ELEMENTOS LIMITED
developing today for tomorrow's tin

ASX ANNOUNCEMENT

18 October 2019

OROPESA TIN PROJECT PRESENTATION TO THE 3rd MINING AND MINERALS HALL CONFERENCE, SEVILLE, SPAIN

"Elementos Limited (ASX: ELT) ("Elementos" or the "Company") is pleased to provide the attached technical presentation relating to the Company's Oropesa Tin Project in Spain. The presentation is to be made to the 3rd Mining and Minerals Hall Conference held in Seville, Spain. The presentation will be made on behalf of Elementos by Emilio Hormaeche Bigorra. Emilio is the Principal and Owner of Soluciones, Concentradores Y Procesos de Ingeniera (SCYPI), a company that specialises in the development, research, process and engineering of mining projects for sustainable mining, located in Oviedo, Spain. Emilio has approximately 40 years of experience in mining projects within Spain and in numerous international locations. He holds a Degree in Chemical Engineering from Salamanca University, Spain. Emilio is the Elementos' Project Manager for the Oropesa Project.

The presentation made to the 3rd Mining and Minerals Hall Conference was presented in Spanish, a translation of the presentation in Spanish can be found at the Company's website www.elementos.com.au.

The presentation contains information pertaining to pilot plant metallurgical test work that was carried out on the Oropesa Tin Project in 2017 by the previous owners of the project Eurotin Inc.. Information pertaining to this test work accompanies this announcement as Table 1 in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012).

For more information, please contact:

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CAUTIONARY STATEMENTS

OROPESA PROJECT

MINAS DE ESTAÑO DE ESPAÑA

Mining and Minerals Hall
Conference - Seville

October 2019

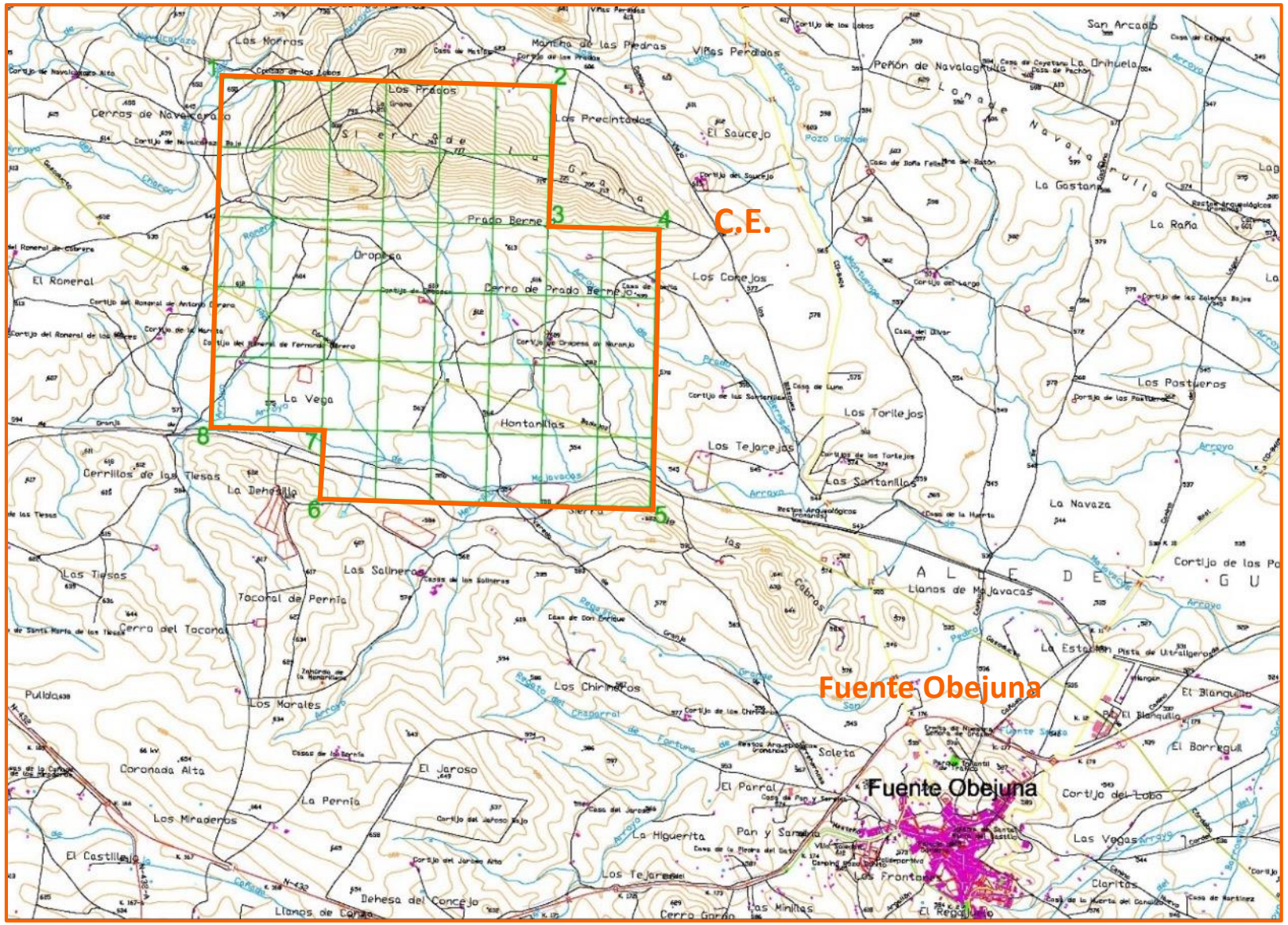
Location

- 11 km from **Fuente Obejuna**
- 88 km from **Córdoba**
- 185 km from **Sevilla**

Technical and Administrative Situation

		Owner Company
Dyscovery of the field by IGME	1990	
Permission to explore	2008	Iberian
Permission to research	2010	Eurotin
Exploration drilling campaign		
Mineralogical tests	2017	
Exploitation Licence application - including EIA	2018	
Complementary environmental studies	2019	Elementos
Complementary metallurgical tests	2019	
Revised Engineering studies	In process	
Resubmit new EIA + Exploitation project	2º T - 2020	
Feasibility Study proposed completion	1º-3º T-2020	
Environmental authorization + Exploitation project	1º T - 2021	

Mining law



RESEARCH PERMIT

Initially comprised 78 mining grids in 2008, reduced to 50 in 2014.

CONCESSION OF EXPLOTATION

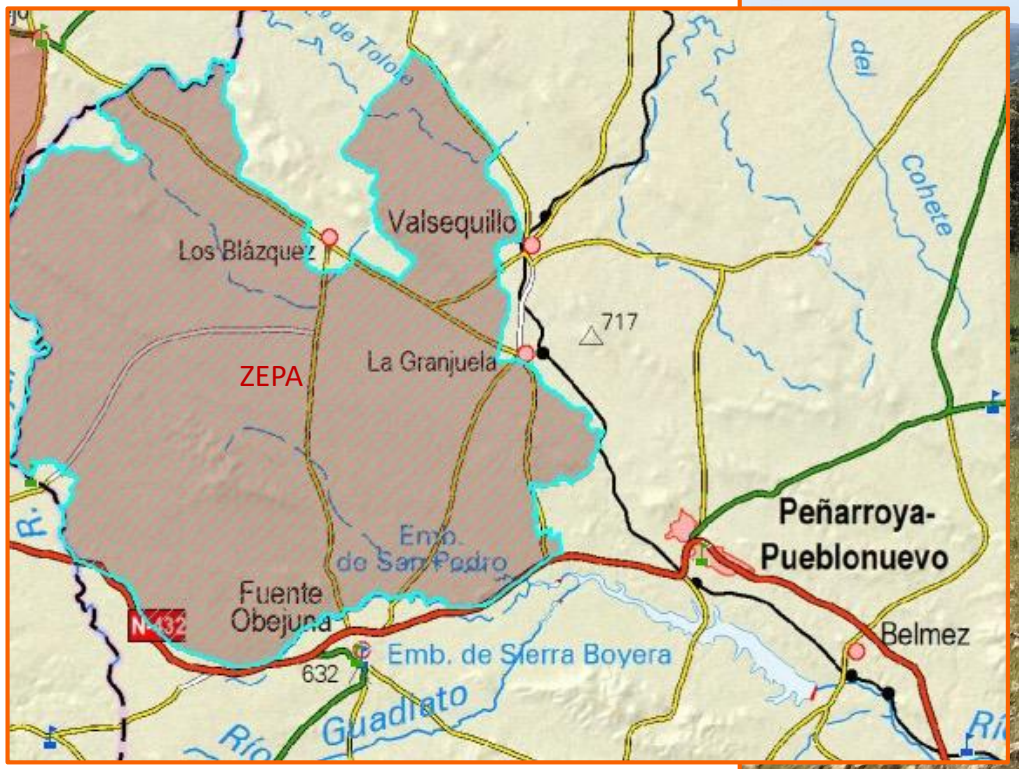
The C.E. project is reduced to 42 mining grids. There are no known historical, archaeological or paleontological areas of interest within the permit.

Flora and fauna

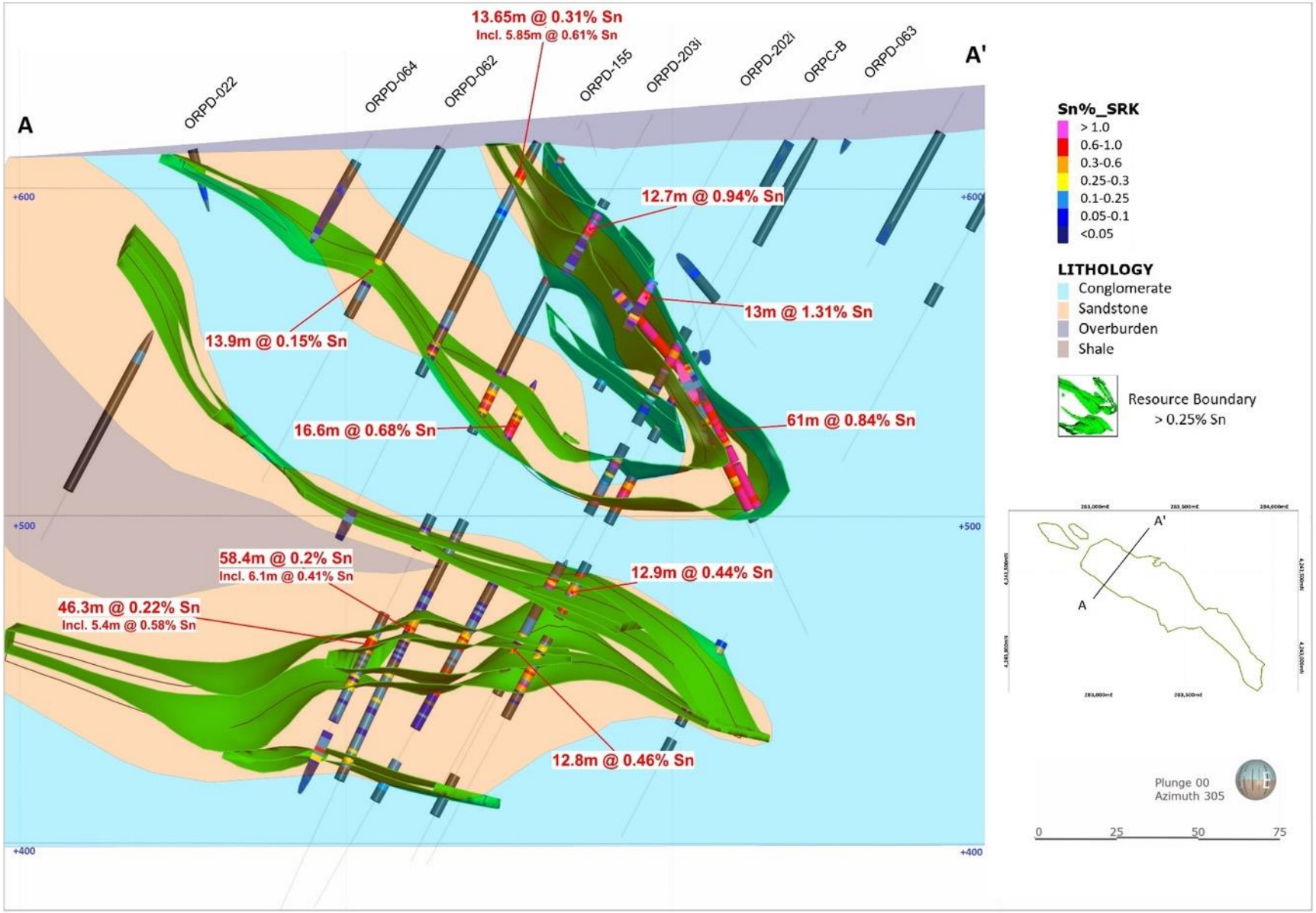
NATURAL SPACES OF SPECIAL INTEREST

There are no known areas of historical, archaeological or paleontological interest within the permit area.

The permit is located within the bounds of a Special Protection Area (ZEPA).



Typical Section. Geological Model



Mineral resources

Oropesa Global Mineral Resource Estimate (0.15% Sn cut-off grade)			
Category	Tonnes	Grades % Sn	Contained Tin (tonnes)
Measured	330,000	1.09	3,585
Indicated	9,010,000	0.53	47,320
Total M & I	9,340,000	0.55	50,905
Inferred	3,200,000	0.52	16,615

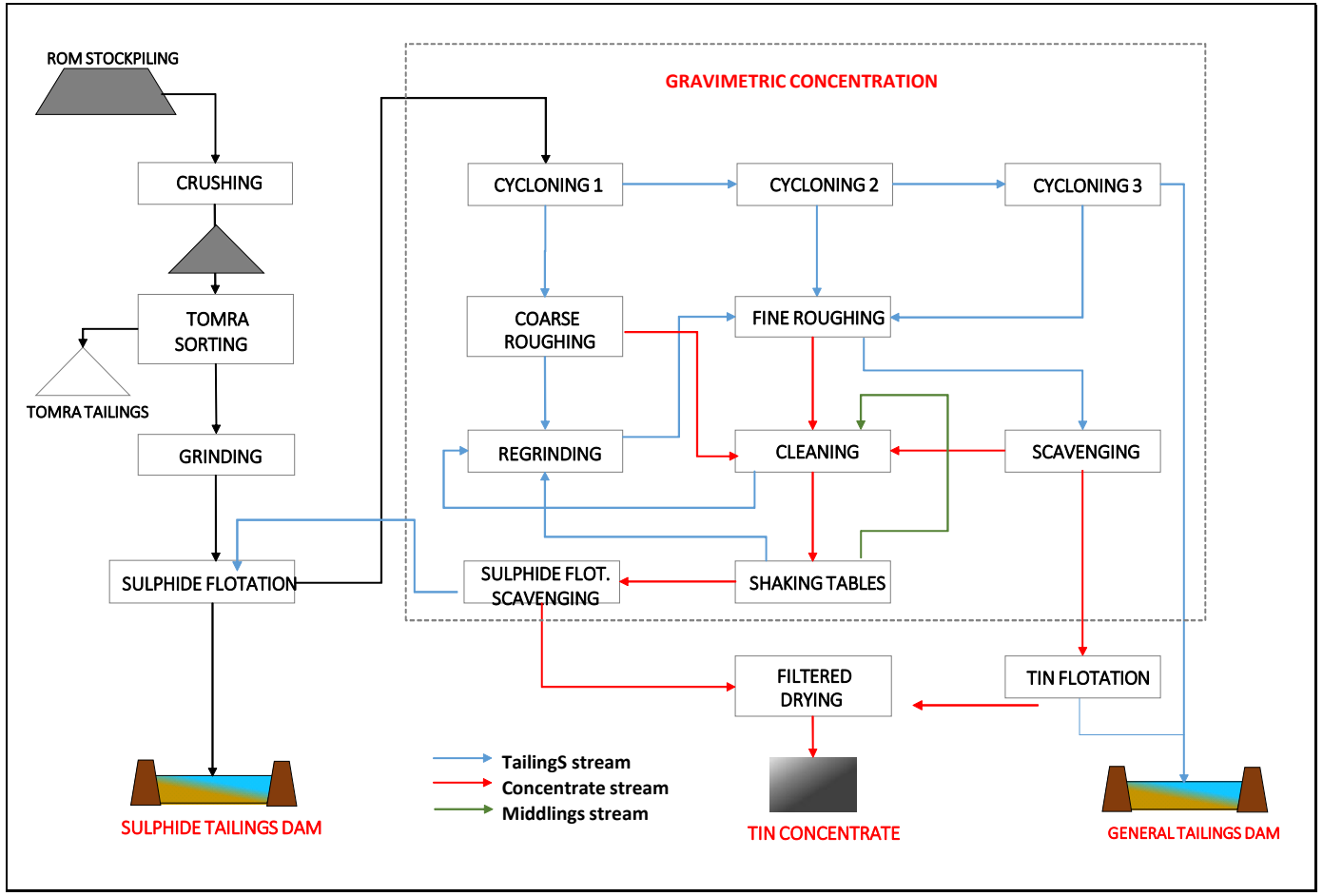
NOTE:

Elementos confirms that Mineral Resource estimates used in this document were estimated, reported and reviewed in accordance with the guidelines of the Australian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 edition. Elementos confirms that it is not aware of any new information or data that materially affects the Mineral Resource estimate information included in the following announcements:

“Acquisition of Oropesa Tin Project” released on 31 July 2018;

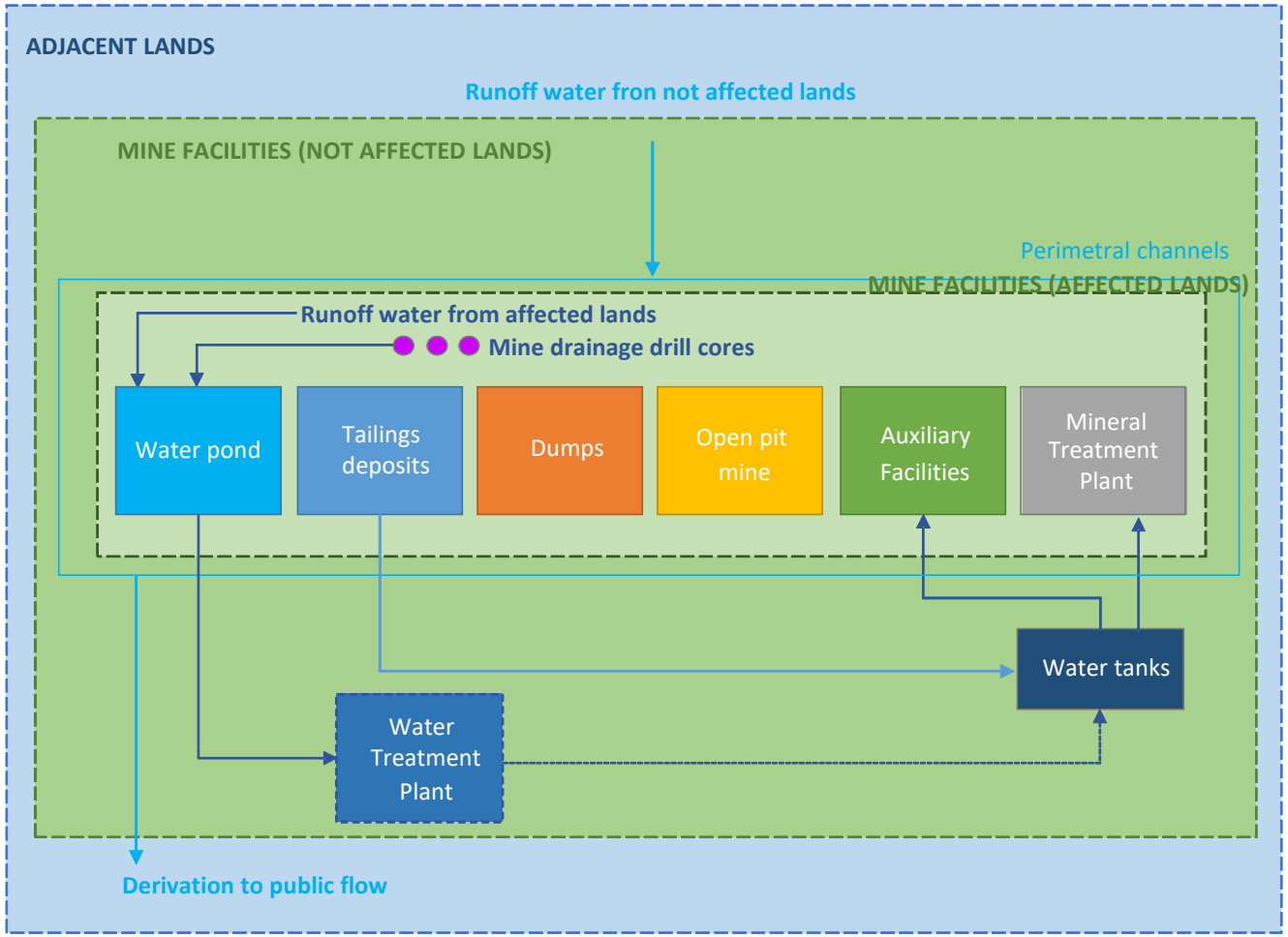
Metallurgy

- Primary and secondary crushing before X-ray pre-concentration stage.
- Tertiary crushing and grinding stages to 75 microns. Flotation and gravimetric concentration are required to achieve a concentrate of > 62% Sn.
- Pilot plant testwork achieved recoveries of 47.6% in the gravimetric circuit and 26.6% in the flotation circuit (overall recovery of 74.20% Sn).



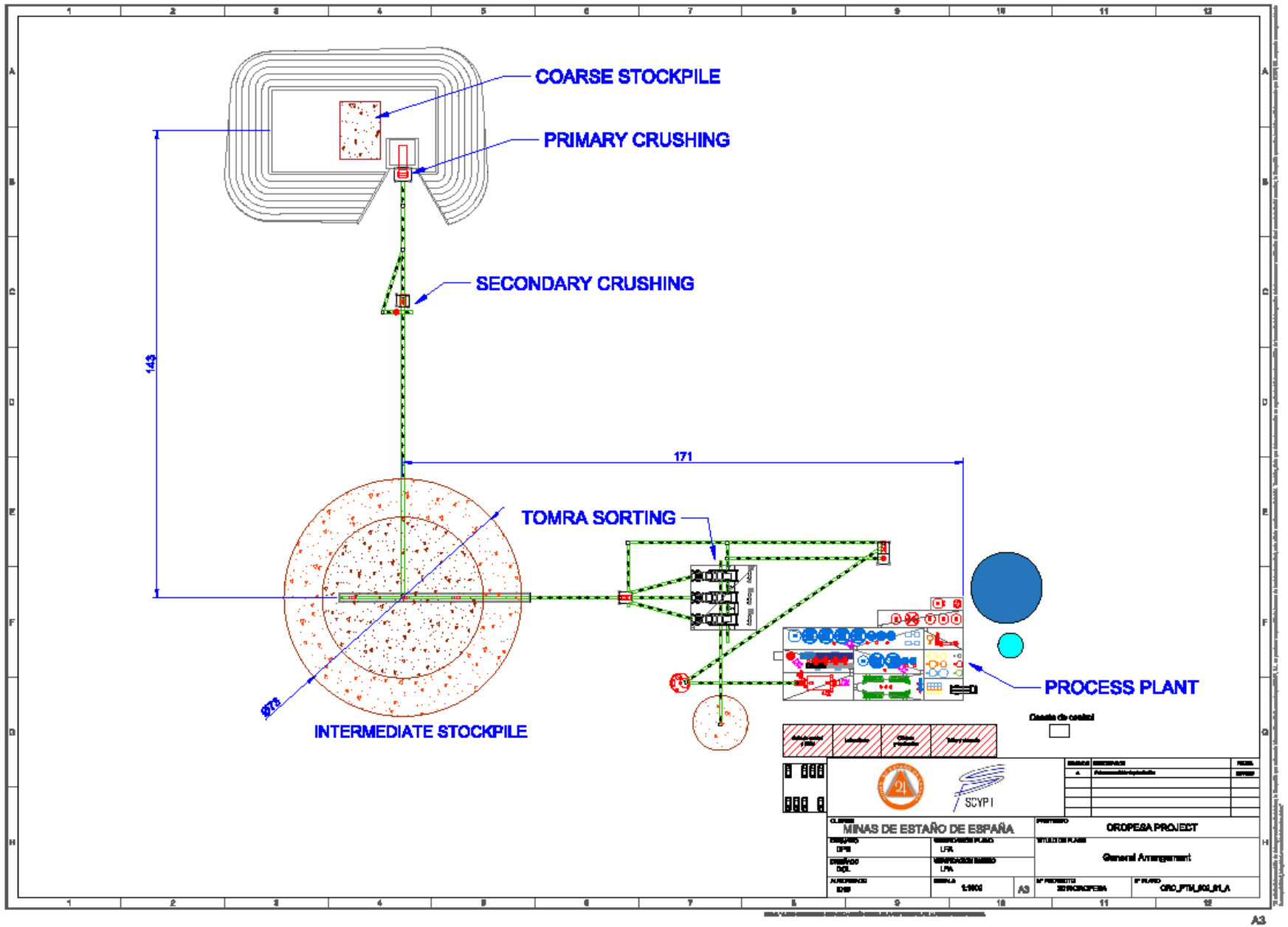
Water management

The water management will be performed under zero discharge conditions, and has been designed as a closed circuit, where all water from the treatment plant is recovered and reused in the operation.

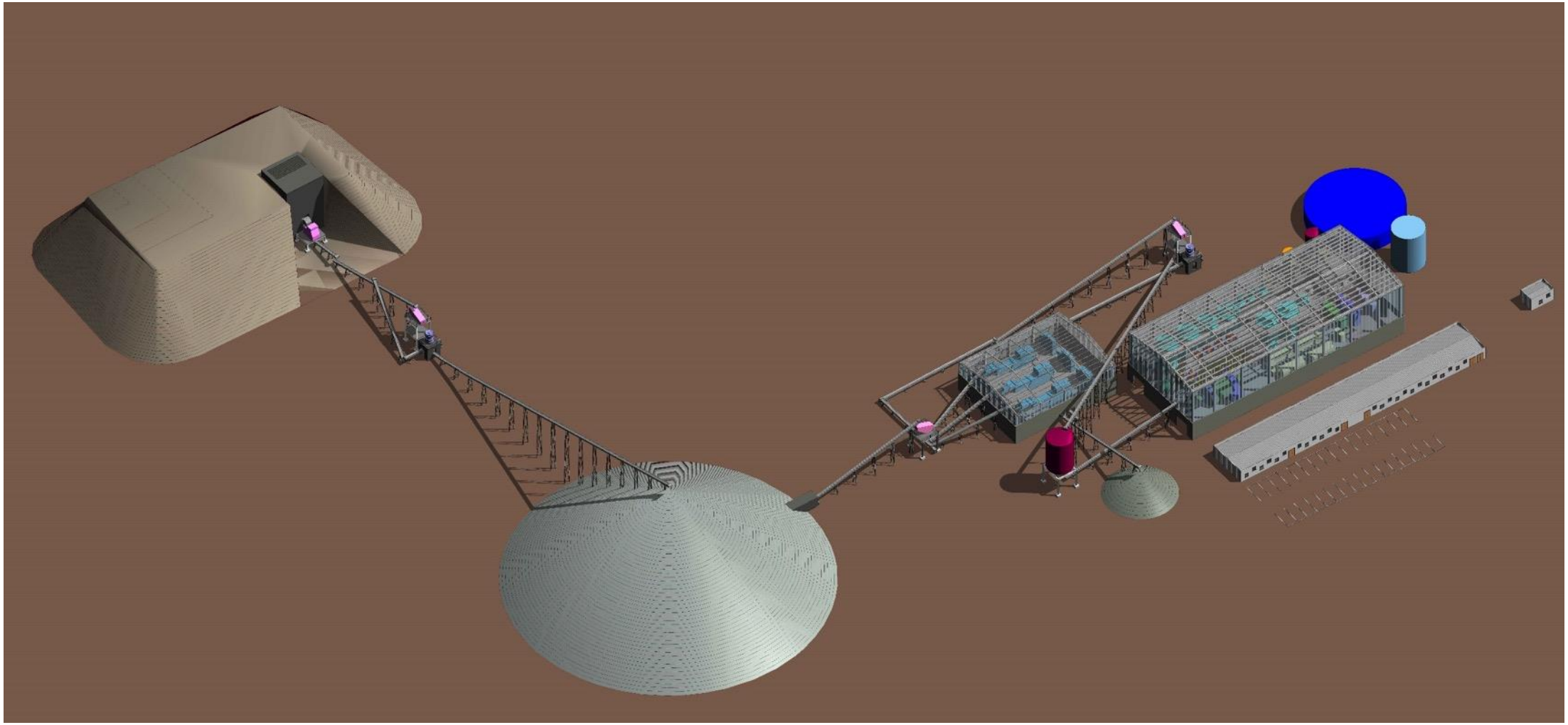


- **<u>Minimize collection.</u>** all rainwater and runoff that falls on unaffected land will be prevented from entering the system by perimeter channels.
- **<u>Reduce water consumption.</u>** The main area of water consumption is the production process. To minimize water consumption, process water will be reclaimed and recirculated back into the process circuit.
- **<u>Working in closed circuit with contact water.</u>** All rainwater and runoff that falls on altered land (waste rock dumps, buildings, etc.) will be managed independently and integrated into the system, to be used in the process as process water.
- A water treatment plant will also be designed to treat excess water from the mine drainage system when conditions require discharge into a public flow.

Treatment plant



Treatment plant



Conceptual Design

Open Pit Mine (1)

Open pit mine – conventional truck and shovel operation

Treatment Plant (2)

Crushing, pre-concentration (x-ray), grinding, flotation and gravitmetry, to produce a tin concentrate.

Tailing Dams (3 and 4)

Two independent cells within the same reservoir, to separate the sulfide tailings and inert plant tail, thus reducing acid generating potential and simplifying tailings subsequent restoration.

Waste Dumps (5 and 6)

Temporary waste rock placement location. Waste rock to be returned to the open-pit void upon completion of mining.

Water Storage (7)

Water storage with one year of storage capacity.

Personnel

Required workforce of 203 direct people, with the following breakdown:

	MINING			GENERAL		
Personnel	MESPA	Contractor	Plant	MESPA	Contractor	Total
Professional	5	3	3	5		16
Non-professional	5	5	8	4	1	23
Managers	2	4	2	2	2	12
Maintenance		7	12			19
Operators	4	50	50	15	14	133
TOTAL	16	69	75	26	17	203

It is the intention that all personnel will be from the local community where possible.

Consultant Team

AGQ Agroalimentaria y Medio ambiente	*Geochemistry and water analysis*
ayterra estudios y proyectos SL	*Hydrological and hydrogeological studies*
CRS ingeniería	*Geological and geotechnical studies*
PGMA	*Environmental studies*
leónolarte ABOGADOS	*Legal advice*
SCYPI	*General project coordination, development and supervision of metallurgical testing programs and mineral processing studies*
SGS	*Laboratory metallurgical tests*
Sondeos y Perforaciones Industriales del Bierzo S.A.	*Drilling Contractor*
wardell armstrong	*Metallurgical laboratory and pilot plant tests*
srk consulting	*Geological modelling, resource and reserves calculation, and mining studies*
MINAS DE ESTAÑO DE ESPAÑA 21	

Cautionary Statements

Forward-looking statements

This document may contain certain forward-looking statements. Such statements are only predictions, based on certain assumptions and involve known and unknown risks, uncertainties and other factors, many of which are beyond the company's control. Actual events or results may differ materially from the events or results expected or implied in any forward-looking statement. The inclusion of such statements should not be regarded as a representation, warranty or prediction with respect to the accuracy of the underlying assumptions or that any forward-looking statements will be or are likely to be fulfilled. Elementos undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date of this document (subject to securities exchange disclosure requirements). The information in this document does not take into account the objectives, financial situation or particular needs of any person or organisation. Nothing contained in this document constitutes investment, legal, tax or other advice.

Mineral Resources

Elementos confirms that Mineral Resource estimates used in this document were estimated, reported and reviewed in accordance with the guidelines of the Australian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 edition. Elementos confirms that it is not aware of any new information or data that materially affects the Mineral Resource estimate information included in the following announcements:

- "Acquisition of Oropesa Tin Project" released on 31 July 2018;

Competent Persons Statement

The information in this report that relates to Processing and Metallurgy for the Oropesa Tin Project is based on and fairly represents information and supporting documentation compiled by Chris Creagh, who is a full-time employee of Elementos Ltd. Mr Creagh is a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and who consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Chris Creagh 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 Code 2012).

Forward-looking statements

This document may contain certain forward-looking statements. Such statements are only predictions, based on certain assumptions and involve known and unknown risks, uncertainties and other factors, many of which are beyond the company's control. Actual events or results may differ materially from the events or results expected or implied in any forward-looking statement.

The inclusion of such statements should not be regarded as a representation, warranty or prediction with respect to the accuracy of the underlying assumptions or that any forward-looking statements will be or are likely to be fulfilled. Elementos undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date of this document (subject to securities exchange disclosure requirements).

The information in this document does not take into account the objectives, financial situation or particular needs of any person or organisation. Nothing contained in this document constitutes investment, legal, tax or other advice

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The Australian Securities Exchange has not reviewed and does not accept responsibility for the accuracy or adequacy of this release.

JORC CODE, 2012 EDITION – TABLE 1

Section 1 Sampling Techniques and Data

Pilot Plant Metallurgical Test Work, Oropesa Tin Project, Spain – December 2017 – Wardell-Armstrong

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *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 (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	Approximately 1.7 tonnes of sample was collected, comprising PQ core from three metallurgical drill holes, namely drill holes ORPM5, ORPM6, ORPM7 completed in 2016, and from selected samples from holes of HQ core from drill holes ORPD193i, ORPD 199i, ORPD 200i, ORPD 201i, ORPD 202i, ORPD 205i, ORPD 206i, and ORPD 207i that were completed as part of an infill drilling program carried out in 2016. The HQ infill drill holes were from mineralised intersections that were used to estimate a Mineral Resource at Oropesa and released to the ASX on 31st July 2018 - "Acquisition of the Oropesa Tin Project". The PQ metallurgical drill holes were not included in the Mineral Resource estimate. The sample underwent a Pilot Plant mineral processing test program at the Wardell-Armstrong Laboratories in Truro, United Kingdom. This sample was subjected to a range of tests including: • Bond Abrasion Index • Bond Rod Mill Work Index • Bond Ball Mill Work Index • Pilot Plant Sulphide float – undertaken with a regrind and cleaning stage

Criteria	JORC Code explanation	Commentary
		• Float tails sizing to produce +38µm, -38+10µm and -10µm fractions • Gravity processing of the +38 and -38+10µm fractions • WHIMS testing of the gravity concentrates • Further grinding and gravity processing of the +38µm middlings and tailings • Pilot plant tin flotation of the -38+10µm tails • WHIMS separation of the tin flotation concentrate, and • MGS processing of the non-magnetics.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	N/A
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	N/A
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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	N/A
Sub-sampling techniques	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*	The HQ samples were submitted as half core following diamond saw cutting at the Company's core preparation facility in Fuente Obejuna, Spain. The HQ samples were selected from analyses of

Criteria	JORC Code explanation	Commentary
and sample preparation	• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	half core samples that were sent for preparation to ALS Laboratories sample preparation facility in Seville, Spain ("ALS Seville"), and then dispatched to ALS Vancouver, Canada ("ALS Vancouver") for analysis for tin by glass fusion X-Ray fluorescence ("XRF"). The PQ samples were submitted as whole core following selection based on geological core logging and portable Nitton XRF analysis. No duplicate samples were required for the test work programme. Each of the chosen samples were crushed through a top size of 25mm and sub-sampled for assay. On receipt of the assays, the final selection for the composite sample was made. Samples were then extracted and prepared for the physical testing programme, with the remaining bulk being crushed through 3.35mm, from which a head sample, and mineralogical sample were extracted.
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 (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	The metallurgical pilot plant test work programme was managed by recognised metallurgical consultants, SCYPI, based in Oviedo, Spain. The test work was independently carried out by Wardell Armstrong Laboratories in Truro, United Kingdom. Sample preparation is covered in the section above Tin (Sn) was analysed by XRF (fused bead) and wet chemical techniques No standards or blank samples were supplied for the pilot plant test programme.

Criteria	JORC Code explanation	Commentary
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	Sampling and analytical methods are of a good standard and as such the results are considered representative of the performance that could be expected from the application of the process flowsheet developed as a result of the pilot plant test programme. Further metallurgical test work is required to optimise the tin flotation and ultra-fine gravity processes.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	HQ samples were selected from half drill core that was used in the estimation of a Mineral Resource that was released to the ASX on 31st July 2018 - "Acquisition of the Oropesa Tin Project". PQ drill core samples were selected from specifically targeted drill holes based on the existing geological resource model to maximise the quantity of representative mineralised sample that would be sufficient to complete the pilot plant test programme. The PQ drill holes are recorded in the data base under the same grid system as the HQ samples.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.*	Samples were composited from numerous drill holes to reach the sample size required to carry out the bulk test.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	N/A
Sample security	• *The measures taken to ensure sample security.*	The drill core is stored in Company locked facilities. Sample security was supervised by Company personnel, SCYPI and Wardell Armstrong. All samples were sealed prior to transport. An

Criteria	JORC Code explanation	Commentary
		independent transport company was used to transport the samples from Oropesa to Truro.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	No audits have been undertaken

Section 2 Reporting of Exploration Results

Ground Magnetic Survey at Cleveland

Criteria	JORC Code explanation	Commentary
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.*	Elementos Limited announced to the ASX the acquisition of Minas De Estaño De España, SLU ("MESPA or the Company") from TSX-V listed Eurotin Ltd on 31July 2018:- (Acquisition of the Oropesa Tin Project) MESPA has registered title to the Oropesa project property with the Andalucia mining authorities (Permit number 13.050), under the Spanish Mining Act. The property is a 14.51km² concession in Andalucía, southern Spain, located 75 km northwest of Cordoba and 180 km northeast of Seville. On 10 October 2017 the Company filed an Exploitation Permit application for the Oropesa property. Under Spanish Law an Exploitation Concession is granted for a 30-year period, and may be extended for two further periods of 30 years each and up to a maximum of 90 years. Completing and filing the Exploitation Application prior to the expiration of the Investigation Permit allows the Company to remain in compliance with its title for the Oropesa property There are no known litigations potentially affecting the Oropesa Project.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	Instituto Geológico y Minero de España ("IGME")conducted an exploration programme in southern Spain between1969–1990,including geological mapping and geochemical surveys, which led tothe discovery of tin on the Oropesa property in

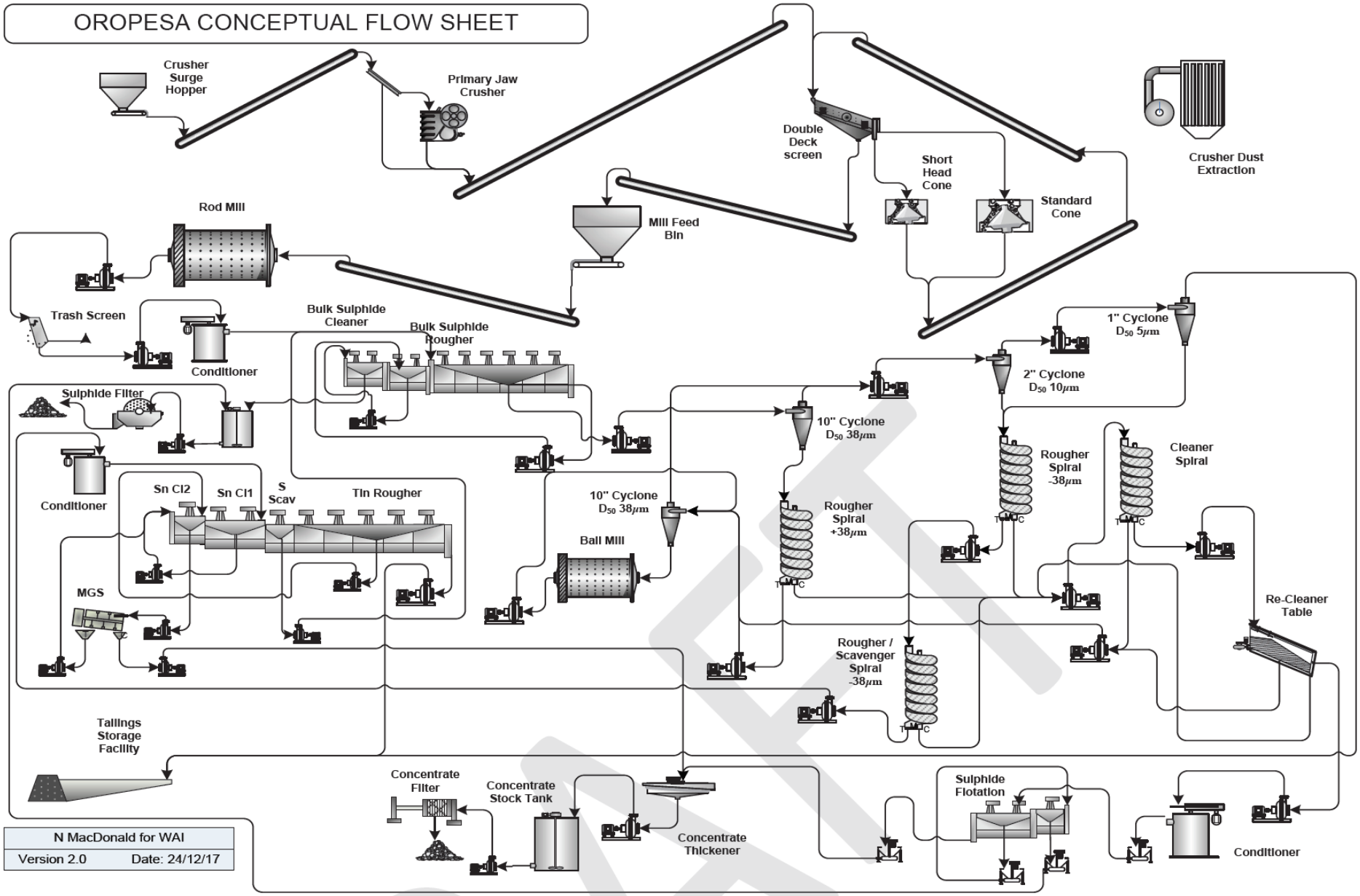
Criteria	JORC Code explanation	Commentary
		1982.Additional tin exploration targeted Oropesa and the neighbouring La Grana property during 1983–1990, which included further mapping, stream sediment sampling, geochemical soils, geophysical surveys, trenching and initial drilling.
Geology	• *Deposit type, geological setting and style of mineralisation.*	The Oropesa deposit is characterised by replacement-style tin mineralisation (cassiterite and minor stannite) occurring mainly at sandstone-conglomerate contacts in the Peñarroya Basin, a Carboniferous basin formed during the Hercynian/Variscan Orogeny. Reactivation of syn-sedimentary and basin-controlling faults has resulted in complex, folded geometries. Subordinate fault-hosted mineralisation is also present.

Drill hole Information	• *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:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		An estimated Mineral Resource for Oropesa was released to the ASX on 31st July 2018 - “Acquisition of the Oropesa Tin Project”. Please refer to this announcement for information related to the geological resource.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *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.*	N/A

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *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 down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	N/A
Diagrams	• *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.*	N/A
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	N/A All data and resource estimates have been previously reported.
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.*	Wardell Armstrong International Ltd were requested by Minas de Estaño de España to conduct a comprehensive pilot plant test work programme on the Oropesa tin deposit in Spain. The main aim of the testing was to further develop the proposed process flowsheet with a view to maximising the amount of tin that can be recovered, for which approximately 1.7 tonnes of PQ core from three Metallurgical drill holes and selected HQ core from infill drill holes was available for the testwork programme. The bulk sample tin head grade was 0.70% Sn, with 10.5% S and 14% Fe. A full metallurgical balance was generated using the mass pulls and recoveries from the pilot plant work, and the ancillary test work. From this a tin recovery of 74.2% at a combined concentrate of 62.4% Sn was achieved. 64% of the recovery came from gravity concentration at a grade of 63.2% Sn, and the remaining 36% came from tin flotation at a grade of 61.0% Sn. The gravity concentrate contained 4.6% Fe and 0.2% S, both within concentrate specification limits. The tin flotation concentrates

Criteria	JORC Code explanation	Commentary
		contained 13.7% Fe and 1.4% S. The sulphur is within limits, but the iron would be out of specification (normally 8%).
Further work	• *The nature and scale of planned further work (eg 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.*	Further metallurgical test work is recommended to optimise the tin flotation circuit with emphasis on iron removal and the reduction of re-circulating loads. The tin flotation concentrate gravity cleaning circuit will require additional test work focused on optimising the ultra fine tin recovery and reducing tin losses.


OROPESA CONCEPTUAL FLOW SHEET
Crusher Surge Hopper
Primary Jaw Crusher
Double Deck screen
Short Head Cone
Standard Cone
Crusher Dust Extraction
Rod Mill
Mill Feed Bin
Trash Screen
Conditioner
Bulk Sulphide Cleaner
Bulk Sulphide Rougher
1" Cyclone D50 5μm
2" Cyclone D50 10μm
Sulphide Filter
10" Cyclone D50 38μm
Rougher Spiral -38μm
Cleaner Spiral
Conditioner
Sn Cl2
Sn Cl1
S Scav
Tin Rougher
10" Cyclone D50 38μm
Rougher Spiral +38μm
Ball Mill
MGS
Re-Cleaner Table
Rougher / Scavenger Spiral -38μm
Tailings Storage Facility
Concentrate Filter
Concentrate Stock Tank
Concentrate Thickener
Sulphide Flotation
Conditioner
N MacDonald for WAI
Version 2.0 Date: 24/12/17

Section 3 Estimation and Reporting of Mineral Resources

n/a

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	N/A
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.*	
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral 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 controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	
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.*	
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).*	

Criteria	JORC Code explanation	Commentary
	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	
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.*	
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	

Criteria	JORC Code explanation	Commentary
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	
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.* • *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.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie 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).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	
Discussion of relative	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to*	

Criteria	JORC Code explanation	Commentary
accuracy/ confidence	*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 estimate should be compared with production data, where available.*	

Section 4 Estimation and Reporting of Ore Reserves

n/a

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* • *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	n/a
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.*	
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* • *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	

Criteria	JORC Code explanation	Commentary
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*	
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	

Criteria	JORC Code explanation	Commentary
Environmental	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*	
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	

Criteria	JORC Code explanation	Commentary
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and*	

Criteria	JORC Code explanation	Commentary
	confidence of the estimate. • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	

Section 5 Estimation and Reporting of Diamonds and Other Gemstones

n/a

Criteria	JORC Code explanation	Commentary
Indicator minerals	• *Reports of indicator minerals, such as chemically/physically distinctive garnet, ilmenite, chrome spinel and chrome diopside, should be prepared by a suitably qualified laboratory.*	
Source of diamonds	• *Details of the form, shape, size and colour of the diamonds and the nature of the source of diamonds (primary or secondary) including the rock type and geological environment.*	
Sample collection	• *Type of sample, whether outcrop, boulders, drill core, reverse circulation drill cuttings, gravel, stream sediment or soil, and purpose (eg large diameter drilling to establish stones per unit of volume or bulk samples to establish stone size distribution).* • *Sample size, distribution and representivity.*	
Sample treatment	• *Type of facility, treatment rate, and accreditation.* • *Sample size reduction. Bottom screen size, top screen size and re-crush.* • *Processes (dense media separation, grease, X-ray, hand-sorting,*	

Criteria	JORC Code explanation	Commentary
	etc). • *Process efficiency, tailings auditing and granulometry.* • *Laboratory used, type of process for micro diamonds and accreditation.*	
Carat	• *One fifth (0.2) of a gram (often defined as a metric carat or MC).*	
Sample grade	• *Sample grade in this section of Table 1 is used in the context of carats per units of mass, area or volume.* • *The sample grade above the specified lower cut-off sieve size should be reported as carats per dry metric tonne and/or carats per 100 dry metric tonnes. For alluvial deposits, sample grades quoted in carats per square metre or carats per cubic metre are acceptable if accompanied by a volume to weight basis for calculation.* • *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive sample grade (carats per tonne).*	
Reporting of Exploration Results	• *Complete set of sieve data using a standard progression of sieve sizes per facies. Bulk sampling results, global sample grade per facies. Spatial structure analysis and grade distribution. Stone size and number distribution. Sample head feed and tailings particle granulometry.* • *Sample density determination.* • *Per cent concentrate and undersize per sample.* • *Sample grade with change in bottom cut-off screen size.* • *Adjustments made to size distribution for sample plant performance and performance on a commercial scale.* • *If appropriate or employed, geostatistical techniques applied to model stone size, distribution or frequency from size distribution of exploration diamond samples.* • *The weight of diamonds may only be omitted from the report when the diamonds are considered too small to be of commercial significance. This lower cut-off size should be stated.*	
Grade estimation	• *Description of the sample type and the spatial arrangement of drilling or sampling designed for grade estimation.*	

Criteria	JORC Code explanation	Commentary
for reporting Mineral Resources and Ore Reserves	• *The sample crush size and its relationship to that achievable in a commercial treatment plant.* • *Total number of diamonds greater than the specified and reported lower cut-off sieve size.* • *Total weight of diamonds greater than the specified and reported lower cut-off sieve size.* • *The sample grade above the specified lower cut-off sieve size.*	

Value estimation	• *Valuations should not be reported for samples of diamonds processed using total liberation method, which is commonly used for processing exploration samples.*
	• *To the extent that such information is not deemed commercially sensitive, Public Reports should include:*
	  ○ *diamonds quantities by appropriate screen size per facies or depth.*
	  ○ *details of parcel valued.*
	  ○ *number of stones, carats, lower size cut-off per facies or depth.*
	• *The average $/carat and $/tonne value at the selected bottom cut-off should be reported in US Dollars. The value per carat is of critical importance in demonstrating project value.*
	• *The basis for the price (eg dealer buying price, dealer selling price, etc).*
	• *An assessment of diamond breakage.*	

Security and integrity	• *Accredited process audit.* • *Whether samples were sealed after excavation.* • *Valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones.* • *Core samples washed prior to treatment for micro diamonds.* • *Audit samples treated at alternative facility.* • *Results of tailings checks.* • *Recovery of tracer monitors used in sampling and treatment.* • *Geophysical (logged) density and particle density.* • *Cross validation of sample weights, wet and dry, with hole volume and density, moisture factor.*	

Criteria	JORC Code explanation	Commentary
Classification	• *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive grade (carats per tonne). The elements of uncertainty in these estimates should be considered, and classification developed accordingly.*	