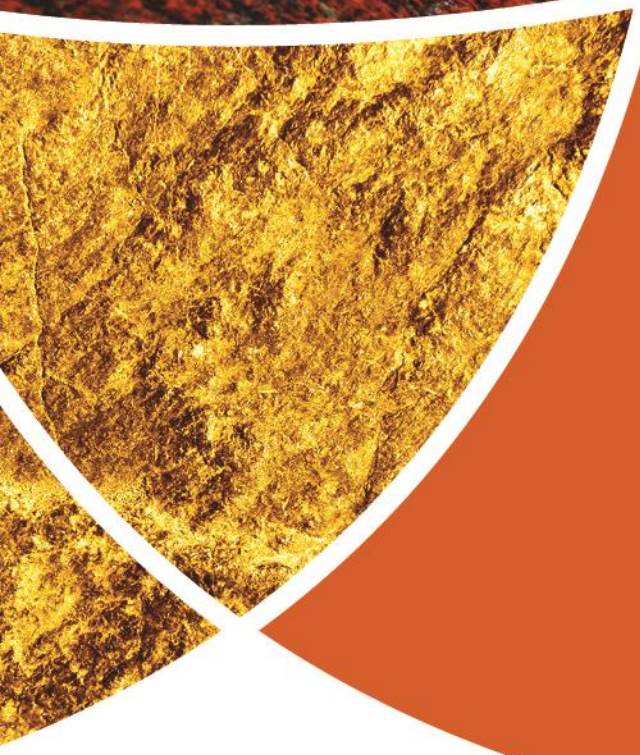

CSA Global
Mining Industry Consultants

MINERAL RESOURCE ESTIMATE

Avoca Historic Mine Site Project, Ireland

IMC Exploration Group plc

CSA Global Report № R406.2019
4 September 2019

www.csaglobal.com

Report prepared for

Client Name	IMC Exploration Group plc
Project Name/Job Code	IMCTMMRE01
Contact Name	Eamon O'Brien
Contact Title	Chairman
Office Address	70 Ballybough Road, Dublin 3, Ireland

Report issued by

CSA Global Office	CSA Global Pty Ltd Level 2, 201 Leichhardt Street Spring Hill QLD 4000 AUSTRALIA PO Box 1077 Spring Hill QLD 4004 AUSTRALIA T +61 7 3106 1200 F +61 7 3106 1201 E csaqld@csaglobal.com
Division	Resources

Report information

File name	R406.2019 IMCTMMRE01 Avoca Mineral Resource estimate
Last edited	09/03/2019 1:08:00 PM
Report Status	Final

Author and Reviewer Signatures

Coordinating Author	David Williams B Sc. (Hons), MAIG, MAusIMM	Signature:	Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.
Peer Reviewer	Maria O'Connor BSc. (Hons), MAIG, MAusIMM	Signature:	
CSA Global Authorisation	Aaron Meakin BSc (Hons) Geology, GradDipAppFin, MAppFin, MAusIMM (CP)	Signature:	Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.

Disclaimers

Purpose of this document

This Report was prepared exclusively for IMC Exploration Group plc ("the Client") by CSA Global Pty Ltd ("CSA Global"). The quality of information, conclusions, and estimates contained in this Report are consistent with the level of the work carried out by CSA Global to date on the assignment, in accordance with the assignment specification agreed between CSA Global and the Client.

Notice to third parties

CSA Global has prepared this Report having regard to the particular needs and interests of our client, and in accordance with their instructions. This Report is not designed for any other person's particular needs or interests. Third party needs and interests may be distinctly different to the Client's needs and interests, and the Report may not be sufficient nor fit or appropriate for the purpose of the third party.

CSA Global expressly disclaims any representation or warranty to third parties regarding this Report or the conclusions or opinions set out in this Report (including without limitation any representation or warranty regarding the standard of care used in preparing this Report, or that any forward-looking statements, forecasts, opinions or projections contained in the Report will be achieved, will prove to be correct or are based on reasonable assumptions). If a third party chooses to use or rely on all or part of this Report, then any loss or damage the third party may suffer in so doing is at the third party's sole and exclusive risk.

CSA Global has created this Report using data and information provided by or on behalf of the Client [and the Client's agents and contractors]. Unless specifically stated otherwise, CSA Global has not independently verified that all data and information is reliable or accurate. CSA Global accepts no liability for the accuracy or completeness of that data and information, even if that data and information has been incorporated into or relied upon in creating this Report.

Results are estimates and subject to change

The interpretations and conclusions reached in this Report are based on current scientific understanding and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for absolute certainty.

The ability of any person to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond CSA Global's control and that CSA Global cannot anticipate. These factors include, but are not limited to, site-specific mining and geological conditions, management and personnel capabilities, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, unforeseen changes in legislation and new industry developments. Any of these factors may substantially alter the performance of any mining operation.

Executive Summary

CSA Global Pty Ltd (CSA Global) was engaged by IMC Exploration Group plc (IMC) to prepare a Mineral Resource estimate for the Avoca Historic Mine Site Project ("the Project"), located in County Wicklow, Ireland. Trove Metal Ltd (Trove) entered into an agreement with IMC to establish an environmental clean-up operation to remove metals from the existing mine waste at the Project site.

This report is issued on the basis that no material changes have taken place on the Project since CSA Global completed the Mineral Resource estimate in November 2018 (CSA Global report R369.2018). IMC advised CSA Global that no material changes have taken place at the Project, in correspondence with the Competent Person dated 3rd September 2019.

The Avoca Mine has operated since the early 18th century, with recent open pit mining during the 1970s and 1980s. The deposit is a volcanogenic massive sulphide (VMS) style and mining extracted Cu, Pb and minor Zn, with uneconomic levels of Au and Ag present. The mining operations were abandoned in 1982 with little to no environmental remediation taking place. Mine spoils were deposited onto several spoil heaps near the mine and IMC requested CSA Global to prepare a Mineral Resource estimate for several of the spoil heaps, specifically the Cronebane, Mt Platt and Tigroney East spoil heaps. Other spoil heaps have been delineated by IMC but are not part of their current investigations due to environmental or land access issues.

The Mineral Resource is classified as Inferred and has been reported in accordance with the JORC Code (2012)[1]. Classification of the Mineral Resource estimates was carried out taking into account the volumes of the spoil heaps, quality of the sampling and density data, and sample spacing. The Mineral Resource is presented in Table 1.

Table 1: Inferred Mineral Resource estimate (all tonnages reported with no cut-off grade applied)

Spoil Heap	Tonnes (kt)	Cu (%)	Pb (%)	Zn (%)	Au (g/t)	Ag (ppm)
Forest of Gold	2	0.57	4.31	0.83	5.2	64
Tigroney Lower East	19	0.44	0.68	0.37	0.6	13
Tigroney North	158	0.18	0.12	0.04	0.1	3
Subtotal (Tigroney East)	178	0.29	0.62	0.20	0.7	11
Mt Platt	852	0.13	0.37	0.12	0.2	7
Cronebane	841	0.13	0.43	0.16	0.4	10
TOTAL	**1,871**	**0.14**	**0.42**	**0.14**	**0.3**	**9**

Notes

- *Forest of Gold, Tigroney Lower East and Tigroney North spoil heaps are collectively Tigroney East.*
- *Rounded volumes presented.*
- *Tonnes are rounded to reflect uncertainty in the spoil heap volumes.*

IMC, Trove and CSA Global believe there are reasonable prospects for the eventual economic extraction of the Mineral Resources. The Project is located near centres with large populations, which can provide a suitable workforce for earthmoving and mineral processing. Power and water are connected to the site. The spoil heap material is free dig and therefore drill and blast activities are not required. The Exploration and Mining Division of the Department of Communications, Climate Action and Environment is of the view that the spoil heaps at the Project site need to be dealt with and consider the extraction of the contained metal as an incentive to progress further studies and eventual earthmoving works.

[1] Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).

The Mineral Resource is based upon sample data obtained from 14 pits dug into the surface of the spoil heaps to a maximum depth of 4 m. Excavation of the pits and sampling took place in April 2018. The excavated material from each 1 m sample interval were deposited in separate piles adjacent to the pit and a representative sample taken from the pile. Samples were dispatched to ALS Laboratory, Loughrea, Co Galway, Ireland for chemical analyses, with field duplicates, certified reference materials and blanks used to monitor the quality control of the sampling and assaying.

Volumes were calculated for each spoil heap using survey data provided by Trove. The basal topography of the spoil heaps is largely unknown, and the volumes were calculated based upon known surface areas and estimated depths, using the surrounding topography to guide the decision making.

Samples were taken from each sample pit sample stockpile and used to calculate in-situ bulk densities. An average bulk density of 1.59 t/m^3 is calculated from all the samples, and this is assumed to be a wet bulk density.

An average sample grade for Cu (%), Pb (%), Zn (%), Au (g/t) and Ag (ppm) was assigned to each spoil heap based upon the sample grades from each pit.

CSA Global recommends the following to add confidence to the Mineral Resource and volumetric control of the Project:

- Sample the spoil heaps using a percussion drilling rig, such as reverse circulation. This will provide a large sample per metre interval and break down the variably sized material.
- A drillhole spacing of 50 m is recommended, with tighter spacing for the smaller spoil heaps. Holes should be drilled to full depth of the spoil heaps.
- Holes should penetrate the pre-spoil heap substrate and samples taken from the substrate.
- All samples to be geologically logged.
- Representative samples should be taken from each hole to provide additional bulk density data. Moisture content should be determined from the samples to allow a dry bulk density to be determined.
- Continue with the existing quality assurance methodologies, monitoring the results in real time.
- Volumes of spoil heaps re-calculated using ‘depth of spoil heap’ data collected from drilling.

Contents

Figures

Tables

Appendices

1 Introduction

1.1 Scope of Work

IMC Exploration Group plc (IMC) entered into an agreement with Trove Metal Ltd (Trove) to establish an environmental clean-up operation to remove metals from the existing mine waste at the Avoca Historic Mine Site Project ("the Project") located in County Wicklow, Ireland. The Avoca Mine has operated since the early 18th century, with open pit mining during the 1970s and 1980s. The deposit is a volcanogenic massive sulphide (VMS) style and mining extracted Cu, Pb and minor Zn, with uneconomic levels of Au and Ag present. The mining operations were abandoned in 1982 with little to no environmental remediation taking place. Mine spoils were deposited onto several spoil heaps near the mine and town of Avoca, which are deemed to detract from the natural beauty of the area. Acid mine drainage (AMD) is a current environmental problem.

CSA Global Pty Ltd (CSA Global) was engaged by IMC to prepare a Mineral Resource estimate for the largest spoil heaps, specifically the Cronebane, Mt Platt and Tigroney East spoil heaps. Other spoil heaps have been delineated by Trove but are not part of their current investigations due to environmental or land access issues.

CSA Global will estimate Mineral Resources for the spoil heaps based upon sample and survey data provided by Trove, and the Mineral Resources will be classified in accordance with the JORC Code (2012)[2]. A Mineral Resource report (this report) will be prepared with a discussion on sample data and quality, deposit volume and tonnage, grade estimation methodology and reporting of tonnes and grade.

A site visit is required by either the Competent Person or a suitably qualified person who can act independently on behalf of the Competent Person. The Competent Person will inspect the layout of the project, sampling sites and sample preparation areas, and establish an opinion as to whether there are reasonable prospects for eventual economic extraction of the deposit.

This report is issued on the basis that no material changes have taken place on the Project since CSA Global completed the Mineral Resource estimate in November 2018 (CSA Global report R369.2018). IMC advised CSA Global that no material changes have taken place at the Project, in correspondence with the Competent Person dated 3rd September 2019.

1.2 Sources of Information

IMC provided CSA Global with the following data:

- A drillhole database (in the form of a Microsoft Excel spreadsheet), containing collar locations for the sample pits, assay data for the pit samples and quality assurance and quality control (QAQC) data.
- A Microsoft Excel spreadsheet with density measurements.
- Survey data including:
  - Contours at 10 m intervals
  - Roads
  - Buildings
  - Geospatial limits to the spoil heaps
  - Documentation detailing areas and volumes for each spoil heap.
- Various reports discussing sampling efforts and environmental studies.

[2] Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).

1.3 Prior Association and Independence

Neither CSA Global, nor the authors of this report, has or has had previously, any material interest in IMC or the mineral properties in which IMC has an interest. CSA Global's relationship with IMC is solely one of professional association between client and independent consultant.

CSA Global is an independent geological and mining consultancy. This report is prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is not contingent on the results of this report.

No member or employee of CSA Global is, or is intended to be, a director, officer or other direct employee of IMC or Trove.

1.4 Competent Person Statement

The information in this report that relates to Mineral Resources and Exploration Targets is based on information reviewed by Mr David Williams, a Competent Person, who is a Member of the Australian Institute of Geoscientists. David Williams is a full-time employee of CSA Global Pty Ltd, an independent consulting company. Mr Williams has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". David Williams consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

1.5 Site Inspection

A CSA Global nominated representative of the Competent Person visited the project on 9 August 2018. A representative of Trove accompanied CSA Global throughout the visit. No activities were taking place on the day however Trove accompanied CSA Global for a tour of the Project site, inspecting sampling sites (rehabilitated prior to CSA Global's visit), geometry of the spoil heaps, and location of the Project with respect to the local countryside. There were no negative outcomes from any of the above inspections, and all samples and geological data were deemed fit for use in the Mineral Resource estimate.

2 Property Description

2.1 Project Location

The Project is located in the valley of the Avoca River, near the town of Avoca, approximately 50 km south of Dublin. The Avoca Historic Mine Site is divided into Avoca East and Avoca West, named according to their locations relative to the Avoca River. This Mineral Resource estimate is focused upon the Cronebane, Mt Platt and Tigroney East spoil heaps. Figure 1 shows the location of the Project and the spoil heaps.

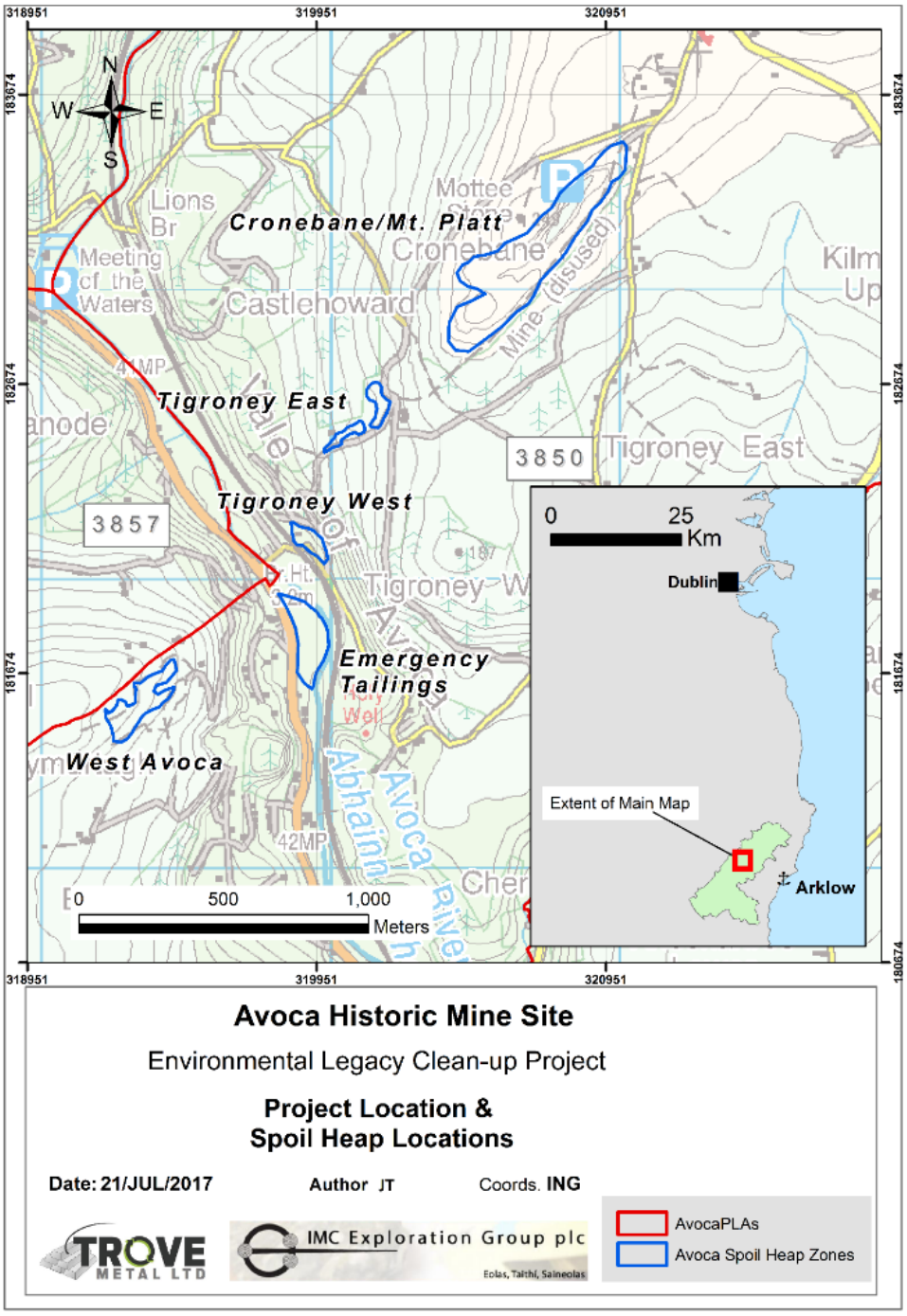

Figure 1: Location of the Avoca Historic Mine Site, Ireland (image courtesy Trove, 2017)

2.2 Ownership and Tenure

The Department of Communications, Climate Action and Environment (DCCAE) is the landowner for all sites, and IMC and Trove requested the permission of DCCAE to carry out the work at the Project.

IMC is the current holder of the prospecting licences at Avoca, covering licence areas 2239, 3849, 3850 and 3857. The Mineral Resource is contained within prospecting licence PLA3850. The licence under area 3850 was issued on 7 February 2013 and is deemed to be in "good standing" by the Exploration and Mining Division (EMD) of DCCAE.

A heads of agreement was concluded with Trove Metal Limited, that has led to a Joint Venture agreement on PL 3850, subject to the approval of the Minister for Communication, Climate Action and Environment.

The right to explore and the associated access rights are inherent in the terms of a valid prospecting licence. In practice, access rights are negotiated with individual landowners without the need to invoke the terms of a prospecting licence. IMC and Trove have considerable experience in permitting exploration in Ireland. All the relevant land is owned by the Irish state and managed by the EMD. It is not anticipated that the EMD will withhold permission to explore.

Mineral ownership in Ireland is, in general, held by the State, although some landowners hold private mineral rights. While an exact title search was outside the scope of this study, it is believed likely that the State holds all the mineral rights at Avoca, given its history and the fact that the State owns most of the relevant land.

Prospecting licences are initially issued for a six-year period. Under the regulations, a licence holder is committed to progressively increasing minimum exploration work programs and expenditures for each of the three two-year terms of the six-year period. The licence holder is also required to provide interim work reports at the end of each of the first two-year periods. Prospecting licences can be renewed beyond the initial six-year period, with increased minimum work program and expenditure commitments. If a licence holder wishes to renew the licence, a renewal report must be submitted at the end of the six-year term of the licence. Licences can be relinquished at any time.

The EMD has already carried out a significant program of landscaping toward the bottom of the valley and recognises that further work to prevent AMD and other pollution is necessary. IMC and Trove are of the opinion that community and other stakeholder engagement will be necessary if significant other work is to go ahead.

IMC, Trove and CSA Global believe there are reasonable prospects for the eventual economic extraction of the Mineral Resources. The Project is located near centres with large populations, which can provide a suitable workforce for earthmoving and mineral processing. Power and water are connected to the site. The spoil heap material is free dig and therefore drill and blast activities are not required. The Exploration and Mining Division of the Department of Communications, Climate Action and Environment is of the view that the spoil heaps at the Project site need to be dealt with and consider the extraction of the contained metal as an incentive to progress further studies and eventual earthmoving works.

3 Geology and Project History

3.1 Geology

The following discussion on the geology of the Avoca Mine and Project history is from Gallagher and O'Connor (1999).

The deposit is a VMS style deposit. The Avoca deposit is hosted by the Avoca Formation, a sequence of 455 Ma Ordovician volcanic and sedimentary rocks. The formation comprises a 2–4 km wide and a 15 km long zone. Three main ore types were recognised at Avoca, namely:

1. **Pyritic zones**: Bands of pyritic ore alternating with bands of sphalerite rich ore and bands of chlorite and sericite. Pyrite is the dominant mineral, either banded or as massive lenticles with or without interstitial chalcopyrite, sphalerite and galena in a chloritic matrix. Magnetite, hematite, arsenopyrite, pyrrhotite, bismuthinite and native bismuth are minor constituents. Gold is rare. This ore was observed in the Main Lode in East Avoca.
2. **Siliceous zones or stringer ore**: Major pyrite, chalcopyrite, sphalerite and lesser galena occur within a siliceous matrix. Arsenopyrite, pyrrhotite, bismuthinite, native bismuth, tetrahedrite and bournonite are minor constituents with cobaltite and lillianite as trace occurrences. These zones were observed in the hangingwall of East Avoca.
3. **Pb-Zn ore**: Banded sphalerite, galena and pyrite occur with minor arsenopyrite and chalcopyrite in a chloritic matrix, with rare tetrahedrite and Bournonite. This ore was observed in the "kilmacooite" zone at Cronebane-Connary.

3.2 Project History

Copper mining is reported to have begun in the Avoca River valley around 1720 and continued, with interruption, until 1982. Low grades and low metal prices during the latter part of the 20th century ensured that mining at Avoca was a marginal proposition. Mining at Avoca was from both underground and open pit mining methods, with the open pits observed today mined in the latter part of the 20th century.

The Mt Platt and Cronebane spoil heaps were predominantly sourced from the Cronebane open pit mined in the 1970s. Much of the mine spoils were built up to form the Cronebane Waste Pile, partly because of lack of space, but also as part of a policy by Avoca Mines Ltd to rehabilitate the site. The source of the smaller spoil heaps at Tigroney East is unclear, although the larger spoil heap at Tigroney North is likely to have originated from material excavated from the adjacent East Avoca open pit. The Forest of Gold spoil heap is comprised of fine-grained material and may have been sourced from milled ore (Trove, pers. comm.).

Following the Avoca Mine Site ceasing production in 1982, the mine site and spoil heaps have been largely undisturbed. There was an unsuccessful attempt to recover the gold in the spoil heaps in the early 1990s by Feltrim Mining/Connary Minerals. The main technical obstacle seems to have been that much of the gold was too fine to be processed by existing methods, including heap leach, which was the intended processing method (Trove, 2017). An estimate of 18,329 ounces across the Project area was reported by CSA in 1992; however, the other metals of relevance were not reported.

Trove (2017) present a grade-tonnage estimate as presented in Table 2, based upon assays of grab samples and was used as the basis for further sampling to be conducted in support of a Mineral Resource estimate. Note that the shaded cells in Table 2 contain Au values estimated from an average of the weighted average of the spoil heaps, discounted by 10% to give a conservative estimate for the Au grades.

Table 2: Grade-tonnage estimate for the waste heaps at Avoca (Trove, 2017)

Spoil heaps only							
Location	**Volume (m^3)**	**Tonnes (000s)**	**Pb (%)**	**Cu (%)**	**Zn (%)**	**Ag (g/t)**	**Au (g/t)**
West Avoca	79,500	123	0.85	0.13	0.03	2.41	0.37
Connary	47,800	74	2.12	0.17	0.04	25.88	0.72
Cronebane	659,800	1,023	0.45	0.07	0.02	8.48	0.48
Tigroney East	104,800	162	1.01	0.34	0.07	15.77	1.57
Tigroney West	28,300	44	1.64	0.35	0.16	17.89	0.72
TOTAL	**920,200**	**1,426**	**0.66**	**0.11**	**0.03**	**8.65**	**0.61**

Preliminary metallurgical and processing testwork and mineralogical studies were conducted in 2017, with conclusions that a combination of dense media separation and micro gravity separation are considered to successfully process the material on site.

It is believed that no other attempts have been made to reduce the metal content of the spoil heaps since the 1990's. The EMD is carrying out a large-scale rehabilitation project, in an attempt to deal with toxic and acidic runoff from the mine (both surface and groundwater), as well as landscaping the existing waste heaps, which are generally considered to be an eyesore to the local communities.

4 Data

4.1 Mine Spoil Heaps

Survey data for the Mineral Resource estimate was provided by Erkina Surveys, licensed surveyors based in County Tipperary. The following data was used by CSA Global:

- File "180198_Avoca_ISSUE.dwg" containing the following relevant layers:
  - Contours (10 m intervals)
  - Roads
  - Buildings
  - Spoil heap limits
  - Trial pit crests.
- File "Avoca.tiff", a high-resolution aerial photo
- Survey certificates for each spoil heap, dated 12 June 2018, detailing:
  - Surface area
  - Volume.

The layers were imported into Datamine. Figure 2 shows the layout of the Project, with sample pits and relevant spoil heaps.

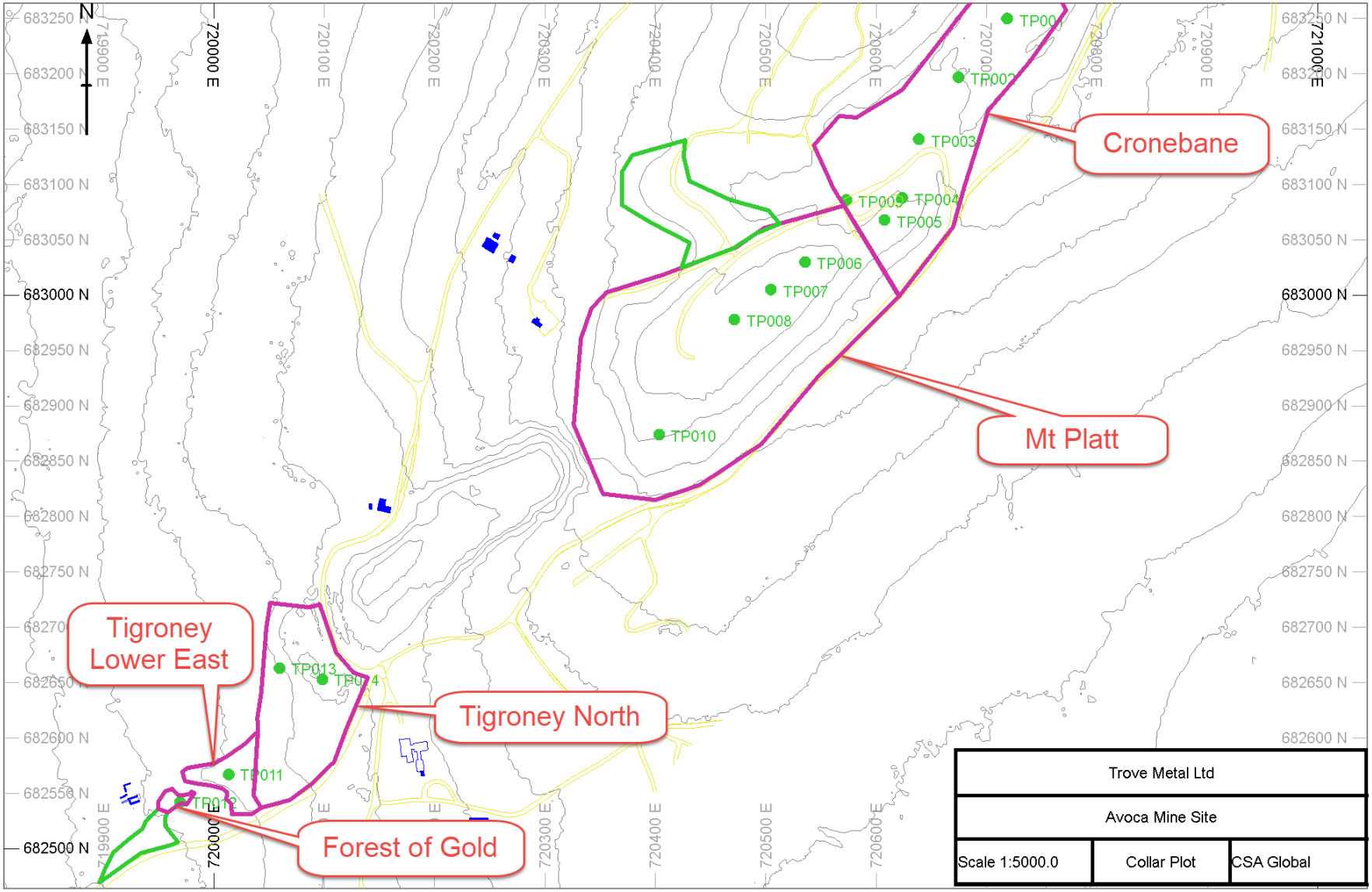

Figure 2: Plan of Avoca Mineral Resource surface, showing contours, roads, buildings and trial pits (Mineral Resource spoil heap limits shown in magenta, others in green)

4.2 Trial Pits

4.2.1 Methodology

IMC provided CSA Global with collar coordinates and 1 m sample assays for 14 pits excavated from the Cronebane, Mt Platt and Tigroney East spoil heaps. The pits were excavated and sampled according to the following procedure as provided by Trove. A long-arm excavator was used for the pitting program.

- The excavator will be positioned adjacent to the pit location.
- A temporary fence, using site tape, will be erected at a safe distance from the excavator. All personnel will remain outside that fence while the excavator is excavating.
- The excavator will dig out the pit, depositing the material at a safe distance from the pit forming a linear embankment no more than 1 m high. The material will be banked at an angle no steeper than 45°, to ensure stability. Pits will be approximately 3 m deep.
- Once the trial pit has been excavated, the material will be sampled along the embankment, to get a reasonably representative vertical profile.
- Samples will be 1–5 kg in weight.
- Once sampling has been completed, the material will be returned to the pit and shaped to restore the original profile.
- In the case that a waste pile is too high to be fully sampled with a pit from the top, the excavator will also remove material from the side of the trench, this is envisaged at locations 9, 11 and 13 (see attached map). The material will again be placed in an embankment until it has been sampled. The material will then be returned to the waste pile and the original profile restored. In some cases, the profile may be smoothened out to increase slope stability.
- The sampling program was supervised by Jonathan Talbot of Trove.
- Before and after photographs will be taken at each site.

Figure 3 presents examples of two trial pits. Both pits show variability in the lithological composition of the spoil heaps in the upper elevations of the spoil heap, although no geological logs were provided by Trove. From Figure 3 and other photos provided, the spoil heaps are a mixture of grain sizes ranging from fine sands to cobbles, and sometime boulders, which would present problems if attempting to sample using a drilling methodology which is not either a rotary percussion, or diamond coring. With the sampling procedure employed by Trove from the trial pit spoils, it is important that each sample captures all grain sizes without inadvertently excluding larger clasts.

Figure 3: Excavation of trial pit TP006 (left), and full excavation depth of TP004, with 4 m measuring rod (right)

4.2.2 Data Observations

CSA Global loaded the trial pit collars and surveyed layers (pit crests) into Datamine and noticed elevation discrepancies in some instances between the crest outlines, surveyed collar and the local contour. An example is trial pit TP007 (Mt Platt) with data for the trial pit collar at 233.484 m, the pit crest layer at approximately 238 m and the adjacent contour layer at 230 mRL. CSA Global reviewed the spoil heaps using Google Earth imagery and observed that the spoil heap elevation was higher than the 230 mRL contour and therefore CSA Global decided to add the pit crest to the contour layers so that a digital terrain model (DTM) could be constructed.

It was also noted that four trial pit collars have no collar elevations (TP005, TP008, TP010 and TP011). CSA Global therefore registered all collars to the DTM and recommend Trove ensure future surveys match the local topographic surveys.

4.3 Sampling and Assays

4.3.1 Sampling

Within the limits of each spoil heap, sample pits are spaced between 40 m and 120 m apart. Forest of Gold and Tigroney Lower East have one pit each, Tigroney North has two pits, Mt Platt has four pits and Cronebane has six pits. The distribution of pits is shown in Figure 2.

Samples were mostly taken at 1 m intervals, to a maximum pit depth of 4 m, with the exception of Forest of Gold, where the pit was excavated to a depth of 1 m and samples taken at 0.3 m and 0.7 m intervals. The samples were laid out by the excavator in individual piles around the pits and were manually sampled by the project geologist by cutting a line up the side of each pile, collecting samples with a small shovel into a numbered polythene bag. All samples were stored in Trove's Kilkenny office before dispatch to the analytical laboratory.

Sampling information was recorded on trial pit reports in the field using pre-arranged templates. This information was entered into Microsoft Excel spreadsheets. Digital files are securely backed up to Trove's cloud storage account.

Figure 4 shows a histogram of sample weights from all samples and shows a significant range of weights. This implies that the process of sampling the stockpiles took inconsistent volumes from the stockpiles which increases the sampling error and decreases the quality assurance (QA) for the samples. The resultant QA from the sample analyses is also decreased. The Inferred classification applied to the Mineral Resource estimate (Section 6) has taken into account the quality of the sampling. CSA Global recommend conventional drilling (reverse circulation or diamond core) or sonic drilling for future sampling programs to ensure a more consistent sample size is achieved.

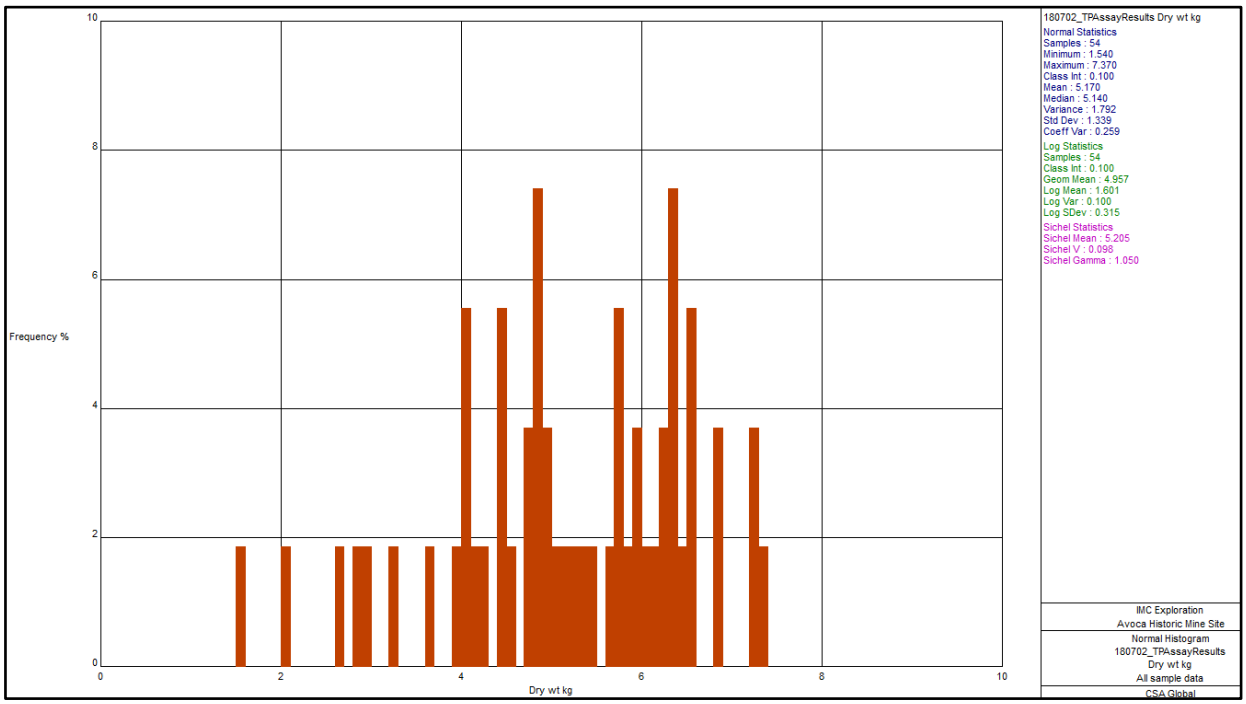

Figure 4: Histogram of sample weights, all pit samples

4.3.2 Assaying

The samples were dispatched to ALS Laboratory (Loughrea) for chemical analyses. ALS weighed, crushed, rotary split and pulverised the samples using the following procedure:

- Crush sample to >70% passing <2 mm
- Pulverize to 85% passing <75 µm
- 33 element, four-acid digestion followed by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) analysis
- Fire assay (30 g charge) followed by atomic absorption for Au
- Ore grade analyses for Cu, Pb and Zn when maximum detection limit exceeded in ICP-AES.

Results were transmitted to Trove via email with data provided as a signed certificate of analysis (PDF) and a CSV format file.

Trove compiled the trial pit data in a Microsoft Excel spreadsheet.

Two Ag assays were reported as "less than detection" with assays recorded as <0.5 Ag. CSA Global adjusted these data to 0.5 ppm Ag prior to importing the data into Datamine. Additionally, two sulphur assays were reported as >10% and these were adjusted to 10% S by CSA Global.

CSA Global prepared a drillhole file in Datamine, treating each trial pit as a drillhole. The pit collars and 1 m sample intervals were used in the generation of the drillhole file. The Competent Person is satisfied as to the adequacy of the sample preparation, security and analytical procedures.

4.3.3 Correlation of Sample Weights and Assays

CSA Global has noted a slight correlation between the sample weights and assays, with higher assays for Cu and Pb associated with the lowest sample weights. CSA Global offer no explanation for this but do recommend Trove focus on achieving consistent sample weights with future sampling programs.

4.4 Quality Assurance and Quality Control

Field duplicates, certified reference materials (CRMs) and blanks were used to monitor the QAQC of the sampling and assaying.

CRMs were inserted at a rate of approximately one CRM per four primary sample analysis. Four CRMs were used, sourced from Geostat. Details of the CRM are presented in Table 3. CSA Global reviewed the results as presented by Trove and found that all assayed results fell within a 3 standard deviation window and therefore the CRMs are considered to have passed.

Table 3: Certified reference materials

CRM	Element	Expected mean	Standard deviation
G311-6	Au g/t	0.22	0.02
G911-10	Au (g/t)	1.30	0.05
GBM-311-3	Ag (ppm)	20.4	1.6
	Cu (ppm)	10,089	400
	Pb (ppm)	3,522	203
	Zn (ppm)	14,291	697
GBM-310-13	Ag (ppm)	30.7	1.7
	Cu (ppm)	353	37
	Pb (ppm)	21,439	944
	Zn (ppm)	111,000	4,558

Field duplicates were inserted at the rate of approximately 1:8, with only half of the trial pits producing a field duplicate sample. Trove advised CSA Global that the field duplicates were sampled in an identical manner to the primary samples (J. Talbot, pers. comm.); however, CSA Global note that the average weight of the field duplicate samples is approximately half that of the primary samples. This suggest that the field duplicates cannot be considered to be representative of the primary samples. The purpose of a field duplicate is to measure the quality of sampling at both the drilling (or excavation) stage as well as the sample preparation stages. If there is pronounced inconsistency in the original sample masses, then a significant sampling error is introduced at the first stage. While the disparity in weights between the field and primary duplicates means that the field duplicates cannot be considered fully representative, there is a good correlation between both sets of assays.

Blanks were sourced from rock from a nearby quarry and regarded by Trove and the quarry operators to be barren of base metals. Blanks were inserted at a rate of 1:20. Some of the grades are marginally higher than would be expected for blanks, although are very low grade.

CSA Global consider the results from the CRMs, field duplicates and blanks to be acceptable and support the use of the sample assays in the Mineral Resource estimate.

4.5 Density

Trove calculated the wet bulk density (WBD) from 13 samples taken from various locations across the Project, mostly adjacent to the trial pits.

A container of known volume was weighed before and after being filled with each sample. The WBD was calculated by subtracting the weight of the empty box from the (sample + box) weight and then dividing by the volume of the container. No moisture content was included in the calculation, nor were the samples dried prior to weighing. The results are therefore WBD and likely to provide an overcall to the density of the Mineral Resource, possibly by up to 10%. The Competent Person is satisfied that this is within the margin of error allowed for in an Inferred Mineral Resource. CSA Global recommend future sampling should immediately seal the sample to reduce moisture loss and request the density measurements be carried out at an accredited laboratory, with a dry bulk density result to be provided.

A total of 13 density measurements were provided to CSA Global, ranging from 1.34 t/m^3 to 1.74 t/m^3, with a mean WBD of 1.59 t/m^3.

5 Tonnage and Grade Calculations

5.1 Spoil Heap Volumes

Erkina Surveys provided Trove with calculations of the volume of each spoil heap at Avoca and these volumes were provided to CSA Global, as discussed in Section 4.1. No basal topographic DTM exists for the Project site and therefore the volumes are based upon an estimated depth of the spoil heaps, using the surrounding topography to guide the decision making. Figure 5 to Figure 7 show modelled representations of the spoil heaps and surrounding topography. Trove advised CSA Global that the pre-mining topography descends at a consistent slope from northeast to the southwest, though the profiles of the Mt Platt and Tigroney East spoil heaps (J. Talbot, pers. comm.)

An accurate surveyed depth of the bottom of the stockpiles is not available and the surveyed volumes were calculated by Erkina Surveys based upon an assumed depth. Trove advised CSA Global they believed most of the surveyed spoil heap volumes are conservative and proposed additional volumes based upon their interpretation of the depth of the spoil heaps, largely from observations of the spoil heap morphologies. Trove discussed these adjustments with CSA Global and the Competent Person believes the proposed volumes are reasonable. The uncertainty of the volumes is reflected in the Inferred classification category assigned to the Mineral Resource, for which geological (and volumetric) evidence is sufficient to imply but not verify geological continuity (volumes). Table 4 presents the volumes for each spoil heap, with comments from Trove supporting volume adjustments.

Table 4: Spoil Heap volumes

Spoil Heap	Survey volume (m^3)	Trove interpreted volume (m^3) (rounded)	Comment
Forest of Gold	368	1,100	Estimated depth of 3 m
Tigroney Lower East	3,500	11,700	Estimated depth of 5 m
Tigroney North	36,400	99,000	Estimated depth of 8 m
Mt Platt	536,000	536,000	-
Cronebane	67,000	529,000	Estimated depth of 20 m

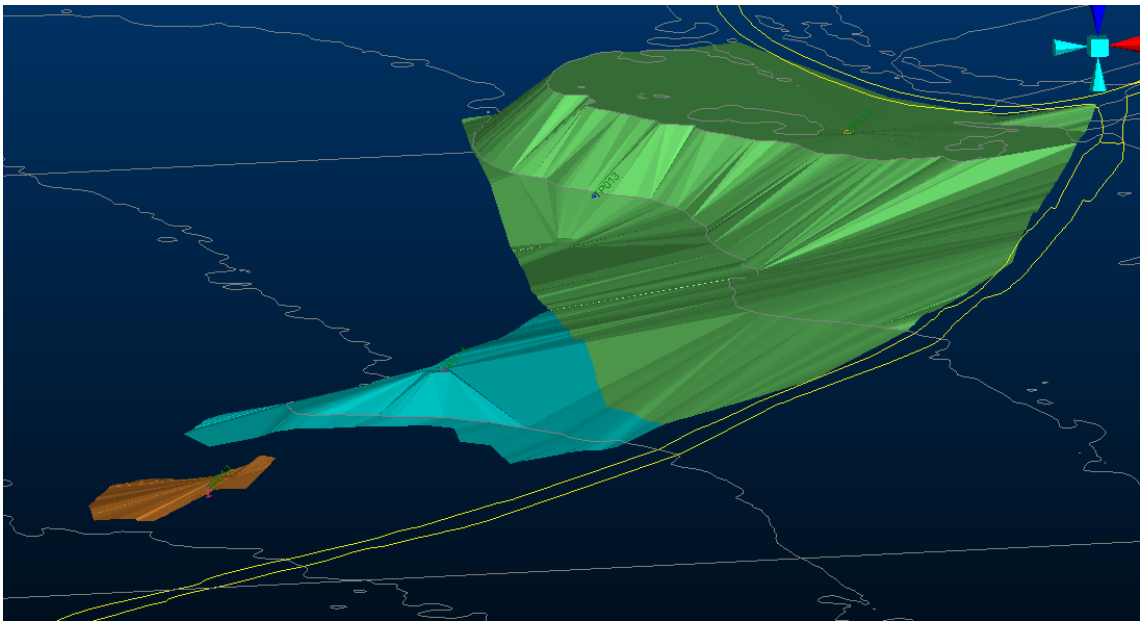

Figure 5: Tigroney East spoil heaps (Forest of Gold – orange, Tigroney Lower East – cyan, Tigroney North – green) with 10 m contour strings and local roads (yellow); trial pits with green IDs shown

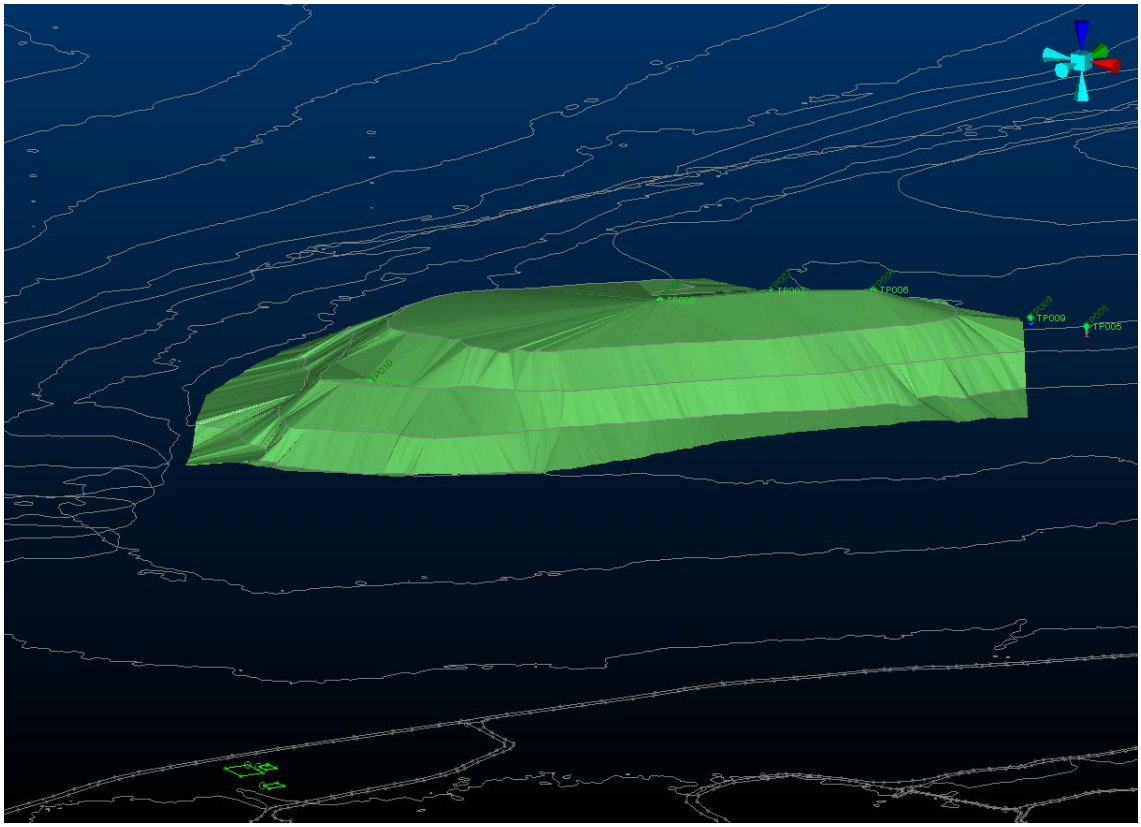

Figure 6: Mt Platt spoil heap with 10 m contour strings; trial pits with green IDs shown

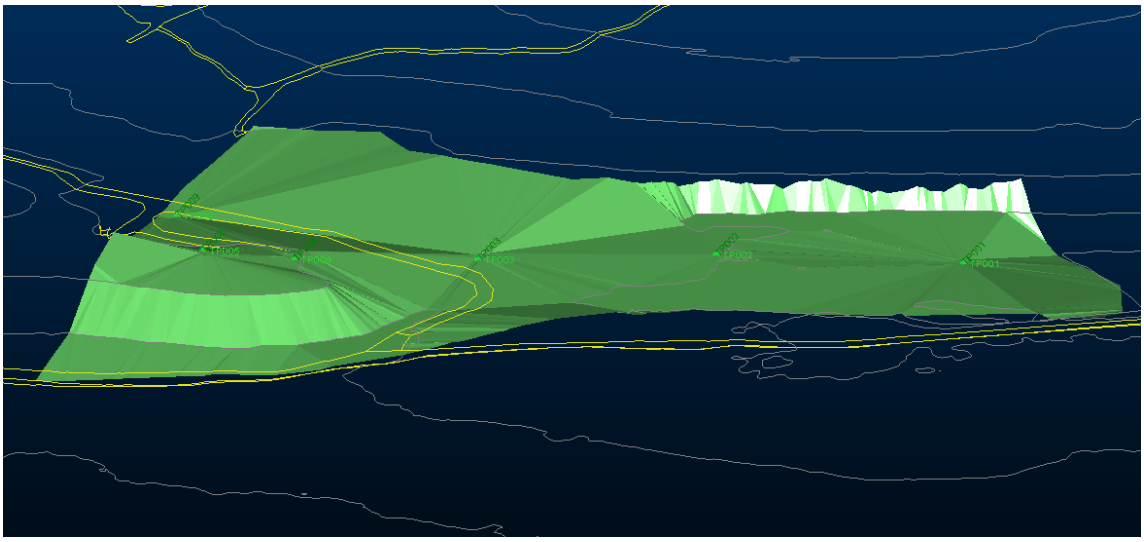

Figure 7: Cronebane with 10 m contour strings and local roads (yellow); trial pits with green IDs shown

5.2 Grade Calculations

Grades were calculated for each spoil heap using the sample analyses provided by Trove, for Cu (%), Pb (%), Zn (%), Au (g/t) and Ag (ppm).

The two samples from trial pit TP012 are of unequal length (0.3 m and 0.7 m respectively) and the total grade was based upon a length weighted calculation. The total grades for the three spoil heaps making up Tigroney East were based upon tonnage weighted averages, with the spoil heap tonnages used. This was important to ensure the high-grade assays in the Forest of Gold spoil heap did not unduly bias the overall

average results. Finally, the total grade from all the spoil heaps were calculated using a tonnage weighted average.

6 Classification and Reporting

The Tigroney East, Mt Platt and Cronebane spoil heaps are classified as Inferred and have been reported in accordance with the JORC Code (2012). Classification of the Mineral Resource estimates was carried out taking into account the volumes of the spoil heaps, quality of the sampling and density data, and sample spacing. The Mineral Resource is presented in Table 5.

Tonnages were calculated by multiplying the unrounded spoil heap volume by the WBD value of 1.59 t/m^3.

IMC, Trove and CSA Global believe there are reasonable prospects for the eventual economic extraction of the Mineral Resources. The Project is located near centres with large populations, which can provide a suitable workforce for earthmoving and mineral processing. Power and water are connected to the site. The spoil heap material is free dig and therefore drill and blast activities are not required. The Exploration and Mining Division of the Department of Communications, Climate Action and Environment is of the view that the spoil heaps at the Project site need to be dealt with and consider the extraction of the contained metal as an incentive to progress further studies and eventual earthmoving works.

Table 5: Inferred Mineral Resource – Avoca Historic Mine Site

Spoil Heap	Volume	Tonnes (kt)	Cu (%)	Pb (%)	Zn (%)	Au (g/t)	Ag (ppm)
Forest of Gold	1,100	2	0.57	4.31	0.83	5.2	64
Tigroney Lower East	11,700	19	0.44	0.68	0.37	0.6	13
Tigroney North	99,000	158	0.18	0.12	0.04	0.1	3
Subtotal (Tigroney East)	111,800	178	0.29	0.62	0.20	0.7	11
Mt Platt	536,000	852	0.13	0.37	0.12	0.2	7
Cronebane	528,900	841	0.13	0.43	0.16	0.4	10
TOTAL	**1,288,500**	**1,871**	**0.14**	**0.42**	**0.14**	**0.3**	**9**

Notes

- *Forest of Gold, Tigroney Lower East and Tigroney North spoil heaps are collectively Tigroney East.*
- *Rounded volumes presented.*
- *Tonnes are rounded to reflect uncertainty in the spoil heap volumes.*

7 Exploration Targets for West Avoca and Connary

CSA Global provide Exploration Targets for West Avoca and Connary in Table 6, with the locations depicted in Figure 1. The potential quantities and grade are conceptual in nature, and there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.

The tonnage and grade ranges are estimated from data provided by Trove, namely surveyed volumes for all spoil heaps at the Avoca Historic Mine Site, and grades from grab samples at West Avoca (Microsoft Excel file *170725_GrabSamplesJun2017_Results_complete.xlsx*) and from Trove (2017) for Connary. The volumes are multiplied by a WBD of 1.59 t/m^3 (Section 4.5) to estimate a tonnage from which a range of tonnages is postulated.

Trove anticipate carrying out trial pit sampling at these spoil heaps after a Scoping Study has been carried out within the next 18 months on the Inferred Mineral Resources at East Avoca.

Table 6: Exploration Targets

Reported variable	West Avoca	Connary
Tonnes	130,000 to 180,000	40,000 to 80,000
Au (g/t)	0.3 to 0.6	0.5 to 1.0
Ag (g/t)	3 to 8	15 to 40
Cu (ppm)	500 to 1,500	1,000 to 4,000
Pb (ppm)	1,000 to 3,000	10,000 to 30,000
Zn (ppm)	75 to 125	200 to 600

8 Recommendations

When carrying out work intended to upgrade the confidence level of the Mineral Resource Estimate with a view towards upgrading the Mineral Resource classification, CSA Global recommends the following:

- Sample the spoil heaps using a percussion drilling rig, such as reverse circulation. This will provide a large sample per metre interval and break down the variably sized material.
- A drill hole spacing of 50 m is recommended, with tighter spacing for the smaller spoil heaps. Holes should be drilled to full depth of the spoil heaps.
- Holes should penetrate the pre-spoil heap substrate and samples taken from the substrate.
- All samples to be geologically logged.
- Representative samples should be taken from each hole to provide additional bulk density data. Moisture content should be determined from the samples to allow a dry bulk density to be determined.
- Continue with the existing QA methodologies, monitoring the results in real time.
- Volumes of spoil heaps re-calculated using 'depth of spoil heap' data collected from drilling.

9 References

Gallagher, V and O'Connor, P, 1999 "The Avoca Mine Site", Biology and Environment: Proceedings of the Royal Irish Academy, Vol. 99B, No. 1, p 43-57.

Joint Ore Reserves Committee, 2012. *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition*. [online]. Available from http://www.jorc.org (The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, and Minerals Council of Australia).

Trove, 2017, "Outline report on Avoca Historic Mine Site, Environmental Cleanup Project", *IMC Exploration PLC and Trove Metal Ltd., 27th July 2017*

Appendix 1: JORC Table 1

JORC Code, 2012 Edition – Table 1 Avoca Waste Spoil Heaps

Section 1: Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.* • *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 (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.*	• The excavator deposited the material at a safe distance from the pit, forming a linear embankment no more than 1 m high. The material was banked at an angle no steeper than 45°, to ensure stability. • The samples were deposited in piles representing 1 m of depth, spread around the four sides of the excavation. The sampler took a channel cut up the side of each sample pile, with samples taken from each side of each pile with a small shovel into a numbered polythene bag. Samples represented each 1 m depth of excavation. Each sample bag was numbered with a unique sample identification number. • Sample bags were weighed at the Trove Metal Ltd (Trove) field office. Weights varied between 1.5 kg and 7.4 kg with the majority of weights between 4 kg and 6.5 kg. The mean weight was 5.2 kg. • The grain size of the samples vary from grit to cobbles, with every effort taken to ensure all material within the sample channel were collected.
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.).*	• Samples were taken from material excavated from pits of depths between 1 m and 4 m. The pits were dug by a long arm excavator. • The pit depths were measured using a rigid measuring staff.
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.*	• The nature of the sampling ensured high recoveries. • It is noted that there is a slight correlation of sample grade to sample weight, with higher assays for Cu and Pb associated with the smallest sample weights. There is no evidence to suggest the sample weight is inversely correlated with sample grade.
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.*	• The primary samples were not geologically logged. • Photographs were taken of many of the pits and show stratification of spoil heap material, especially with respect to colour. • Samples taken for density testwork were logged for primary rock type, grain size distribution and colour.

Criteria	JORC Code explanation	Commentary
Subsampling techniques and sample preparation	• *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.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all subsampling 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.*	• Samples were dispatched to ALS Loughrea where they were prepared for chemical analyses. • Samples were weighed, crushed to 70% <2 mm, riffle split, 1 kg sample pulverised to 85% <75 µm. • The sample preparation technique is considered appropriate. • Trove inserted certified reference materials (CRMs) and blanks into the sample stream at a rate of 1 QC: 4 primary samples. • Field duplicate samples were taken at the rate of 1 duplicate: 8 primary samples. Not all pits had field duplicates taken. • Sample sizes (weights) are considered to be appropriate for the grain size of the material being sampled.
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.*	• Samples were analysed by 33-element, four-acid digestion followed by Inductively coupled plasma atomic emission spectroscopy (ICP-AES) analysis. • Fire assay (30 g charge) followed by atomic absorption for Au • The analytical technique is considered to be appropriate for the analyses of metals under investigation. The process is total. • Field duplicates, CRMs and blanks were used to monitor the quality assurance and quality control (QAQC) of the sampling and assaying. • CRMs were inserted at a rate of approximately one CRM per four primary sample analysis. Four CRMs were used, sourced from Geostat. All assayed results fell within a 3 standard deviation window and therefore the CRMs are considered by Trove and the Competent Persons to have passed. • Field duplicates were inserted at the rate of approximately 1:8 and show generally good correlation between the primary and field duplicate assays. • Blanks were sourced from rock from a nearby quarry and regarded by Trove and the quarry operators to be barren of base metals. Blanks were inserted at a rate of 1:20. Some of the grades are marginally higher than would be expected for blanks, although are very low grade. • Acceptable levels of accuracy and precision have been established.
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.*	• The Forest of Gold spoils heap presented higher grade samples than the other spoil heaps and Trove advised CSA Global that the Forest of Gold material may have been sourced from an adjacent mill. The fine-grained nature of the spoils compared to the grain size distribution of the other spoil heaps supports this view. CSA Global confirmed the fine-grained nature of these spoils during the Competent Person's site inspection. • No sample twinning has occurred to date, although surface grab samples taken from the vicinity of the pits reconcile well (in terms of assays) with the pit

Criteria	JORC Code explanation	Commentary
		sample assays. • Sampling information was recorded on sheets of paper in the field using pre-arranged templates. This information was entered into Microsoft Excel spreadsheets. Digital files are securely backed up to Trove's cloud storage account. • No adjustments have been made to the data.
Location of data points	• *Accuracy and quality of surveys used to locate drillholes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• The easting and northing locations of the sample pits were surveyed by a licensed surveyor. • The topography of the project was surveyed on 10 m contour intervals, and the drill collars were registered to this surface. The topographic digital terrain model has sufficient survey control detail to support the current Mineral Resource. • The grid used is the Irish Transverse Mercator (IRENET95) with Geoid Republic of Ireland 2015, datum Ordnance Survey.
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.*	• Sample pits within spoil heap limits are spaced between 40 m and 120 m. • No sample compositing occurred. • The data spacing is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource procedure and classifications applied.
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.*	• The orientation of sampling is largely orthogonal to the layering of the spoil heap material and is considered appropriate for the deposit type. • No sampling bias is believed to have been introduced based upon the orientation of the sampling activities.
Sample security	• *The measures taken to ensure sample security.*	• All sampling was carried out by a Trove employee and were removed from site daily by Trove and stored in Trove's Kilkenny office prior to dispatch to the laboratory.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• The sampling procedures were discussed with CSA Global prior to implementation and deemed to be sufficient for the current classification levels of the Mineral Resource estimate. Photographs of the sampling activities were supplied to the Competent Person for review. Trove discussed the sampling procedures with CSA Global during the site inspection. The Competent Person is satisfied the sampling procedures are of sufficient quality to support the Mineral Resource estimate.

Section 2: Reporting of Exploration Results

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.*	• IMC Exploration Group plc (IMC) is the current holder of the prospecting licences at Avoca, covering licence areas 2239, 3849, 3850 and 3857. The Mineral Resource is contained within prospecting licence PLA3850. The licence under area 3850 was issued on 7 February 2013 and is deemed to be in "good standing" by the Exploration and Mining Division (EMD) of the Department of Communications, Climate Action and Environment (DCCAE). • Koza Gold, a joint venture partner of IMC, had to mid-2017 been earning into a 30% share of the licences, however due to circumstances in Koza Gold's home country, that joint venture has since been set aside. Trove was invited by IMC in 2017 to provide the technical expertise necessary to advance the Project. IMC and Trove subsequently entered an agreement for Trove to take a 17% share in the licence, to be accomplished by means of transferring the licence to a subsidiary company in which Trove will have a 17% holding. The deed of assignment regarding the transfer of the licence is awaiting approval by the Minister for Communications, Climate Action and Environment. There are no difficulties envisaged in having the deed approved.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Two grade-tonnage estimates were completed (1992 and 2017) with the latter being the basis for further sampling to be conducted in support of a Mineral Resource estimate. • Preliminary metallurgical and processing testwork and mineralogical studies were conducted in 2017, with conclusions that a combination of dense media separation and micro gravity separation are considered to successfully process the material on site.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Project is comprised of a group of mine spoil heaps, which were created during open cut mining during the 1970s. The Mt Platt and Cronebane spoil heaps were predominantly sourced from the Cronebane open pit mined in the 1970s. Much of the mine spoils were built up to form the Cronebane Waste Pile, partly because of lack of space, but also as part of a policy by Avoca Mines Ltd to rehabilitate the site. The source of the smaller spoil heaps at Tigroney East is unclear although the larger spoil heap at Tigroney North is likely to have originated from material excavated from the adjacent East Avoca open pit. The Forest of Gold spoil heap is comprised of fine-grained material and is likely to have been sourced from milled ore. • The source deposit is a volcanogenic massive sulphide (VMS) style deposit. The Avoca deposit is hosted by the Avoca Formation, a sequence of 455 Ma Ordovician volcanic and sedimentary rocks. The formation comprises a 2–4 km wide and a 15 km km long zone. Three main ore types were recognised at Avoca; pyritic zones, siliceous zone and Pb-Zn ore.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td>Drillhole information</td><td>• A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:
○ easting and northing of the drillhole collar
○ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar
○ dip and azimuth of the hole
○ downhole 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.</td><td>14 pits were excavated and spatial coordinates detailed below. Note that the elevations are registered to the topographic digital terrain model. All pits were excavated vertically. Grid used is the Irish Transverse Mercator.
<table>
<tr><th>BHID</th><th>Easting</th><th>Northing</th><th>Elevation</th><th>Pit depth (m)</th></tr>
<tr><td>TP001</td><td>720719.003</td><td>683249.598</td><td>208.6</td><td>4</td></tr>
<tr><td>TP002</td><td>720675.000</td><td>683196.593</td><td>210.2</td><td>4</td></tr>
<tr><td>TP003</td><td>720639.001</td><td>683140.597</td><td>211.3</td><td>4</td></tr>
<tr><td>TP004</td><td>720624.001</td><td>683087.598</td><td>220.3</td><td>4</td></tr>
<tr><td>TP005</td><td>720608.003</td><td>683067.596</td><td>222.7</td><td>4</td></tr>
<tr><td>TP006</td><td>720536.001</td><td>683029.597</td><td>236.4</td><td>4</td></tr>
<tr><td>TP007</td><td>720505.000</td><td>683004.602</td><td>237.9</td><td>4</td></tr>
<tr><td>TP008</td><td>720472.000</td><td>682977.598</td><td>236.4</td><td>4</td></tr>
<tr><td>TP009</td><td>720573.337</td><td>683085.457</td><td>216.7</td><td>4</td></tr>
<tr><td>TP010</td><td>720404.004</td><td>682873.594</td><td>220.8</td><td>4</td></tr>
<tr><td>TP011</td><td>720014.003</td><td>682566.596</td><td>135.0</td><td>4</td></tr>
<tr><td>TP012</td><td>719970.003</td><td>682541.599</td><td>123.5</td><td>1</td></tr>
<tr><td>TP013</td><td>720060.005</td><td>682662.593</td><td>139.6</td><td>4</td></tr>
<tr><td>TP014</td><td>720099.003</td><td>682652.598</td><td>150.2</td><td>4</td></tr>
</table></td></tr>
<tr><td>Data aggregation methods</td><td>• 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.
• 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.</td><td>• No data aggregation has taken place during sampling.</td></tr>
<tr><td>Relationship between mineralisation widths and intercept lengths</td><td>• 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 (e.g. 'downhole length, true width not known').</td><td>• The pits were excavated close to orthogonal to the repose of the spoil heap material, which exhibits up to a 10° repose as observed in photographs of the walls of the excavations.</td></tr>
<tr><td>Diagrams</td><td>• 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.</td><td>• Maps and figures showing location of pits, and the outlines of the spoil heaps, are presented in the body of this report.</td></tr>
<tr><td>Balanced reporting</td><td>• 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.</td><td>• All sample assays are incorporated within the Mineral Resource estimate.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
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 other testwork has been completed which materially impact upon this Mineral Resource estimate.
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.*	• Future programs of work are currently in planning stages, and will focus on the following: • Metallurgical and mineral liberation studies. • High-level examination of most applicable processing technique(s). • Drilling to test at depth and to infill between trial pits.

Section 3: Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, e.g. transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• 10 pit locations were verified by CSA Global using a handheld global positioning system (GPS). • Data is stored in Microsoft Excel spreadsheets and backed up to Trove's cloud account.
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.*	• CSA Global visited the Project on 9 August 2018. A Trove representative accompanied CSA Global throughout the visit. No activities were taking place on the day. CSA Global inspected sampling sites (rehabilitated prior to CSA Global's visit), geometry of the spoil heaps, and location of the Project with respect to the local countryside. The Trove representative described the sampling and density measurement processes undertaken at the trial pits. There were no negative outcomes from any of the above inspections, and all samples and geological data were deemed fit for use in the Mineral Resource estimate.
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.*	• The Mineral Resource is constrained within mine spoil heaps, and no internal geology is interpreted. The upper and outer surfaces of the spoil heaps are surveyed however there remains some conjecture as to the basal limits of the spoil heaps. • Assumptions are made concerning the depths of the spoil heaps, however these are based upon careful consideration of the morphology of the spoil heaps and an interpretation of the surrounding landscape (or open pit profiles). • No alternative interpretations were prepared. • Material types (including grain size) and grade (all elements) are interpreted to demonstrated continuity throughout the spoils heaps.

Criteria	JORC Code explanation	Commentary
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.*	• Forest of Gold has a strike of extent of 35 m and maximum width of 15 m and depth of 3 m. • Tigroney Lower East has a strike of extent of 65 m and maximum width of 70 m and depth of 5 m. • Tigroney North has a strike of extent of 160 m and maximum width of 70 m and an average depth of 8 m. • Mt Platt has a strike of extent of 310 m and maximum width of 190 m and an estimated depth of between 5 m and 11 m. • Cronebane has a strike of extent of 270 m and width of between 70 m and 160 m, and a depth of 20 m.
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 (e.g. sulphur for acid mine drainage characterisation).* • *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 drillhole data, and use of reconciliation data if available.*	• Drill (pit) data was imported into Datamine software, with the collars registered to the DTM. Pits were treated as drillholes and de-surveyed. • The areas of the spoil heap footprints were calculated, and cross checked against surveyor records. Volumes were calculated using assumed depths of spoil heaps. Five separate spoil heaps were estimated for tonnage and grade – Forest of Gold, Tigroney Lower East, Tigroney North (these three comprise Tigroney East spoil heaps); Mt Platt and Cronebane. • Tonnages for the spoil heaps were calculated by multiplying the volumes by an assigned wet bulk density value. • Grades were calculated for each spoil heap using the sample analyses provided by IMC and Trove, for Cu (%), Pb (%), Zn (%), Au (g/t) and Ag (ppm). The two samples from trial pit TP012 (Forest of Gold) are of unequal length (0.3 m and 0.7 m respectively) and the total grade was based upon a length weighted calculation. The total grades for the three spoil heaps making up Tigroney East were based upon tonnage weighted averages. • No block models were created in support of the Mineral Resource estimate. All tonnage calculations and grade weighting were carried out using Microsoft Excel software. • The volume of the spoil heaps was totally confined to surveyed and interpreted spatial limits to the spoil heaps. • No top-cuts were used during averaging of the sample assays. • No mine production records are available to reconcile the spoil heap and mine production grades and tonnages. • The pit samples reconcile reasonably well with the grab sample results.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• No account was taken for moisture content during the density measurements and the density data are therefore regarded as wet bulk densities.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• No cut-off grades were used for reporting of the Mineral Resource estimates. It is assumed any future mining will not selectively mine parts of the spoil heaps but instead the entire spoil heaps will be excavated, and material sent to the mill.

Criteria	JORC Code explanation	Commentary
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• The spoil heaps will be mined using surface mining methods. The spoil heap material is free dig, therefore no drill and blast is required.
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.*	• IMC and Trove conducted a desktop study into potential processing methods and concluded that a combination of dense media separation and micro gravity separation are the most likely methods to successfully process the material on site. • Particle size distribution testwork on a sample from the Cronebane spoil heap showed that almost 45% of the material was finer than 2.0mm (from that location), making it amenable to immediate grinding, rather than requiring pre-crushing. These results are indicative and do not necessarily represent the Project as a whole.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• The historical mining activities have left a legacy of acid mine drainage into the local groundwater and river systems, as well as an unsightly array of brown mine spoils. The mine closed in 1982, when it was effectively abandoned, with little or remediation. The poor environmental legacy of the mine site has been a source of much local controversy for many years. • Rehabilitation is currently being carried out by Irish government agencies, attempting to deal with toxic and acidic runoff from the mine (both surface and groundwater), as well as landscaping the existing waste heaps, which are generally considered to be an eyesore. The program is attempting to manage the water runoff, but Trove consider the best solution is to deal with the source of the problem, involving removal (mining) of the spoils and extracting the metals.
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.*	• Trove calculated the wet bulk density from 13 samples taken from various locations across the Project, mostly adjacent to the trial pits. • A container of known volume was weighed before and after being filled with each sample. The wet bulk density was calculated by subtracting the weight of the empty box from the (sample + box) weight and then dividing by the volume of the container. No moisture content was included in the calculation, nor were the sample dried prior to weighing. The results are therefore wet bulk density and likely to provide an overcall to the density of the Mineral Resource, possibly by up to 10%. The Competent Person is satisfied that this is within the margin of error allowed for in an Inferred Mineral Resource. CSA Global recommend future sampling should immediately seal the sample to reduce moisture loss and request the density measurements be carried out at an accredited

Criteria	JORC Code explanation	Commentary
		laboratory, with a dry bulk density result to be provided. • A total of 13 density measurements were provided to CSA Global, ranging from 1.34 t/m^3 to 1.74 t/m^3, with a mean wet bulk density of 1.59 t/m^3.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (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.*	• The Tigroney East, Mt Platt and Cronebane spoil heaps are classified as Inferred and have been reported in accordance with the JORC Code (2012. Classification of the Mineral Resource estimates was carried out taking into account the volumes of the spoil heaps, quality of the sampling and density data, and sample spacing. • 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.*	• No external reviews of the Mineral Resource estimate have been carried out. Results were communicated to IMC and Trove who considered the tonnage and grade estimates to reasonably reflect their understandings. • CSA Global carried out internal reviews of the Mineral Resource estimate as part of their internal peer review protocols.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The 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.*	• The estimated tonnages and grades are deemed by the Competent Person to be a fair representation based upon the quantity and quality of the input data. • The estimates are considered global because the entire volume of the spoils heaps is included in the tonnage estimate, without exclusion of some volume due to grade control considerations. • No production data from the historical mining activities is known to exist.

Australia • Canada • Indonesia • Russia
Singapore • South Africa • United Kingdom

csaglobal.com