Increase in JORC Resource and Completion of Mining Study at the Kildare Zn/Pb Project Co. Kildare, Ireland.

Increase in JORC Resource to 11.3mt @ 9.0% Zn+Pb at a 5.0% Zn equivalent cut off.

High Level Mining Study (non JORC) confirms Kildare Project development potential.

HIGHLIGHTS:

Mineral Resource Estimate Update

- **Additional resources are due to the delineation of FC3 mineralisation which lies directly between McGregor and Shamrock and highlights the potential for future drilling to link the three mineralised areas into one continuous, larger resource.**
- **The Inferred Mineral Resource Estimate for the Kildare Project has increased to: 11.3 Mt @ 9.0% Zn+Pb (7.8% Zn and 1.2% Pb) at a 5.0% Zn equivalent cut off.**

High Level Mining Study

- **A High Level Mining Study has been completed on the potential development of an underground mining operation at Kildare. The study focussed on the potential for application of safe, low cost mining methods to the ore bodies based on their geometry and observed geotechnical conditions.**
- **Various production scenarios were investigated based on the updated Inferred Resource.**

While results of the Study cannot be released due to ASX rules (as all resources are currently Inferred) the document has provided Zinc of Ireland NL (ASX: ZMI) ("**ZMI**" or "**Company**") with project analysis with respect to Zn/Pb operations within Ireland. This will allow ZMI to focus on the advancement of specific technical aspects of the project in order to optimise the development of the Kildare Project going forward.

Increase in Mineral Resource Estimate at Kildare

Assaying and interpretation of drilling undertaken into the Fault Compartment 3 (FC3) area at Kildare was completed early in 2020. This work has been included into the company's updated Inferred Mineral Resource Estimate (MRE) for the Kildare project details of which are given in Table 1. below.

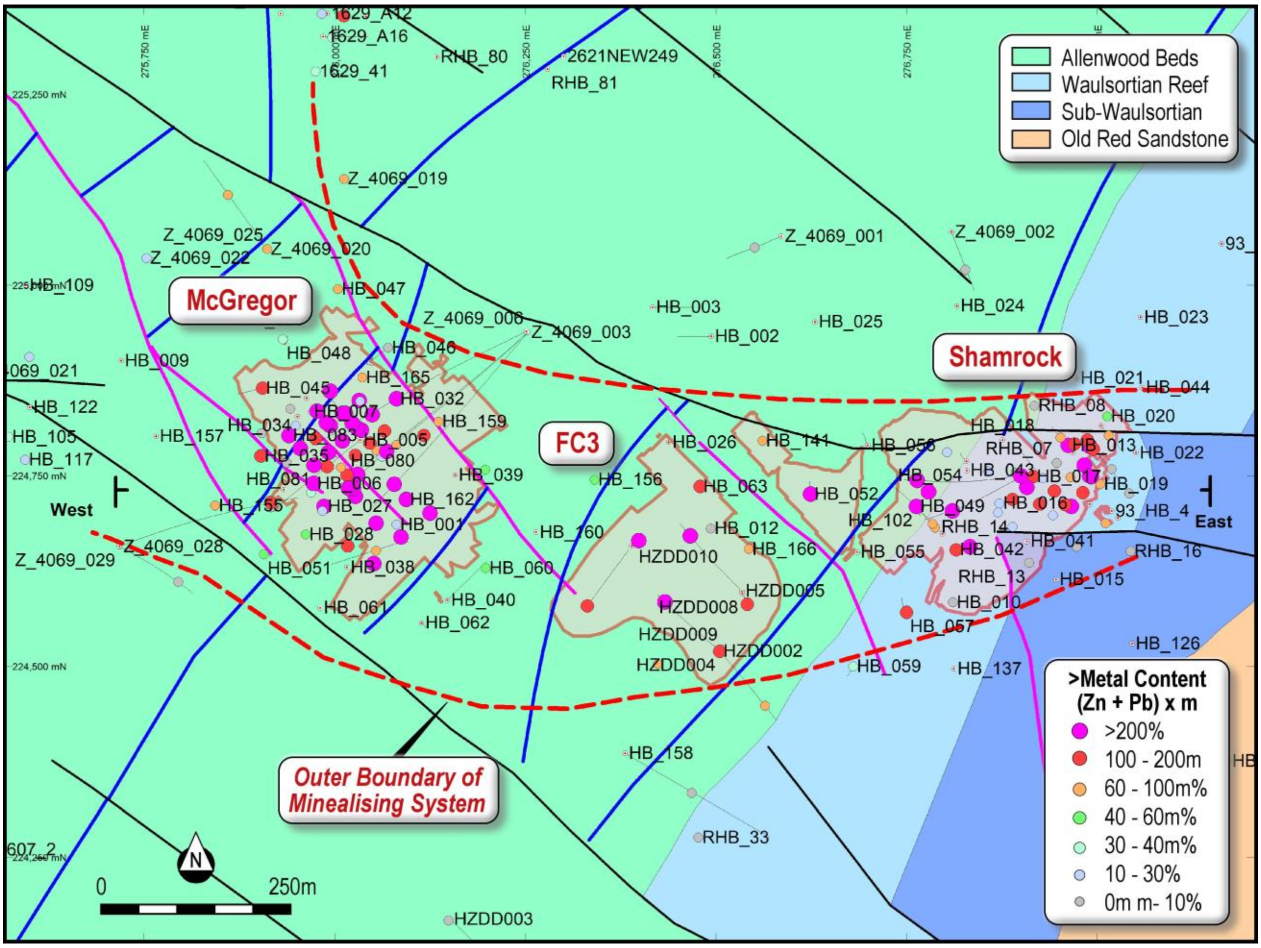

Figure 1. Drill hole and deposit locations at the Kildare Zn Pb project.

McGregor Shamrock and FC3 Inferred Mineral Resource							
Deposit	**ZnEq Cut Off (%)**	**Mt**	**Zn%**	**Pb%**	**Zn + Pb%**	**Zn (kt)**	**Pb (kt)**
McGregor	3.5	**13.2**	6.2	1.0	**7.1**	815	127
Shamrock	3.5	**6.9**	5.4	0.9	**6.3**	376	59
FC-3	3.5	**1.5**	6.4	0.9	**7.3**	98	14
Total	3.5	**21.7**	5.9	0.9	**6.9**	1,289	201
McGregor	4.0	**11.0**	6.7	1.1	**7.7**	736	117
Shamrock	4.0	**5.4**	6.0	0.9	**6.9**	325	49
FC-3	4.0	**1.2**	7.3	1.0	**8.3**	87	12
Total	4.0	**17.6**	6.5	1.0	**7.5**	1,147	178
McGregor	4.5	**8.7**	7.4	1.2	**8.6**	641	106
Shamrock	4.5	**4.3**	6.6	1.0	**7.5**	282	41
FC-3	4.5	**1.0**	8.0	1.0	**9.0**	80	10
Total	4.5	**14.0**	7.2	1.1	**8.3**	1,003	156
McGregor	5.0	**7.0**	8.1	1.4	**9.5**	565	95
Shamrock	5.0	**3.5**	7.1	0.9	**8.1**	248	33
FC-3	5.0	**0.9**	8.5	1.0	**9.5**	74	9
Total	5.0	**11.3**	7.8	1.2	**9.0**	887	136
McGregor	5.5	**5.9**	8.7	1.5	**10.2**	510	86
Shamrock	5.5	**3.1**	7.4	1.0	**8.4**	228	30
FC-3	5.5	**0.8**	9.0	1.0	**10.0**	70	8
Total	5.5	**9.7**	8.3	1.3	**9.6**	808	124
McGregor	6.0	**5.0**	9.3	1.6	**10.9**	465	78
Shamrock	6.0	**2.6**	7.7	1.0	**8.8**	204	27
FC-3	6.0	**0.7**	9.2	1.0	**10.2**	68	8
Total	6.0	**8.4**	8.8	1.3	**10.1**	737	113

Table 1. Updated Mineral Resource Estimate Table, Kildare.

- Due to rounding, numbers presented throughout this document may not add up precisely to the totals provided
- The ratio between Pb and Zn (0.8) is based on long term average price assumptions of $2,500 per tonne for zinc (Zn) and $2,000 per tonne for lead (Pb)
- ZnEq = (Zn% * Zn recovery) + (0.8* (Pb% * Pb recovery)).
- ZnEq = (Zn% * 0.9639) + (0.8 * Pb% * 0.8644)

STRUCTURAL, GEOCHEMICAL AND GEOLOGICAL MODELLING

A multi-disciplinary approach has been adopted in the development of a comprehensive model of the Allenwood Graben and geological, structural, alteration and geochemical information has been compiled from an extensive re-logging, sampling and re-analysis programme.

Structural and mineralogical logging of all available drill core demonstrated evidence for a protracted history of deformation and fluid flow, with part of this history responsible for the deposition of base metal (Pb and Zn) mineralisation. Deformation is expressed as variably developed veining, breccia development, brittle faulting, ductile shearing and foliation formation. A geological and mineralisation history was elucidated by a specialist structural consultant, and comprises successive, and locally overlapping, deformation and fluid flow events. Zn-Pb sulphides (sphalerite and galena) are localised within faults and areas of stratigraphically and structurally-controlled permeability.

For the purposes of geological modelling, the lithologies of the Allenwood Graben have been summarised into the following units:

- Overburden
- 'Carbonate-dominated' upper mineralisation
- Waulsortian
- Below Waulsortian
- Basement

Initial 3D surfaces of the boundaries between these main lithostratigraphic units were developed using Leapfrog software. Visualisation and 'shade-contouring' of the resultant surfaces were used as a guide to the position, type and relative offsets of a series of faults that are considered to have developed during the formation of the Allenwood Graben. The Allenwood Graben is a large, asymmetric half-graben as shown in Figures 2. and 3. which are, respectively, a plan and schematic cross section through the graben. Note that in the Figures, the overlying glacial till which covers the Allenwood Graben, has been omitted for clarity.

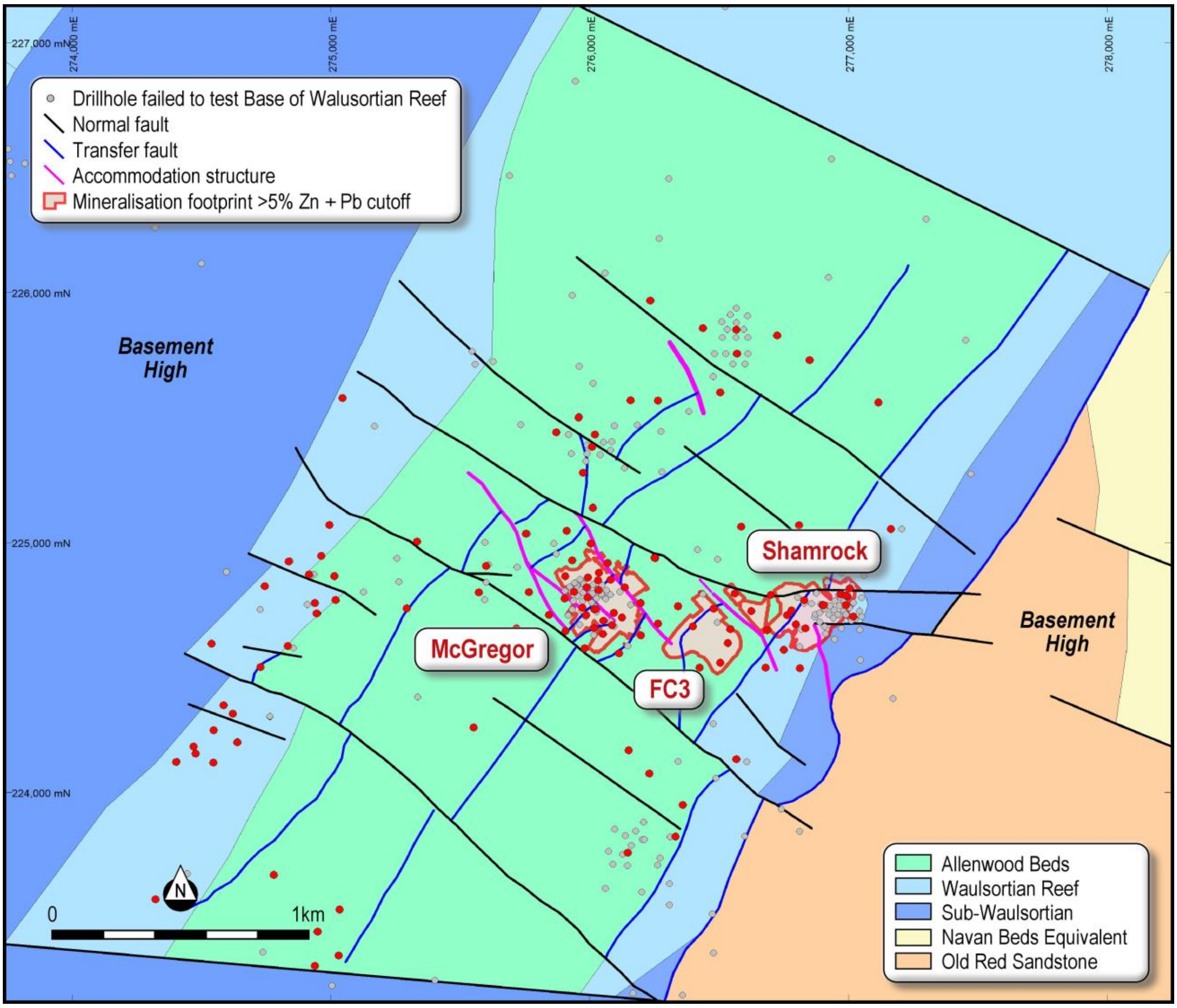

Figure 2: Schematic geological and structural map of the Allenwood Graben

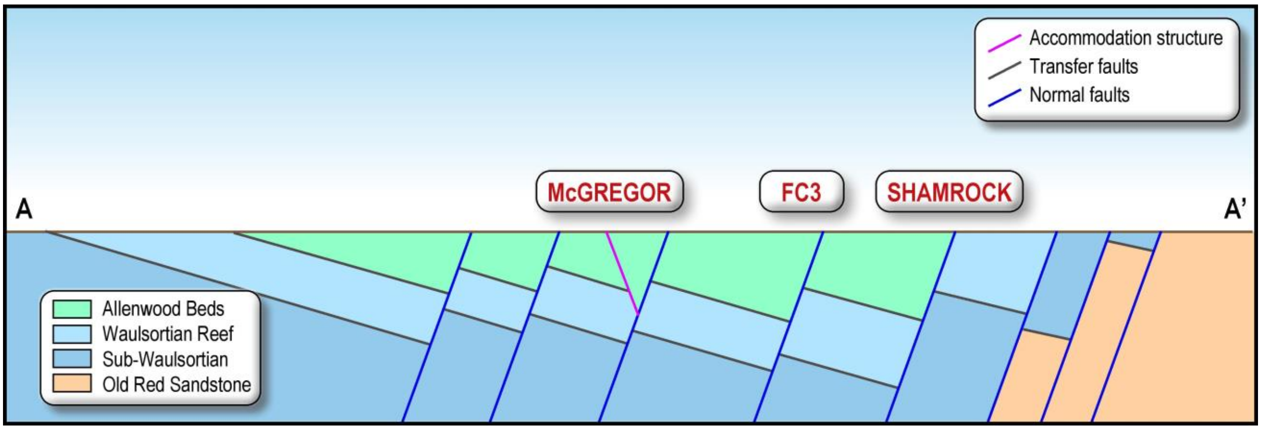

Figure 3: Schematic cross-section through the Allenwood Graben

Using the structural 'architecture' modelled by ZMI's structural consultant, there is a major basin-bounding normal fault on the eastern margin of the Graben, along with sub-parallel subsidiary normal faults within the basin. The stratigraphy generally dips 10 to 20 degrees towards the east. Transfer faults, extensional and accommodation structures have also been modelled, which result in the formation of a series of at least 40 fault-constrained 'compartments' inside the Allenwood Graben. To date, 26 faults have been modelled (four transfer faults, six accommodation structures and 16 extensional faults) in the volume surrounding the McGregor, FC3 and Shamrock deposits. In Figure 2., transfer faults are coloured black, extensional normal faults are coloured blue and accommodation structures are coloured pink. The fault array has been modelled in 3D in Leapfrog and then the key lithostratigraphic surfaces were remodelled, taking into account the relative displacement along the faults. A typical section showing the modelled displacements on the base of the Waulsortian reef surface is displayed in Figure 4.

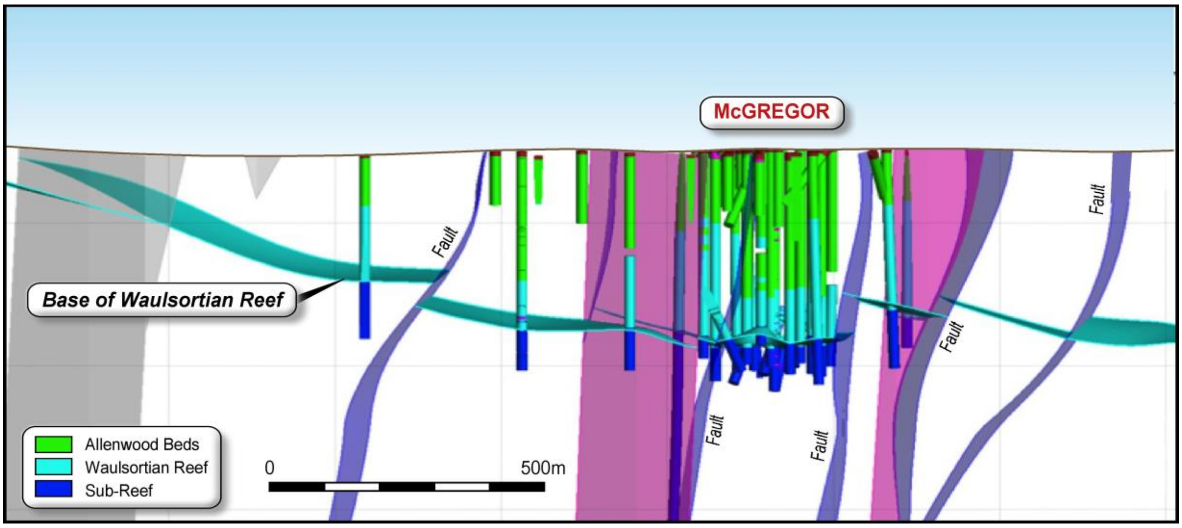

Figure 4: Indicative cross-section showing fault displacement on the base of the Waulsortian reef surface in the Leapfrog 3D geological and structural model (drill holes colour-coded by lithostratigraphic unit).

As a result, a combined 3D lithological and structural model has been developed for the Allenwood Graben and has been used to control block model development and grade estimation during resource estimation.

METALLURGICAL TESTWORK AND BASE METAL PRICES

Previously announced metallurgical testwork (23rd April 2019) returned exceptional metallurgical results and the information has been used to develop a 'zinc equivalent' (ZnEq) cut off grade for use in resource reporting. The metallurgical testwork was carried out at a coarse grind size of p80 -150 microns, using a standard differential flotation process and a standard reagent regime. Very encouraging concentrates were produced:

- An overall 96.4% recovery of Zn to the Zn concentrate was achieved, with a 56% Zn grade in the concentrate and with minimal Pb (<0.5%).
- The Pb concentrate achieved 86.4% recovery with a 62% Pb concentrate grade and minimal Zn (<3%).

Similarly, minimal levels of deleterious elements occur in either concentrate. Refer to the ZMI ASX announcement on the 23rd April 2019 for further details.

In order to determine appropriate Pb and Zn prices for use in calculating a ZnEq cut off grade, the monthly average LME spot prices for Pb and Zn were assessed for the 5 years between June 2014 and June 2019, resulting in an average price of US$2,468 per tonne for Zn and US$2,047 per tonne for Pb. For the purposes of calculating a ZnEq cut off, these two prices were rounded to $2,500 per tonne for Zn and $2,000 per tonne for Pb, resulting in a 0.8 ratio between Pb and Zn.

The resultant ZnEq formula used in resource reporting is:

- ZnEq = (Zn% * Zn recovery) + (0.8* (Pb% * Pb recovery)).
- ZnEq = (Zn% * 0.9639) + (0.8 * Pb% * 0.8644).

All elements included in the ZnEq formula calc (i.e. zinc and lead) have a reasonable potential to be recovered and sold.

RESOURCE ESTIMATION

The AcQuire drill hole database was delivered for resource estimation in comma delimited format and was loaded into Vulcan software. Unsampled intervals (in the historical drilling) have been treated as the lower limit of detection and Zn and Pb values have been set to 0.001%. In addition, unsampled intervals have been split into 1m down hole lengths in order to facilitate 'flagging' of various wireframes during the resource estimation process.

The geological and structural model has been used to control the development of the block models of McGregor, Shamrock and FC3. The rotated block model has been positioned relative to the McGregor and Shamrock drilling, as shown in Figure 5.

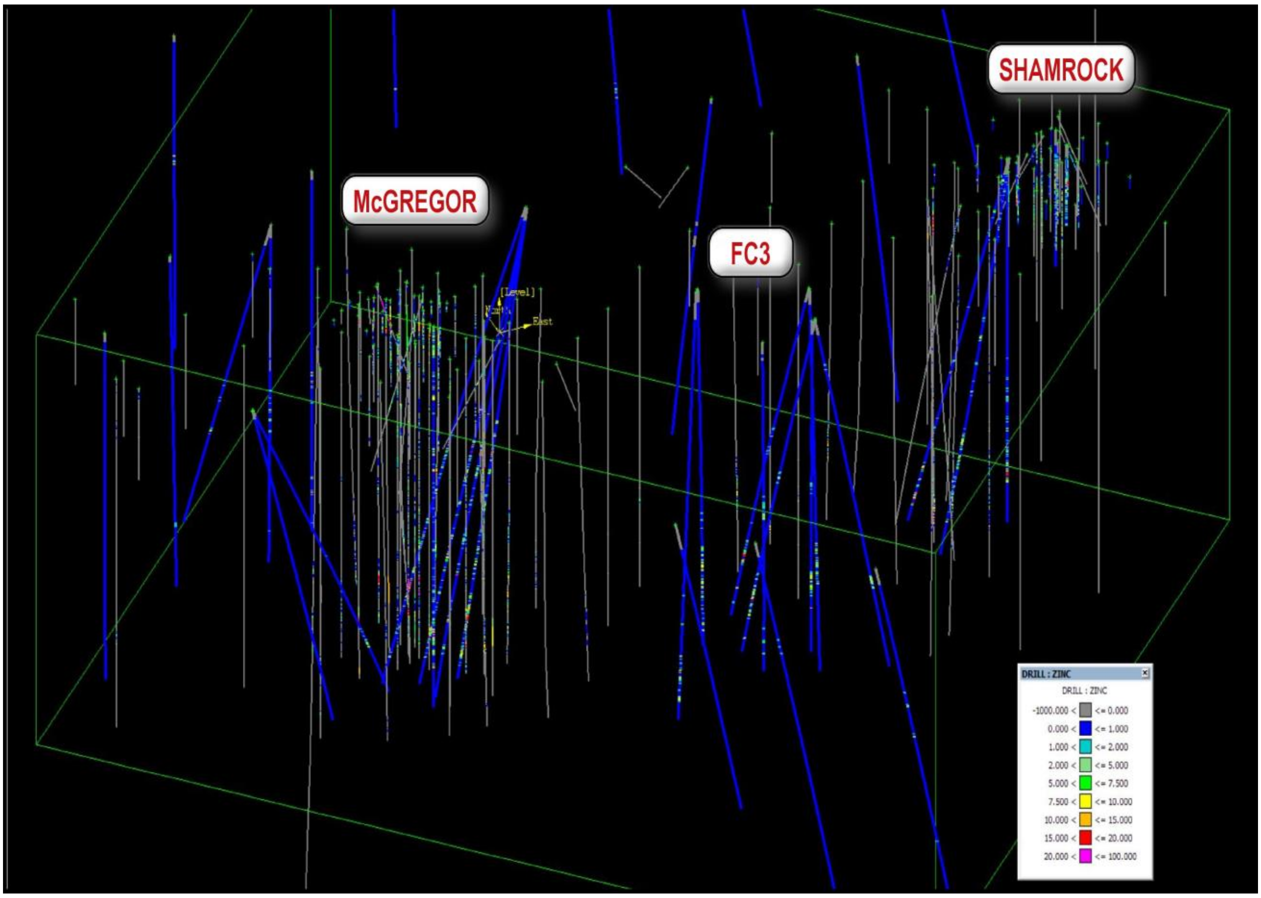

Figure 5: Isometric view of the McGregor, FC3 and Shamrock drilling (within the block model boundaries).

Given the complex 3D distribution of Pb-Zn mineralisation, a probabilistic grade shell approach has been used in order to define wireframes to constrain grade estimation, along with the structural and lithological controls developed for the 3D geology model. A mineralised shell was generated using indicator kriging based on a 2% lower cut off for a combined Pb and Zn variable in order to capture mineralisation in the model. The probability shell used 2m run length down hole composites (for uniform sample support), estimated into small blocks (2mE x 2mN x 2mRL). Following extensive review in 3D and in order to exclude obvious low-grade material, a 30% probability shell was adopted for use as an ordinary kriging (OK) grade estimation constraining boundary, as illustrated in Figure 6. In addition, the development of probabilistic grade shells was carried out separately for each major lithology, further constrained by the fault architecture. The basement (Code 100) and Upper Transported Glacial Till (Code 600) were excluded from the estimation process.

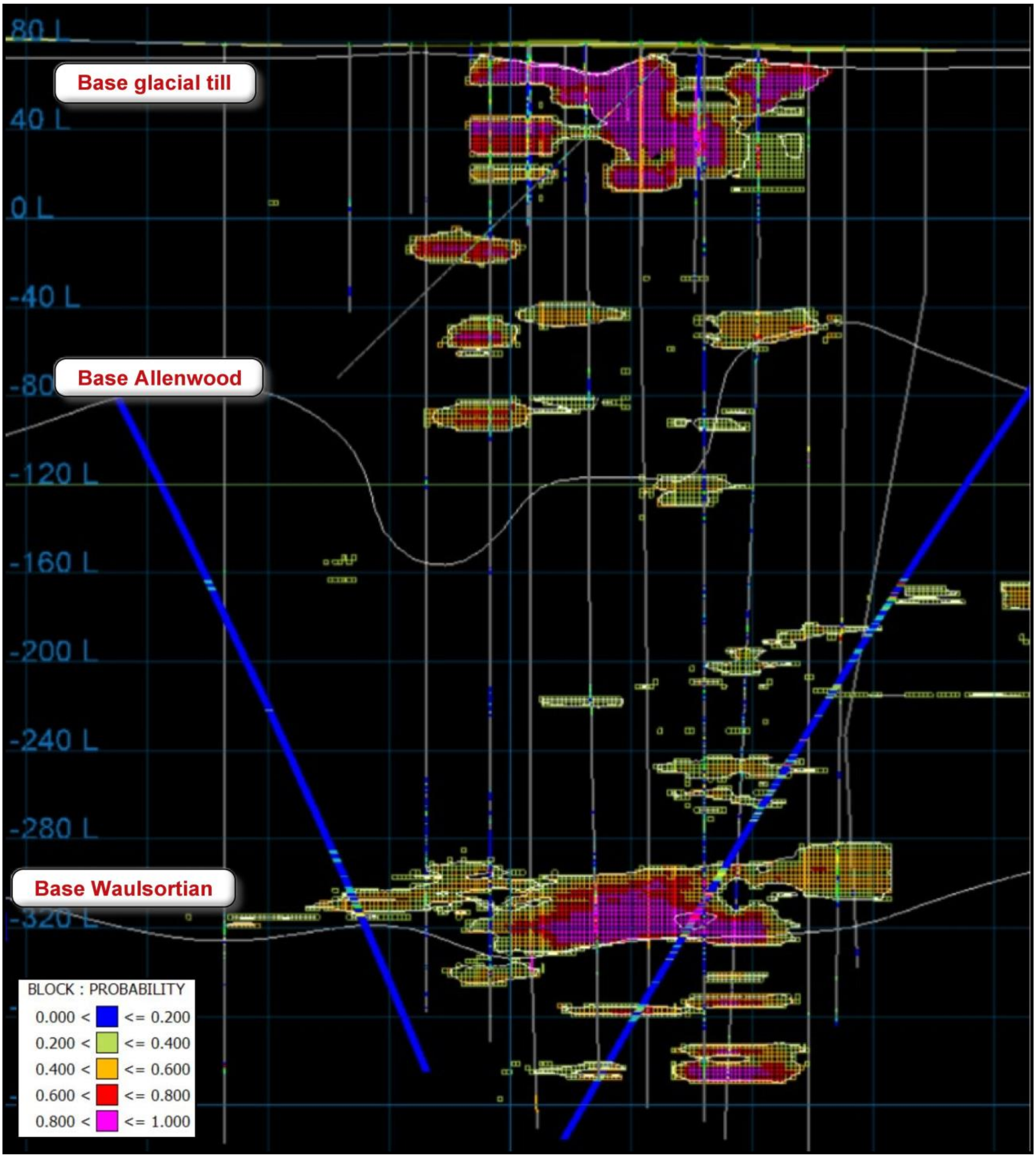

Figure 6: Typical section (McGregor) displaying the probability model wireframes.

Statistical analysis has included univariate descriptive statistics, subdivided by major stratigraphic unit, variography, and correlation analysis for density data with Pb and Zn analyses. The univariate statistical analysis returned low coefficients of variation (standard deviation divided by the mean) indicating that outlier samples are not distorting the grade distribution. As such, upper cuts have not been applied prior to grade estimation. The variography resulted in two spherical structure models being developed for the four mineralised units (Carbonate-dominated Upper Mineralisation, Above-Waulsortian, Waulsortian and Below-Waulsortian). Typical overall ranges of 80m to 130m (major axis) and 50m to 80m (semi-major axis) in the horizontal axes and 15m in the vertical axis were modelled. A series of density regression models were developed for each key stratigraphic unit, for the mineralised areas. The base case densities for each key unit (taken from density samples with dry bulk densities determined both by ZMI technical staff and ALS Ireland) were adjusted for the level of mineralisation using regression formulas, as summarised in Table 2.

A rotated (135 degrees around the vertical axis) block model was constructed in Vulcan using a 10mE x 10mN x 10mRL 'parent' cell size with sub-blocking to 2.5mE x 2.5mN x 2.5mRL. The block models were coded with the lithology codes using the Leapfrog geological and structural model and the probabilistic grade shells were coded into the model to control grade estimation.

Density values and regression formulae used in the block model		
	McGregor	
Material	Unmineralised	Mineralised Regression Formulae
Overburden	2.00	
Upper carbonate dominated mineralisation	2.80	density =(zn_pct*0.0292) + 2.80
Above Waulsortian	2.80	density =(zn_pct*0.0685) + 2.80
Waulsortian	2.90	density =(zn_pct*0.0361) + 2.9746
Below Waulsortian	2.85	density =(zn_pct*0.0368) + 3.0427
	Shamrock	
Material	Unmineralised	Mineralised Regression Formulae
Overburden	2.00	
Upper carbonate dominated mineralisation	2.90	density =(zn_pct*0.0275) + 2.9337
Above Waulsortian	2.80	
Waulsortian	2.90	density =(zn_pct*0.0342) + 2.8127
Below Waulsortian	2.85	density =(zn_pct*0.0368) + 3.0427
	FC3	
Material	Unmineralised	Mineralised Regression Formulae
Overburden	2.00	
Upper carbonate dominated mineralisation	2.80	density =(zn_pct*0.0273) + 3.1355
Above Waulsortian	2.80	density =(zn_pct*0.0273) + 3.1355
Waulsortian	2.90	density =(zn_pct*0.0273) + 3.1355
Below Waulsortian	2.85	density =(zn_pct*0.0273) + 3.1355

Table 2. Density Values and Regression Formulae

Grade estimation has been carried out using OK. Two estimation passes were employed for each key lithology and the coded probability shells that were used as hard boundaries to constrain the estimate, Blocks unestimated in the first pass were estimated by a second OK pass using more extended search distances and relaxed composite selection criteria. The model was validated by both statistical methods and visual comparison.

Figure 7. shows an isometric view of the 5% ZnEq and 10% ZnEq 'grade' shells as a means of visualising the resource estimate. It is of note that the main zones of mineralisation delineated to date contain a high grade core.

The McGregor, Shamrock and FC3 models have been assessed using the JORC (2012) guidelines and the resource estimates are considered to comprise Inferred Resources. There has been no extrapolation of the mineralisation in the model beyond the parameters derived by the geostatistical modelling. On average the McGregor and Shamrock zones have been effectively drilled on a nominal 60m spacing and FC3 on a nominal 80m spacing.

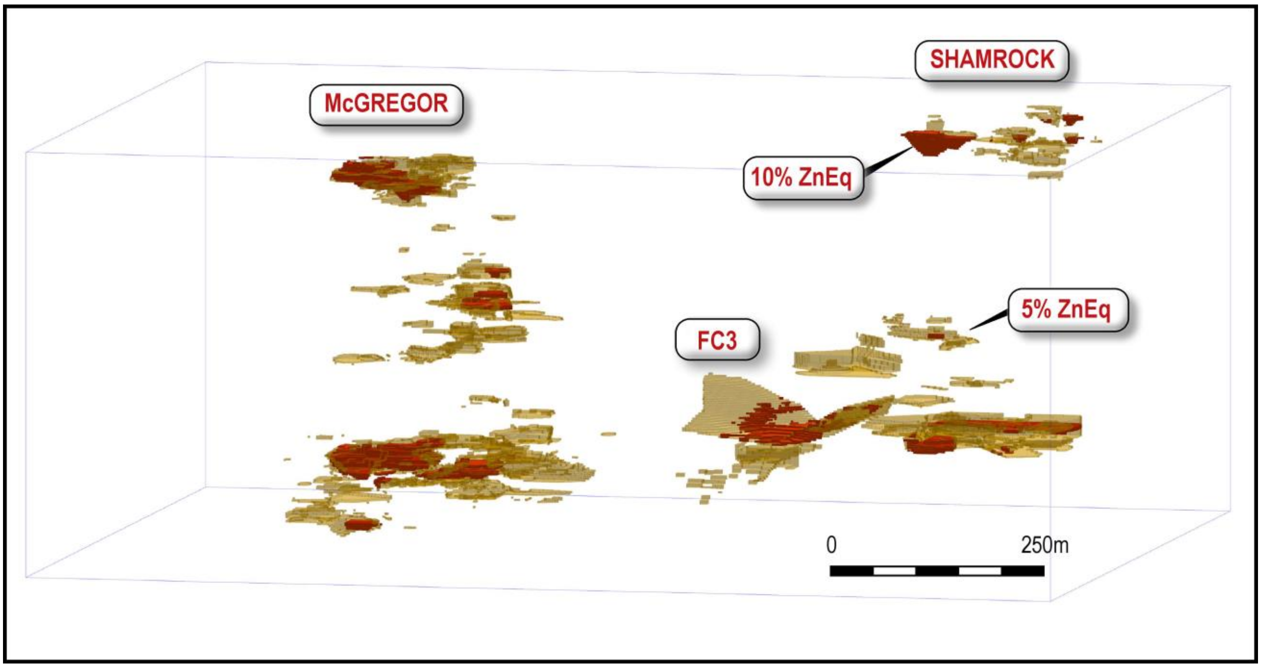

Figure 7: Isometric view of the McGregor (left), FC3 (centre) and Shamrock (right) 5% ZnEq (orange) and 10% ZnEq (red) grade shells. Other structures and lithostratigraphic boundaries omitted for clarity

Figure 8, below summarises the tonnage distribution, by 10m RL increment, based on a 5% ZnEq cut off, subdivided for McGregor (blue), Shamrock (red) and FC3 (green). The graph clearly shows that the system is mineralised at multiple levels, in both McGregor and Shamrock. Upper mineralisation was not noted in the FC3 area at the current drill spacing, however 'Upper', 'Above Waulsortian', Waulsortian, 'Base of Reef' and 'Below Waulsortian' mineralisation are evident, with Pb-Zn mineralisation being intersected over 500m of vertical extent.

The presence of substantial, higher grade portions of the overall resource at relatively shallow depths and at McGregor in particular provides clear opportunities for targeting early cashflow during mine design and associated financial modelling.

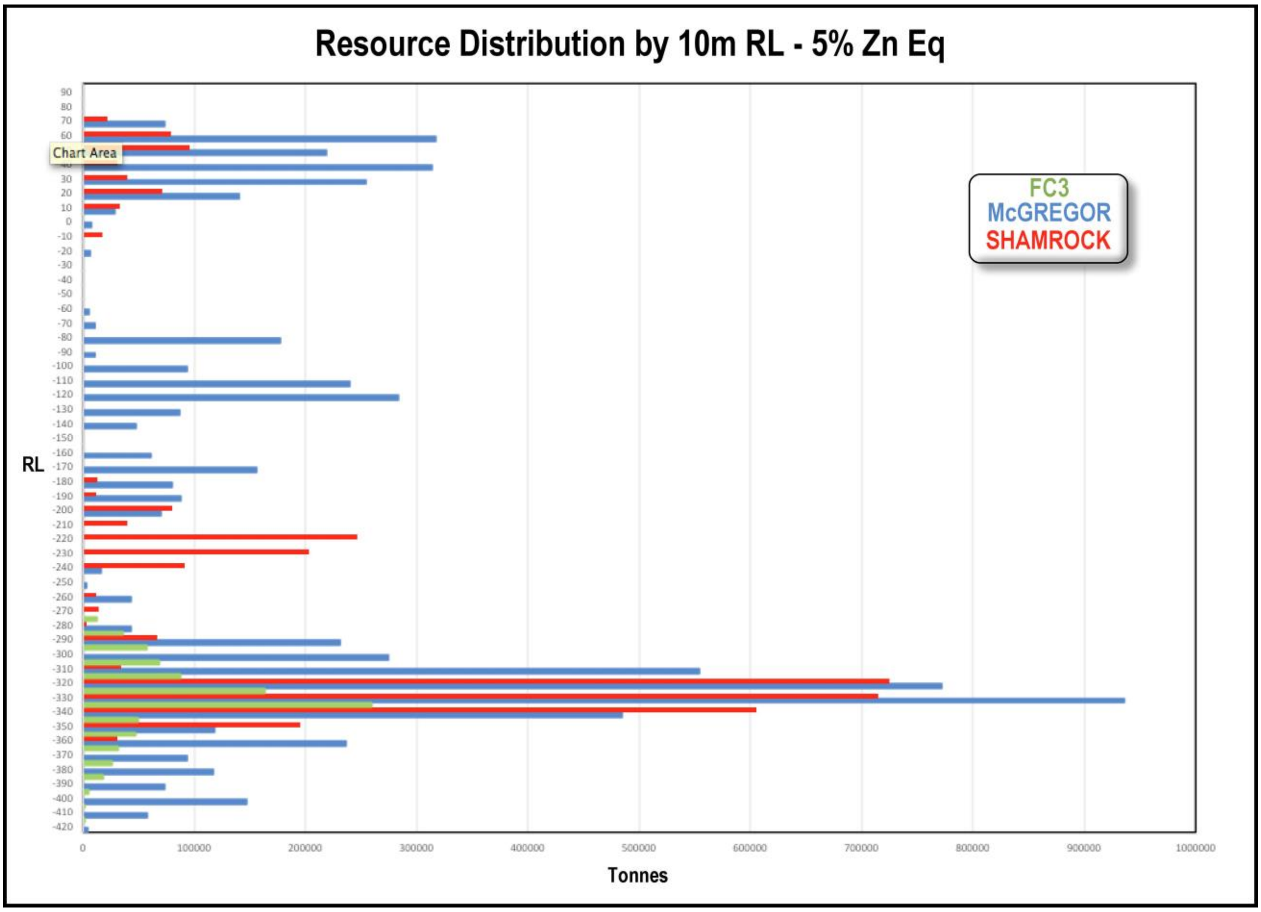

Figure 8: Resource distribution graph subdivided by 10m RL increment for McGregor, Shamrock and FC3, based on a 5% ZnEq cut off grade.

Fault compartments adjacent to McGregor, Shamrock and FC-3 (e.g. FC-7 and FC-31) all have considerable potential for additional zinc and lead mineralisation. The delineation of these high grade fault compartments has been based on highly selective historical sampling practices making them especially favorable targets for further, appropriately sampled, drilling.

Significant intercepts include:

- **1.4m at 10.2% Zn + Pb and 0.9m at 10.9% Zn + Pb in Hole HB_060, FC31.**
- **2.9m at 6.1% Zn + Pb and 1.1m at 17.7% Zn + Pb in Hole HB_156, FC 7.**

Future drilling in these priority areas has the potential to not only make a further contribution to the resource inventory but also to connect areas of known mineralisation with aiding project optimization and mine design.

High Level Mining Study

Golder Associates Ireland Limited (Golder) were commissioned by the Company to undertake a High Level Mining Study based on the development of an underground mining operation at Kildare. The aim of the study was to provide preliminary information regarding the potential for developing a mining project based on the updated Inferred Mineral Resource Estimate. Specifically the study was intended to investigate whether the use of low cost methods for the extraction of ore could potentially be applied to the MacGregor, Shamrock, and FC3 zones based on the known geometry of the orebodies and early indications of geotechnical conditions from physical assessment of available drill core and review of drill logs and photographs. Golder worked with Lisheen Technical and Mining Services Limited and Avoca Geotech Limited to complete the study.

Various annual production rate scenarios were investigated based on the Kildare Updated Inferred Resource and the information generated will eventually contribute to more detailed project scoping studies. The study also involved high level review of the available information and benchmarking relating to other aspects of the potential mining operation. This included Geology and Mineral Resources, Mining, Metallurgy and Processing alternatives, Hydrologeology, Tailings, Infrastructure, Environmental and Social and Permitting. Cost models for capital and operating costs were also built from an extensive local knowledge base.

ZMI is encouraged by the outcomes of the study. The intention is that the company will build on these outcomes and the updated 2020 Mineral Resource to assess options to link the deposits via selective drilling of known Fault Compartments containing pre-existing high grade intercepts. The study will also be used to inform the design of future infill drilling programs and form the basis of detailed studies required to advance the project.

Specific results of the Study cannot be released due to ASX rules (all resources are currently Inferred), however the study does confirm, that based on the review of geotechnical information and the geometry of the ore bodies, various well established low cost mining methods are well suited for application to the project. The study provides ZMI with guidance and a pathway to developing the next phase of the project including both resource drilling and engineering and metallurgical testing and analysis.

This announcement has been approved for release to the market by the Board of Zinc of Ireland NL.

Richard Monti
Chairman
Zinc of Ireland NL

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Competent Persons' Statements

The information in this report that relates to exploration results is based on information compiled by Mr. Greg Hope, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr. Hope is a consultant geologist with over 25 years industry experience. Mr. Hope has sufficient experience, which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which has been 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). Mr. Hope consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the Mineral Resources is based on information compiled by Brian Wolfe, Principal Consultant of International Resource Solutions Pty Ltd. Mr. Wolfe is a Member of the Australian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which has been 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). Mr. Wolfe consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

The information in this document that relates to metallurgical testwork is extracted from the ASX announcement entitled "Exceptional Preliminary Metallurgical Results from Kildare Zinc Project" dated 23 April 2019 and is available to view on www.zincofireland.com. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement. The Company confirms that the form and context in which Competent Person's findings are presented here have not been materially modified from the original market announcement.

ZnEq Calculation:

In order to determine appropriate Pb and Zn prices for use in calculating a ZnEq cut off grade, the monthly average LME spot prices for Pb and Zn were assessed for the 5 years between June 2014 and June 2019, resulting in an average price of US$2,468 per tonne for Zn and US$2,047 per tonne for Pb. For the purposes of calculating a ZnEq cut off, these two prices were rounded to $2,500 per tonne for Zn and $2,000 per tonne for Pb, resulting in a 0.8 ratio between Pb and Zn. The recoveries from the metallurgical test work as announced 23 April 2019 have been used, and all elements included in the ZnEq formula calc (i.e. zinc and lead) have a reasonable potential to be recovered and sold.

The resultant ZnEq formula used in resource reporting is:
*ZnEq = (Zn% * Zn recovery) + (0.8* (Pb% * Pb recovery)).*
*ZnEq = (Zn% * 0.9639) + (0.8 * Pb% * 0.8644).*

ADDITIONAL INFORMATION

JORC CODE, 2012 EDITION – TABLE 1

The following sections are provided for compliance with requirements for the reporting of exploration results under the JORC Code, 2012 Edition.

Section 1 Sampling Techniques and Data

(Criteria listed in the preceding section also apply to this section.)

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 Company is focused on exploring the Allenwood Graben Zn Project which is part of the larger Kildare group of prospecting licences. • Given the distinct lack of surface rock outcrop and the prevalent glacial till cover the Company specifically relies on exploration diamond drilling to determine the 3D geological, structural and mineralisation context of the Allenwood Graben. As such the Company endeavours at all times to extract the maximum amount of geological information from its drill core. • The Company's current set of procedures for processing diamond drill core would be considered 'industry best practice'.
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*	• Commonly tri-coning occurs through the overburden (glacial till) to depths of approximately 20m or when solid rock is encountered. • Diamond drill core diameter may be

Criteria	JORC Code explanation	Commentary
	core is oriented and if so, by what method, etc.).	PQ3/HQ3/NQ3/BQ3. • Hex or full hole locking couplings are used on an as needs basis to promote hole stabilisation and reduce hole deviation as appropriate. • The core was orientated at the drill site using a Reflex ACT III tool.
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.*	• Drill core has been logged for recovery by length of run, RQD and recovery per sample interval. • Triple tube coring has been used on an as needs basis to date. • There does not appear to be a relationship between core recovery and grade and assessment remains ongoing on a regular basis. • Sample recovery is maximised by drilling shorter length runs within zones of poor rock quality.
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.*	• Drill holes have been logged by a competent geologist in Ireland. The current logging procedures would be sufficient to meet the requirements for a mineral resource estimate. • Mineralisation/alteration/brecciation types, intensities, amounts and interpreted lithologies have been completed using a standardised logging template and ZMI's stratigraphic coding and nomenclature that has been defined so as to be relevant to the local geology and the styles of alteration, structure and mineralisation encountered. • Core photography (wet & dry) is routine.
Sub-sampling 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 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.*	• Sampling has occurred within lithological/mineralised domains as and where appropriate. The Company marks up the core in regular sample intervals i.e. 2m intervals NQ and 1.5m intervals HQ3 (maximum sample size) and uses industry standard core cutting machines to cut the core into two halves with the right-hand side of the core downhole being sampled consistently. The remaining half-core is retained for reference and the selection of bulk density samples. • The Company's sample preparation process would be considered "industry best practise" for this mineralisation style.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *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*	• Samples are prepared by ALS Loughrea, Co Galway by jaw crushing to a nominal 70% passing 2mm with a representative 250g sample then split using a rotary splitter. The split sample is pulverised to 85% passing 75um in a LM-2. • (ALS Code: ME-ICPORE) Ore grade analysis for base metals and associated elements by ICP-AES, following a strong oxidizing acid digestion. Elements (low reporting limit/upper limit) –units

Criteria	JORC Code explanation	Commentary
	their derivation, etc. • *Nature of quality control procedures adopted (egg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	are % unless indicated otherwise: Ag (1/1500 ppm (µg/g)), As (0.005/30.0), Bi (0.005/30.00), Ca (0.01/50.0), Cd (0.001/10.0), Co (0.001/20.0), Cu (0.001/40.0), Fe (0.01/100.0), Hg (8/10000 ppm (µg/g)), Mg (0.01/50.0), Mn (0.005/50.0), Mo (0.001/10.0), Ni (0.001/30.0), P (0.01/20.0), Pb (0.005/30.0), S (0.05/50.0), Sb (0.005/100.0), Tl (0.005/1.0), Zn (0.002/100.0). • The Company inserts appropriate certified reference material on a 1/20 basis. Field duplicates are taken on a 1/20 basis following the crushing stage and pulp replicates are taken on a 1/13 basis from the LM-2 bowl. • The laboratory (ALS Loughrea) also carries out its own comprehensive internal QAQC on all jobs submitted by the Company. • The Company QAQC data is reviewed by the responsible Geologist on a reported job basis and only after approval of said report is the data given the appropriate priority ranking within the acQuire database. • Nominal 30cm billets of half core are selected for bulk density determination either by standard weight in air/weight in water (non-porous rock) or by the wax coating method depending on the quality of the sample. Sample spacing is on a nominal 10m downhole basis for non-mineralised intervals and on a nominal 3m downhole basis within mineralised zones. • At present, approximately 17% of total analyses are related to the Company's QAQC programme. • Metallurgical testwork samples have been assayed at the Wheal Jane Laboratory, Cornwall, UK.
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.*	• All Company drill hole data is regularly validated upon its introduction into the acQuire database. The database Manager will report any potential sample overlaps, non-valid coding etc. to the responsible Geologist for appraisal. Until such a time as the responsible Geologist provides the correct information, said data resides within the database but is given a different 'priority level' and cannot be used as part of the final, validated database that would be used for a mineral resource estimate. • The Company has not specifically 'twinned' any historic (i.e. pre-ZMI) RC drill holes. • The Company has not specifically 'twinned' any historic (i.e. pre-ZMI) diamond drill holes and has not 'twinned' any of its own diamond drill holes. There may be some ZMI drill holes that would be considered as having been drilled 'near' to some historic drill holes. • The Company has on site a written set of procedures dealing with all aspects of the

Criteria	JORC Code explanation	Commentary
		'Exploration Programme' e.g. dealing with zones of core loss in drill core through to data flow 'sign off' requirements, all of which have been specifically designed to be used with the acQuire database management system.
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.*	• Proposed drill hole collar surveys are determined by hand-held GPS in Irish Grid 65. • Final drill hole collars have been surveyed either by handheld GPS or by a differential GPS: Trimble GPS6000 (RTK GPS accurate to 5mm) • Downhole surveys are determined by Reflex EZ-TRAC. • The principal area of exploration drilling would be considered relatively flat with no significant topographic constraints.
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.*	• Drill spacing is currently appropriate to the level of exploration being conducted by the Company and have been designed to provide the maximum amount of geological, grade continuity and structural information.
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.*	• Base metal mineralisation at the 'base of reef' i.e. Waulsortian Limestone lower contact is known to be sub-horizontal based on the results of historic drilling.
Sample security	• *The measures taken to ensure sample security.*	• Samples are prepared and stored at the Company's secure Grangeclare West core shed facility until such a time as they are transported to the ALS Loughrea facility by Company representatives.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• An on-site audit of site-based activities was undertaken by the resource estimation consultant as part of the site visit activities prior to the development of the resource model.

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Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

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.*	• The Kildare Project is comprised of 7 Prospecting Licenses, namely PL890, PL3846, PL3866, PL4069, PL4070, PL4072 and PL4073 all of which are in 'good standing'. • All tenements are 100% owned by Raptor Resources, a 100% owned subsidiary of Zinc of Ireland NL. • No historical, wilderness or national parks are known to infringe significantly on the tenure.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Historical exploration is outlined in GXN Announcement dated 17th March 2016 and associated annexes. • Also, please see asx.com.au, under 'ZMI'.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Kildare Project is situated approximately 2km NW of the Lower Palaeozoic Kildare Inlier on a northeast-southwest trending fault. Local geology consists of calcareous sediments conformably overlying Carboniferous Waulsortian Mudbank. This mudbank overlies a thick succession of carbonates and limestones above Palaeozoic basement rocks. • The area is considered prospective for breccia-hosted Fe-Zn-Pb deposits similar to Irish-Type mineralisation.

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.*
		• For a detailed list of all drill holes related to the McGregor-Shamrock MRE, please see ZMI press release dated 31.07.19, specifically Appendix A.
		• **HZDD002**: 276505mE, 224520mN, 93mRL, -75 dip, 135 azimuth, total depth 450m.
		• **HZDD004**: 276505mE, 224520mN, 91mRL, -75 dip, 315 azimuth, total depth 480m.
		• **HZDD005**: 276534mE, 224599mN, 90mRL, -75 dip, 315 azimuth, total depth 482.5.
		• **HZDD008**: 276,534mE, 224,599mN, 99mRL, -90 dip, n/a azimuth, total depth 504m.
		• **HZDD009**: 276,505mE, 224,520mN, 93mRL, -90 dip, n/a azimuth, total depth 446.7m.
		• **HZDD010**: 276,399mE, 224,665mN, 0mRL, -90 dip, n/a azimuth, total depth 482.7.
		• **HZDD011**: 276,425mE, 224,500mN, 0mRL, -90 dip, n/a azimuth, total depth 435m.
		• **HZDD012**: 276,399mE, 224,665mN, 0mRL, -77 dip, 206 azimuth, total depth 525m.

Criteria	JORC Code explanation	Commentary
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (egg 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.*	• Future reporting of mineralised intervals will incorporate the appropriate information.
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 (egg 'down hole length, true width not known').*	• The Company will endeavour to provide the requisite information on intercept lengths and mineralisation lengths relationships on an as required basis as exploration drilling results are returned.
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.*	• The Company regularly observes this requirement.
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.*	• The Company regularly observes this requirement.
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.*	• The Company regularly observes this requirement.
Further work	• *The nature and scale of planned further work (egg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas*	• The Company regularly observes this requirement and acknowledges that it will inform the market to the best of its abilities providing that the information is not

Criteria	JORC Code explanation	Commentary
	of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	commercially sensitive.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

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.*	• The Company stores all its exploration data within the acQuire relational database; data are only accepted as Priority 1 following a rigorous validation process and only the Database Manager can make changes to the dataset. • On a day to day basis all data derived from drill core is entered into specifically validated (i.e. drop down menu is locked) excel spreadsheet templates (e.g. alteration, brecciation, bulk density, collar, geotech, lithology, mineralisation, plan, drill plod, sample, structure, survey, core photos etc.) which are present on the Toughbook laptops that are used for this specific purpose; on a daily basis these templates are uploaded onto the server and following validation, into acQuire.
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.*	• Mr Brian Wolfe visited ZMI's Grangeclare West Core Processing Facility on the 12th & 13th February 2019 so as to participate in the Company's Technical Session and also to review all data collection procedures together with a discussion relating to the Company's standard QAQC practices. He also independently checked a representative number of ZMI drill collars using a hand held GPS unit.
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.*	• Approximately 68,000m of diamond drilling has been completed within the Allenwood Graben to date; all of which has been competently logged for lithology. The majority of that drilling has been completed within the McGregor-Shamrock area. • Given that there is no outcrop within the project area all geological interpretations have been defined by diamond drill core. • For the purposes of geological modelling, the lithologies of the Allenwood Graben have been summarised into the following units: *Overburden, 'Carbonate-dominated' upper mineralisation, Above Waulsortian, Waulsortian, Below Waulsortian, Basement.* • A multi-disciplinary approach has been adopted

Criteria	JORC Code explanation	Commentary
		in the development of a comprehensive model of the Allenwood Graben and geological, structural, alteration and geochemical information has been compiled from an extensive re-logging and re-analysis programme using a number of specialist consultants and ZMI technical staff. • As a result of the above, a combined 3D lithological and structural model has been developed for the Allenwood Graben and has been used to control block model development and grade estimation during resource estimation.
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.*	• The base metal mineralisation at Kildare is both structurally and stratigraphically controlled. • Within the McGregor-Shamrock-FC-3 region mineralisation has been traced for over 1km east-west, 500m north-south and over 500m depth. The style consists of numerous fault-controlled zones.
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*	• The probabilistic approach (indicator kriging) in order to define volumes in which to carry out Ordinary Kriging is considered to be the most appropriate estimation approach at this early stage of the project development. • No alternative estimation method (such as nearest neighbour or inverse distance weighting) have been carried out as part of this resource estimate as the methods are not considered to be appropriate for the style of mineralisation. • The style of mineralisation at Kildare consist of sphalerite (zinc) and galena (lead) with very low levels of potentially deleterious elements. Other than lead and zinc there are no other by-product minerals. • As any potentially deleterious elements are only present at very low levels, additional estimates of these elements have not been carried out to date. • Recent metallurgical testwork has been carried out on representative freshly drilled diamond core and the results have been used in calculating a zinc equivalent cut off. • A block model with parent block cell size of 10m x 10m x 10m with sub-blocking to 2.5m x 2.5m x 2.5m has been adopted to replicate the various lithostratigraphic surfaces, fault boundaries and probability shells that have been used to both build the block model frameworks and grade estimation constraints. • Correlation studies were carried out between zinc grade and density in order to build correlation algorithms for use in density assignment. • The univariate statistics for lead and zinc exhibit

Criteria	JORC Code explanation	Commentary
	process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	low coefficients of variation (standard deviation divided by the mean) indicating that outlier grades do to exist at Kildare. As such the data was not cut before grade estimation. Following grade estimation, declustered statistical analysis was undertaken to ensure that the block model grades match the source data. • Validation after grade estimation has consisted of both visual and statistical methods. • During grade estimation the structural framework and the key lithostratigraphic units in conjunction with the probability grade shells were used as controls.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Dry bulk densities were collected and measured by both ZMI technical staff, ZMI's consultants and ALS (Ireland). The dry bulk density data has been correlated with both the lithostratigraphic logging and the analytical data.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• *Although it is premature for the Kildare project to adopt a detailed NSR approach when reporting resources, a review of likely cut off grades, based on both current operations and historical operations within the Irish Lead-Zinc belt and other operations worldwide, suggests that a range of cut offs from 3.5% ZnEq to 6% ZnEq are appropriate for the project at the current level of definition.* • *A long term metal price (5 year LME average spot process from June 2014 to June 2019) were used to establish product prices for use in cut off grade calculations and to establish the price ratio between zinc and lead (0.8).* • *The results of the metallurgical testwork were also taken into account. A recovery of 96.39% for zinc and 86.44% for lead has been sued and is supported by the metallurgical testwork results.*
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• *The metallurgical testwork was carried out at a coarse grind size of p80 -150 microns, using a standard differential flotation process and a standard reagent regime. Very encouraging concentrates were produced. An overall 96.4% recovery of Zn to the Zn concentrate was achieved, with a 56% Zn grade in the concentrate and with minimal Pb (<0.5%). The Pb concentrate achieved 86.4% recovery with a 62% Pb concentrate grade and minimal Zn (<3%). Similarly, minimal levels of deleterious elements occur in either concentrate. Refer to the ZMI ASX announcement on the 23rd April 2019 for further details.* • *In order to determine appropriate Pb and Zn prices for use in calculating a ZnEq cut-off grade, the monthly average LME spot prices for Pb and Zn were assessed for the 5 years between June*

Criteria	JORC Code explanation	Commentary
		2014 and June 2019, resulting in an average price of US$2,468 per tonne for Zn and US$2,047 per tonne for Pb. For the purposes of calculating a ZnEq cut off, these two prices were rounded to $2,500 per tonne for Zn and $2,000 per tonne for Pb, resulting in a 0.8 ratio between Pb and Zn. • *The resultant ZnEq formula used in resource reporting is:* *ZnEq = (Zn% * Zn recovery) + (0.8* (Pb% * Pb recovery)).* *ZnEq = (Zn% * 0.9639) + (0.8 * Pb% * 0.8644)*
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.*	• ZMI maintains an active ESIA programme with the express purpose of earning and retaining the social licence to operate. • The project is at an early stage of development, however, the framework for environmental base line studies has been developed and is being put into action by ZMI management and their consultants. • The region has a long history of mining of lead-zinc mineralisation and ZMI is well aware of the steps required to develop and permit a mining operation in Ireland.
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.*	• The Company routinely collects approximately 30cm billets of half core for determination of bulk density; 1 sample every 10m when within unmineralised country rock and 1 sample every 3m within mineralised areas. • Bulk density samples that exhibit open space and/or clear porosity are sent to ALS Loughrea for bulk density determination by wax coating followed by the water immersion method (ALS Loughrea code: OA-GRA09a). • Bulk density samples that are clearly non-porous are determined internally at the Company's Core Processing Facility using the water immersion method. • A series of density regression models were developed for each key stratigraphic unit, for the separate mineralised areas. • The base case densities for each key unit (taken from density samples with dry bulk densities determined both by ZMI technical staff and ALS Ireland) were adjusted for the level of mineralisation using regression formulas, as summarised in Table 2. • As an example, a 11% Zn grade at McGregor would have a bulk density of **3.37** ((11*0.0361) +

Criteria	JORC Code explanation	Commentary
		2.9746).
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• There has been no extrapolation of the mineralisation in the model beyond the parameters derived by the geostatistical modelling. • On average the McGregor and Shamrock zones have been effectively drilled on a nominal 60m spacing with this increasing to approximately 80m at FC-3. • The resource estimate is considered to be an Inferred Resource under the JORC 2012 guidelines.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The resource estimate has been reviewed in detail internally by ZMI technical staff. No external audit of the independent resource estimate has been carried out to date.
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.*	• As an Inferred Resource, the current resource estimate is considered as a global estimate. It is recognised that additional infill drilling will be required to develop more robust local estimates, that are required to promote mineralisation to higher JORC resource categories for use in feasibility level studies.