</td></tr>
<tr><td>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.</td><td>Mineral Resources reported are inclusive of Ore Reserves.</td></tr>
<tr><td rowspan="2">Site visits</td><td>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</td><td>The Competent Person for this Ore Reserve statement is a full-time employee of Sandfire Resources NL (SFR), is based in Perth, and undertakes regular site visits.</td></tr>
<tr><td>If no site visits have been undertaken indicate why this is the case.</td><td>Site visits are undertaken as described above.</td></tr>
</table>

Criteria	JORC Code Explanation	Commentary
Study status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*	A feasibility study was completed between June 2016 and April 2017.
Cut-off parameters	*The basis of the cut-off grade(s) or quality parameters applied.*	The cut-off parameters used to determine the project Ore Reserves are based on 100% project ownership. JV charges and fees are also considered. Three copper only cut-off grades have been calculated as economic cut-offs in the determination of the Ore Reserves. These are based on study estimated costs, revenues, mill recoveries and modifying factors. The cut-off values are: Full cost cut-off grade (4.9% Cu) – is based on all operating costs associated with the production of copper metal. Stope incremental cut-off grade (3.2% Cu) - considers material below the full cost cut-off that is accessible, and Development cut-off grade (2.4% Cu) – considers material that has to be mined in the process of gaining access to fully costed economic material.
Mining factors or assumptions	*The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).*	Ore Reserves have been estimated by generating detailed mining shapes that take account of cut-off grade criteria and geometric complexity for all areas that contain Indicated Mineral Resources. This also includes requirements for access development. Internal stope dilution has been designed into the mining shapes and interrogated. External stope dilution and mining recovery factors have been applied post geological model interrogation to generate final diluted and recovered material that is then reassessed against final Project cut-off grade criteria.
	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.	The Monty project is a time constrained project that requires its mining life to align with the processing life of the nearby DeGrussa mine. To minimise extraction risk and provide production capacity and flexibility the Ore Reserve requires to be accessed as early as practical. Development priority is given to accessing the Indicated Massive Sulphide Resource located between 210mRl and 410mRL. A deep weathering profile in the vicinity of the deposit has impacted on the selection of the location of the portal boxcut and subsequent decline pathway. Boxcut and decline development are located to provide early access to fresh rock in order to minimise orebody access timing risk. The mining method selected is long-hole open stoping (LHOS) with fill. Primary fill material will be Cemented Aggregate Fill (CAF) with unconsolidated rock fill (RF) used where consolidated fill is not required. This method allows for total extraction where economic and provides good extraction flexibility with variable geometry and ground conditions. An overhand mining sequence has been selected employing multiple mining panels. CAF sill pillars will be established to create mining panels. Strategic CAF rib pillars will be used to manage local stope and mining panel ground stability. The overhand sequence provides an opportunity to complete grade control drilling prior to accessing the orebody. The selected mining method is considered appropriate for the nature of the defined Mineral Resources and surrounding host rock. Experienced gained at the nearby DeGrussa underground mine has been adopted where applicable as extraction is expected to occur under comparable conditions.

Criteria	JORC Code Explanation	Commentary
	The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.	Both the boxcut and near surface decline locations have been assessed via specific diamond drilling programs and subsequent geotechnical assessment. A 40m long primary surface ventilation raise is planned to be established in close proximity to the planned decline pathway. Geotechnical parameters for this raise have been derived from the nearby boxcut and decline geotechnical assessments. No *in situ* stress measurements have been undertaken. The stress field has been estimated to be low to moderate, supported by the measured stress field at DeGrussa, which is located approximately 10 km west of the Monty Project. Stope and development geotechnical parameters have been derived from core logging of dedicated geotechnical and metallurgical diamond drill holes, resource diamond drill holes, rock strength testing data and a structural model. Stope stability (size) has been assessed using the industry accepted empirical stability chart method. This method is suitable to provide indicative stope stability assessments but reliable stability forecasts require local scale rock mass information. The method has known published limitations but is considered appropriate for this mine design in the manner in which it has been applied. Stope size in the Upper Zone (UZ) is constrained because of the influence of rock fracturing and oxidation associated with the Arneis Fault. This fault runs sub-parallel to and in and out of the UZ mineralisation. The level of confidence in stope performance in this zone is considered low. Rock mass conditions in the Low Zone (LZ) are considered to be fair to very good with mineralisation geometric complexity a primary influence on stope size. Grade control drilling requirements have been determined via the use of conditional simulation techniques. A drill hole spacing grid of 10m x 10m has been assumed.
	The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).	The Monty deposit Mineral Resources as at the 31 March 2016 was used as the basis for stope and development design. No modifications were made to this model for mine design and stope optimisation purposes.
	The mining dilution factors used.	Internal stope dilution tonnage (waste material contained within the designed stope shape) has been captured via the stope design process and is variable dependent on the geometry of the mineralisation to be extracted. The geometry of the Monty deposit varies both on strike and dip with multiple lodes present. Internal stope dilution tonnage therefore varies and ranges from 0% to 90% with an average of 17%. Internal stope dilution is at zero grade. An external dilution factor (external to the stope shape) is also applied to stopes to account for blasting practices and expected local ground conditions. The UZ is impacted by the Arneis Fault that runs sub-parallel to and in and out of the mineralisation therefore a larger factor has been used compared to the LZ where ground conditions are better and are not impacted by a significant structure. The LZ uses a 3% external dilution tonnage factor at zero grade. The UZ uses a 33% external dilution tonnage factor at an average grade of the Halo Mineral Resource that envelops the massive sulphide.
	The mining recovery factors used.	A mining recovery factor of 95% is applied to all diluted stopes.
	Any minimum mining widths used.	A minimum mining width of 3.0m has been used which takes account of the selected equipment fleet, productivity requirements and the nature of the mineralisation.
	The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.	No Inferred Mineral Resources are included in the Ore Reserves. The Monty deposit contains an Inferred Mineral Resource that constitutes less than 1% of the total mineral resource tonnage. Its inclusion in the LOM plan and subsequent impact on economic viability is negligible.

Criteria	JORC Code Explanation	Commentary
	The infrastructure requirements of the selected mining methods.	The selected mining method requires the following infrastructure: • Orebody access, including boxcut, and egress development drives and raises • Orebody intake and return air ventilation development drives and raises • Surface primary ventilation exhaust fans • Underground service water and compressed air supply and dewatering system • Underground communications system • Underground power reticulation • Crushing and screening facilities and a surface batch plant for shotcrete and CAF backfill supply • Surface explosive storage
Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* *Whether the metallurgical process is well-tested technology or novel in nature.* *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* *Any assumptions or allowances made for deleterious elements.* *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	The Ore Reserve estimate is based on an operating 1.6 Mtpa concentrator plant producing a 24.5% copper-concentrate that contains gold and silver. The ore from Monty will be treated subject to the terms of an Ore Sale and Purchase Agreement. The Monty orebody is a volcanogenic massive sulphide similar in composition to the nearby DeGrussa orebodies. The DeGrussa plant will operate at 1.6 Mtpa and Monty will comprise up to 25% of the ore presented to the plant. The level of testwork is considered adequate as a result of adopting a processing blend strategy and using the existing DeGrussa concentrator plant flowsheet. The testwork completed focused on: • Understanding the comminution properties and how these properties affect the DeGrussa milling circuit achieving 1.6Mtpa at a primary grind of 45µm • Performing flotation variability testing using the DeGrussa geometallurgical flowsheet to assess the robustness of this flowsheet on natural variations within the Monty ore • Investigate the resultant concentrate specifications in order to determine the quality of the concentrate. Flotation testwork was based on a total of eleven quarter core and half core diamond drill holes that were selected to cover the deposit with respect to spatial variability, ore variability, ore mineralogy and waste types. Composites were created to reflect full ore zones plus adjacent waste. Comminution testwork included SMC, Bond Ball Work Index and abrasion testing. Seven large diameter PQ diamond drill holes were drilled to provide the samples. These holes were drilled “twinning” some of the geological significant areas determined from geotechnical drilling. In particular, in relation to known structural controls, grade ranges, mineralogy and waste characteristics. Testwork on the Monty ore has shown that flotation and comminution characteristics of the ores are similar to DeGrussa ore and Monty can be treated at DeGrussa with high recoveries. Cu, Au and Ag recovery algorithms have been used in the determination of the Ore Reserve estimate. Elevated levels of bismuth, mercury, selenium and tellurium in concentrate have been reported from some of the bornite zone composites. Blending of ore from this zone requires a lower percentage (<10%) to manage the risk of penalties. No bulk sample or pilot scale testwork was undertaken as ore will be treated at the existing DeGrussa concentrator plant with Monty ores having similar flotation and comminution characteristics to DeGrussa ores.

Criteria	JORC Code Explanation	Commentary
Environmental	*The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	Monty will require a number of environmental approvals, including Mining Proposal (Mining Act), Works Approval and Environmental Licence (EP Act), Native Vegetation Clearing Permit (EP Act), Groundwater Licence (DoW Licence to Take Water). No separate Commonwealth environmental assessment will be required, nor will the project require assessment by the Office of the Environmental Protection Authority (WA). All the necessary studies required to complete the various applications have been completed and reported. Other reports completed include the Mine Closure Plan.
Infrastructure	*The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	Monty will utilise existing infrastructure and services installed to support mining operations at DeGrussa. The main items includes: • Access road from the Great Northern Highway • Raw water system and borefield • Accommodation village • Aerodrome • Assay laboratory • Core farm • External communication connections • Underground heavy mobile equipment workshop • Mine workers change room facilities • DeGrussa ROM pad Infrastructure requirements specific to Monty include: • A 14km access road to Monty that will connect the Monty mine to the DeGrussa ROM pad • Site earthworks including laydown areas, Potential Acid Forming (PAF) waste rock storage, ore stockpile, diversion drains and bunds, water storage and event ponds • Mining offices, muster/crib room, toilets and first aid treatment; • Fuel storage and dispensing; • Service facilities for underground mining equipment; • Power generators and power distribution; • Waste water treatment plant with spray fields; • Communications tower; • Crushing facilities, batch plant and CAF mixing.

Criteria	JORC Code Explanation	Commentary
Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.* *The methodology used to estimate operating costs.* *Allowances made for the content of deleterious elements.* *The source of exchange rates used in the study.* *Derivation of transportation charges.* *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* *The allowances made for royalties payable, both Government and private.*	Capital and operating costs have been derived from first principles. Quantity information was derived from detailed design and factored from similar works. Cost information primarily supplied from: • Existing DeGrussa contractors, and • DeGrussa historical costs Monty ore will be subject to an ore treatment fee, as part of an Ore Sale and Purchase Agreement. The fee structure is subject to finalisation with negotiations nearing completion between Sandfire Resources NL (SFR) and Talisman Mining Ltd (TLM). No allowances have been made for deleterious elements. Exchange rates are based on ANZ bank December 2016 forecasts and vary over the life of the mine. The average weighted LOM AU$:US$ exchange rate is 0.72. Land freight and port charges are based on existing contracts. Sea freight charges based on Braemar indices. TC / RC based on benchmark. Monty is subject to Government Royalties. Rates for Government Royalties are: • Copper is 5.0% of net revenue (concentrate); • Gold is 2.5% of net revenue; and • Silver is 2.5% of net revenue.
Revenue factors	*The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	Commodity prices are based on the ANZ bank December 2016 forecast and vary over the life of the mine. Average weighted LOM values are: Copper price: US$6,126/t Gold: US$1,366/oz Silver: US$18.72/oz
Market assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* *A customer and competitor analysis along with the identification of likely market windows for the product.* *Price and volume forecasts and the basis for these forecasts.* *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	Monty ore will be sold to SFR to be processed at DeGrussa into a copper concentrate containing gold and silver. SFR is a copper concentrate producer selling into global market for custom concentrates. Pricing is fundamentally on value of contained metals the main metal being copper with gold and small silver credits. SFR produces a clean concentrate, low in deleterious elements. SFR relies upon independent expert publications (CRU, Wood Mac, Metal Bulletin) and other sources (bank reports, trader reports, conferences, other trade publications) in forming a view about future demand and supply and the likely effects of this on both metal prices and concentrate prices. SFR concentrate is sold by competitive tender.
Economic	*The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	The economic evaluation has been completed on a 100% project ownership basis, including estimated JV charges and fees, and excludes tax considerations. The evaluation has not considered the commercial position of the respective JV parties. Cost inputs as outlined in Costs section with the exclusion of corporate overheads, exploration expenditure, project financing or interest charges and cost escalation. Revenue inputs as outlined in the Revenue factors section. The project is considered to be economically robust. The project is most sensitive to copper price, copper grade and exchange rate. Individual variations in copper price (-20%), average copper grade (-15%) and exchange rate (+10%) all produce positive economic outcomes.

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td>Social</td><td>The status of agreements with key stakeholders and matters leading to social license to operate.</td><td>Monty is located wholly within a registered Native Title Claim. An agreement (LAA) exists between the claimants and SFR and the claimants have agreed to amend the existing LAA.</td></tr>
<tr><td>Other</td><td>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:
Any identified material naturally occurring risks.
The status of material legal agreements and marketing arrangements.
The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.</td><td>The owner and proponent of Monty is an Unincorporated Joint Venture between SFR and TLM. SFR holds a 70% interest in the Joint Venture and is the manager while TLM holds the remaining 30% as minority holder. The Joint Venture is based on three agreements, namely:
• Exploration JV Agreement (EJVA);
• Mining JV Agreement (MJVA); and
• Ore Sale and Purchase Agreement (OSPA).
All three agreements have been signed.
All areas of the proposed development have been surveyed in accordance with the Aboriginal Heritage Act 1972 (WA) and any areas of significance have been noted and plotted on development plans.
The Mining Lease M52/1071 over the Monty Project covers all mining and support infrastructure required before being transported to the DeGrussa for processing. Miscellaneous License L52/170 is for Monty Haul Road and other infrastructure such as pipelines and power lines, as required.
<table>
<tr><th>Tenement</th><th>Area (ha)</th><th>Area (km2)</th><th>Holder(s)</th><th>Application Date</th><th>Grant Date</th></tr>
<tr><td>M52/1071</td><td>1,642</td><td>16.42</td><td>SFR - TLM</td><td>13-Jul-16</td><td>30-Mar-17</td></tr>
<tr><td>L52/170</td><td>246.48</td><td>2.46</td><td>SFR - TLM</td><td>10-Nov-16</td><td>17-Feb-17</td></tr>
</table></td></tr>
<tr><td>Classification</td><td>The basis for the classification of the Ore Reserves into varying confidence categories.
Whether the result appropriately reflects the Competent Person's view of the deposit.
The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).</td><td>Underground Ore Reserves have been derived from a mine plan that is based on extracting the 31 March 2016 Mineral Resources. Probable Ore Reserves have been derived from Indicated Mineral Resources after consideration of all modifying factors.
The Ore Reserve classification appropriately reflects the competent person's view of the deposit.
The 31 March 2016 Mineral Resource does not contain any Measured Mineral Resources.
Unmodified Massive Sulphide Indicated Mineral Resources comprise 191,000 tonnes at 7.7% Cu for 14,800 tonnes of contained copper. These are generally located at the extremities of the defined orebody where the mineralisation narrows. Underground diamond drilling programs will target these areas during operations.</td></tr>
<tr><td>Audits or reviews</td><td>The results of any audits or reviews of Ore Reserve estimates.</td><td>The Ore Reserve has been internally reviewed. Modifying factors have been externally peer reviewed by:
• AMC Consultants Pty Ltd - Mining, geotechnical, geohydrology;
• Battery Limits Pty Ltd – Metallurgical;
• Mintrex Pty Ltd - Surface Infrastructure; and
• Integrate Sustainability Pty Ltd – Environment.
No fatal flaws were identified in the modifying factors by the external peer reviewers.</td></tr>
</table>

Criteria	JORC Code Explanation	Commentary
Discussion of relative accuracy / confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The project is considered robust with the Ore Reserve copper grade of 8.6% Cu significantly higher than the full cost cut-off grade of 4.9% Cu. Approximately 19% of the Ore Reserve tonnes which contains 8% of the Ore Reserve contained copper tonnes falls between the development incremental cut-off copper grade of 2.4% Cu and the full cost cut-off grade of 4.9% Cu. There has been an appropriate level of consideration given to all modifying factors to support the declaration and classification of Ore Reserves. No statistical or geostatistical procedures were carried out to quantify the accuracy of the Ore Reserve. There is a lower level of confidence associated with the geotechnical parameters adopted to derive the Ore Reserves located in the UZ (>=410mRL) compared to those adopted for the LZ (<410mRL). This area is impacted by rock fracturing and oxidation associated with the Arneis Fault. This fault runs sub-parallel to and in and out of the UZ mineralisation that forms part of the Ore Reserve. This structure will negatively impact on stope performance in this zone. The zone is marginally economic therefore is sensitive to changes in the key economic inputs e.g. copper price, copper grade. The UZ contains approximately 15% of the Ore Reserve tonnes and 8% of the Ore Reserve contained copper.