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# 147Mt Mineral Resource sets strong foundation for optimisation and long-term growth at MATSA

# **Highlights**

- Updated Measured, Indicated and Inferred Mineral Resource Estimate (MRE) completed for the 4.7Mtpa MATSA Mining Operations, located in the Huelva Province, Spain, as at 31 December 2021:
  - Global Measured, Indicated and Inferred Mineral Resource Estimate for MATSA of 147.2Mt at 1.4% Cu, 3.0% Zn, 1.0% Pb and 39.6g/t Ag containing an estimated 2.1Mt of copper, 4.4Mt of zinc, 1.5Mt of lead and 187.6Moz of silver.
  - Measured & Indicated (M&I) Mineral Resource: 109.0Mt at 1.5% Cu and 3.2% Zn for 1.6Mt of contained copper and 3.5Mt of contained zinc with an estimated Net Smelter Return (NSR) of US\$130.86/t (using an NSR cut-off). M&I Mineral Resources increased by 14% after mining depletion.
  - The global M&I Mineral Resource comprises 73.6Mt of Polymetallic material at 1.3% Cu and 4.7% Zn and 35.4Mt of Cupriferous and Stockwork material types at a combined grade of 1.8% Cu.
- Initial combined Inferred Mineral Resource Estimate for the Concepción, Poderosa and Castillo-Buitrón deposits of 19.8Mt at 1.2% Cu and 1.6% Zn. Evaluation and exploration activities continue across Sandfire's extensive 2,500km<sup>2</sup> regional exploration footprint in the Iberian Pyrite Belt, with over 35,000m of resource development drilling planned in FY23.
- Inclusive of the new resources, contained tonnes have increased by 21% with an 11% increase in contained copper and a 10% increase in contained zinc since the previous Mineral Resource Estimate stated as at 31 December 2019. This more than replaces mining depletion over the intervening two years and confirms Sandfire's due diligence assessment of MATSA's significant geological potential.
- Resource estimation completed employing industry best practice and robust NSR methodology utilising independent and highly regarded GeoEstima consultants, with support from Sandfire's technical expertise at MATSA and corporate technical services.
- The updated MRE provides the basis for Life-of-Mine planning and Ore Reserve estimation. This work is ongoing and expected to be completed in the September quarter 2022.

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Sandfire Resources Ltd (**Sandfire** or **the Company**) is pleased to report an updated Measured, Indicated and Inferred Mineral Resource Estimate (MRE) for the MATSA mining operations, located in the Iberian Pyrite Belt in southern Spain, totalling **147.2Mt at 1.4% Cu**, **3.0% Zn**, **1.0% Pb and 39.6g/t Ag** containing an estimated **2.1Mt of copper**, **4.4Mt of zinc**, **1.5Mt of lead and 187.6Moz of silver**.

The updated MRE, reported as at 31 December 2021, represents Sandfire's first Mineral Resource Estimate for MATSA since it assumed ownership of the project in February 2022, with the Company employing rigorous estimation and reporting methodologies including constraining the Mineral Resource to exclude sections of the orebodies unlikely to be accessible from planned workings.

The strong outcome confirms MATSA's geological potential as assessed by Sandfire during its due diligence process for the project acquisition, delivering a robust and high-quality MRE that will provide a strong platform for future life-of-mine planning.

Importantly, approximately 74% of the updated MRE is classified in the higher confidence Measured and Indicated (M&I) Resource categories. An updated Ore Reserve Estimate for the MATSA mining complex is scheduled for delivery in the September 2022 quarter.

When compared with the previous Mineral Resource Estimate reported as at 31 December 2019, the updated December 2021 MRE delivers a 21% increase in contained tonnes, an 11% increase in contained copper and a 10% increase in contained zinc. This is a strong result that more than replaces mining depletion over the intervening two-year period.



Figure 1: MATSA Mineral Resource variances since the previous estimate as at 31 December 2019

The updated MRE also includes initial Inferred Mineral Resources for the satellite Concepción, Poderosa and Castillo-Buitrón deposits totalling 19.8Mt at 1.2% Cu and 1.6% Zn. All three deposits are located close to the existing 4.7Mtpa processing plant.

Mineralisation within the updated MRE comprises two key material types – Polymetallic and Cupriferous/Stockwork. These material types are processed through the 4.7Mtpa Aguas Teñidas processing plant using separate processing streams.



Mineralisation at all three mines is dominated by massive sulphides, with the dominant sulphide mineral being pyrite with lesser amounts of sphalerite, chalcopyrite and galena. The character of the mineralisation is specific to each mine and described briefly below.

The **Aguas Teñidas** deposit comprises four main mineralisation types: polymetallic lead-zinc, massive cupriferous, barren pyrite and cupriferous stockwork. The polymetallic mineralisation is dominated by massive pyrite, sphalerite and galena with small amounts of chalcopyrite, arsenopyrite, tetrahedrite and tennanite. The massive cupriferous mineralisation consists predominantly of pyrite and chalcopyrite with minor silicate minerals. The cupriferous stockwork mineralisation is comprised of mainly chalcopyrite and pyrite veinlets which are typically coarser grained compared to the cupriferous sulphide mineralisation.

The **Magdalena** deposit comprises of three types of mineralisation: polymetallic lead-zinc, massive cupriferous and barren pyrite. In general, Magdalena has a higher content of chalcopyrite and sphalerite, and lower pyrite content to other massive sulphide deposits in the Iberian Pyrite Belt (IPB). The polymetallic mineralisation is typically banded at the microscopic scale as is the cupriferous mineralisation, however the cupriferous mineralisation bands tend to be more massive.

The **Sotiel** deposit comprises three main mineralisation types: polymetallic lead-zinc, massive cupriferous and massive barren pyrite. The polymetallic mineralisation is typically massive or banded lead- and zinc-rich sulphide which is generally fine grained. The cupriferous mineralisation is typically composed of massive pyrite that has been, in part, replaced by chalcopyrite along edges and within fractures of the pyrite. The barren massive pyrite is typically structureless and contains negligible base metal sulphide content.

### **Management Comment**

Sandfire Managing Director and CEO, Karl Simich, said: "The completion of our first-ever Mineral Resource Estimate for MATSA is a tremendous achievement which confirms the world-class nature of the asset, validates our due diligence assessment prior to the acquisition, and sets a strong long-term platform for growth.

*"Importantly, this Mineral Resource has been completed to a very high standard, employing rigorous industry best practice estimation techniques and robust Net Smelter Royalty or NSR methodology.* 

"The key takeaway for investors is therefore that this is a high-quality Resource with 109 million tonnes in the high-confidence Measured and Indicated categories, which provides a strong platform for life-of-mine optimisation and planning, with an updated Ore Reserve estimate scheduled for completion in the September Quarter.

"The Measured and Indicated Mineral Resource of 109Mt equates to around 2.8 million tonnes of contained metal on a copper equivalent basis and has been broken down into its key components of 73.6Mt of Polymetallic material at 1.3% Cu and 4.7% Zn and 35.4Mt of Cupriferous and Stockwork material at a combined grade of 1.8% Cu.

"Very importantly, the Measured and Indicated Mineral Resource has seen an increase in overall tonnes, contained copper and zinc since the previous December 2019 Mineral Resource Estimate – more than making up for mining depletion at MATSA over the two years prior to Sandfire's ownership.

"The global Mineral Resource of 147.2Mt incorporates initial Inferred Resource estimates Concepción, Poderosa and Castillo-Buitrón deposits of just under 20Mt, demonstrating the geological potential of the belt – which we believe offers outstanding potential from an exploration perspective.



"They also demonstrate the significant untapped exploration potential at MATSA, which offers numerous high-quality targets for our exploration team both in the immediate near-mine environment and across our regional tenement holding.

"This Mineral Resource represents an outstanding first step for Sandfire at MATSA and we have every confidence that this exceptional asset will continue to grow and develop in the months and years ahead, forming the backbone of our ambition to become a sector-leading international base metals producer."

### Location

MATSA holds 43 exploitation concessions grouped into three mining projects: Aguas Teñidas, Magdalena and Sotiel covering 53.3km<sup>2</sup> and has applied for four additional exploitation concessions.

The three MATSA mines are located in relatively close proximity to one another (see Figure 2). The Aguas Teñidas mine is 7km west of the Magdalena mine, within the Almonaster la Real municipality and less than 2km from the villages of Valdelamusa and Cueva de la Mora. The Sotiel mine is located approximately 38km south of the Aguas Teñidas mine within the municipality of Calañas, immediately on the southern border of the village of Sotiel Coronada.

The three MATSA mines are accessed by the national road network which is characterised by well-maintained paved roads. The Aguas Teñidas processing plant is located approximately 100km north from the industrial port city of Huelva (Figure 3).



Figure 2: Location of Aguas Teñidas, Magdalena and Sotiel mines

### **Regional Geology**

The Project is located in the Iberian Pyrite Belt (IPB) which is arguably the largest and most important VMS metallogenic province in the world. The IPB comprises Upper Devonian to Upper Carboniferous volcano-sedimentary sequences and occurs in the provinces of Huelva and Seville in Spain as well as south Portugal, extending over a strike length of approximately 230km and 40km wide.

The stratigraphy of the IPB is fairly well understood and consists predominately of syn-orogenic Upper Devonian to Upper Carboniferous flysch (Culm facies) sequences as well as back-arc volcano-sedimentary strata (Figure 4). The basal unit is known as the Phyllite-Quartzite Group (PQ Group), which typically contains sandstones and shales with siliciclastic shelf facies units of Devonian period and approximately 2km thick.



These rocks are overlain by the Volcano-Sedimentary Complex (VSC) of Late Devonian-Early Carboniferous period and up to 1.3km in thickness. The VSC comprises of basic to acidic volcanic rocks, slates, tuffs and chemical sediments. The Culm Group overlies the VSC, the Culm Group consists of sandstones and mudstones of the Middle to Upper Carboniferous (Variscan Orogeny related). The whole series is affected by very low degree metamorphism as well as folding and thrust tectonics related to the orogeny. Most of the mineral deposits in the area consist of massive sulphides within the VSC Group.

The massive sulphide deposits within the IPB can generally be split into northern limb and southern limb styles. The northern limb (e.g. Aguas Teñidas and Magdalena) is largely characterised by massive sulphides hosted in pumic-rich volcaniclastic rocks, located in the marginal areas of volcanic domes. The southern limb (e.g. Sotiel) is characterised by



Figure 3: MATSA mines regional location relative to Huelva Port

large pyrite-rich, slate hosted deposits, which are typically strata bound and can have a stockwork system.



Figure 4: Regional Geology



### **Project Geology**

### Aguas Teñidas Mine

The local mine geology is comprised of volcano-sedimentary sequences of the VSC, which is crosscut by thrust faults and shear zones. The main lithological units at the mine comprise of footwall rhyodacite unit, massive sulphide mineralisation and a hanging wall volcano-sedimentary unit.

The mine comprises of four main mineralisation types: polymetallic lead-zinc, massive cupriferous, barren pyrite and cupriferous stockwork. Overall, the deposit is affected by deformation, exhibiting a reverse fold structure, with sheared contacts between the massive sulphide and the host rocks. The mine comprises of four deposits: Calañesa, Western Extension, Aguas Teñidas and Castillejito (Figure 5 and Figure 6).



Figure 5: Long Section Aguas Teñidas Mine



Figure 6: Plan View Aguas Teñidas Mine

The Aguas Teñidas deposit extends over a strike length of approximately 1,500m. The deposit consists of massive sulphide and stockwork mineralisation. The massive sulphide portion of the deposit is typically 100m to 150m wide, has a thickness of up to 100m, dips 0° to 30° to the north with an azimuth of approximately 100°. The stockwork mineralisation has a similar azimuth but is steeper,



on average 60° dip (to the north) with a thickness of up to 80m. In the east the deposit is 285m below surface and in the west it is 650m below surface.

The Western Extension is located west of Aguas Teñidas and extends over a strike length of approximately 1,200m. The deposit consists of massive sulphide and stockwork mineralisation. Massive sulphide mineralisation is up to 50m thick, dip averages 45° to the north and strikes eastwest. The stockwork mineralisation dips and strikes at similar angles with thicknesses also up to 50m. Figure 7 depicts a typical cross-section of the geology of the Western Extension.

The Calañesa deposit strikes almost east-west, dips approximately 55° to the south and has been defined by drilling for approximately 450m along strike and down-dip.

The Castillejito deposit strikes approximately east-west, dips at 65° towards the north in the upper portions and 50° towards the north in the lower portion. The mineralisation strikes for approximately 800m and is 20m to 30m wide.



Figure 7: Geological cross-section of the Western Extension

### Magdalena

The Magdalena mine geology comprises of VSC with wall rocks of andesite, dacite, basalts, rhyolite and/or tuffs.



The massive sulphide deposits are characterised by three main types of mineralisation, namely polymetallic lead-zinc, massive cupriferous sulphides and barren pyrite. The massive sulphides are enveloped in volcanic rocks, hangingwall typically rhyolite and the footwall dacite. The massive sulphide deposits strike east-west for 2km, extending down-dip to the north for up to 400m at 70° to 80°. Three significant mineralised bodies are defined, Masa 1, Masa 2 and Masa 2 Gold which are affected by shears of differing degrees, with stockwork mineralisation seen at Masa 2 Gold (Figure 8 and Figure 9). Figure 10 depicts a typical cross-section of the geology at Masa 1 and Masa 2.



Figure 8: Long Section of the Magdalena Mine



Figure 9: Plan View of the Magdalena Mine







Figure 10: Cross-Section of Masa 1 and Masa 2



### Sotiel

The Sotiel mine geology consists of mixed volcano-sedimentary sequences and alternating beds of shales, slates, tuffs and phyllites of the VSC as well as interbedded sandstones, quartzites of the PQ Group. The Sotiel mine comprises of the Sotiel, Sotiel East, Migollas, Elvira and Calabazar deposits (Figure 11 and Figure 12), each separated from one another by north-east/south-west trending faults. The PQ group (typically below the VSC) is thrust over the VSC at Sotiel.



Figure 11: Long Section of Sotiel Mine



Figure 12: Plan View of Sotiel Mine

The Sotiel deposit is comprised of sulphide lenses which dip approximately 45° to the north, thickness of up to 20m and extend for a strike length of 420m and 450m down-dip. The massive sulphide is fine grained, dominated by pyrite with sphalerite and galena with chalcopyrite.

The Sotiel East zone is comprised of sub-horizontal sulphide lenses which range between 5m to 50m thick for a strike length of 380m and down-dip of 500m. Similarly, to the Sotiel deposit, the massive sulphide is fine grained, dominated by pyrite with sphalerite and galena laminates with subordinate chalcopyrite.



The Migollas deposit occurs immediately adjacent to the Sotiel deposit. The mineralisation dips 40° to the north at the southern extent to 5° moving northwards, then steepening again to around 20° on the northern margin. It has a strike length of around 950m, extending 670m down-dip and maximum thickness of up to 80m. The deposit is divided into two zones based on sulphide mineralogy. The west is generally higher copper content and chalcopyrite rich, whereas in the east it is zinc-lead rich, exhibiting laminations of sphalerite and galena. Figure 13 shows a schematic cross-section of the geology at Migollas.



Figure 13: Schematic Cross-Section of Migollas

The Calabazar deposit lies to the west of the Sotiel deposit. The deposit comprises of sulphide lenses similar in mineralogy to the Sotiel deposit. The strike length of Calabazar is approximately 320m and it has a down-dip extent of 620m with thicknesses up to 25m to 30m and dipping 35° to the north.

The Elvira deposit was discovered in 2017 to the east of Migollas. It is characterised by polymetallic massive sulphides, with some localised copper enrichment. It has a strike length of approximately 400m, thickness of 25-80m and dips 25° to 30° to the north for more than 400m.

### **Mineral Resource Methodology**

Statistical analysis was conducted to identify the presence of correlations among the assayed elements. High degree of correlation was identified between Cu and Bi, between Zn, Ag, Pb, Hg and Sb, and between F and S. No significant correlation was identified between Cu and Zn.

For estimation purposes two main domains were defined for Cu and Zn mineralisation. Internal highgrade and low-grade domains were delineated as required. Cu, Bi estimated inside the Cu domains, while Zn, Ag, Pb, Hg and Sb estimates were constrained to the Zn domains.



Grade estimation was conducted using ordinary kriging (OK) for most domains. Inverse Distance Squared (IDW2) was carried out in domains where the number of available samples was insufficient for OK. Hard boundaries were applied to constrain the estimation process.

Variography was conducted for each variable within the corresponding domains. The associated models were bounded and well structured. High-grade cuts were applied to isolated high-grade composites prior to estimation where applicable. Distance based top-cuts were also used to limit the influence of isolated high-grade composites.

The grade estimation outputs were validated generating sectional profiles for each mineralised domain (swath plots). These profiles represent a spatial comparison of averages of the estimated block grade and averages of composite cut samples through the model. Additionally, representative cross-sections through each of the estimation domains were produced for visual validation of block model grade with drillhole grade. The validation process included statistical comparisons of global means of estimated blocks and composites. No material issues with the grade interpolation were identified.

Mining and processing assumptions were used to derive NSR values for each mine in order evaluate the proportions of the block model that could reasonably be expected to be economically mined. NSR is a function of the material type, metal grades, metallurgical recoveries, realisation costs, forecast metal prices and the payability of each metal according to the agreed smelter terms.

The Mineral Resource Reporting cut-off for in-situ mineralisation is mine specific:

- Aguas Teñidas and projects = US\$40.14/t
- Magdalena = US\$42.62/t
- Sotiel = US\$50.02 /t

The following Sandfire's long term commodity prices for Mineral Resources were used:

- Cu 8,863 (US\$/t)
- Zn 3,042 (US\$/t)
- Pb 2,579 (US\$/t)
- Ag 25.7 (US\$/t)

Processing recovery is specific to the material feed type and varies depending on the feed grade:

- Polymetallic Feed: Cu=65-85%, Zn=66-87%, Pb=25-50%
- Cupriferous Feed: Cu=50-93%
- Stockwork Feed: Cu=66-80%



Mining costs are specific to each particular mine:

	Aguas Teñidas	Magdalena	Sotiel
Mining cost (US\$/t)	16.43	18.91	26.32
Process Operation (US\$/t)	12.01	12.01	12.01
Process Maintenance (US\$/t)	4.34	4.34	4.34
General Services (US\$/t)	3.11	3.11	3.11
Administration (US\$/t)	4.25	4.25	4.25
Total	40.14	42.62	50.02

Payable Metal assumptions are as follows:

•Cu Payable=96.5%

• Zn Payable=85%

• Pb Payable=95%

### **MATSA Mineral Resource**

Tables with breakdown of resources by material type and mine with accompanying commentary on key changes and long section/obliques

Resources 2019	Resources 2021
Polymetallic: Zn >= 2.5%.	Polymetallic: Zn >= 2.5%.
Cupriferous: Cu >= $0.5\%$ and Zn < $2.5\%$ .	Cupriferous: Cu >= $0.5\%$ or Cu/Zn >1.7%.
Stockwork: Cu >= 0.4%	

The reclassification of the Cu/Zn ratio by the metallurgical group resulted in increased volume of categorised polymetallic material and decrease in cupriferous material.

Additional volumes of copper mineralisation were added to the Resource at Aguas Teñidas. These were added in the stockwork to the east of the Aguas Teñidas, and massive sulphide mineralisation was added in the Western Extension and Castillejitos mineralisation domains.

Appreciable changes in Sotiel are due to the addition of new Inferred Resources to the east of Sotiel East where mineralisation is not yet closed. Mineralisation in the Migollas zone was also reclassified from Inferred to Measured after a comprehensive drilling campaign.

Note that this year the lenses of Migollas and Sotiel East have been updated with implicit modelling, which has increasing continuity throughout the domain.

Magdalena, as in 2020, has seen a reduction mainly in its Inferred Resources, although the Indicated Resources have also decreased. This is the result of in-fill drilling focused on Masa 2 Centro, where the underground drill-holes were not able to confirm the information provided by the surface drilling, since the mass at depth is less continuous than initially expected.





Figure 16: Long Section of Aguas Teñidas



Figure 17: Long Section of Magdalena

#### ASX:SFR





Figure 18: Long Section of Sotiel

### MATSA Mineral Resources by Material Type

Material Type	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)
Polymetallic Combined	Measured	58.6	142.5	1.3	4.7	1.6	54.9
Resource	Indicated	15.0	116.7	1.1	4.3	1.5	52.1
	Inferred	20.5	103.2	1.2	3.9	1.5	48.7
	Total	94.1	129.8	1.3	4.5	1.5	53.1
Cupriferous Combined	Measured	17.8	146.0	2.3	0.4	0.2	24.7
Resource	Indicated	6.2	118.3	1.9	0.3	0.2	21.0
	Inferred	13.5	98.3	1.6	0.3	0.1	14.4
	Total	37.4	124.3	2.0	0.3	0.2	20.4
Stockwork Combined	Measured	8.3	68.9	1.0	0.1	0.0	4.9
Resource	Indicated	3.1	83.3	1.2	0.1	0.0	5.1
	Inferred	4.3	62.4	0.9	0.1	0.0	3.9
	Total	15.7	70.0	1.0	0.1	0.0	4.7
Total Combined	Measured	84.7	136.0	1.5	3.4	1.1	43.7
Resources	Indicated	24.3	112.8	1.3	2.7	1.0	38.1
	Inferred	38.2	96.9	1.3	2.2	0.8	31.6
	Total	147.2	122.0	1.4	3.0	1.0	39.6



### **MATSA Mineral Resources by Mine**

Deposit	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Cu (Kt)	Zn (Kt)	Pb (Kt)	Ag (Koz)
Magdalena	Measured	15.9	232.4	2.7	3.5	1.0	50.6	427	560	160	25,896
Resources	Indicated	4.5	148.5	1.9	1.6	0.5	25.6	87	70	23	3,675
	Inferred	4.8	161.6	2.1	1.5	0.5	25.3	103	71	24	3,897
	Total	25.2	204.0	2.4	2.8	0.8	41.3	616	701	207	33,468
Aguas	Measured	39.4	130.5	1.3	3.2	0.9	42.1	523	1,273	357	53,299
Combined	Indicated	9.0	125.8	1.2	3.2	0.9	40.5	110	287	80	11,690
Resources	Inferred	2.9	167.2	1.7	4.1	0.9	48.7	49	118	27	4,540
	Total	51.3	131.7	1.3	3.3	0.9	42.2	682	1,678	464	69,529
Sotiel	Measured	29.4	91.4	1.1	3.5	1.5	42.1	316	1,029	443	39,794
Resources	Indicated	10.8	87.2	1.2	2.9	1.2	41.3	126	310	130	14,377
	Inferred	10.7	70.0	0.9	3.2	1.4	37.5	99	338	146	12,899
	Total	51.0	86.0	1.1	3.3	1.4	40.9	540	1,678	719	67,070
Projects	Measured	-	-	-	-	-	-	-	-	-	-
Resources	Indicated	-	-	-	-	-	-	-	-	-	-
	Inferred	19.8	85.4	1.2	1.6	0.6	27.6	246	324	123	17,580
	Total	19.8	85.4	1.2	1.6	0.6	27.6	246	324	123	17,580
Total	Measured	84.7	136.0	1.5	3.4	1.1	43.7	1,265	2,862	961	118,990
Resources	Indicated	24.3	112.8	1.3	2.7	1.0	38.1	323	667	232	29,742
	Inferred	38.2	96.8	1.3	2.2	0.8	31.7	496	852	320	38,916
	Total	147.2	122.0	1.4	3.0	1.0	39.6	2,085	4,381	1,513	187,647

#### Notes:

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1. Mineral Resources estimate has been reported in accordance with the 2012 edition of the JORC Code

- 2. Mineral Resources are reported on a 100% ownership basis.
- 3. Mineral Resources are inclusive of Mineral Reserves.
- 4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability
- 5. Mineral Resources are estimated at the following NSR cut-off:
  - a. Magdalena: 42.62 US\$/t
  - b. Aguas Teñidas and projects: 40.14 US\$/t
  - c. Sotiel: 50.02 US\$/t
  - Mineral Resources are estimated using the following long-term prices:
  - a. Cu 8,863 (US\$/t)
  - b. Zn 3,042 (US\$/t)
  - c. Pb 2,579 (US\$/t)
  - d. Ag 25.7 (US\$/oz)
- 7. Cu recovery for Polymetallic ranged between 32% and 79%, for Cupriferous ranged between 29.8% and 93% and for Stockwork ranged between 66% and 93%.
- 8. Zn recovery for Polymetallic ranged between 32% and 83%.
- 9. Pb recovery for Polymetallic ranged between 22% and 50%.
- 10. Original statements did not present metal content, these have been derived for consolidated table only.
- 11. Numbers may not add due to rounding.



### **MATSA Drilling Update**

Sandfire is preparing an updated drilling budget aligned with a renewed focus on near-mine extensions. More than 35,000m of resource development drilling is planned for FY23, targeting extensions to known mineralisation domains at all three mines.

Maiden Mineral Resources for Concepción, Poderosa and Castillo-Buitrón

### **Concepción and Poderosa Project Description**

Following recent drill intersections, the potential for a new mining centre has been identified at Poderosa and Concepción. Both Poderosa and Concepción are VMS deposits in similar nature to Magdalena.

Poderosa and Concepción are located east of the Magdalena and Aguas Teñidas mines. Poderosa is 41km east of the Aguas Teñidas plant and Concepción is 28km east.



Figure 19: Regional Location Plan of Concepción and Poderosa

### **Project Geology**

### Concepción

The geology of the Concepción deposit consists of massive to semi-massive sulphides with a stockwork area hosted in a volcano sedimentary sequence. This sequence has an important deformation zone to the north that puts this volcanic sequence in contact with the Campofrío granitic stock. The hangingwall consists of a series of acidic altered tufitic units with interbedded sedimentary rocks, mainly grey and black shales. This area has been strongly affected by chlorite, sericite and silica hydrothermal alteration. the footwall sequence corresponds to a barren dacitic unit.

The Concepción deposit is approximately 750m long along the N100°E direction. The mineralisation is dipping 60° to 70° to the north, and has a plunge to the north-west, leaving the mineralisation open in this direction. The thickness and shape of the mineralised areas varies but extends continuously from surface to the currently known Mineral Resource.



The Concepción deposit comprises four main mineralisation types: polymetallic lead-zinc, massive cupriferous, barren pyrite and the stockwork with some cupriferous zones. The polymetallic mineralisation is dominated by massive pyrite, sphalerite and galena with small amounts of chalcopyrite. The massive cupriferous mineralisation consists predominately of pyrite and chalcopyrite. Cupriferous stockwork mineralisation is comprised of mainly chalcopyrite and pyrite veinlets. The cupriferous, massive and stockwork zones present cobalt mineralisation.

Material Type	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)
Polymetallic	Inferred	2.4	102.4	0.6	5.1	1.8	49.1
Cupriferous	Inferred	6.9	78.1	1.3	0.3	0.1	11.3
Stockwork	Inferred	3.9	62.5	0.9	0.1	0.0	3.7
Combined Resources	Inferred	13.1	77.7	1.1	1.1	0.4	16.0

Concepción Mineral Resource NSR >=50.02

### Poderosa

Poderosa Massive Sulphides is located 2.5km SE of Mina Concepción. This mineralisation is hosted by an acidic part of the volcanogenic unit of the volcano-sedimentary complex. Host rocks are range from dacites to rhyolites in both footwall and hangingwall. These appear in different series of coherent volcanoclastic units with different grades of deformation.

Mineralisation extends for more than 400m down-dip to the NW defining one lens that dips  $65^{\circ}$  to  $70^{\circ}$  towards the north with a plunge of  $50^{\circ}$  to  $70^{\circ}$  to the NW.

The Poderosa deposit comprises three main mineralisation types: massive polymetallic with copper, lead and zinc, barren pyritic massive sulphides, and the stockwork type mineralisation with some local enrichment Cu zones.

Poderosa Mineral Resource (NSR >=50.02)

Material Type	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)
Polymetallic	Inferred	2.7	140.1	2.0	3.8	1.7	91.3
Cupriferous	Inferred	2.3	78.0	1.6	0.3	0.2	20.2
Combined Resources	Inferred	5.1	111.6	1.8	2.2	1.0	58.7



### **Castillo-Buitrón Project Description**

### **Project Geology**

### Buitrón

The Castillo-Buitrón deposit is located 20km south of MATSA's Plant area. The geology consists of a complex series of volcanic rocks, ranging from acidic (rhyolites and dacites) to basic rocks (andesites) and bands of sedimentary rocks, black and grey shales.



Figure 20: Regional Location Plan of Castillo Buitron

Mineralisation forms two bodies emplaced along a west-east direction separated by 250m. Both bodies outcrop with the presence of a well-developed gossan. The eastern body ("Levante") comprises mostly massive copper-rich sulphides and has been partially mined in the past. The western body ("Poniente") is a polymetallic massive sulphide dominated by massive pyrite, chalcopyrite sphalerite and galena. A weak, mostly pyritic, stockwork with occurrence of copper mineralisation has been identified.

Castillo-Buitrón Mineral Resource NSR >=50.02

Material Type	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)
Polymetallic	Inferred	1.7	66.7	0.8	3.8	1.2	24.0

- ENDS -



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#### This announcement is authorised for release by Sandfire's Managing Director and CEO, Karl Simich.

#### **Competent Person's Statement**

The information in this report that relates to Mineral Resources is based on and fairly represents information and supporting documentation prepared by Mr Orlando Rojas who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Rojas is a full-time employee of GeoEstima. Mr Rojas has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves'. Mr Rojas consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

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

Certain statements made during or in connection with this release contain or comprise certain forward-looking statements regarding Sandfire's Mineral Resources and Reserves, exploration and 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.

There is also continuing uncertainty as to the full impact of COVID-19 on Sandfire's business, the Australian economy, share markets and the economies in which Sandfire conducts business. Given the high degree of uncertainty surrounding the extent and duration of the COVID-19 pandemic, it is not currently possible to assess the full impact of COVID-19 on Sandfire's business or the price of Sandfire securities.

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 these forward-looking statements 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 forward-looking statements 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.



# MATSA Mineral Resources Statement and Explanatory Notes



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### **Summary Mineral Resources**

#### Table 1: MATSA Mineral Resources Estimate as at 31 December 2021

Deposit	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Fe (%)	S (%)	As (ppm)	Sb (ppm)	Bi (ppm)	Hg (ppm)
	Measured	15.9	232.4	2.7	3.5	1.0	50.6	1.3	32.7	38.9	2,337	260	202	18
Magdalena	Indicated	4.5	148.5	1.9	1.6	0.5	25.6	1.0	35.2	41.4	1,999	121	188	10
Combined Resources	Inferred	4.8	161.6	2.1	1.5	0.5	25.3	0.9	34.2	38.6	2,794	103	190	11
	Total	25.2	204.0	2.4	2.8	0.8	41.3	1.2	33.4	39.3	2,364	205	197	15
	Measured	39.4	130.5	1.3	3.2	0.9	42.1	0.6	34.1	38.5	5,341	351	146	18
Aguas Teñidas	Indicated	9.0	125.8	1.2	3.2	0.9	40.5	0.5	28.9	31.9	5,009	324	107	19
Resources	Inferred	2.9	167.2	1.7	4.1	0.9	48.7	0.8	29.0	34.0	3,709	346	97	19
	Total	51.3	131.7	1.3	3.3	0.9	42.2	0.6	32.9	37.1	5,191	346	136	18
Sotiel	Measured	29.4	91.4	1.1	3.5	1.5	42.1	0.5	36.2	40.3	5,530	660	100	140
	Indicated	10.8	87.2	1.2	2.9	1.2	41.3	0.5	36.2	38.9	5,146	620	101	108
Resources	Inferred	10.7	70.0	0.9	3.2	1.4	37.5	0.4	35.7	34.0	5,071	685	100	88
	Total	51.0	86.0	1.1	3.3	1.4	40.9	0.5	36.1	38.7	5,352	657	100	122
	Measured	-		-	-	-	-	-	-	-	-	-	-	-
Projects	Indicated	-	-	-	-	-	-	-	-	-	-	-	-	-
Resources	Inferred	19.8	85.4	1.2	1.6	0.6	27.6	0.4	35.8	36.8	2,160	220	112	21
	Total	19.8	85.4	1.2	1.6	0.6	27.6	0.4	35.8	36.8	2,160	220	112	21
	Measured	84.7	136.0	1.5	3.4	1.1	43.7	0.7	34.6	39.2	4,842	441	140	60
Total	Indicated	24.3	112.8	1.3	2.7	1.0	38.1	0.6	33.3	36.8	4,515	419	119	57
Combined Resources	Inferred	38.2	96.8	1.3	2.2	0.8	31.7	0.5	35.0	36.0	3,172	345	117	38
	Total	147.2	122.0	1.4	3.0	1.0	39.6	0.6	34.5	38.0	4,355	413	131	54

1. Mineral Resources estimate has been reported in accordance with the 2012 edition of the JORC Code

2. Mineral Resources are reported on a 100% ownership basis.

3. Mineral Resources are inclusive of Mineral Reserves.

4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability

5. Mineral Resources are estimated at the following NSR cut-off:

a. Magdalena: 42.62 US\$/t

- b. Aguas Teñidas and projects: 40.14 US\$/t
- c. Sotiel: 50.02 US\$/t

6. Mineral Resources are estimated using the following long-term prices:

- a. Cu 8,863 (US\$/t)
- b. Zn 3,042 (US\$/t)
- c. Pb 2,579 (US\$/t)
- d. Ag 25.7 (US\$/oz)
- 7. Cu recovery for Polymetallic ranged between 32% and 79%, for Cupriferous ranged between 29.8% and 93% and for Stockwork ranged between 66% and 93%.
- 8. Zn recovery for Polymetallic ranged between 32% and 83%.
- 9. Pb recovery for Polymetallic ranged between 22% and 50%.
- 10. Numbers may not add due to rounding.



### MATSA Resources Statement as at 31 December 2021

The MATSA December 2021 Mineral Resources statement relates to the Mineral Resources estimate for the MATSA Mining Complex which includes copper-zinc-lead deposits of three mines: Aguas Teñidas, Magdalena and Sotiel and three Projects. These deposits are all interpreted as volcanogenic massive sulphide, or VMS, in a well-established mineralised belt known as the Iberian Pyrite Belt ("IPB") deposits located in southwest Spain near the international border with Portugal (see Figure 1).



Figure 1: Location of MATSA deposits, Southwest Spain

Sandfire has completed the acquisition of MATSA with effect on 1 February 2022. This Mineral Resources statement is as of 31 December 2021 and includes drillhole data acquired between 1984 and December 2021, and also uses mapping information collected from underground development in its three mines.

The 2021 model uses an approach to interpretation consistent with that used for previous models for Aguas Teñidas, Magdalena and Sotiel Mines, and add, respect to previous statements, resources related to three projects that were previously in an exploration stage.

The resource model of Aguas Teñidas Mine includes the Aguas Teñidas, Western Extension, Calañesa, and Castillejito deposits. The resource model of Magdalena mine includes Masa 1, Masa 2, Masa Gold and Masa Gold Norte deposits, and the resource model of Sotiel Mine includes Sotiel, Sotiel East, Migollas, Calabazar, and Elvira deposits. The projects resource models include Concepción, Castillo–Buitrón and Poderosa deposits.

The Reasonable Prospects For Eventual Economic Extraction (RPEEE) are based on updated commodity prices for Mineral Resources<sup>1</sup> and Copper, Zinc, Lead and Silver recoveries that allow the valuation of blocks as from NSR<sup>2</sup> calculation. NSR cut-off were applied for each mine regarding different production costs that apply to each of them. The model has been created and classified

<sup>&</sup>lt;sup>1</sup> For resources estimates, prices higher than those used for the valuation of reserves are applied.

<sup>&</sup>lt;sup>2</sup> NSR: net smelter return.

assuming it will underpin an assessment of the applicability of the current mining method, namely transverse and longitudinal sub-level, long hole open stoping.

### **Mineral Resources**

The estimated Mineral Resources for the MATSA Complex Mines deposits are shown in Table 2. The Mineral Resources estimate has been reported in accordance with the 2012 edition of the JORC Code. For mineralisation above a nominal cut-off of NSR equal to 42.62 US\$/t for Magdalena; 40.14 US\$/t for Aguas Teñidas and projects; and 50.02 US\$/t for Sotiel. Commodities long term prices for Mineral Resources are Cu equal to 8,863 (US\$/t); Zn equal to 3,042 (US\$/t); Pb equal to 2,579 (US\$/t); and Ag equal to 25.7(US\$/oz).

Cu recovery for Polymetallic mineralisation ranged between 32% and 79%, for Cupriferous mineralisation ranged between 29.8% and 93% and for Stockwork mineralisation ranged between 66% and 93%. Zn recovery for Polymetallic mineralisation ranged between 32% and 83%; Pb recovery for Polymetallic mineralisation ranged between 22% and 50%.

Deposit	Class	Mt	NSR (\$/t)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Fe (%)	S (%)	As (ppm)	Sb (ppm)	Bi (ppm)	Hg (ppm)
	Measured	15.9	232.4	2.7	3.5	1.0	50.6	1.3	32.7	38.9	2,337	260	202	18
Magdalena	Indicated	4.5	148.5	1.9	1.6	0.5	25.6	1.0	35.2	41.4	1,999	121	188	10
Combined Resources	Inferred	4.8	161.6	2.1	1.5	0.5	25.3	0.9	34.2	38.6	2,794	103	190	11
	Total	25.2	204.0	2.4	2.8	0.8	41.3	1.2	33.4	39.3	2,364	205	197	15
	Measured	39.4	130.5	1.3	3.2	0.9	42.1	0.6	34.1	38.5	5,341	351	146	18
Aguas Teñidas	Indicated	9.0	125.8	1.2	3.2	0.9	40.5	0.5	28.9	31.9	5,009	324	107	19
Combined Resources	Inferred	2.9	167.2	1.7	4.1	0.9	48.7	0.8	29.0	34.0	3,709	346	97	19
	Total	51.3	131.7	1.3	3.3	0.9	42.2	0.6	32.9	37.1	5,191	346	136	18
	Measured	29.4	91.4	1.1	3.5	1.5	42.1	0.5	36.2	40.3	5,530	660	100	140
Sotiel	Indicated	10.8	87.2	1.2	2.9	1.2	41.3	0.5	36.2	38.9	5,146	620	101	108
Combined Resources	Inferred	10.7	70.0	0.9	3.2	1.4	37.5	0.4	35.7	34.0	5,071	685	100	88
	Total	51.0	86.0	1.1	3.3	1.4	40.9	0.5	36.1	38.7	5,352	657	100	122
	Measured	-	-	-	-	-	-	-	-	-	-	-	-	-
Projects	Indicated	-	-	-	-	-	-	-	-	-	-	-	-	-
Combined Resources	Inferred	19.8	85.4	1.2	1.6	0.6	27.6	0.4	35.8	36.8	2,160	220	112	21
	Total	19.8	85.4	1.2	1.6	0.6	27.6	0.4	35.8	36.8	2,160	220	112	21
	Measured	84.7	136.0	1.5	3.4	1.1	43.7	0.7	34.6	39.2	4,842	441	140	60
Total Combined Resources	Indicated	24.3	112.8	1.3	2.7	1.0	38.1	0.6	33.3	36.8	4,515	419	119	57
	Inferred	38.2	96.8	1.3	2.2	0.8	31.7	0.5	35.0	36.0	3,172	345	117	38
	Total	147.2	122.0	1.4	3.0	1.0	39.6	0.6	34.5	38.0	4.355	413	131	54

Table 2: MATSA Mineral Resource Estimate as at 31 December 2021

1. Mineral Resources estimate has been reported in accordance with the 2012 edition of the JORC Code

2. Mineral Resources are reported on a 100% ownership basis.

3. Mineral Resources are inclusive of Mineral Reserves.

4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability

5. Mineral Resources are estimated at the following NSR cut-off:

a. Magdalena: 42.62 US\$/t

b. Aguas Teñidas and projects: 40.14 US\$/t



- c. Sotiel: 50.02 US\$/t
- 6. Mineral Resources are estimated using the following long-term prices:
  - a. Cu 8,863 (US\$/t)
  - b. Zn 3,042 (US\$/t)
  - c. Pb 2,579 (US\$/t)
  - d. Ag 25.7 (US\$/oz)
- 7. Cu recovery for Polymetallic ranged between 32% and 79%, for Cupriferous ranged between 29.8% and 93% and for Stockwork ranged between 66% and 93%.
- 8. Zn recovery for Polymetallic ranged between 32% and 83%.
- 9. Pb recovery for Polymetallic ranged between 22% and 50%.
- 10. Numbers may not add due to rounding.

### **Geology and Geological Interpretation**

The MATSA Complex Mines is located within 250 × 20–70km Iberian Pyrite Belt (IPB) a Variscan metallogenic province in SW Portugal and Spain hosting the largest concentration of massive sulphide deposits worldwide. The lowermost stratigraphic unit is the early Givetian to late Famennian-Strunian (base unknown) Phyllite-Quartzite Group (PQG), with shales, quartz-sandstones, quartzwacke siltstones, minor conglomerate, and limestones at the top. The PQG is overlain by the Volcanic Sedimentary Complex (VSC), of late Famennian to mid-late Visean age, with a lower part of mafic volcanic rocks, rhyolites, dacites and dark shales, hosting VMS deposits on top and an upper part, with dark, purple, and other shales and volcanogenic/volcaniclastic rocks, carrying Mn oxide deposits.

IPB contains over 90 VMS deposits. Eight of these are giant (≥100Mt) VMS deposits, namely Rio Tinto, Tharsis, Aznalcóllar-Los Frailes, Masa Valverde, Sotiel-Migollas and La Zarza in Spain and Neves Corvo and Aljustrel in Portugal. The VMS deposits are of the felsic-siliclastic type and mostly of the Zn–Pb–Cu and Zn–Cu–Pb metal content types. The deposits range in thickness from 1m to tens of metres (plus increase from tectonic stacking) and up to a few kilometres in extension, and many are underlain by large stockwork zones<sup>3</sup>.

MATSA deposits are related to three clusters: the Aguas Teñidas Mine that includes the Aguas Teñidas, Western Extension, Calañesa, and Castillejito deposits (see Figure 2). The Magdalena Mine that includes Masa 1, Masa 2, Masa Gold and Masa Gold Norte deposits (see Figure 3), and the Sotiel Mine that includes Sotiel, Sotiel East, Migollas, Calabazar, and Elvira deposits (See Figure 4).

<sup>&</sup>lt;sup>3</sup> C Inverno et al., 2015, Introduction and Geological Setting of the Iberian Pyrite Belt, 3D, 4D and Predictive Modelling of Major Mineral Belts in Europe, Mineral Resource Reviews, © Springer International Publishing Switzerland 2015.



#### ASX:SFR



Figure 2: Aguas Teñidas Mine Deposits



Figure 3: Magdalena Mine Deposits



Figure 4: Sotiel Mine Deposits



Mineralisation is related to the tabular lens shaped bodies of massive sulphide named as Masa (SM) and stockwork lens bodies named as Stockwork (SW) (see Figure 5 and Figure 6). Massive sulphide mineralisation is composed primarily of at least some of the following minerals: pyrite, arsenopyrite, chalcopyrite, sphalerite, or galena.



Figure 5: Massive sulphide and stockwork type mineralisation





Figure 6: SM and SW lens in ATE (West Extension), NS Cross Section looking west

Geological modelling is based on drilling logging and underground face mapping. Each deposit was interpreted by MATSA geologists using implicit and explicit methodologies. For deposits modelled by implicit tools Leapfrog Geo software was used creating wireframes of massive or semi-massive sulphides (SM) or stockwork (SW) for the cupriferous stockwork zones based on logged rock code in the drilling database. The explicit models were made on cross-sections, based primarily on the occurrence of logged massive or semi-massive sulphides in diamond drillholes and underground exposures, where applicable. The cross-section interpretations are triangulated in Datamine software to produce volumes denoted as SM and SW.

### Sampling and Sub-Sampling Techniques

For all intersections with logged presence of sulphides and adjacent waste zones, cores are marked for sampling and cut into two equal halves. The core is placed in a v-rail prior to being placed in the core cutting machine, the core is then cut. One half of the core is selected for sample preparation and assay analysis, whilst the other is retained as a reference sample.

### **Drilling Techniques**

Coring sizes vary with surface drillholes progressing from PQ to HQ, and then NQ, depending on the target depth of the drillhole. The underground exploration drillholes start in HQ and can be reduced to NQ size depending on the target depth of the drillhole.

The underground production drillholes are all NQ in diameter and reduction in size are not applied, as these are typically short in length. Almost all massive sulphide mineralisation is drilled using HQ or NQ diameters.

### Sample Analysis Method

Density measurements, sample preparation and analysis are carried out in the Internal MATSA laboratory. Samples are assayed using ICP-OES, with aqua regia digest at the Internal MATSA laboratory. Samples are also fire-assayed for Au. The minimum detection limits are given by assaying equipment (ICP-OES).

Historically at the Sotiel Mine before 2001, only Cu, Zn, Pb, and S% were assayed for unknown method.



The historical Aguas Teñidas core (before 1999) was assayed for the current MATSA suite of element in most cases (when the mine was active), typically by ICP and XRF.

### **Estimation Methodology**

A total of twelve variables were estimated in the respectively (sub-cell) block models: Cu, Zn, Pb, Au, Ag, As, Hg, Bi, Sb, Fe, S and density.

Multivariate data analysis shows correlations between Cu and Bi; between Zn, Ag, Pb, Hg and Sb, and between Fe and S. There is not a correlation between Cu and Zn.

This analysis was considered as initial driver in the grade estimation process leading the definition of domains for Cu and Bi estimates within Cu mineralisation wireframes (SM or SW), or in some cases, dividing the mineralised bodies into sub-zones of high-grade or low-grade copper domains according to grade thresholds observed in histograms or cumulative probability plots.

Regarding Zn domains these were defined independently of Cu divisions creating divisions of the mineralised wireframes into sub-zones of high-grade or low-grade zinc domains according to grade thresholds observed in stat graphs. Within these Zn domains Zn, Ag, Pb, Hg and Sb were estimated.

The original mineralisation domains (SM or SW) were used for Au, As, Fe and S. Density was estimated into the mineralisation domains and also on no-mineralised country rocks surrounding mineralised zones in order to have values for later dilution computations.

For most part of estimations domains, the samples were composited to 4 metres length, in few cases to 2 metres length using domains wireframes as constrain.

Grade estimation technique applied for estimation within Cu, Zn and mineralisation domains was mostly ordinary kriging (OK) for all variables Cu, Bi, Zn, Ag, Pb, Hg, Fe, S, density. Only in a few domains, with few data Inverse Distance Squared (IDW2) was applied.

Analysis suggests that a stationarity assumption is reasonable for the style of deposit and linear estimation of grades. Variograms are bounded and well structured. In some domains variograms model were fitted on transformed data.

Top cuts were applied to isolated high-grade composites prior to estimation where applicable based on review of histograms, disintegration analysis and statistical analysis of composites. Distance based top cuts were also used to limit the influence of isolated high-grade composites.

The search ellipsoid was settled on three nested neighbourhood and is constrained by the optimum number of samples to ensure data used to estimate blocks, the interpolation process was completed with ISATIS Neo software. Subsequently all block models were exported to Datamine format.

Estimates validation was carried out for all elements and domains. The methodology applied includes standard model validation starting visually checking estimated blocks against the input composite/drillhole data followed by numerical methods like swath plots of the estimated block grades and composite mean grades generated by easting, northing and elevation swaths and reviewed to ensure acceptable correlation, and global statistical comparisons of mean estimated block grades to mean composite grades.

### **Mineral Resource Classification Criteria**

The classification criteria are based on drillhole spacing that consider the style of mineralisation and the selectivity of the mining method in the three mines of MATSA.



MATSA has been employing these distances to drillhole criteria for several years and find that these reconcile appropriately (based on Resource classification) to observations and results from mining.

The basis for Mineral Resource classification is underpinned by:

- Robustness of the conceptual geological model
- Quality of data
- Continuity of geology and grade relative to the arrangement of data
- Agreement between the model and process plant reconciled grade estimates.

The Competent Person assessed the quality of the data and the confidence in the interpretations of geology and mineralisation. The quality of the estimation of grades was assessed using visual and stat validations, and reconciliations data. The confidence in the interpretations and estimate were then integrated. Finally, those parts of the model that were unlikely to satisfy the RPEEE test, were excluded from the resource estimate, mainly the areas affected by the development of the mine.

The Competent Person has examined, reviewed and integrated all this information and subsequently assigned a classification of Measured, Indicated or Inferred Mineral Resource to the estimate, and excluded parts of the model that do not satisfy the RPEEE from the Mineral Resources.

### **Cut-Off Value**

To inform the resources, firstly an envelope for each mineralised zones has been generated using a low NSR value threshold to remove some small, isolated bodies, then inside these shapes cut-off to the NSR were applied. NSR is calculated considering 2021 business plan metallurgical recovery based on current performance, current royalties and transport, treatment, and refining costs. Recovery is calculated for copper, zinc, lead, and silver based on three flotation domains: polymetallic concentrate, copper concentrate from massive sulphide mineralisation and copper concentrate from stockwork type mineralisation. Cut-off values applied are different for each mine. NSRs cut-off were calculated considering mining, process, maintenance, general service, and administration cost which are different for each mine (Aguas Teñidas, Magdalena and Sotiel).

### **Mining and Geotechnical**

MATSA Mineral Resource potentially can be economically mined by underground mining methods. It is assumed any of the current mining method used by MATSA can be used (Aguas Teñidas and Magdalena are mined for transverse and longitudinal sub-level, longhole open stoping. At the Sotiel mine, a modified long hole stoping approach is employed).

### **Processing**

Mineral Resources are estimated assuming that these will be processed in the Aguas Teñidas processing plant. This plant has two separate processing streams, a polymetallic and a copper processing stream, which are used to produce concentrates. The polymetallic mineralisation stream processes polymetallic massive sulphide material, whereas the copper mineralisation stream processes mineralisation stemming from stockwork material and cupriferous massive sulphides.

### Environment

Capacity exists within current approvals to accommodate waste rock and tailings for the remaining Mineral Resource in the existing facilities at MATSA.



### **Reasonable Prospects for Economic Extraction**

MATSA has been exploited and processing ore from the three mines for 10 years. The assumption of any mineralised zones with same geological features, massive sulphide and stockwork mineralisation can be economically extracted by underground mining and current process plant. In order to avoid including isolated blocks in the mineral resource figures, an NSR's grade shell was generated for each block model thus small volumes could be discarded.

### **Dimensions**

The mineralised bodies have same characteristics and style of mineralisation, but its dimensions change individually. Mainly the lens shape form of massive sulphide and stockwork mineralisation are sub vertically attitude with thickness between 2m to 80m. Subzones of high-grade or low grades of copper or zinc could be distinguish inside these lenses. Mineralised zones extend between 100m to 890m from surface.

### **Competent Person Declaration – Mineral Resources**

The information in this report that relates to Mineral Resources is based on information compiled by Orlando Rojas, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (3010402). Orlando Rojas is a full-time employee of GeoEstima. Orlando Rojas has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC 2012). Orlando Rojas consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. Orlando Rojas BSc (Geology) has over 28 years of relevant and continuous experience as a geologist of several deposit types including sulphide mineral deposits of tabular shapes and with structural control. Orlando Rojas has visited site on 22 to 30 April 2022. Orlando Rojas is not employee of Sandfire and is an independent consultant, there is no relationship between Sandfire shareholder benefits and the outcomes of these Mineral Resources.



### APPENDIX I: JORC 2012 CODE

### JORC 2012 MINERAL RESOURCE PARAMETERS

### MATSA

JORC Code Assessment Criteria	Comment
Section 1 Sampling Techniques and Data	
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.	<ul> <li>Drilling undertaken by MATSA conforms to industry best practices and the resultant sampling pattern is sufficiently dense to interpret the geometry, boundaries, and different styles of the sulphide mineralisation at the three mines with a high level of confidence within well drilled areas.</li> <li>The procedure used to acquire drilling information in historic programs (prior to 2004) is not documented or recorded.</li> <li>Historical holes are generally surrounded by a majority of more recent MATSA drillholes (post 2004)</li> </ul>
Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	<ul> <li>Historical holes are generally surrounded by a majority of more recent MATSA drillholes (post 2004) which largely confirm the location of mineralisation which indirectly suggests that the location accuracy of the historical holes is reasonable.</li> </ul>
Aspects of the determination of mineralisation that are Material to the Public Report. 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.	<ul> <li>Historical drillholes comprise less than 22% of all drillholes at the Project and where these exist, the mineralisation location is confirmed by surrounding MATSA drillholes</li> <li>All samples from all three mines were taken from diamond drill cores drilled from both, surface and underground. Samples were cut longitudinally in half using an auto-feeding diamond core saw, or whole core, depending on the purpose of the drill hole and the core diameter.</li> <li>Sampling intervals are then marked, typically at 2m intervals, although this is reduced depending on the geology and mineralisation in the core. The most common sample lengths in the assay database are 1m and 2m.</li> <li>Diamond drill holes were generally sampled along their entire length.</li> </ul>



JORC Code Assessment Criteria	Comment
Drilling Techniques Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.), and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	<ul> <li>All drilling conducted at the three mines and the surrounding areas to date has been diamond drilling ("DDH") – from both surface and underground collar locations.</li> <li>Total surface DDH = 1,367 drillholes (614,124m)</li> <li>Total underground DDH = 5,874 drillholes (706,396m)</li> <li>MATSA does not currently drill orientated core.</li> <li>Drilling has been carried out by external third-party contractors both for surface and underground programs.</li> <li>The diamond drilling has been conducted using various drilling machines and is usually undertaken using wireline double tube tools.</li> <li>Coring sizes vary with surface drillholes progressing from PQ to HQ, and then NQ, depending on the target depth of the drillhole. The underground exploration drillholes start in HQ and can be reduced to NQ size depending on the target depth of the drillholes are all NQ in diameter and reduction in size are not applied, as these are typically short in length. Almost all massive sulphide mineralisation is drilled using HQ or NQ diameters</li> </ul>
Drill Sample Recovery           Method of recording and assessing core and chip sample recoveries and results assessed.	• The drill core is transported from the drilling rigs to the Core Shed where it is sorted and stored before being processed. Core intervals are measured against the drillers recorded measurements and then the core recovery is determined by MATSA geologists.
Measures taken to maximise sample recovery and ensure representative nature of the samples.	• The core recovery in the mineralised horizons is rarely less than 95% for all drilling contractors.
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.	• Core was cut along a cut-line marked by the supervising geologist, which was marked orthogonal to the main core axis.



JORC Code Assessment Criteria	Comment
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.	• The drill core is laid out on an angled logging rack with dedicated lights and water supply. The MATSA logging includes lithological coding as well as assigning an overall geological unit. The lithological coding system used at the three mines records 68 individual rock types. These individual rock types are grouped into an overall geological unit code, or main rock type.
Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.), photography.	• The core logging is qualitative in nature whereas the sampling and results are quantitative. All drill cores are photographed and catalogued appropriately.
The total length and percentage of the relevant intersections logged.	All drill holes are fully logged.
	Longitudinally cut half core samples are produced using a core saw.
	• No non-core data was used in the Mineral Resource Estimate.
Sub-Sampling Techniques and Sample Preparation	For all intersections with logged presence of sulphides and adjacent waste zones, cores are marked for
If core, whether cut or sawn and whether quarter, half or all core taken.	sampling and cut into two equal halves. The core is placed in a v-rail prior to being placed in the core cutting machine, the core is then cut. One half of the core is selected for sample preparation and assay
If non-core, whether riffled, tube sampled, rotary split, etc., and whether sampled wet or dry.	analysis, whilst the other is retained as a reference sample.
	Core sample preparation at the laboratory was completed as follows:
For all sample types, the nature, quality and appropriateness of the sample preparation technique.	<ul> <li>Weight.</li> </ul>
	Oven dry, each sample is stored in a metal tray on a rack and dried at 105°C for at least two hours.
Quality control procedures adopted for all sub-sampling stages	The entire dried sample is first crushed using a jaw crusher.
to maximise representivity of samples.	<ul> <li>The sample is then run through a cone crusher which reduces 90% of the particles to less than 2 mm in size.</li> </ul>
of the in situ material collected, including for instance results for field duplicate/second-half sampling.	Each sample is then placed on a large plastic sheet and rolled (mixed) 20 times to homogenise the sample.
Whether sample sizes are appropriate to the grain size of the	After homogenisation, sample is split using an automatic riffle splitter resulting in a 500g sample, the sample must be at least 400g in weight and no more than 800g.
material being sampled.	The 500 g sample is milled using a ring mill for seven minutes resulting in the sample particles passing through a 75 µm sieve.



JORC Code Assessment Criteria	Comment
	<ul> <li>The pulverised sample is then placed on a large plastic sheet, and it is mixed (rolled) 20 times to homogenise the sample. The pulp sample is then dip sampled to obtain a 150g sub-sample.</li> <li>Any external check samples, which require pulp material, are also taken during this process (external umpire and MATA reference samples). This 150g sample is then placed in a small plastic or paper bag with the sample number printed on it.</li> <li>Coarse blanks and twin duplicates are inserted at the laboratory at the start of the sample preparation process.</li> <li>Duplicate analysis of pulp samples has been completed and identified no issues with sampling representatively with assays showing a high level of correlation.</li> <li>The sample size is considered appropriate for the mineralisation style.</li> </ul>
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.         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.         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.	<ul> <li>Samples are assayed using ICP-OES, with aqua regia digest at the Internal MATSA laboratory. Samples are also fire-assayed for Au. The elements (Cu, Zn, Pb, Ag, Au, As, Sb, Bi, Cd, Ni, Se, Mn and Co, Hg, Fe and S) that are analysed at the MATSA laboratory, along with the minimum detection limits of the assaying equipment (ICP- OES).</li> <li>Historically at the Sotiel Mine, only Cu, Zn, Pb, and S% were assayed for (unknown method).</li> <li>The historical Aguas Teñidas core was assayed for the current MATSA suite of element in most cases (when the mine was active), typically by ICP and XRF.</li> <li>No geophysical tools were used to analyse the drilling products.</li> <li>QAQC samples (blanks, certified reference material and duplicates) are inserted by MATSA staff into the sample stream prior to these being sent to the laboratory for assay analysis. MATSA also employs ALS (previously OMAC Laboratories Ltd) and ALS Chemex (Global) as its external reference laboratories used to undertake check (umpire) assay analysis.</li> <li>Blank samples used by MATSA comprise silica material and have been included in the sample stream</li> </ul>



JORC Code Assessment Criteria	Comment
	detection limit threshold, specific for each element. Samples which plot above this threshold are determined as failed samples is typically due to contamination or a mix up of samples (incorrect labelling). The results of the blank analysis demonstrate that the sample preparation process employed at MATSA limit contamination to a reasonable level.
	• Fine blank samples were used by MATSA on 2016 for Aguas Teñidas and Magdalena and 2017 for other projects (these samples have not continued to be made). Those comprise pulped (homogenised) silica material, these have been included in the sample stream. The results of the fine blank analysis are within reasonable limits, with little evidence for sample contamination between the ICP samples.
	• Twin duplicate samples used by MATSA are quarter core field duplicate samples which have been included in the sample stream at Aguas Teñidas and Magdalena since 2016, and at the other deposits since 2017. As expected, these duplicate results show a wider range of variation than the other duplicate types inserted into the sample stream by MATSA but still show reasonably good repeatability as well as good correlation between the original and duplicate sample. The twin duplicates report correlation coefficients typically more than 0.85 (most above 0.9).
	• Coarse duplicate samples used by MATSA are collected after the second split following crushing. The results for the coarse duplicates show a high degree of repeatability and a very high degree correlation between the original and duplicate sample, with a correlation coefficient typically more than 0.97.
	• Internal pulp duplicates sample used by MATSA are collected at the final stage of sample preparation. The results for the pulp duplicates show a high degree of repeatability and a high degree of correlation between the original and duplicate sample, with a correlation coefficient typically more than 0.98.
	• External duplicate samples are collected at the final stage of sample preparation and sent to the umpire laboratory (ALS Laboratories, Ireland ISO/IEC 17025). The results for the external duplicates show a high degree of repeatability and a high degree of correlation between the original and duplicate samples, with a correlation coefficient typically more than 0.97.



JORC Code Assessment Criteria	Comment
	• MATSA has used 37 different CRM across all the deposits since production at the Aguas Teñidas mine recommenced in 2008. The CRM are used to monitor Cu, Zn, Pb, Ag, and Au grades. All CRM used have been created in - house by MATSA and were sent for round robin laboratory analysis, at ALS Vancouver, ALS Loughrea, SGS Peru, SGS Canada, ALS Perth, and ALS Brisbane. Overall, the grade ranges of the CRM are representative of the different mineralisation types (cupriferous and polymetallic) and grades as demonstrated in the drillhole statistics.
	• GeosEstima considers that the QAQC results for each of the deposits to demonstrate acceptable levels of accuracy and precision at the laboratories.
	• GeosEstima therefore has confidence that the associated assays are of sufficient quality to be used in the subsequent Mineral Resource estimate.
Verification of Sampling and Assaying	Documented verification of significant intervals by independent personnel has not been done, however
The verification of significant intersections by either independent or alternative company personnel.	the mineralisation appears to be reasonably continuous and is not dominated by any one significant intersection.
The use of twinned holes.	• Furthermore, the tenor of copper and zinc is visually predictable in massive or semi massive sulphide
Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	intersections.
	• A number of new drillholes have been drilled in proximity of older ones and confirm existing information.
Discuss any adjustment to assay data.	Consequently, no twinned holes have been drilled.



JORC Code Assessment Criteria	Comment
Location of Data Points Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system used.	• The MATSA drillhole collars, for both underground and surface drillholes, are surveyed by the MATSA survey department. The surface collar locations are surveyed using GPS total station which has a reported accuracy of less than 10cm in the X, Y, and Z coordinates. The underground collars are surveyed using a total station method which has an accuracy of less than 10cm in the X, Y, and Z coordinates.
Quality and adequacy of topographic control.	• The procedure used to survey historic drillhole collars (drilled prior to 2004) is not documented or recorded. Historical holes are generally surrounded by a majority of MATSA drillholes which largely confirm the location of mineralisation which indirectly suggests that the location accuracy of the historical holes is reasonable.
	<ul> <li>Regarding downhole survey the majority of the drillholes have a start and end of hole measurement only. MATSA typically uses a REFLEX Flexi-It multi-shot tool for all of its downhole surveys, with the measurements taken every 25m. The REFLEX tool is a magnetic tool, and the survey azimuth is aligned to mine grid north.</li> </ul>
	• Collars are marked out and picked up in the ETRS89 UTM Zone 29 N format.
	<ul> <li>Validation of surface diamond drilling collars was carried out by independent consultants (SRK) in previous MREs in Elvira and Calañesa using a handheld GPS. This process found no major discrepancies when these were compared against the satellite imagery. Underground drillhole collars were also compared against the underground development with no major issues identified.</li> </ul>
	• A local mining grid is used at the three mines. Aguas Teñidas and Magdalena mine use the same local grid. Conversion to this grid is undertaken from WGS84 co-ordinates and is achieved by adding 1,002.968m to the elevation (Z) values (to avoid negative numbers in the underground development) and then a translation is applied to the X and Y coordinates by adding 0.006m to the X and 0.196m to the Y coordinate respectively.



JORC Code Assessment Criteria	Comment
	<ul> <li>Sotiel mine grid is calculated by applying a translation (from the Pozo Isidro co-ordinate system) of 689,597.452m to the X coordinate and 4,164,133.734m to the Y coordinate, after which a translation is applied to all three coordinates, with 2,000m added to X, 5,000m added to the Y, and 1,000m added to the Z coordinate. Finally, a rotation of 24.7° is applied to align the strike of the orebodies to an eastwest direction.</li> <li>Concepción, Castillo-Buitrón and Poderosa Projects are in UTM coordinates, ED 50, Huso 29.</li> </ul>
Data Spacing and DistributionData spacing for reporting of Exploration Results.	• All surface and underground drilling at the three mines is typically aimed to intersect mineralisation perpendicular to strike where access facilitates this.
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. Whether sample compositing has been applied.	<ul> <li>From surface drilling is on 30 to 50 m sections (north-south), meanwhile underground is on 20m spacing.</li> <li>No sample compositing is applied during the sampling process.</li> </ul>
Orientation of Data in Relation to Geological Structure	• All drilling undertaken at the three mines is typically aimed to intersect mineralisation perpendicular to
Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	strike where access facilitates this. A few geotechnical holes were not drilled perpendicular to the strike of the mineralisation, although these were not specifically intended for use in geological modelling or MRE.
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.	<ul> <li>No significant sampling bias occurs in the data due to the orientation of drilling with regards to mineralisation.</li> </ul>
	• Drilling undertaken by MATSA conforms to industry best practices and the resulting sampling pattern is sufficiently dense to interpret the geometry, boundaries, and different styles of the sulphide mineralisation at the three mines with a high level of confidence within well drilled areas. Confidence in the geological interpretation decreases in areas of reduced sample coverage and is reflected in the classification of mineral resources.



JORC Code Assessment Criteria	Comment
	<ul> <li>It is GeosEstima's view that the drilling orientations are appropriate to model the geology and mineralisation based on the current geological interpretation.</li> </ul>
Sample Security The measures taken to ensure sample security.	• All drill cores from the three mines are delivered to the core shed, usually via flatbed trucks, for photography, core recovery calculations, geological and geotechnical logging, and sampling.
	• The core shed, sample preparation facilities and laboratory are all confined within secure boundaries, with controlled access points, where only authorised, mine personnel are allowed entry.
Audits and Reviews	<ul> <li>No audits or reviews have been completed.</li> </ul>
The results of any audits or reviews of sampling techniques and data.	
Section 2 Reporting of Exploration Results	
Mineral Tenement and Land Tenure Status         Type, reference name/number, location and ownership         including agreements or material issues with third parties such         as joint ventures, partnerships, overriding royalties, native title         interests, historical sites, wilderness or national park and         environmental settings.         The security of the tenure held at the time of reporting along         with any known impediments to obtaining a licence to operate         in the area.	<ul> <li>MATSA currently holds 55 mining permits which cover all three mines and has the rights to exploit the Aguas Teñidas and Magdalena mines in the municipality of Almonaster Ia Real and the Sotiel mine in the municipality of Calanas, both of which are located in the province of Huelva. The Company also has exploitation (mining) and research (exploration) permits which cover more than 1,100 km<sup>2</sup> in the IPB and 160km<sup>2</sup> in the Spanish region of Extremadura.</li> <li>The Aguas Teñidas, Magdalena, and Sotiel mines are covered by 33, 21, and one mining permits, respectively. The Aguas Teñidas mining permits were renewed in 2012 for a 30-year period and are due to expire on 31 August 2042. The Magdalena mining permits were issued in 2013 and are due to expire on 15 January 2043, except for the Magdalena Masa 2 permit which is due to expire on 07 July</li> </ul>
	<ul> <li>2046. The Sotiel mining permit was renewed in 2015 and is due to expire on 19 January 2045.</li> <li>MATSA was granted an exploration permits for the Concepción, Poderosa and Castillo-Buitrón projects.</li> </ul>



JORC Code Assessment Criteria	Comment
	• The "Permiso de Investigación El Patrás" (exploration permit) which includes Concepción was granted to MATSA on the 14/11/2002. On the 17/01/2018 MATSA applied for a mining permit which is currently being processed by the authorities, Exploration work continues in this area.
	• The "Permiso de Investigación Buitrón" (exploration permit) which includes the Castillo-Buitrón Project was granted to MATSA on the 03/11/2015. A first 3-year extension was granted on the 03/06/2020.
	• The "Permiso de Investigación Buitrera" (exploration permit) which includes the Poderosa Project was originally granted to MATSA on the 28/01/2010. MATSA applied for a third 3-year extension on the 03/12/2021.
<b>Exploration Done by Other Parties</b> Acknowledgment and appraisal of exploration by other parties.	• Mining in the IPB has occurred for over 2,500 years. Activity can be dated to Roman and Phoenician periods. Significant interest in IPB did not re-emerge until the 1800s following the successful extraction of Cu, resulting in over 60 mines operating by 1900. The Rio Tinto Company was formed in 1873 to operate these mines. The discovery of the Neves Corvo deposit in 1977, renewed exploration interest in the region, which ultimately led to the discovery of the mineralisation associated with the Aguas Teñidas mine and re-opening of the Sotiel Mine in 1983.
	• The Calañesa deposit is the oldest known deposit in the mine area. The deposit was first mined in the Roman period; however, the oldest records referencing exploration and mining are from 1886 by the Compagnie des Mines de Cuivre d Aguas Teñidas, who operated the mine until the end of the 19th Century. It was later mined in 1916 by Huelva Copper Company until 1934. Since this time, most of the exploration in relation to the Calañesa deposit has been surface drilling by MATSA, the majority of which was completed in 2018, except for the exploration conducted by Billiton during the 1980s. Billiton relinquished the property in 1990. Placer Dome subsequently acquired the project and between 1991 and 1994 drilled the deposit and built on Billiton's previous work. Navan then acquired the project between 1995 and 2000 and, in 1995, acquired the mining rights for the Aguas Teñidas and Western Extension deposit. In April 1997, Navan acquired Almagrera SA from the Spanish government. This



JORC Code Assessment Criteria	Comment
	operation comprised the Sotiel underground mine, a minerals processing complex (at Sotiel mine) for Cu, Zn, and Pb, and an acid plant.
	• The Castillejito deposit was discovered by RioMin in 1998 via gravimetric survey.
	Magdalena deposit was discovered by MATSA in September 2011.
	• The Sotiel mine comprises the Sotiel, Sotiel East, Migollas, Elvira, and Calabazar deposits. There is limited information available on the historical exploration and mining previously conducted at the mine.
<b>Geology</b> Deposit type, geological setting and style of mineralisation.	• The MATSA deposits are all interpreted to be volcanogenic massive sulphide, or VMS, deposits. VMS deposits are predominantly stratiform accumulations of sulphide minerals that precipitate from upwelling hydrothermal fluids associated with magmatism on or below the seafloor in a wide range of geological settings.
	• The deposits at Aguas Teñidas and Magdalena mines also have stockwork sulphide zones in the footwall that can be quite extensive and are characterised by primarily pyrite and chalcopyrite mineralisation.
	• The deposits which comprise the Project have been categorised as Kuroko type VMS deposits based on their mineralogy, geological setting, and geometry/size.
Drill hole information	• No Exploration Results have been reported in this release. This criterion is not relevant to this report on
A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:	Mineral Resources.
Easting and northing of the drill hole collar	
<ul> <li>Elevation or rl (reduced level – elevation above sea level in metres) of the drill hole collar</li> </ul>	
Dip and azimuth of the hole	
Downhole length and interception depth	
Hole length.	



JORC Code Assessment Criteria	Comment
If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	
Data aggregation methods	• No Exploration Results have been reported in this release. This criterion is not relevant to this report on
In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g., cutting of high grades) and cut-off grades are usually Material and should be stated.	Mineral Resources.
Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	
The assumptions used for any reporting of metal equivalent values should be clearly stated.	
Relationship between mineralisation widths and intercept lengths	• No Exploration Results have been reported in this release. This criterion is not relevant to this report on Mineral Resources
These relationships are particularly important in the reporting of Exploration Results.	Willeral Resources.
If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	
If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g., 'downhole length, true width not known').	
Diagrams	• No Exploration Results have been reported in this release. This criterion is not relevant to this report on
Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	Mineral Resources.



JORC Code Assessment Criteria	Comment
Balance reporting Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	<ul> <li>No Exploration Results have been reported in this release. This criterion is not relevant to this report on Mineral Resources.</li> </ul>
Other substantive exploration data Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations, geophysical survey results, geochemical survey results, bulk samples – size and method of treatment, metallurgical test results, bulk density, groundwater, geotechnical and rock characteristics, potential deleterious or contaminating substances.	• No Exploration Results have been reported in this release. This criterion is not relevant to this report on Mineral Resources.



JORC Code Assessment Criteria	Comment
Further work           The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling).           Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	<ul> <li>MATSA is carrying out Brownfield exploration around its mines and Greenfield exploration programs in Spain and Portugal.</li> </ul>
Section 3 Estimation and Reporting of Mineral Res	ources
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.         Data validation procedures used.	<ul> <li>The databases were directly exported from the master Geobank (Micromine) database, as managed by MATSA geologists. The following drillhole data was included:</li> <li>Collars including collar co-ordinates, hole lengths, date drilled, etc.</li> <li>Downhole surveys;</li> <li>lithology;</li> <li>specific gravity samples (density); and</li> <li>sample assay intervals.</li> <li>GeoEstima completed a phase of data validation on the digital sample data supplied by the Company, and previous owners of the mines, from their Geobank (Micromine) database which included the following:</li> <li>Search for sample overlaps, duplicate or absent samples;</li> <li>Checks for anomalous assay results;</li> <li>Checks for incorrect or irregular survey results; and</li> </ul>



JORC Code Assessment Criteria	Comment
	Search for non-sampled drillhole intervals within the mineralised zones.
Site Visits Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case.	<ul> <li>A site visit has been undertaken by Competent Person between April 25 to 28, 2022. The visit included the following inspections:</li> <li>The Core shed and MATSA Internal laboratory facilities, Aguas Teñidas and Magdalena mines;</li> <li>The process plant; and</li> <li>A set of representatives drillhole cores was reviewed with the resource and exploration geologists in order to discuss the main geological features of deposit. Ore control process was reviewed and several meetings with key ore control geologists, mine geologists, resources geologists, mine planning engineers and metallurgists were held.</li> </ul>
Geological Interpretation Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.	• The main control of mineralisation is well known, but confidence in the geological interpretation varies locally and is dependent on the spacing of drilling of which varies throughout the deposit.
Nature of the data used and of any assumptions made. The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and	<ul> <li>The geological model of Aguas Teñidas Mine includes the Aguas Teñidas, Western Extension, Calañesa, and Castillejito deposits. The geological model of Magdalena mine includes Masa 1, Masa 2, Masa Gold and Masa Gold Norte deposits, and the geological model of Sotiel Mine includes Sotiel, Sotiel East, Migollas, Calabazar, and Elvira deposits.</li> </ul>
The factors affecting continuity both of grade and geology.	• Each deposit was interpreted by MATSA geologists on cross-sections using implicit and explicit methodology. For deposits modelled by implicit tools Leapfrog Geo software was used creating wireframes of massive or semi-massive sulphides (MS) or stockwork (SW) for the cupriferous stockwork zones based on logged rock code in the drilling database. The explicit models were made on cross-sections, based primarily on the occurrence of logged massive or semi-massive sulphides in diamond drillholes and underground exposures, where applicable. The cross-section interpretations are triangulated in Datamine software to produce volumes denoted as SM and SW by the MATSA geologists.



JORC Code Assessment Criteria	Comment
	<ul> <li>All available geological logging data from diamond core are used for the interpretations.</li> <li>The geological interpretation of mineralised boundaries is considered robust and alternative interpretations do not have the potential to impact significantly on the Mineral Resources.</li> <li>The interpreted mineralisation boundaries are used as hard boundaries during the Mineral Resource estimation, domains are intrinsically related to the geology.</li> <li>The massive sulphides and cupriferous stockwork mineralisation are controlled by tabular lens shaped bodies which are typically strata bound and or structurally controlled to varying degrees.</li> </ul>
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.	<ul> <li>Polymetallic mineralisation in Aguas Teñidas mine is related to four tabular lens shaped bodies. Together Aguas Teñidas and Western Extension extend from approximately 270m to 890m below surface. Mineralisation extends for 3,000m along west-east strike, dipping 80° to the north. The cumulative total true width of mineralisation ranges from 10m to 80m. Calañesa is a smaller tabular lens extending from approximately 100m below the surface. Mineralisation extends for 400m along west- east strike, dipping 60° to the south. The cumulative total true width of mineralisation ranges from 1m to 4m. Castillejito is composed of two tabular lenses with synclinal shape extending from approximately 100m below the surface located to the North of Aguas Teñidas. Mineralisation extends for 750m along West-East strike, dipping 68° to the north. The cumulative total true width of mineralisation ranges from 10m to 50m</li> </ul>
	<ul> <li>Polymetallic mineralisation in Magdalena mine is related to tabular lens shaped bodies extending from approximately 100m to 830m below surface. Mineralisation extends for 2,000m along West-East strike, dipping 70° to the north. The cumulative total true width of mineralisation ranges from 3m to 70m.</li> <li>Polymetallic mineralisation in Sotiel mine is related to four tabular lenses shaped bodies extending from approximately 200m to 400m below surface. Mineralisation extends discontinuously; Calabazar and Sotiel extend 600m along a 60°E strike, dipping 40° to the northwest. The cumulative total true width of mineralisation ranges from 3m to 30m; Migollas extends 250m along 60°E strike, dipping 40° to the</li> </ul>



JORC Code Assessment Criteria	Comment
	northwest. The cumulative total true width of mineralisation ranges from 3m to 20m; Elvira extends 400m along 60°E strike, dipping 40° to the northwest. The cumulative total true width of mineralisation ranges from 10m to 40m.
	<ul> <li>Polymetallic mineralisation in Castillo-Buitrón is composed of two east-west oriented tabular lens outcropping to surface, dipping 70° to the north: Poniente and Levante. The former extends for 170m along strike and 300m in depth, with thickness from 5m to 20m, and the latter extends for 90m along strike and 200m in depth, with thickness ranging from 5m to 12m.</li> </ul>
	• Polymetallic mineralisation in Concepción is related to east-west oriented tabular lens outcropping to the surface, dipping 67° to the north. It currently extends for 500m along strike and 700m in depth, with thickness ranging from 5m to 50m (higher thickness is reached in the upper part were two lenses run parallel).
	• Polymetallic mineralisation in Poderosa is composed of two parallel East-West oriented tabular lenses, recognisable from 200m below surface. Mineralisation extends for 250m along strike, 750m in depth with thickness ranging from 5m to 38m.



JORC Code Assessment Criteria	Comment
<b>Estimation and Modelling Techniques</b> 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.	<ul> <li>Multivariate data analysis shows high degree of correlation between Cu and Bi; between Zn, Ag, Pb, Hg and Sb; and between F and S. There is not a clear correlation between Cu and Zn. This analysis was considered as initial driver in the grade estimation process.</li> <li>Domains for Cu and Bi estimates were defined within Cu mineralisation wireframes, in some cases, these bodies were divided into sub-zones to define domains of high and low-grade Cu.</li> </ul>
The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	• Different divisions into sub-zones to define domains of high and low-grade zinc were applied. Within these domains Zn, Ag, Pb, Hg and Sb were estimated.
The assumptions made regarding recovery of by-products.	• The majority of samples were composited to 4m in length, in few cases to 2m in length using domain wireframes as restriction.
Estimation of deleterious elements or other non-grade variables of economic significance (e.g., sulphur for acid mine drainage characterisation).	<ul> <li>The original Cu mineralisation domains were used for Au, As, Fe, S and density estimates.</li> <li>Grade estimation technique applied for estimation within Cu, Zn and mineralisation domains was</li> </ul>
In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	ordinary kriging (OK) for all variables Cu, Bi, Zn, Ag, Pb, Hg, Fe, S, density, and most part of domains. Only in a few domains, where data was scarce, Inverse Distance Squared (IDW2) was applied.
Any assumptions behind modelling of selective mining units.	<ul> <li>Analysis suggests that a stationarity assumption is reasonable for the style of deposit and linear estimation of grades. Variograms are bounded and well structured. Variograms were fitted for all</li> </ul>
Any assumptions about correlation between variables.	domains independently. In some domains variograms model were fitted on transformed data.
Description of how the geological interpretation was used to control the resource estimates.	• Top cuts were applied to isolated high-grade composites prior to estimation where applicable based on review of histograms, disintegration analysis and statistical analysis of composites. Distance based top out a variable based to provide upper class used to be influence of isolated birth grade composites.
Discussion of basis for using or not using grade cutting or capping.	<ul> <li>The search ellipsoid was settled in three nested neighbourhood and is constrained by the optimum</li> </ul>
The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	number of samples to ensure data used to estimate blocks. Searching with local orientation was applied based on a reference surface interpreted for each mineralised solid.



JORC Code Assessment Criteria	Comment
	Mineral Resource estimation was completed with Isatis Neo software.
	• Silver, gold, and lead has been estimated as a by-product within the MATSA deposits.
	• Estimates include deleterious or penalty elements As, Bi, Hg, and Sb.
	• No selective mining units are assumed in this estimate.
	• The block model is assigned unique domain codes matching the corresponding domain codes defined by mineralisation wireframes. Wireframes are then used as hard boundaries during interpolation where blocks are estimated only with composites having the corresponding domain code.
	• Top cuts were applied to isolated composites prior to estimation where applicable based on review of histograms, probability plots, deciles, and statistical analysis.
	• The process of validation includes standard model validation using visual and numerical methods:
	The block model estimates are checked visually against the input composite/drillhole data;
	<ul> <li>Swath plots of the estimated block grades and composite mean grades are generated by eastings, northings and elevations and reviewed to ensure acceptable correlation, and;</li> </ul>
	<ul> <li>Global statistical comparisons of mean estimated block grades to mean composite grades.</li> </ul>
Moisture           Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	<ul> <li>Tonnages are estimated on a dry basis.</li> </ul>



JORC Code Assessment Criteria	Com	nment				
Cut-off Parameters The basis of the adopted cut-off grade(s) or quality parameters applied.	<ul> <li>Polymetallic mineralisation suggests using NSR to value resources. NSRs has been calculated bas on metallurgical information obtained from cumulative process plant experience and on Sandfire's I term metal price projections.</li> <li>NSRs are defined by ore type: Polymetallic ore and Cupriferous ore</li> <li>NSRs cut-off were calculated considering mining, process, maintenance, general service, and administration cost which are different for each mine (Aguas Teñidas, Magdalena and Sotiel), see the below.</li> </ul>				ted based dfire's long- nd I), see table	
			ATE - Projects	MGD	SOT	_
		Mining Cost	13.69	15.76	21.93	_
		Process Operation	10.01	10.01	10.01	
		Process Maintenance	3.62	3.62	3.62	
		General Services	2.59	2.59	2.59	
		Administration	3.54	3.54	3.54	
		NSR €/t	33.45	35.52	41.69	_
		NSR US\$/t	40.14	42.62	50.02	_
		Note: mining costs do not incl	ude development cost			
	•	<ul> <li>Mineral Resources are estimate</li> <li>Magdalena: 42.62 US\$/t</li> <li>Aguas Teñidas and projects</li> <li>Sotiel: 50.02 US\$/t</li> <li>Mineral Resources are estimate</li> </ul>	d at the following NSR cu s: 40.14 US\$/t d using the following long	t-offs: -term prices:		



JORC Code Assessment Criteria	Comment
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.	<ul> <li>Cu 8,863 (US\$/t)</li> <li>Zn 3,042 (US\$/t)</li> <li>Pb 2,579 (US\$/t)</li> <li>Ag 25.7 (US\$/oz)</li> <li>Cu recovery for polymetallic material ranged between 32% and 79%, for cupriferous material ranged between 29.8% and 93% and for stockwork ranged between 66% and 93%.</li> <li>Zn recovery for polymetallic material ranged between 32% and 83%.</li> <li>Pb recovery for polymetallic material ranged between 32% and 50%.</li> <li>Mineral Resource potentially can be economically mined by underground mining methods. It is assumed any of the current mining method used by MATSA can be used (Aguas Teñidas and Magdalena are mined for transverse and longitudinal sub-level, longhole open stoping. At the Sotiel mine, a modified long hole stoping approach is employed).</li> <li>The NSR value is computed for each mine using metal prices (Cu, Zn, Pb) higher than the prices used for Life of Mining planning in order evaluate the proportions of the block model that could assure RPEEE.</li> </ul>
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	<ul> <li>Mineral Resources are estimated assuming that these will be processed in the Aguas Teñidas processing plant. This plant has two separate processing streams, a polymetallic and a copper processing stream, which are used to produce concentrates. The polymetallic mineralisation stream processes polymetallic massive sulphide material, whereas the copper mineralisation stream processes mineralisation stemming from stockwork material and cupriferous massive sulphides.</li> </ul>



JORC Code Assessment Criteria	Comment
the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	
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.	<ul> <li>Capacity exists within current approvals to accommodate waste rock and tailings for the remaining Mineral Resource in the existing facilities at MATSA.</li> <li>With the reopening of the mine in 2013, MATSA has recovered old waste dumps (environmental rehabilitation) in areas degraded by historical mining activity. These dumps may be used to fill the Sotiel mine stopes in the future.</li> </ul>



JORC Code Assessment Criteria	Comment
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.	• Density measurements have been taken for all main rock types intersected in each drillhole. This was completed by weighing a piece of core in air and then determining the core volume by displacement of water. The MATSA geologists typically select intact drill core which are between 5cm or 10cm in length for density analysis.
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.	<ul> <li>In mineralised zones three density measures are averaged for a sampling support of 2m in length.</li> <li>In the case of barren rocks sampling is performed every 15m to 20m for density measurement.</li> </ul>
Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	• The weight of the dry sample is initially determined using bench mounted electronic scales, before being submerged in water to determine the submerged weight. The following equation has then been applied by MATSA to determine the dry density: Density = weight (in air) / [weight (in air) – weight (in water)].
	• It should be noted that MATSA does not coat drill cores with wax as pore space (vugs/fractures) are not typically an issue according to MATSA. There is a strong correlation between specific gravity and S and Fe.
	No assumptions for bulk density were made.
	<ul> <li>Density is estimated using OK or IDW2 within the Cu domains. Density is also estimated in waste blocks around the Cu domains.</li> </ul>
Classification The basis for the classification of the Mineral Resources into varying confidence categories.	• The classification criteria are based on drillhole spacing that consider the style of mineralisation and the selectivity of the mining method in three mines of MATSA.
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.	<ul> <li>MATSA has been employing these distances to drillhole criteria for several years and find that they reconcile appropriately (based on Resource classification) to observations and results from mining.</li> </ul>
Whether the result appropriately reflects the Competent	



JORC Code Assessment Criteria	Comment							
Person(s)' view of the deposit.	Class	Aguas Teñidas, Western Extension, Calañesa	Castillejito	Magdalena	Sotiel	Castillo- Buitrón	Concepción	Poderosa
	Measured	<20 m	<20 m	<=25m	<=20 m			
	Indicated	<40m	<40m	<=50m	<=40m	<40m	<40m	
	Inferred	>40m	>40m	>50m	>40m	>40m	>40m	only inferred
	• The M	ineral Resource es	stimation app	ropriately refle	cts the Cor	npetent Per	son's view of tl	ne deposit.
Audits or Reviews The results of any audits or reviews of Mineral Resource estimates.	<ul> <li>No ext</li> <li>The Reconsid</li> </ul>	ernal audits or rev esource Estimates ered fit for purpose	iews have be have been re e.	en completed	ally by qua	lified Sandfi	re personnel a	nd are



JORC Code Assessment Criteria	Comment
Discussion of Relative Accuracy/ConfidenceWhere 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 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.These statements of relative accuracy and confidence of the	<ul> <li>The accuracy and confidence level in the Mineral Resource estimate is commensurate with that implied by the classification.</li> <li>The classification criteria take in account mining experience of MATSA in this type and style of mineralisation.</li> <li>The Mineral Resource is derived from a block model that is intended to have sufficient local accuracy to be useful for mine planning decisions.</li> <li>Factors that affect accuracy and confidence include:</li> <li>The accuracy of the interpreted position of mineralised domain boundaries; and</li> <li>Estimated block grades being smoother than true grades, due to OK having been used as the interpolation method.</li> </ul>
<ul> <li>estimate should be compared with production data, where available.</li> <li>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 that could affect the relative accuracy and confidence of the estimate.</li> <li>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.</li> </ul>	



JORC Code Assessment Criteria	Comment
<ul> <li>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.</li> </ul>	
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.	