CHILWA MINERALS

ASX ANNOUNCEMENT

ASX : CHW 14 November 2023

SIGNIFICANTLY DEEPER FOOTWALL IDENTIFIED AT MPOSA

KEY POINTS

- **MAIDEN FOUR HOLES IDENTIFIES THICKER UNCONSOLIDATED SEDIMENTARY PACKAGE AND COMPETENT ROCK (FOOTWALL) AT SIGNIFICANTLY GREATER THAN ANTICIPATED DEPTHS**
- **MATERIALLY IMPROVED DRILL CORE RECOVERIES FROM SONIC DRILLING TECHNIQUE**
- **REVISED DRILLING PLAN DEVELOPED FOR MPOSA AS A RESULT OF NEW DEPTH OUTCOMES**

OVERVIEW

Chilwa Minerals Limited (ASX: CHW) ("**Chilwa**" or the "**Company**") is pleased to announce that the first four (4) infill and extensional drill holes (Figure 1) at the Mposa Main ("**Mposa"**) target area have reached competent rock (footwall) at a significantly increased depth and, from visual interpretation [1], indicate a substantially thicker fluvio-lacustrine deposit compared to what was previously identified by drilling in this area. Assays are awaited and a further update will be provided when they are to hand.

The drilling program has been designed to test the extent of potential mineralisation at depth, as well as its lateral continuity. This will be achieved by twinning selected existing holes whilst also drilling infill and extensional holes in the areas adjacent to Mposa for a total of 6,000 metres of drilling.

The existing Mposa Main JORC-2012 Inferred mineral resource of 19.4Mt at 4.3% THM[2] was determined from a sample of 340 holes. The average hole depth was 6.23m with the shallowest hole being 2m and the deepest hole 11m.

Chilwa is employing the use of sonic drilling at Mposa, a technique that provides a core-like sample with very high recovery rates[3].

Chilwa's Managing Director, Cadell Buss, commented:

"*Whilst we are awaiting the assays from these initial holes, the increased drill depths are extremely exciting for the team. We commenced the drill program with a plan to increase the JORC categorisation and add tonnes at the edges of the existing mineral resource. Not even within our best expectations did we believe that there was the potential to increase the drill depth of the previous campaign by 5-8 times.*

"*The drilling program is in its early stages with the team understanding the best way to drill these thicker sequences. We expect drill rates to pick up over the coming weeks as we look to update the plan to undertake broad spaced drilling across the project, initially to determine the average thickness across the deposit."*

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[1] The Company draws attention to the inherent uncertainty in reporting visual results. Visual estimates of mineral abundance should never be considered a proxy or substitute for laboratory analyses where concentrations or grades are the factor of principal economic interest. Visual estimates also potentially provide no information regarding impurities or deleterious physical properties relevant to valuations.
[2] Chilwa Minerals Prospectus, dated 5 April 2023
[3] Refer to ASX announcement 10 October 2023

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INITIAL MPOSA DRILL DEPTH RESULTS

	PREVIOUS DEPTH (m)	NEW DEPTH (m)	INCREASE (m)	INCREASE (%)
MPO-SD-001	5	30.5	25.5	510%
MPO-SD-002	8	44.6	36.6	457%
MPO-SD-297*	5	50	45	900%
MPO-SD-295	4	50	46	1150%

The first hole drilled in this current campaign at the northern end of the Mposa area, MPO-SD-001, reached a depth of 30.5 metres, however, did not reach the footwall. The expectation was that the footwall would be around 20 metres in depth and as such, casings were not used until a depth of 10 metres. This was a twinned hole (CWCMPA-20001-5) from 2015, which ended at 5 metres.

The second hole drilled at this site, MPO-SD-002, was cased from surface and encountered the footwall at 44.6 metres. This hole was also a twin (CWCMPA-20002) that had a depth of 8 metres.

Following the completion of the first two holes, the Company decided to shift the drilling program to the southern part of the Mposa area, a distance of approximately seven kilometres, in order to determine the southerly extent of the Mposa deposit.

Hole 3 (MPO-SD-297) was drilled in the southern extremity of Mposa and obtained a depth of **50 metres**. This hole was not a twin but lies within close proximity to several holes from 2015 which recorded depths of between 4 and 5 metres. Hole 4 (MPO-SD-295) reached a depth of **50 metres**, twinning a previously drilled hole (CWCMPA-76004) with a depth of 4 metres. Refer Figure 1.

Importantly, holes MPO-SD-297 & MPO-SD-295 did not end in competent bedrock (footwall), rather they ceased at 50 metres because the drill rig only had 50 metres of drill rods. This further illustrates how the depths of these holes have been greater than hoped and anticipated.

The competent bedrock is at a depth in excess of 50 metres for these two holes with more drill rods having been ordered in order to determine the ultimate depth of the bedrock for these holes The company's Competent Person, Mr Mark Burnett (a competent person who is a fellow of the Geological Society of London and is an employee of AMC Consultants (UK) Limited) was on site to review drilling procedures for hole 3 (MPO-SD-297) and provided input into all quality assurance and control procedures being undertaken by the Chilwa exploration team.

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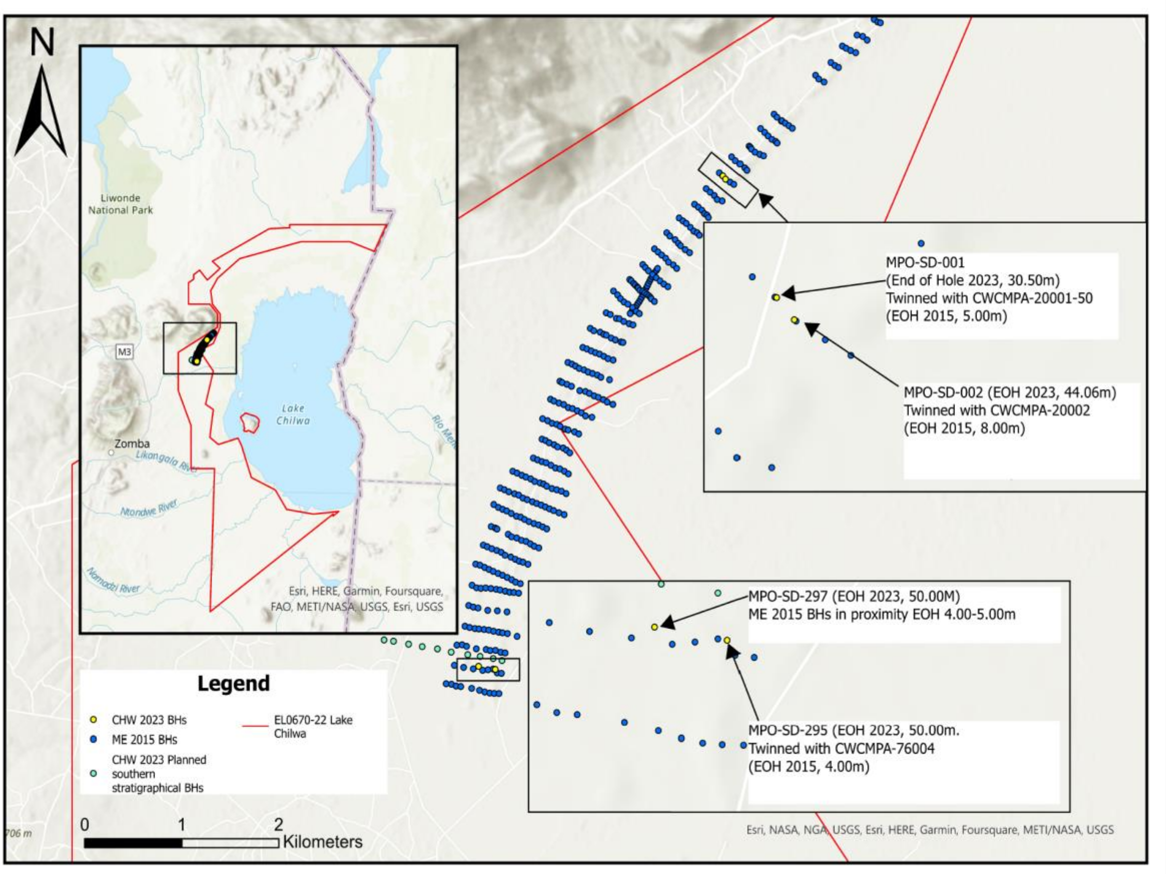

Figure 1 – Mposa drillhole locations

IMPROVED RECOVERIES

A key factor behind the Company's decision to employ sonic drilling techniques moving forward, was the variable levels of material recovered from the previous campaign. Many of these holes terminated in mineralisation due to the use of an aircore rig, which was unable to penetrate the water table. Recoveries from this drilling were also variable, averaging <70%.

Recoveries obtained by using a sonic drill rig have averaged 85% and in some cases 100% was achieved.

AMENDED DRILLING PROGRAM

Having established the northerly and southern extents of the Mposa deposit, the Company has decided to amend the drilling program, (which will see 10 holes drilled along an East – West transect) in order to gain an understanding of the stratigraphic composition of Mposa. These are shown on Figure 1 – Green holes (Southern Stratigraphical BHs.

Given this revised drilling program, assay results are now expected in the first quarter of 2024. The Company will provide regular updates on drilling progress during this period.

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Figure 1 - The Competent Person, Mr Mark Burnett, from AMC was on site to review drilling procedures.

AUTHORISATION STATEMENT

This update has been authorised to be given to ASX by the Board of Chilwa Minerals Limited.

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JORC 2012 Inferred Mineral Resource Estimate

A Mineral Resource Estimate (MRE) for the Project has been classified and reported in accordance with the JORC code (2012). The Mineral Resource Estimate has been classified as Inferred and at a 1.0 % THM cut-off contains 2.4 Mt of THM. The MRE is allocated across the Project deposits in **Table 1** below.

Table 1 Inferred Mineral Resources at 1.0% THM as at 31st July 2022 (Refer IPO Prospectus 5th April 2023)

Deposit	Volume (million m3)	Tonnes (million t)	Dry Density (t/m3)	Gangue (%)	Ilmenite (%)	Slimes (%)	THM (%)	Zircon (%)
Bimbi	1.5	2.6	1.7	0.7	4.3	15.3	5.3	0.3
Northeast Bimbi	3.6	6.1	1.7	0.3	2.2	15.9	2.7	0.1
Mposa (Main)	11.7	19.4	1.7	0.7	3.2	11.7	4.3	0.4
Mposa (North)	0.6	1.0	1.7	0.3	1.4	8.3	1.9	0.2
Mpyupyu (dune)	2.0	3.5	1.7	1.2	5.7	15.3	7.1	0.2
Mpyupyu (flat)	9.5	16.4	1.7	0.5	2.9	15.4	3.6	0.2
Nkotamo	0.1	0.2	1.5	1.1	3.0	28.3	4.2	0.2
Halala	6.0	8.9	1.5	0.9	2.6	9.8	3.7	0.2
Beacon	0.4	0.6	1.5	0.6	1.8	17.7	2.5	0.1
Namanja West	2.0	2.9	1.5	0.8	2.3	14.7	3.3	0.2
Total	**37.5**	**61.6**	**1.6**	**0.7**	**3.0**	**13.3**	**3.9**	**0.3**

- Estimates of the Mineral Resource were prepared by AMC Consultants (UK) Limited (AMC).
- In situ, dry metric tonnes have been reported using varying densities and slime cut-off per deposit.
- Material below 30% slimes for Halala, 20% slimes for Bimbi, Northeast Bimbi and Mpyupyu (dune and flat) and 25% slimes for Mposa Main and Mposa North. All other deposits are a stated using 30% slimes cut-off.
- Tonnages and grades have been rounded to reflect the relative uncertainty of the estimates and resultant confidence levels used to classify the estimates. As such, columns may not total.
- Estimates of the Mineral Resource have been constrained by ultimate pit shells to demonstrate Reasonable Prospects for Eventual Economic Extraction
- Estimates are classified as Inferred according to JORC Code.

Compliance Statement

The information in this report that relates to Mineral Resources. and Ore Reserves, is extracted from the Company's ASX Announcement dated 3 July 2023 titled "Prospectus", which is available on the Company's website.

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, that all material assumptions and technical parameters underpinning the estimates of Mineral Resources and Ore Reserves in the market announcement above continue to apply and have not materially changed, and that the form and context in which the Competent Persons findings are presented have not been materially modified.

Forward Looking Statements and Important Notice

This announcement may contain some references to forecasts, estimates, assumptions and other forward-looking statements. Although Chilwa believes that its expectations, estimates and forecast outcomes are based on reasonable assumptions, it can give no assurance that they will be achieved where matter lay beyond the control of Chilwa and its Officers. Forward looking statements may be affected by a variety of variables and changes in underlying assumptions that are subject to risk factors associated with the nature of the business, which could cause actual results to differ materially from those expressed herein.

Competent Person's Statement

The information in this Announcement that relates to exploration results is based on information compiled by Mark Burnett, a competent person who is a Fellow and Chartered Geologist (**CGeol**) of the Geological Society of London and is also registered with the European Federation of Geologists (**EFG**) as a European Geologist (**EurGeol**) and is an employee of AMC Consultants (UK) Limited. Mark Burnett is not an employee or Shareholder of the Company and has no conflict of interest. Mark Burnett has sufficient experience that is relevant to the style of mineralisation and type of deposits under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 edition of the JORC Code. Mark Burnett consents to the inclusion in this report of the matters based on his work in the form and context in which it appears.

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* *Aspects of the determination of mineralisation that are Material to the Public Report.* *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• Prior to commencement of drilling, logging, and sampling, the geological team developed a standardized set of protocols and procedures. • Whole samples were collected every 1 m in a plastic sample-bag from the air core (AC) rig's cyclone. This included wet samples. No specialist tools were used, or additional measurements taken other than the sample. • As received samples (no free water) were weighed at the rig using a spring balance to ensure that the weight was adequate. Due to recovery issues 52% of the samples had poor recovery (<70%). The spring balance was not calibrated and deviation between balances used at the various rigs were noted. All samples were re-weighed in the core yard to confirm sample mass. • Samples were geologically logged at the rig. Panning of a grab sample from the sample bag was used to conduct a visual determination for coarse, HM, and slimes at the rig. • Samples were dried in drying pans, in the sun, at the core yard where they were re-weighed, manually de-aggregated, and a 1 kg sub-sample was split using multiple passes using a 50-50 riffle splitter. • Samples were dispatched in batches to the primary assay lab (SGS) for analysis. • The Competent Person believes that the sampling techniques were industry standard and acceptable for the Mineral Resource Estimate.
Drilling techniques	*Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Primary sampling for resource delineation was accomplished using industry-standard drilling (Wallis air coring). Whole samples were collected every 1 m in a plastic sample-bag from the rig's cyclone. This included wet samples. • Triple-tube diamond drilling (DD) was also undertaken but due to very poor recovery as well as a sample support issue between the AC and DD, the DD information was not used for Mineral Resource estimation.
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.*	• Samples (no free water) were weighed at the rig as a measure of recovery. • Due to technical difficulties with the scales (spring balances) there were significant errors in the recorded masses. • No redrilling was undertaken on samples with low recovery. • There is a weak correlation between slimes content and recovery. • No clear correlation is observed between recovery and total heavy mineral (THM). • There is a weak negative bias in the oversize values with respect to recovery.
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.*	• Each 1 m sample interval was logged in the field by a Geologist. • Items recorded were dominant sediment type, colour, hardness, coarseness, sorting, and roundness. • A grab sample from each interval was wet panned, and a visual estimation of THM, slimes, and oversize was recorded. • All intervals were logged according to the established protocol. • 5% of all logging was checked against the AC samples by the Senior Project Geologist to ensure consistency in the geological description.

Criteria	JORC Code explanation	Commentary
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.*	• At the core yard, the entire sample was placed in a drying pan and sundried. • The dried samples were often cemented due to a high clay-content and were manually disaggregated using a mortar and pestle, comprising of a steel bin and a RC blasthole bit welded to a steel pipe. • The disaggregated samples were weighed, and riffle-split multiple times using a 50-50 riffle splitter, to generate an approximate 1 kg representative sub-sample for submission to SGS. • Sample representivity was monitored through the generation of field duplicates derived from the final split of randomly selected samples for every batch of 20 samples • Blanks, a site constructed reference sample, and umpire samples (5% replication) were also inserted per batch to monitor the data quality. • These quality assurance and quality control samples (QA/QC) samples identified that some of the assay results from SGS were biased. • The sample size is considered representative in that the 1 kg sample represents roughly 10% of the parent sample and was generated using appropriate riffle splitting techniques.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• The analysis of the samples for THM, slimes, and oversize was conducted using industry standard techniques for HMS samples. The screen size for the slimes determination was adjusted from the default of 65 < m to 54 < m based on mineralogical characterization work conducted by AML. This adjustment is considered to be valid by the Competent Person. • For every batch of 20 samples, a blank (silica pool sand), a standard (generated on-site from a 1-tonne bulk sample) and a duplicate were randomly inserted. • 5% of all samples were duplicated and sent to an umpire laboratory for check analysis • The blank sample proved to have very minor heavy minerals that registered in the heavy liquid separation but were effective at monitoring contamination between samples. • The duplicates and the standards as well as the umpire samples identified an analytical error in the analysis of some of the sample batches from Halala, Bimbi, and Mposa (approximately 60% of the samples). • The compromised samples were re-assayed by SGS; however, AMC has elected to keep the classification of the Mineral Resource at the Inferred level of confidence. • The Competent Person believes that the QA/QC methods applied were industry standard and acceptable for the Mineral Resource Estimate.
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.*	• 10% of the RC holes were relogged from the chip tray samples by a Senior Geologist. No significant deviations from established protocols were noted. All check log results are stored in the database. • 20% of all RC holes were twinned by triple-tube diamond holes for verification purposes but due to poor recovery and the sample support difference between the AC and DD samples, AMC elected not to use the DD information in the resource estimation process.
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.*	• All drilling, augering, and pitting has been surveyed by qualified surveyors, using DGPS. • All survey work references UTM zone 36, using the WGS 84 datum • The topography DTMs have been constructed from collar data and some limited survey lines. The resolution of the topography data is considered adequate for an Inferred Mineral Resource.

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Criteria	JORC Code explanation	Commentary
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.*	• Drilling was spaced 25 m across-strike and 100 m along-strike for most of the targets in the Chilwa project area. • Data spacing is considered reasonable for the current level of the study. • Compositing was not applied. All samples within the modelled horizons were left at the sample interval of 1 metre.
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.*	• All holes were drilled vertically, which is near normal to the low-angle bedding and is therefore considered to be unbiased.
Sample security	*The measures taken to ensure sample security.*	• Samples were labeled, tagged, and sealed with cable ties at the drill rig. • Samples were collected and inventoried at the drilling machines during drilling activities. • The sample bags were then transported from the drilling site to a field storage area by field vehicle, and again inventoried on arrival. • Samples, once transported from the drilling camp, were stored within a fenced enclosure at MEIML's processing and storage facility. • Drilling samples were dispatched from the field storage area to MEIML's processing and storage facility. The samples were inventoried and verified on arrival. • After processing, the laboratory samples were transported by-batch by road to the SGS laboratory in Johannesburg, while the umpire samples were airfreighted to AML in Perth. • The sample inventory for each batch was signed off by the transport company and again by the respective laboratory. • All hard-copy documents relating to sample transport are filed in hard copy. This includes inventory verifications at the different collection and dispatch points, export permits, and inspection certificates.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	• A review of the recovery values (as a function of the sample weight) highlighted missing sample weight data. All samples were reweighed, and the sub-sample mass added back in to arrive at a nominal dry sample mass. This revealed significant errors with the precision and accuracy of the spring balances used at the rigs. The new weights replaced the originals.

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.*	• On the 26 September 2022, Mota-Engil Investments (Malawi) Limited (MEIML), a party related to Luso Global Mining B.V. (LGM), was granted Exploration Licence (EL) 0671/22 (Chilwa Island), allowing them to explore for HMS deposits over an area of 12.84 km² on Chilwa Island. The licence is valid for three years, with an option to extend the term in accordance with Section 119 of the (Malawian) Mines and Minerals Act (Act number 8 of 2019). CML has informed AMC that they have no plans to explore for or mine HMS deposits on Chilwa Island at this stage. • On September 27 September 2022, a new licence, EL0670/22 (Lake Chilwa), was granted to MEIM, allowing them to explore for HMS deposits over an area of 865.86 km² located on the shores and hinterland around Lake Chilwa. The new licence increases MEIML's tenement holding to 865.86 km². The licence is valid for three years, with an option to extend the term in accordance with Section 119 of the (Malawian) Mines and Minerals Act. Exploration in this EL is planned to commence in Q4 2022. • MEIML engaged Singano Purshotam Law Consultants (Singano), a Malawian legal firm, who have their chambers in Blantyre, Malawi, to review the tenement status. AMC has had sight of the legal opinion as provided by Singano, who note that the ELs are in good standing.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	• Academic work was completed by Lancaster (1981) specifically looking at the Halala/Namanja Sand Bar deposit on the north shore. Dill and Ludwig (2007) studied the geomorphological-sedimentological aspects of landform types and placer deposits in the savannah and specifically Southern Malawi. • Claus Brinkmann worked on the Mpyupyu-Kachulu deposit between 1991 and 1993 as part of an initiative by the German Government to aid mineral development in Malawi. A total of 125 pits were completed on a 500 m × 500 m grid and depth of between 2 metres and 4.2 metres deep with THM and ilmenite determinations done. • Millennium Mining Limited concluded exploration work on the northern deposits of Halala and Namanja during the early 2000s. They completed an initial auger drill programme of 31 holes. A further 104 AC holes were drilled by Wallis Drilling on an approximate 100 m × 100 m grid. • Millennium also completed bulk sample work through Ticor/Kumba which was supplied by three bulk samples.
Geology	*Deposit type, geological setting and style of mineralisation.*	• Lake Chilwa is a closed, saline lake, which formed as a result of tectonic activities along the East African Rift. • The lake previously drained to the north, but the mouth eventually silted up and the lake was subsequently completely closed off. A 25 km long sand bar formed along the north shore of the lake, closing off the drainage to the north. • The Lake Chilwa (Project) HMS targets consists of beach and dune deposits located on palaeostrandline deposits that were deposited and preserved through several cycles of lake level fluctuations and stable periods. • The main HM deposits are located on a very distinct strandline where the conditions of sediment supply, lake level, and hydrological were favorable for the formation and preservation of the sand deposits. • Sediment, including HMs, were eroded and supplied by several streams and rivers flowing into the lake from surrounding basement gneiss and alkaline intrusion complexes. • The HM characteristics of each deposit are determined by the provenance rock types of rocks. Some deposits have local point sources contributing to the HM assemblage. • The Competent Person believes that the geological model produced is of industry standard and acceptable for the Mineral Resource Estimate.

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Criteria	JORC Code explanation	Commentary
Drillhole 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.*	• All holes were drilled vertically with the drilling trend orientated to the nominal strike/trend of the deposits, based on regional auger drilling and geological field mapping. • Bimbi and Northeast Bimbi Deposits:295 AC holes drilled vertically at roughly 25 m. across-strike and maximum 250 m on-strike. Minimum depth 4 m, max depth 12 m. • Halala deposits: 327 AC holes drilled vertically at roughly 50 m across-strike and maximum 200 m on-strike. Minimum depth 2 m, max depth 24 m. • Mposa deposits: 406 AC holes drilled vertically at roughly 50 m across-strike and maximum 200 m on-strike. Minimum depth 2 m, max depth 17 m. • Mpyupyu deposit: 407 AC holes drilled vertically at roughly 25 m across-strike and maximum 250 m on-strike. Minimum depth 2 m, max depth 17 m. • All diamond drilling has been excluded due to poor recovery. • No AC drilling has been excluded.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Not applicable for reporting of Mineral Resources. • No metal equivalent values were reported.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• All holes are drilled vertically, and the intersections are closely approximate to true width intersections.
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.*	• All plots and plans are included in the main text of the technical report.
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.*	• This report precedes public reporting of Exploration Results, thus not applicable for reporting of Mineral Resources
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 surface extents of HM deposits were mapped using a hand-held GPS, supplemented with drilling information. • A ground radiometric survey (total radiation) was completed on the EPL area using a GPS scintillometer. The outlines of the HM deposits can clearly be distinguished in certain areas where background radiation of the younger residual material is low. The HM deposits contain small amount of radioactive monazite. • Auger drilling programme was conducted on a regional scale, and on a localized scale once a HM deposit was identified. A total of 1,400 holes were drilled in the EPL between 2014 and 2016. • Several bulk sampling and metallurgical programmes were undertaken aimed at investigating the physical characteristics of the mineralized sand as well processing and product quality of the different deposits. The work was carried out by SGS, Mintek, and AML—reports on the programmes are available. • Material for density determinations was obtained from a programme of 63 pits. Determinations of in situ wet and dry density of the mineralized sand were completed, and the pits were geologically logged, and samples submitted for HLS analysis. The results of these HM analyses are pending as at the time of this report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Further regional auger drilling will be undertaken to delineate subsequently identified targets, in preparation for AC drilling. • AC drilling is planned on existing resources and new targets and will form part of a feasibility study programme. The drilling is aimed at adding resources to the project, as well as upgrading the confidence levels of current resources. • Identification and redrilling of low recovery AC samples is also planned. • A bulk sampling and pilot plant programme is planned as part of the feasibility-study phase of the project. The programme will target all current resources and will be aimed at developing a processing flowsheet for a production phase.

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.*	• Initial data capture was onto hard-copy logging sheets and sample inventory lists. • This data was manually transcribed into MS Excel ™ spreadsheets and later imported into a customized version of Sable Data Warehouse™ database. • A review of 10% of logs versus the electronic data was conducted by a senior Site Geologist. No major issues were noted. • Grade values are imported directly into modelling software from MS Excel™ format sample sheets provided by laboratories. • Initial data manipulation errors were detected during automated processing checks and visual validations were corrected. • Collar survey positions were checked against topography DTM surfaces and issues were referred to survey team to correct. • The Competent Person believes that the database integrity is of industry standard and acceptable for the Mineral Resource Estimate.
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.*	• No site visit was undertaken by the Competent Person, as no additional drilling or other exploration work has been undertaken on the site since 2016. As soon as exploration work commences, a site visit will be undertaken.

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<table>
<tr>
<td>Geological interpretation</td>
<td>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.</td>
<td>

The geological interpretation is limited in that it is derived from the 1 m long AC samples and is primarily based on the proportion of slimes and THM in the samples.
The genetic model for the deposits has resulted in deposits that are dominated by low angle, or thin (<1 m) facies and that the AC drilling tends to mute the detail available for modelling.
The Project Geologist has produced initial "minable domain" geology models on a sectional basis that has defined domains with observed lower slimes and higher THM values.
Statistics and interpolation runs have indicated these slimes/HM models to be insufficient as constraints for resource estimation.
In some cases, these models were able to be refined and used for resource estimation purposes.
The deposits are dominated by low-lying aeolien dunes as well as strandlines. These geological features are continuous over 100s of metres, with the grade correlating to the trends of the mineralized facies. The drilling data density, as well as secondary auger drilling and mapping, are sufficient to support the current geological models and estimations.
The total volume of the deposits is generally limited to the vertical extents of the drilling, as the drilling was stopped once clay or bedrock was intersected.
The resource estimate, per deposit, was constrained using Whitte™ ultimate pit shells. The pit optimization parameters are presented in the table below:

<table>
<tr><td>Physicals</td><td></td></tr>
<tr><td>Soil thickness</td><td>0.4 m</td></tr>
<tr><td>Operating costs</td><td>Dry Units</td></tr>
<tr><td>Surface related costs</td><td></td></tr>
<tr><td>Topsoil</td><td>2.0 $/bcm</td></tr>
<tr><td>Clearing and rehabilitation</td><td>20,000 $/ha</td></tr>
<tr><td>Mining costs</td><td></td></tr>
<tr><td>Truck and excavator</td><td>1.5 $/t</td></tr>
<tr><td>Processing on site</td><td></td></tr>
<tr><td>Wet Concentrator</td><td>1.0 $/t ore</td></tr>
<tr><td>Administration/other</td><td>1.0 $/t ore</td></tr>
<tr><td>Off site</td><td></td></tr>
<tr><td>Transport</td><td>60 $/t HMC</td></tr>
<tr><td>Mineral Separation</td><td>20 $/t HMC</td></tr>
<tr><td>Royalty</td><td>3% of revenue</td></tr>
<tr><td>Recoveries</td><td></td></tr>
<tr><td>HMC from WCP</td><td></td></tr>
<tr><td>HM recovery</td><td>90%</td></tr>
<tr><td>HM grade of HMC</td><td>92.5%</td></tr>
<tr><td>Overall recovery of</td><td></td></tr>
<tr><td>Ilmenite</td><td>80%</td></tr>
<tr><td>Zircon</td><td>57%</td></tr>
<tr><td>Mineral prices</td><td></td></tr>
<tr><td>Ilmenite</td><td>275 $/t in product</td></tr>
<tr><td>Zircon</td><td>1,850 $/t in product</td></tr>
</table>
</td>
</tr>
</table>

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.*	• The resource dimensions are quoted as (X-Y-Z) with Y orientated along the primary mineralization axis of the models. All measurements are in metres: — Bimbi: 1,400 × 3,300 × 6. — Northeast Bimbi: 1,650 × 1,500 × 5. — Mpyupyu: 5,650 × 3,250 × 8. — Mposa: 900 × 8,000 × 8. — Halala: 300 × 9,000 × 11.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* *The assumptions made regarding recovery of by-products.* *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* *Any assumptions behind modelling of selective mining units.* *Any assumptions about correlation between variables.* *Description of how the geological interpretation was used to control the resource estimates.* *Discussion of basis for using or not using grade cutting or capping.* *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• All resource models were estimated using inverse distance weighting to a power of 2, as is commonly applied to mineral sands. • All estimations were conducted into blocks aligned with the primary mineralization trends. The blocks were sized to half the average data spacing, which was wider along the dune/trend lines (100 m to 250 m) and significantly closer across the strike of the trends (25 m to 50 m). • Due to the curvilinear nature of the mineralization trends, strike lines defining the trends were used to dynamically adjust the search ellipse orientations (dynamic anisotropy) • Search ellipses were orientated along the trend line, with nominal 4:1 to 2.5:1 anisotropy ratios. Search volumes were sized such that sufficient samples (min: 3, max 15) were obtained for each block estimate. The majority of each of the deposits were estimated on the first search pass, and with more than ten samples. • There is no historical data that is adequate to check against the resource estimates, other than the regional auger data and the historical AC data which serves only to confirm the general mineralization trends. • During resource estimation and modelling no account was taken of recovery, other than, where possible, to partition the high- and low-slimes material. • While THM is the primary variable of interest, slimes and oversize — which impact recovery and volume — were also estimated into the model, using the same data support and estimation parameters. • No capping was applied as it was not considered necessary at this stage of the project. • There are weak correlations between THM and slimes, and THM and oversize. • Models were validated by comparing global drilling data statistics, in section and plan. A series of 3D moving window plots (were reviewed for significant over-or underestimation. • For all the models, the THM, slimes, and oversize estimates appear reasonable, with no obvious conditional bias. • The Competent Person believes that the estimation methodology employed is of industry standard and acceptable for the Mineral Resource Estimate.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnage is derived from dry bulk density values and therefore does not include moisture.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	• The cut-off grades used for reporting are derived from initial mineralogical work done prior to drilling, the outputs of an early-stage scoping study, and guidance from TZ Minerals International (TZMI). • A higher slimes cut-off has been applied to the Halala deposit, as the samples have been significantly affected by the analytical error at the primary laboratory, and as such the slimes values are overstated by a factor of 2 or 3.

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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.*	• It is assumed that the deposits will be exploited using dry mining methods, and the corresponding anticipated vertical mining selectivity has influenced the selection of 1 m high blocks.
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.*	• Several metallurgical studies were completed by SGS, Mintek, and AML on representative samples from the different HM deposits of the project . Detailed reports are available for the studies. • The studies show that the Lake Chilwa mineralized sand from the different deposits can be processed into high-grade ilmenite and zircon products with high recovery rates.
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.*	• Lake Chilwa is recognized as a Ramsar-designated wetland. The Lake Chilwa EPL however, covers grasslands along the lake shore used for grazing and farming, and none of the EPL or deposits falls within the actual wetland. • The mineralized sand deposits are populated by rural farming communities and small villages as they are elevated above the surrounding low-lying areas. • Mining activities at Chilwa will involve dry mining methods using loaders and trucks with the expectation at this point in the project that all tailings will be backfilled into the mined-out areas. The low slimes levels of slime of the deposits should allow for the slimes directly backfilled with the gravity and oversize tailings. • Where slimes levels are above the threshold (to be determined) for direct backfilling, slimes will have to be handled in an appropriate manner.
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.*	• Pits of varying depth were dug and density of the selected lithology (at that level in the pit) was determined using the "In Place Sand Cone Method". • Moisture content was also determined but has not been used. • There are relatively limited number of density data (68 records). However, the samples are distributed throughout the various deposits and target the potentially minable areas and units. • Averaged density values have been applied to each deposit.

Criteria	JORC Code explanation	Commentary
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.* *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• None of the deposits, have been classified higher than Inferred: The limiting factors on resource classification are as follows. • Biased assay results from the primary laboratory have been shown to overstate slimes and understate THM. Previous work indicates factors of 2 to 3 times for slimes, but due to the wide variance associated with the bias it is not possible to adjust or regress the data other than on a global basis. This analytical error means that it is possible to confirm continuity of mineralization, and the historical work implies economic levels of slimes, but it is not possible to have a greater confidence than Inferred in the estimate of contained valuable heavy minerals (VHM). • RC core recovery is, on average, marginally acceptable (average 70%). There are several poor recovery holes and holes with anomalous recovery that need to be redrilled. Poor recovery implies cavitation or sample winnowing, leading to potentially biased sampling, which further reduces the confidence in the resource estimates. • Data-management errors, due to the lack of a functional database, as well as transcription errors, especially associated with the definition of the metallurgical composites and changes in the geological interpretations which impacted the metallurgical composites also serves to limit the confidence in the resource to Inferred.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	• The resources have been peer-reviewed internally by AMC Consultants (UK) Limited Principal Geologists and no material failings were identified.
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.*	• No confidence limits have been applied beyond the basic Inferred classification. • The Competent Person considers that different attributes of the deposits have different levels of confidence. Specifically, the levels of confidence in the deposit limits and hence the volumes of material, are rated as slightly higher than estimates of slimes and THM, which are affected by the documented sampling and assaying issues. Estimates of bulk density, and hence factors for tonnage conversion, are assessed as medium confidence. • No mining has taken place and therefore no production data is available for comparison with the Mineral Resource Estimate. • The Mineral Resource accuracy is communicated through the classification assigned to the deposits.