SLR Consulting Australia Pty Ltd
6 Mayneview Street, Milton QLD 4064, Australia

25 August 2025

SLR Ref No.: 625.010787.00001 Warialda Quarry CPL Cover Letter 20250825.docm

Attention: The Directors

Atlas Metals Group 9th Floor

107 Cheapside

London, EC2V 6DN

and

SPARK Advisory Partners Limited

5 St John's Lane

London, EC1M 4BH

SLR Project No.: 625.010787.00001

RE: Warialda Quarry
Competent Persons Report

Dear Sirs,

SLR Consulting Australia Pty Ltd ("**SLR**" or the "**Report Provider**") was requested by Atlas Metals Group plc ("**AMG**") through UPSA Australia Pty Ltd ("**UPSA**") to prepare this competent person's report (the "Report") on the Warialda Quarry, located in New South Wales, Australia, which is operated by UPSA.

This Report, which summarises the findings of the Report Provider's review, has been prepared to satisfy the requirements of the prospectus regulation rules made by the Financial Conduct Authority (the "**FCA**") pursuant to section 73A (4) of the Financial Services and Markets Act 2000, as amended ("**FSMA**") (the "**UK Prospectus Regulation Rules**") and the UK version of Regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017 and repealing Directive 2003/71/EC and the delegated acts, implementing acts and technical standards thereunder as such legislation forms part of retained EU law by virtue of the European Union (Withdrawal) Act 2018 (the "**EUWA**"), in conjunction with the European Securities and Markets Authority ("**ESMA**") update of the Commission of European Securities Regulators ("**CESR**") recommendations for the consistent implementation of the European Commission's Regulation on Prospectuses No 809/2004 (CESR/05-054b) issued ("**ESMA Recommendations**"), specifically, as the Acquisition constitutes a Reverse Takeover, paragraphs 131 to 133 and Appendices I and II, which are provided for with the FCA's Guidance on specialist issuers contained within Technical Note 619.1. Reporting of reserves has been undertaken in accordance with The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 Edition (**'JORC Code'**).

AMG intends to include this Report in a prospectus in connection with, inter alia, its acquisition of the entire issued share capital of UPSA on the equity shares (commercial companies) category of the Official List of the FCA and to trading on the main market for listed securities of London Stock Exchange plc (the "Prospectus").

The Report Provider has given and has not withdrawn its written consent to the inclusion of information extracted from or sourced to this Report in the part of the Prospectus, and the

references in the Report to the Report Provider's name in the form and context in which they are included, and has authorised the contents of this Report and references thereto as part of the Prospectus for the purposes of Rule 5.3.2R(2)(f) of the UK Prospectus Regulation Rules and Item 1.3 of Annex 1 of Commission Delegated Regulation (EU) 2019/980 as it forms part of UK law by virtue of the EUWA.

In compliance with Item 1.2 of Annex 1 of Commission Delegated Regulation (EU) 2019/980 as it forms part of UK law by virtue of the EUWA, the Report Provider accepts responsibility for this Report and any information extracted from or sourced to this Report which is included in the Prospectus and, to the best of the Report Provider's knowledge, declares that the information set out in this Report and any information extracted from or sourced to this Report which is included in the Prospectus is in accordance with the facts and that this Report and any information extracted from or sourced to this Report which is included in the Prospectus makes no omission likely to affect its import.

This Report is issued by the Report Provider, and accordingly the Report Provider assumes responsibility for this Report and confirms that the information contained is true and accurate as of 25th August 2025.

The Report Provider acquired knowledge of UPSA's properties between July 2025 and August 2025. Discussions were held with UPSA's management team and their assistance is acknowledged.

Regards,

SLR Consulting Australia Pty Ltd

Tim Hunter
Principal Mining Engineer – Construction Materials & Services

Daniel Crowe, BEng (Mechanical), MIQ
Principal Consultant – Construction Materials & Services

Warialda Quarry

Resource Estimation and Financial Evaluation

Prepared for:

Atlas Metals Group 9th Floor, 107 Cheapside, London, EC2V 6DN
and
SPARK Advisory Partners Limited, 5 St John's Lane, London, EC1M 4BH

Prepared by:

SLR Consulting Australia Pty Ltd

SLR Project No.: 625.010787.00001

25 August 2025

Revision: 1.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	25 August 2025	Tim Hunter Daniel Crowe	Clayton Hill	Clayton Hill

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Atlas Metals Group plc (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Statement

I, Timothy Hunter confirm that I am the Competent Person for the Resource and Reserve Estimate, and further confirm that:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code, 2012 Edition, having more than five (5) years' experience that is relevant to the style of mineralisation and types of deposit described in the Report, and to the activities for which I am accepting responsibility. My qualifications include a Bachelor of Applied Science in Geology and a Graduate Diploma in Mining.
- After auditing, validating and reviewing the data and information provided to me relating to geology and approvals, I consider the data is appropriate and is as accurate as is practicably achievable.
- Data relating to selling prices including the price achievable FOB Brisbane have been provided by the client and UPSA, supported by work undertaken by others and has not been independently verified by myself at this point in time.
- Project costs where appropriate have been derived from industry experience held within SLR Consulting in addition to information provided by the client and UPSA.
- I am a member of the Australian Institute of Geoscientists (Membership Number: 1858).
- I have either written or reviewed all relevant Reports and information to which this Consent Statement applies.
- I am a consultant working for SLR Consulting and have been engaged by Atlas Metals Group to prepare the report, which is based on information provided to me.
- I have summarised all relevant issues of materiality.
- I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest. Neither the Competent Person or SLR Consulting Pty Ltd have any financial connection or conflict of interest with any aspect of Atlas Metals Group or UPSA – Warialda Quarry Resource and Reserve Estimate project or staff.
- The Report is based on, and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves.
- I consent to the release of the Report and this Consent Statement by Atlas Metals Group.

Competent Person's Consent Form

This Competent Persons Report (CPR) complies with TN6.19.1 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement) and reconciles with ESMA recommendations.

Consent

I, Tim Hunter, consent to the release of the Report and this Consent Statement by the directors of:

SLR Consulting Australia Pty Ltd

	Tim Hunter
Signature of Competent Person	Date: 25 August 2025
Professional Membership: Australian Institute of Geoscientists	Membership Number: 1858

SLR Consulting of 120 High Street, North Sydney, NSW 2060 Australia has given and not withdrawn its written consent to the inclusion of its report in this prospectus and/or extracts therefrom and references thereto and to the inclusion of its name and references and has authorised the contents of those parts of this prospectus which comprise its report for the purposes of Rule 5.3.2R(2)(f) of the Prospectus Regulation Rules.

To the best of the knowledge of SLR Consulting, the information in the report, estimates of mineral reserves and resources contained therein, as well as references to them, and statements and information attributed to them or extracted from their report are in accordance with the facts and make no omission likely to affect the import of such information.

Statement of SLR Consulting Independence

Neither SLR Consulting, nor any of the authors of this Report, have any material present or contingent interest in the outcome of this CPR, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SLR Consulting.

SLR Consulting has no prior association with the Company concerning the mineral assets that are the subject of this CPR. SLR Consulting has no beneficial interest in the outcome of the technical assessment being capable of affecting its independence. SLR Consulting's fee for completing this CPR is based on its normal professional daily rates plus reimbursement of incidental expenses. The payment of that professional fee is not contingent upon the outcome of this CPR.

SLR Consulting is not a sole trader and is qualified under the ESMA Recommendations to provide such reports for the purposes of inclusion in public company prospectuses and admission documents. The effective date of this CPR is 25 August 2025.

Executive Summary

SLR Consulting Pty Ltd (SLR) have been engaged by Universal Pozzolanic Silica Alumina Australia Pty Ltd (UPSA) to undertake a review of the Claystone International Pty Limited (CIPL) Warialda Quarry and provide a 'Competent Persons' statement for the Pozzolanic Sand resource.

SLR have been provided with resource estimation documents and laboratory test results.

This report has been prepared for Atlas Metals Group and SPARK Advisory Partners Limited to consider the feasibility of an extractive industry operation at Warialda Quarry within Lots 5, 6, 7 and 8 in DP264346.

Warialda Quarry is located on Yammacoona Estate Road, Kurraian NSW, accessed via Adams Scrub Road, approximately 12 kilometres south of Warialda NSW. The site consists of Lots 5, 6, 7 and 8 in DP 464346 and Lots 5 and 6 in DP 263715.

Documentation from the study area was provided to prepare a desktop model to estimate volumes of Soil, Sand, and Pozzolanic Sandstone. Assessment and modelling estimates that there is an Inferred Resource Totalling **160.68 M tonne comprising of 33.27 M tonnes of Sand and 127.41 M tonnes of Pozzolanic Sandstone.**

The Pozzolanic Sandstone is undefined and not tested at depth below 30 metres from surface. In general accordance with the Joint Ore Reserves Committee (JORC), volumes within the study area are based on material type are shown.

Table i - Material Volumes Lots 5 to 8 DP 264346

Depth	Soil		Sand		Pozzolanic Sandstone		Total In-situ Material	
	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)
Resource Concept	0.76	1.07	19.40	33.27	53.08	127.41	**72.48**	**160.68**
Deep Sandstone	-	-	-	-	94.20	226.10	**94.20**	**226.10**
TOTAL	**-**	**-**	**19.40**	**33.27**	**147.28**	**353.51**	**166.68**	**386.78**

Table ii - Resource Estimate JORC Table

Pit	Inferred		Indicated		Measured		TOTAL	
	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)
Sand Resource	19.40	33.27	-	-	-	-	**19.40**	**33.27**
Sandstone Resource	53.08	127.41	-	-	-	-	**53.08**	**127.41**
Deep Sandstone	-	-	-	-	-	-	**-**	**-**
TOTAL	**72.48**	**160.68**	**-**	**-**	**-**	**-**	**72.48**	**160.68**

The Pozzolanic Sandstone remains undefined at depth. Regional state geology has the indicated sandstone thickness up to 80 metres.

Table iii - Future Volumes

Pit	Pozzolanic Sandstone	
	Volume (M bcm)	Tonnes (Mt)
Deep Sandstone	94.20	226.10
TOTAL	**94.20**	**226.10**

In order to upgrade the resource classification there is a requirement to increase the confidence level of the geological knowledge, understanding and definition. This can be achieved through drilling and sample testing for material characteristics and properties.

A financial model has been developed to assess the financial viability of the quarry and its operation. Net Present Value (NPV) was calculated using the discount cash flow method over a 25 year period including terminal value at year 25. This is presented in **Table iv – Financial Model Outputs**.

Table iv – Financial Model Outputs

Item	Value
FY2026 Volume	400,000 tonnes
FY2026 Revenue	$80,140,000
FY2026 Operational Costs	$11.30/tonne
Max Revenue	$1,411,567,883 (FY2050)
Max EBIT (pre-tax)	$1,309,310,335 (FY2050)
Max Volume	3,160,844 tonnes (FY2050) • *Pozzolanic Sandstone – 3,000,000 tonne* • *Masonry Sand – 160,844 tonne*
FY2050 Operational Costs	$20.44/tonne
Initial CapEx Investment	$32,155,000 *(From FY2026 to FY2028 to cover Purchase of equipment, business case, DA costs, construction of trucking access road and rail spur)*
NPV	**$3,304,007,612**

If the material is proven, the financial model provides a positive NPV of **$3,304 M** based on a 25 year timeframe. After accounting for the cost of capital, the project is expected to add value to the UPSA's financial position.

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1.0 Introduction

1.1 Scope

SLR Consulting Pty Ltd (SLR) have been engaged by Atlas Metals Group plc (AMG) to undertake a review of the Claystone International Pty Limited (CIPL) Warialda Quarry and provide a 'Competent Persons' statement for the Pozzolanic Sand resource.

SLR was provided with resource estimation documents and laboratory test results.

This report has been prepared for AMG to consider the feasibility of an extractive industry operation at Warialda Quarry.

1.2 Limitations and Exclusions

SLR Consulting's review has been based on this data including various reports, plans and tabulations as provided by UPSA Australia Pty Ltd. Atlas Metals Group has not advised SLR Consulting of any further data, material change, or event likely to cause material change, to the operations or forecasts.

The work undertaken for this CPR is that required for a technical review of the information, and has been completed at a desktop level, with no site visit undertaken by SLR Consulting. It specifically excludes all aspects of legal issues, commercial and financing matters, land titles and agreements, except such aspects as may directly influence technical, operational or cost issues and where applicable to the JORC Code (2012) guidelines.

1.3 Non-Compliant Reporting for Warialda Quarry

In the compilation of this report and review of data provided, it has been concluded that the Warialda Quarry internal resource and reserve estimates generated by SLR Consulting from resource investigations undertaken previously by others and provided by UPSA Australia Pty Ltd, and which form the basis of the future volumes, do not meet the necessary criteria as set out in JORC Code (2012) to be classified as a Mineral Resource estimate and/or Ore Reserve estimate.

As such, for the purpose of this report and to ensure no ambiguity, or potential confusion with Mineral Resources and Ore Reserves as defined by the JORC (2012) code and the CRIRSCO family of reporting codes, geological estimates of mineralisation are herein referred to as a 'future volumes' and not Mineral Resources.

1.4 Verification, Validation and Reliance

All information provided in the generation of this CPR has been sourced from UPSA Australia Pty Ltd and has been provided via email.

SLR Consulting confirms that it has performed all necessary validation and verification procedures deemed necessary and/or appropriate to place a suitable level of reliance on such technical information.

1.5 Notice to Third Parties and Indemnification

This CPR has been prepared by SLR Consulting for the purposes of AMG for the acquisition of UPSA Australia's asset, the Warialda Quarry, in accordance with the requirements of the Listing Rules of the UK Financial Conduct Authority and is not to be used or relied upon for any other purpose. SLR Consulting has created this report using data and information provided by or on behalf of UPSA and AMG. Unless specifically stated otherwise, SLR Consulting has not independently verified that all data and information is reliable or accurate. SLR Consulting accepts no liability for the accuracy or completeness of that data and information, or obtained by it from UPSA or any third parties, even if that data and information has been incorporated into or relied upon in creating this CPR.

The report has been produced by SLR Consulting in good faith using information that was available to SLR Consulting as at the date stated on the cover page and is to be read in conjunction with the circular which has been prepared and forms part of the referenced transaction.

This CPR contains forecasts, estimates and findings that may materially change in the event any of the information supplied to SLR Consulting is inaccurate or is materially changed. SLR Consulting is under no obligation to update the information contained in the report.

1.6 Site Visits and Inspections

No site visits have been undertaken as part of the CPR scope.

1.7 Results and Estimates and Subject to Change

The interpretations and conclusions reached in this CPR are based on current scientific understanding and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for absolute certainty. The ability of any person to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond SLR Consulting's control and that SLR Consulting cannot anticipate.

These factors include, but are not limited to, site-specific mining and geological conditions, management and personnel capabilities, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, unforeseen changes in legislation and new industry developments. Any of these factors may substantially alter the performance of any mining operation.

1.8 Other Disclaimers

SLR Consulting relies solely on the information provided by the client and UPSA on all aspects relating to selling prices for the Pozzolanic Sandstone and provides no conclusions or opinions regarding the selling prices reported herein. SLR Consulting accepts no liability for any aspects related to the achievable selling price from Warialda Quarry.

In the compilation of this report and review of data provided, it has been concluded that the Warialda internal resources and reserves generated by Wesral Mintec Pty Limited, and which informed the resource assessment, do not meet the necessary criteria set out in JORC Code (2012) standards to be classified as a Mineral Resource estimate and Ore Reserve estimate.

As such, for the purpose of this report and to ensure no ambiguity, or potential confusion with Mineral Resources and Ore Reserves as defined by the JORC (2012) code and the CRIRSCO family of reporting codes, geological estimates of mineralisation are herein referred to a 'future volumes' and not Mineral Resources.

This CPR uses the terms "Resource", "Measured Resource", "Indicated Resource" and "Inferred Resource". U.S. investors and shareholders in AMG are advised that, while such terms are recognised and permitted under JORC Code (2012), the U.S. Securities and Exchange Commission (SEC) does not recognise them and strictly prohibits companies from including such terms in SEC filings. Accordingly, U.S. investors and shareholders in the Company are cautioned not to assume that any unmodified part of the Resource estimates in these categories will ever be converted into Ore Reserve estimates as such term is used in this CPR.

2.0 Site Details

2.1 Location

Warialda Quarry is located on Yammacoona Estate Road, Kurraian NSW, accessed via Adams Scrub Road. The site is approximately 12 kilometres south of Warialda NSW as shown in **Figure 1 - Location Map**.

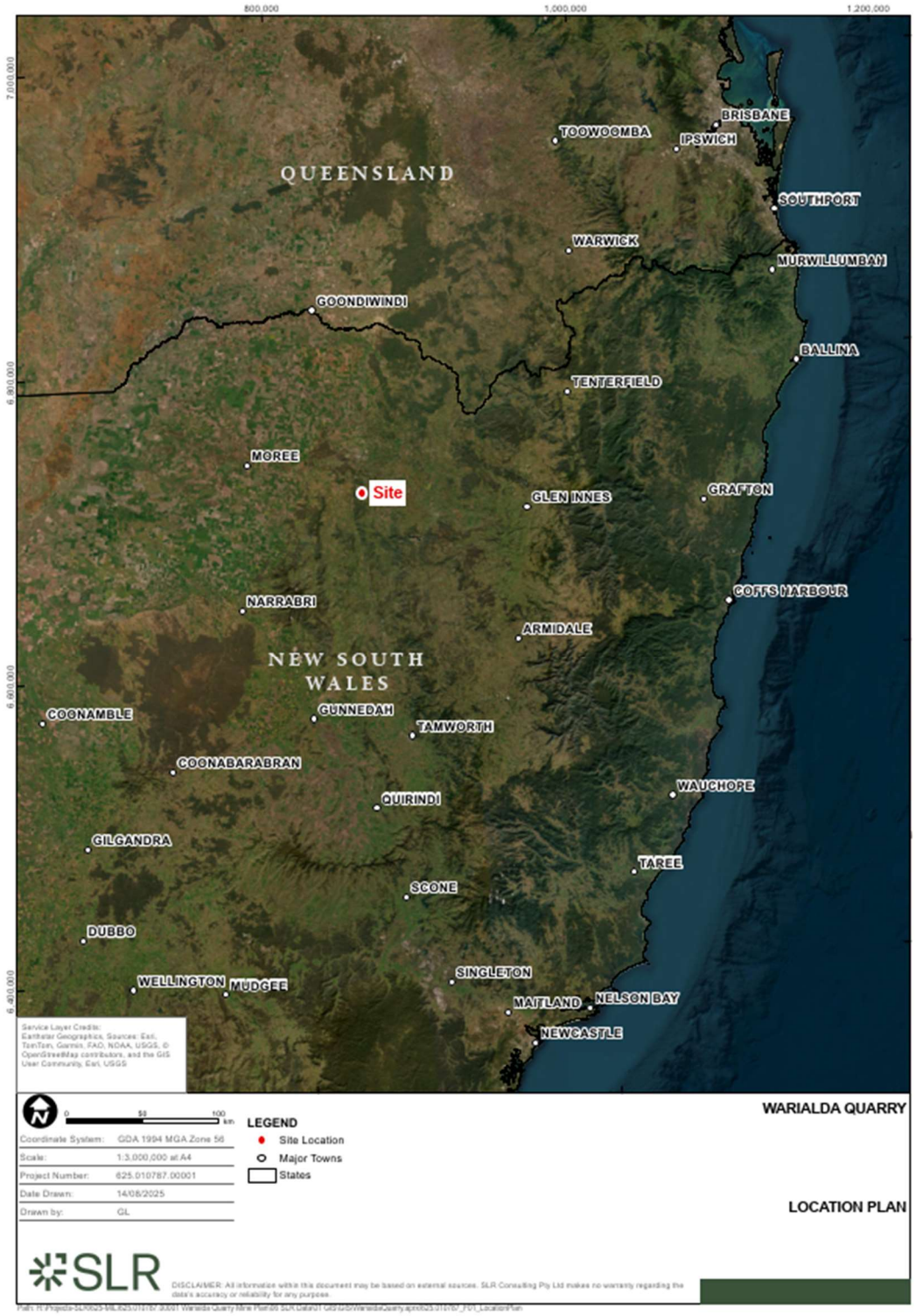


Figure 1 - Location Map

The site consists of Lots 5, 6, 7 and 8 in DP 464346 and Lots 5 and 6 in DP 263715. This review assesses Lots 5, 6, 7 and 8 in DP 464346 as show in **Figure 2 – Lot Plan**.

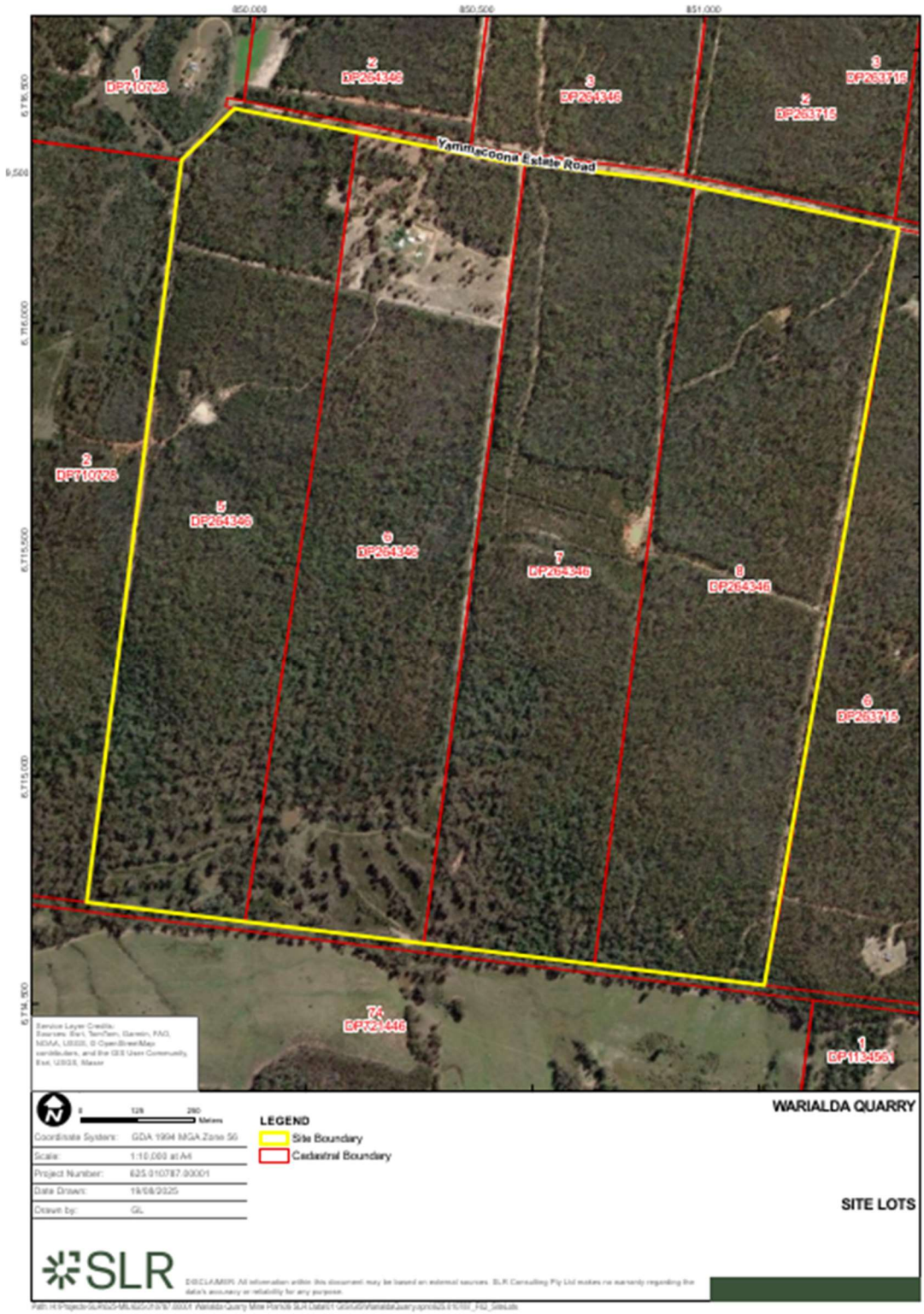


Figure 2 - Lot Plan

2.2 Previous Ownership

Lots 5 and 6 were originally owned by Mr William Clift with ownership transferred to Mr David Duncan in 1994, according to title searches undertaken and information provided by UPSA Australia Pty Ltd.

Lot 7 and 8 were understood to be transferred from Mr William Clift to Claystone Masonry Pty Ltd in 2010.

2.3 Approvals and Rights

Development Application No. 32/97 was determined and consent granted subject to conditions by the Yallaroi Shire Council under the *Environment Planning and Assessment Act 1979* to Mr W L Clift on 15 April 1988 providing consent for extractive industry activities on Lots 5, 6 and 7 on DP264346.

A further Deed was made between CMB Propriertory Limited and the Council of the Shire of Yallaroi on 9 August 1989, varying conditions of consent, taking effect from 1 July 1989 which related to a contribution towards the cost of upgrading Adams Scrub Road.

A modification application was made to the Gwydir Shire Council by Mr William Clift on 11 July 2016 to modify a number of conditions of the consent. This modification application was considered and approved by Council on 12 December 2016 amending condition 11 of the consent, relating to the operation of the quarry and haulage from the site.

An Environmental Protection Licence No. 20792 (EPL) issued under the *Protection of the Environment Operations Act 1997* is currently held by Claystone Masonry Pty Ltd authorising land based extractive activities on Lots 5, 6 and 7 on DP264346. The current EPL was issued on 12 July 2016. Condition L4.1 of the EPL limits production and transport of finished material from the premises to 35,000 tonnes within any 12 month reporting period.

An annual return is required to be submitted to the Environment Protection Authority (NSW) each year which is a statement of compliance with the EPL requirements and is currently due for lodgement.

Table 1 - Property Approvals and Rights

PROPERTY	TENURE	REGISTERED OWNER	APPROVALS	RIGHTS
Lot 5 DP264346	Freehold	David Duncan	Consent 32/97 EPL No. 20792	Right to extract quarry material are in favour of Claystone Masonry as per development consent and EPL
Lot 6 DP264346	Freehold	David Duncan	Consent 32/97 EPL No. 20792	Right to extract quarry material are in favour of Claystone Masonry as per development consent and EPL

Lot 7 DP264346	Freehold	Claystone Masonry Pty Ltd	Consent 32/97 EPL No. 20792	Right to extract quarry material are in favour of Claystone Masonry as per development consent and EPL
Lot 8 DP264346	Freehold	Claystone Masonry Pty Ltd	Consent 32/97 EPL No. 20792	Right to extract quarry material are in favour of Claystone Masonry as per development consent and EPL

2.4 Other Agreements, Licences and Permits

The following agreements and licences have been provided by UPSA detailing rights to sand:

1. A transfer of ownership of Pozzolanic Silica Alumina material from Claystone International Pty Ltd to Universal Pozzolanic Alumina Ltd was made via an agreement dated 20 June 2023. This agreement and transfer of product ownership was to be made via a ninety-nine (99) year Leasehold Agreement as detailed in a letter dated 7 December 2023 on behalf of Claystone International Pty Ltd with the agreement to be registered with the relevant State or Commonwealth Statutory Authority, in favour of UPSA. No lease is currently registered on the Title.

   Under the Agreement dated 20 June 2023, the following was documented:

   - On 19 June 2023 various parties entered into an agreement which included a licence to Lot 5 on DP264346 to Universal Pozzolanic Alumina Ltd which was incorporated on 25 May 2023.
   - A second agreement, being a Memorandum of Understanding and Agreement between Universal Pozzolanic Alumina Ltd and Claystone International Pty Ltd dated 20 June 2023 was then made to extend the property leased to Lots 5, 6 and 7 on DP264346 incorporating 250 million tons of sand.

   On 15 August 2025, the second agreement was extended to include Lot 8 on DP264346.

2. A licence and right to extract between Claystone International Pty and Claystone Masonry Pty Ltd was dated 25 December 2023.

2.4.1 Royalties

Under the 20 June 2023 Agreement, the parties agreed that the Lessee shall pay the Lessor the sum of US $3.00 per metric ton out of the consideration received by the Lessee from its sale or assignment of the deposit rights which replaces the consideration under the previous agreement dated 19 June 2023. Payment of this amount is only due once payment is received by the Lessee for the product sold.

It is understood from Minutes from the Gwydir Shire Council Ordinary Meeting of 12 December 2016 considering an application by Mr Clift to modify the development consent for the quarry that a Deed of Agreement with the former Yallaroi Shire Council (now Gwydir Shire Council) was entered into. This required the upgrade of the road on a basis to be negotiated and payment of a contribution of $1.00 per tonne per load carried from the land until such time as the road is upgraded to a 2 lane gravel road with bitumen surface to an area adjacent to the house in the village of Kooloona. This Deed of Agreement has not been sighted by SLR.

2.5 Historical Production

UPSA have advised that historical production levels from the quarry have been in line with development consent and EPL conditions, i.e. less than 30,000m^3 per annum.

3.0 Geological Assessment

3.1 Regional Geology

The regional geology between Warialda and Bingara lies within the New England fold belt. There are two (2) major north south trending geological belts separated by the regionally extensive Peele Fault. This fault extends several hundred kilometres from Warialda in northern NSW, to Forster on the coast.

To the south of the site, sitting above the sandstone, are Tertiary Volcanic including including basalt, dolerite, and andesite, form capping layers.

The site is situated within Pilliga Sandstone unit which is part of the Injune Group as shown on the regional geology maps **Figure 3 - Regional Geology** (sourced from Minview https://minview.geoscience.nsw.gov.au/#/(report:strat-unit/Jinp)?lon=150.5204&lat=-29.66219&z=11&bm=bm1&l=ge611:n:100,ge610:n:100,ge68:n:100,ge69:n:100,ge67:n:100,ge66:n:100,ge65:n:100,ge64:n:100,ge63:n:100,ge62:n:100,ge61:n:100,ge612:y:100,hi1:n:25,wa1:y:100,ut1:y:50,ad0:y:100).

The sandstone unit is described as a medium to very coarse-grained, well sorted, angular to subangular quartzose sandstone and conglomerate. Minor interbeds of mudstone, siltstone and fine-grained sandstone and coal. Common carbonaceous fragments and iron staining. Rare lithic fragments.

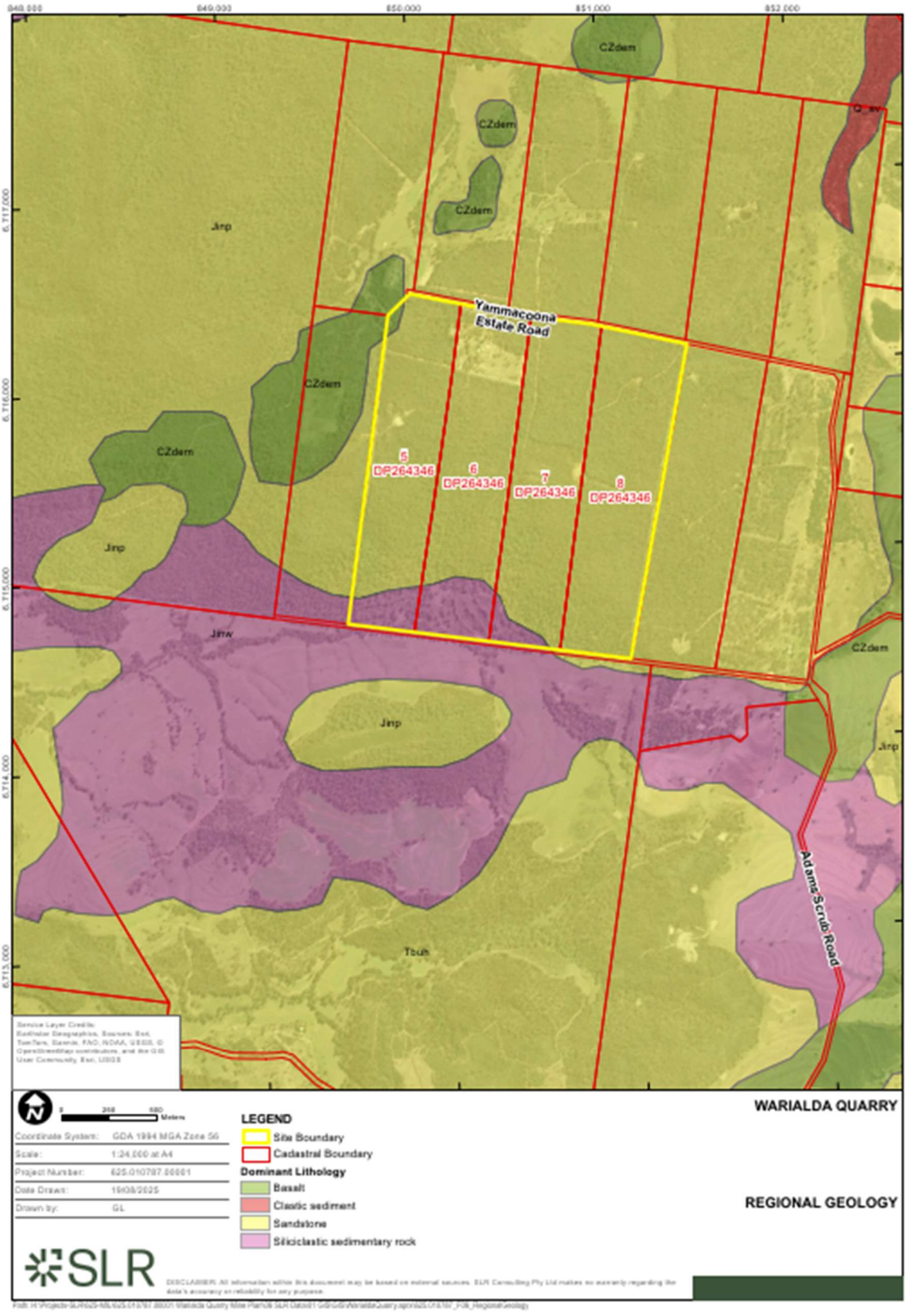


Figure 3 - Regional Geology

3.2 Site Geological Overview

Warialda Sandstone is a geological unit from the Late Jurassic period, also known as the Pilliga Sandstone, found in the Warialda and surrounding regions of New South Wales, Australia. It is a medium-grained sandstone and forms prominent rock features

The lithological unit consist of tenacious friable, fine to very coarse-grained, quartz sandstones and minor pebbly sandstones and shales, which dip gently to the north. Outcropping sandstones are variably ferruginised laterised sandstones rich in haematite and limonite. The sandstones are at least several tens of metres thick persisting beyond the resource area.

Within the resource area the iron content is low, not exceeding 6% in any area of interest. The sand is approximately 70% - 80% quartz and 10% - 14% alumina with a low clay content. The sandstone when crushed and screened produce a quartz rich finely sized sand and the grains are angular to sub-angular in shape.

The sandstone unit is overlayed by a free sand, informed to be 8 metres in thickness.

3.2.1 Geotechnical

There is currently no geotechnical assessment undertaken of the site to determine practical stability and excavation parameters.

3.2.2 Hydrology

Real time water data sourced from Water NSW, (*https://realtimedata.waternsw.com.au/water.stm*), indicates three (3) nearby regional registered water bores authorised purpose of domestic and stock use. This information is shown below in **Table 2 – Regional Water Bore Information**.

Table 2 - Regional Water Bore Information

WB ID	Licence	Direction from proposed site	Bore Hole Depth (m)	Water Bearing Zone (m)	Standing Water Level	Yield (L/s)
GW070086	90BL150435	North	37.7	12.6 – 13.0 30.8 – 32.1	9.7	5.00
GW052366	90BL112479	South-East	61.0	Dry	-	-
GW022740	90BL015860	South-East	62.5	35.0 – 36.5	27.4	0.23

3.3 Previous Assessments

Wesral Mintek Pty Ltd had previously provided CIPL with resource estimates and a value of the deposit. These volume estimates were calculated based on the area of land and a uniform thickness of the various material types and corresponding densities as listed in **Table 3 – Material Thickness and Density.**

Table 3 – Material Thickness and Density

Material	Thickness (m)	Density
Soil	0.3	1.4
Sand	8	1.7
Pozzolanic Sandstone	80	2.4

The initial resource estimate conducted by Wesral Mintek, was refined to Lots 5, 6 and 7 on DP 246346 as shown below in **Table 4 – CIPL Volume Estimates**.

Table 4 – CIPL Volume Estimates

Material	Lot 5		Lot 6		Lot 7	
	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)
Soil	0.19	0.27	0.20	0.28	0.19	0.27
Overburden Sand	5.12	8.70	5.36	9.11	5.12	8.70
Pozzolanic Sandstone	14.08	33.79	14.74	35.38	14.08	33.79
Deep Sandstone	38.40	92.16	40.20	96.48	38.40	92.16

An 80% recovery factor was applied to the Pozzolanic Sandstone resource to indicate an extractable volume within the combined lots of **307.0M tonne** as shown in **Table 5 – CIPL Recovered Resource**.

Table 5 – CIPL Recovered Resource

Material	Recovered Resource
Pozzolanic Sandstone	82.36
Deep Sandstone	224.64
Total	**307.00**

No consideration of the topography has been applied nor any variations in material thicknesses.

3.4 Historical Statements

The historical work has been gained through the series of assessment, studies and valuation documents provided which can be found in **Appendix A – Wesral Mintec Reports**.

In review of previous estimations provided it is concluded that they are not a Competent Person Statement and therefore is a non-compliant to JORC requirements. Calculations were area by depths with an applied bulk density and an assumed recovery.

3.4.1 Test Pits

Previous reports written by Wesral Mintek, indicate that 22 test pits have been dug to a depth of 15 metres. The location of these test pits is unknown.

3.4.2 Drilling

A series of Rotary Air Blast (RAB) drillholes were drilled to a depth of 30 metres, with a spacing of approximately 400 metres x 400 metres. Details of the drilling location and geological logs are not available for review and interpretation for modelling.

The drillhole locations have been digitised from information that was provided. These are shown on **Figure 4 – Drillhole Location as Digitised**. The majority of the drilling occurred outside of the final resource area lots.

One (1) deep borehole was drilled in Lot 7. This hole indicated that the Pozzolanic Sandstone thickness to be greater than 80 metres.

3.4.3 Sample Analysis

Limited XRF element analysis of samples collected from Lot 7 has been undertaken. The XRF test reports can be found in **Appendix B – XRF Analysis**.

No sand particle size distribution (gradings) or other source material testing has been provided as part of this review.

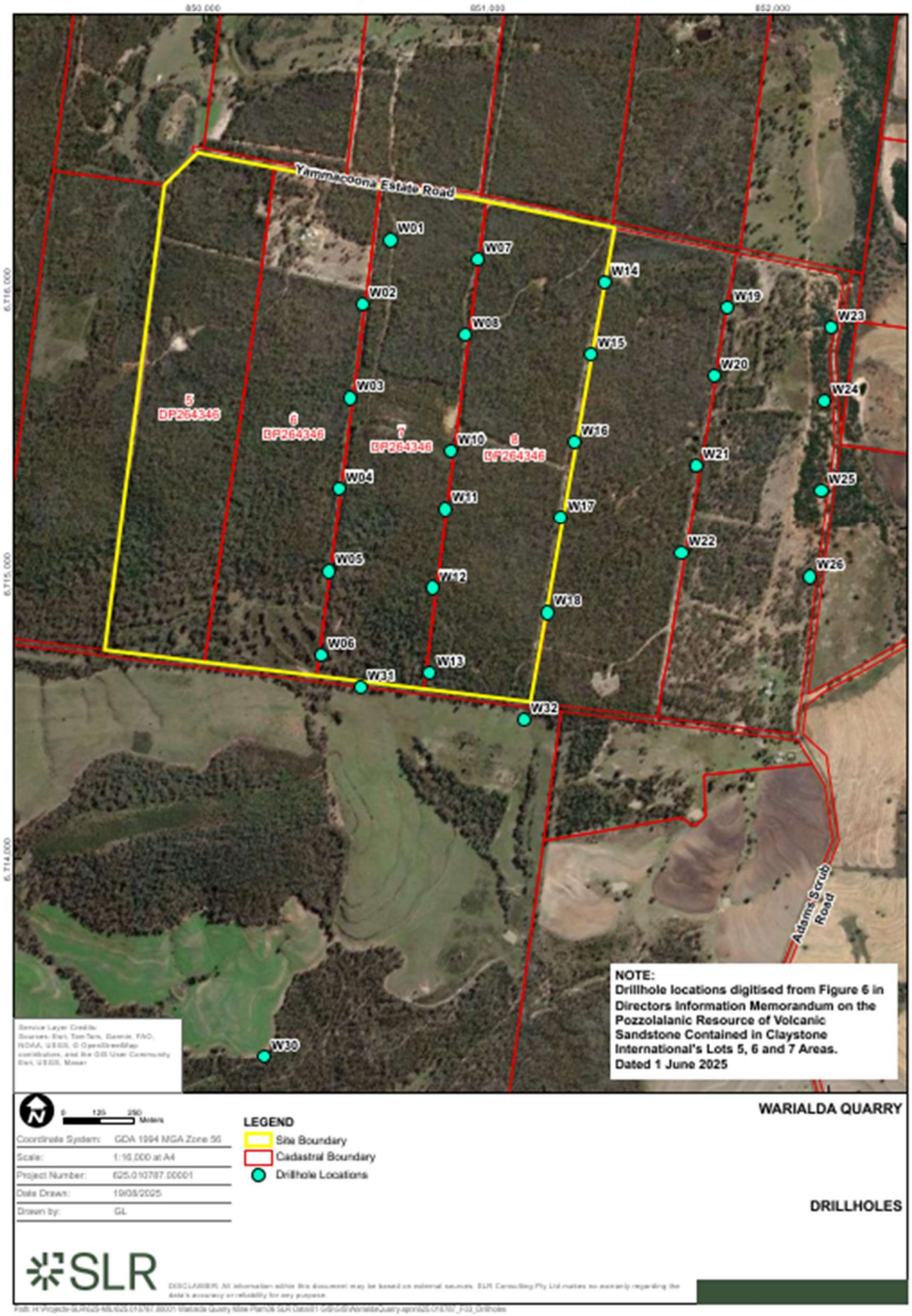


Figure 4 - Drillhole Locations as Digitised

4.0 Resource Assessment

This is not a mineral deposit focussed on a precious metal but rather a project that aims to extract a lithological unit. It is proposed the overlying sand can be utilised in the manufacturing of masonry products while the sandstone will produce pozzolanic sand.

4.1 Geological Profile

The geological profile for Warialda Quarry as shown in **Figure 5 – Geological Profile**, has been defined as soil, sand and sandstone. More geological investigation drilling will be required to determine variations in material thicknesses and base of sandstone.

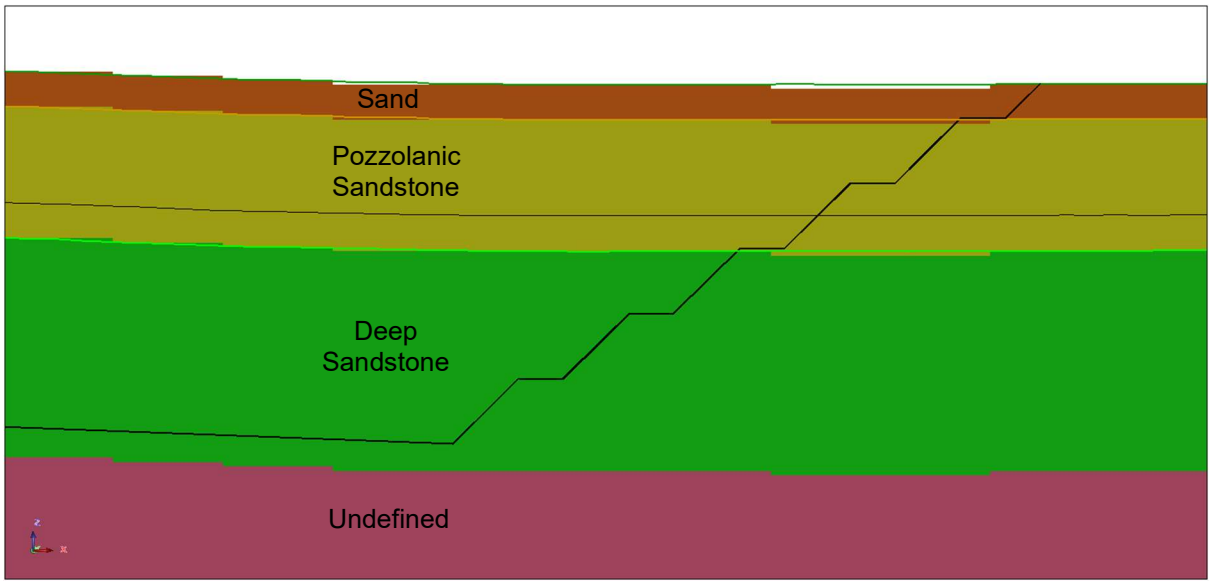


Figure 5 - Geological Profile

4.2 Topography

Topography for the Warialda Quarry site has been obtained from Department Finance, Services and Innovation, Elvis Elevation and Depth cloud-based system (https://elevation.fsdf.org.au/), at 2 metre contour interval.

The topography of the resource area, consists of flat to gently sloping terrain with several hills. **Figure 6 - Topographic Contours**, shows the landform across the site varies between 450 mRL to 525 mRL. It also shows that a creek transgresses across the site flowing to both the north and south.

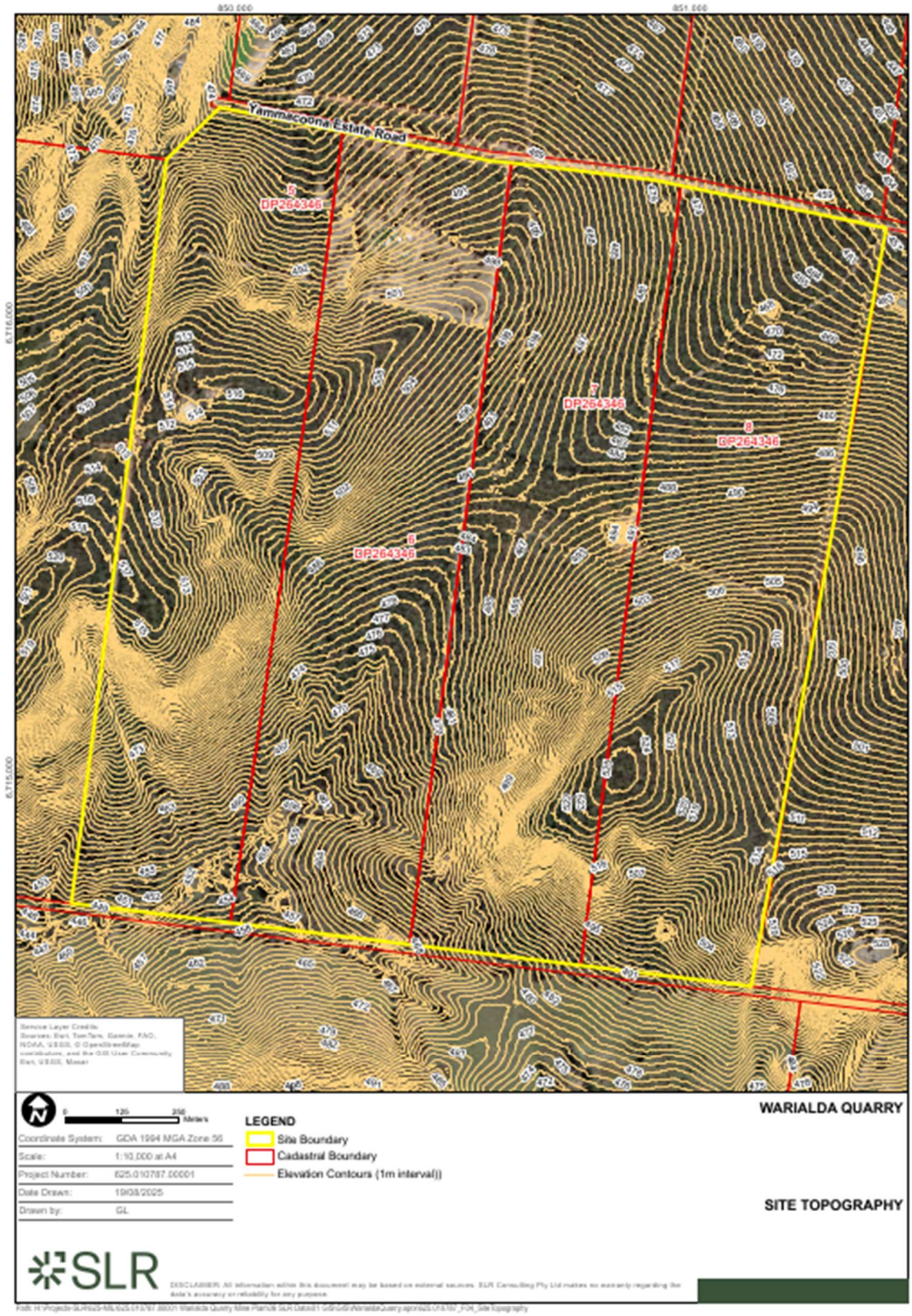


Figure 6 - Topographic Contours

4.3 Description of Estimation

This estimation is for the purpose to extract material from a lithological unit based on interpreted geological domains.

Construction of the domain interface surfaces were created using interactive modelling facilities in the Geovia Surpac mining software package by projecting the topography contours down by the suggested thickness indicated in the supplied documents as no detailed geological logging data from the drillholes have been supplied.

A three-dimensional geological block model was constructed to cover the project area. The block model was constrained by the geological domains with material and density attributes applied. The various models were merged to form a single block model for estimation reporting against a semi constrained conceptual pit design.

The model has been validated by viewing in multiple orientations using the 3-D viewing tools in Surpac. Based on the visual review, and reproduction of the interface volumes, the block model was considered a representation of the interpreted geology.

The estimate is classified as an Inferred Resource due to limited data, providing a low confidence level. The estimate is not able to be classified as a reserve due to no development approvals.

There is no necessity to apply a dilution or mining loss factors to the resource estimate as extraction is of the whole material within the rock unit.

4.4 Conceptual Pit Design

A conceptual pit design has been developed using Geovia Surpac software to guide a long-term conceptual quarry design. The design is based within the boundary of Lots 5, 6, 7 and 8 on DP264346.

4.4.1 Constraints

A 20 metre wide buffer zone from the property boundary to top of extraction crest has been incorporated in the design to allow for visual screening and pit bunding. Additional constraints will be applied to the resource following further investigation and definition activities.

4.4.2 Assumptions

As drill logs and test pit information are not available, geological interpretation and modelling has not been able to be undertaken with a level of confidence. It is therefore assumed that a uniform material thickness is applied across the site.

4.4.3 Parameters

The design parameters shown in **Table 6 – Pit Design Parameters**, have been used to develop a conceptual pit shell, shown in **Figure 7 – Concept Pit Design**. This design incorporates adequate bench widths to ensure geotechnical stability throughout the life of the pit.

Table 6 – Pit Design Parameters

Design Parameter	Design
Wall Angles	45 degrees
Bench Height Sand	8 m
Bench Height Sandstone	15 m
Berm Width	10 m

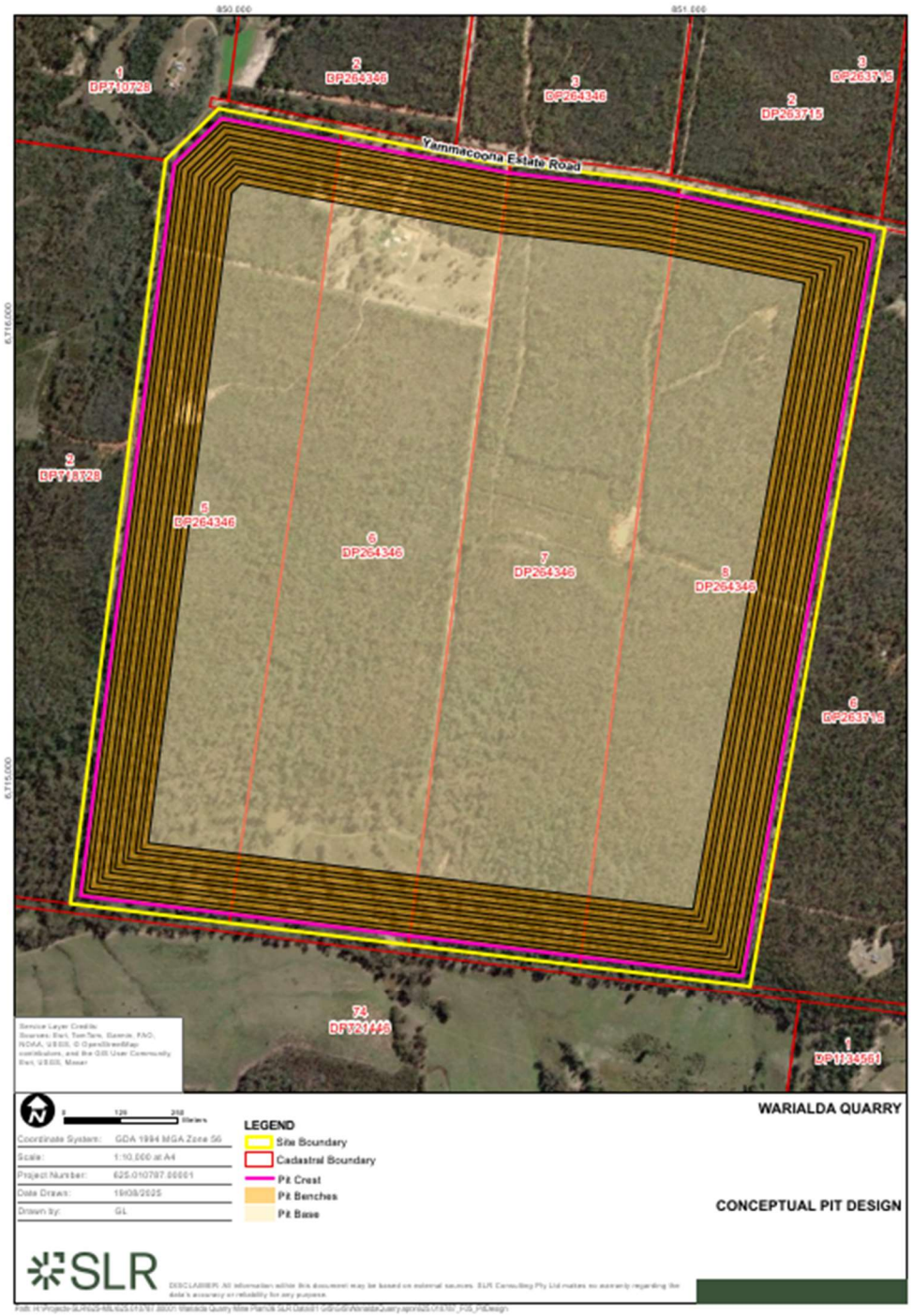


Figure 7 - Concept Pit Design

Figure 8 – Resource Section shows a cross section of the concept pit.

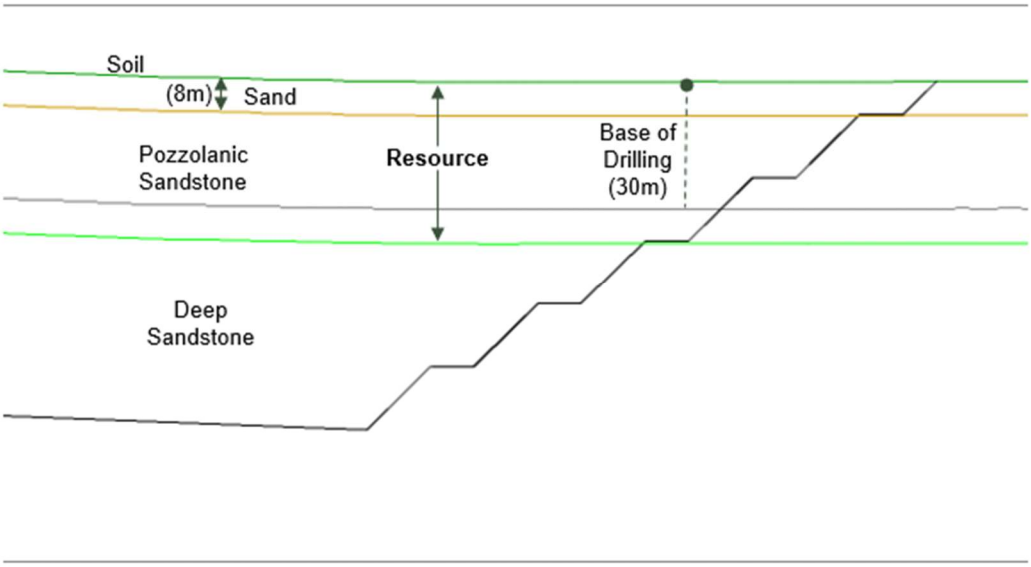


Figure 8 - Resource Section

4.5 Resource Estimation and Classification

The Resource estimate has been classified as Inferred Resource in accordance with guidelines as set out in the Joint Ore Reserves Committee (JORC) Code (2012). Resource categories have been defined using definitive criteria determined during the validation of the geological model, with detailed consideration of the JORC Code categorisation guidelines.

4.5.1 Resource Categorisation

The key parameters considered during the resource categorisation are as follows:

- Geological knowledge and continuity.
- Rock types.
- Confidence in the sampling and test data.
- Spacing of the drill holes.
- Prospects for eventual economic extraction.

Based on the consideration of items listed above, classification criteria is determined as summarised in **Table 7 - Resource Category Criteria**.

Table 7 – Resource Category Criteria

Resource Category	Criteria
Measured	• Outside the approved extraction limit • Within pit design shell • Drillhole data and quarry faces • High point reference for geological interpretation
Indicated	• Limited drillhole data • Outside of approved extraction limits • Within pit shell design concept • Low point reference for geological interpretation
Inferred	• Sparse or No drilling data • Projected geological interpretation • Conceptual pit design

Conversion of Resources to Reserves requires the establishment of modifying factors to be applied to the material included the Resources to be approved for extraction and reflect marketability of the final mined and processed product. Therefore, the reference point at which Reserves are defined is firstly the rock is approved / consented for extraction and secondly is a saleable product.

The main modifying factor to consider is the quality of the material, which determines if it will be extracted or treated as waste.

Although not containing minerals of economic value, the terms, definitions and principles are adopted from the 2012 Edition of the “Australasian Code for reporting of Exploration Results, Mineral Resources and ore Reserves” (refer to **Figure 9 - JORC Code**).

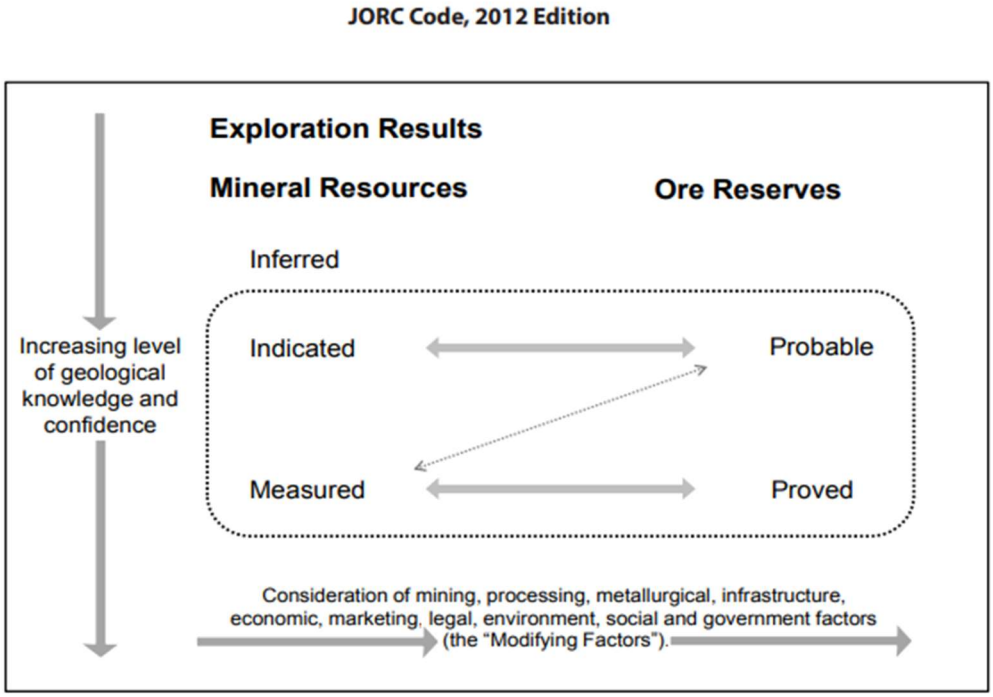


Figure 9 - JORC Code

The status of resource and reserves and associated classification is based around the geological confidence levels of the lithological unit(s) along with the appropriate approval requirements. SLR understands that further resource drilling will form part of a future State Significant Development application to allow for increased confidence levels of the resource and conversion from an inferred resource to indicated and/or measured status within the JORC code. Additional drilling data once available should be included in a revised version of this Competent Persons Report.

4.5.2 Block Model

Insufficient data was provided to develop a high confidence level 3D geological model appropriate for resource estimation purposes.

A geological block model was developed using Surpac geological mining software to estimate material volumes and tonnages across the site. The model was constructed based on interpreted geological domains and informed by historical data. This generic block model has been created to cover the study area for the purpose of generating volume estimates. Material and density attributed have been incorporated into the model. Definitions of the block model is captured in the **Figure 10 - Block Model Summary**.

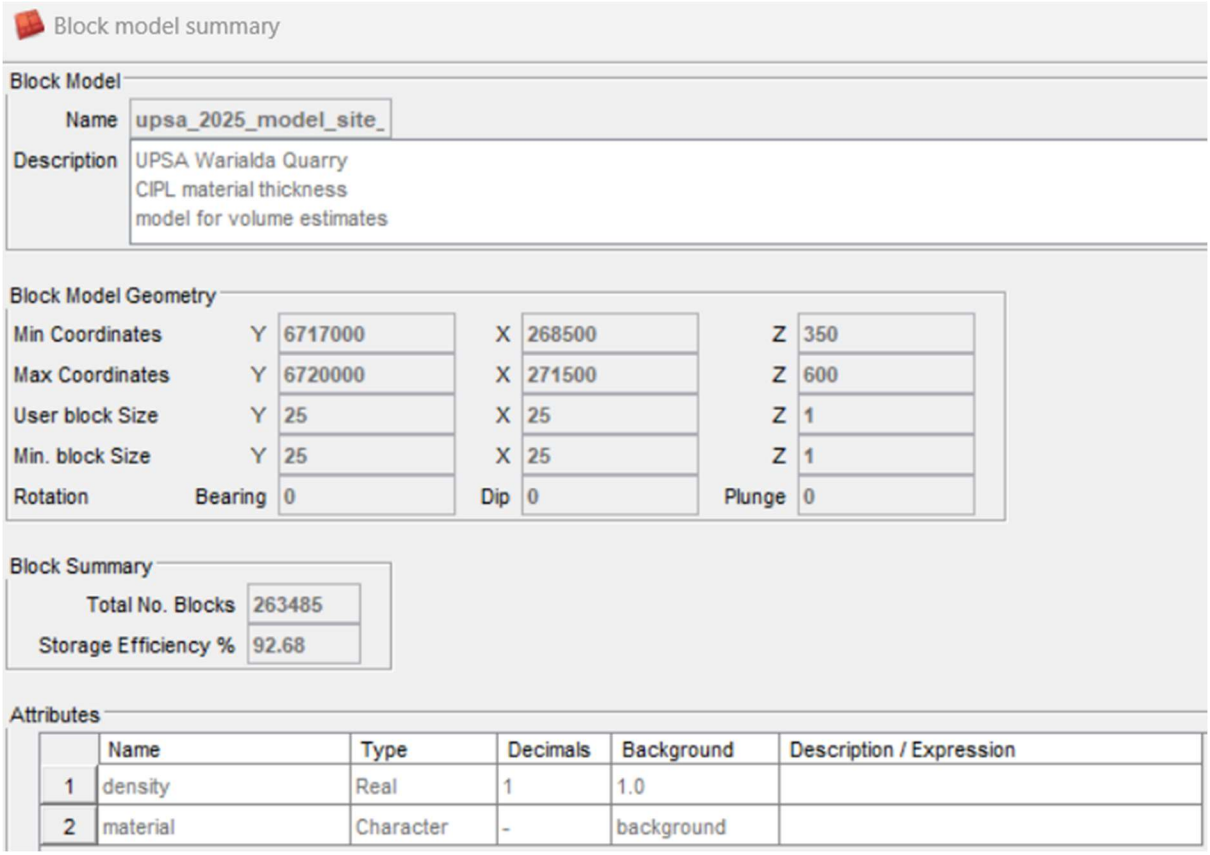


Figure 10 - Block Model Summary

4.5.3 Resource Estimation

The resource estimate consists of Sand (for Masonry) and Pozzolanic Sandstone defined to the base of the second Pozzolanic Sandstone bench, as shown by the lighter green line in **Figure 8 – Resource Section**. In general accordance with the Joint Ore Reserves Committee (JORC), volumes within the study area are based on material type, shown in **Table 8 – Material Volume Lots 5 to 8 DP264346** and **Table 9 – Resource Estimation JORC Table**, indicate that the concept pit contains a total of **160.68 M tonne** of **inferred** material.

Table 8 – Material Volume Lots 5 to 8 DP264346

Pit	Soil		Sand		Pozzolanic Sandstone		TOTAL	
	Volume	Tonnes	Volume	Tonnes	Volume	Tonnes	Volume	Tonnes
	(M bcm)	(Mt)	(M bcm)	(Mt)	(M bcm)	(Mt)	(M bcm)	(Mt)
Sand Resource	0.76	1.07	19.40	33.27	53.08	127.41	**72.48**	**160.68**
Sandstone Resource	-	-	-	-	94.20	226.10	**94.20**	**226.10**
Deep Sandstone	**-**	**-**	**19.40**	**33.27**	**147.28**	**353.51**	**166.68**	**386.78**
TOTAL	0.76	1.07	19.40	33.27	53.08	127.41	**72.48**	**160.68**

Table 9 - Resource Estimation JORC Table

Pit	Inferred		Indicated		Measured		TOTAL	
	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)	Volume (M bcm)	Tonnes (Mt)
Sand Resource	19.40	33.27	-	-	-	-	**19.40**	**33.27**
Sandstone Resource	53.08	127.41	-	-	-	-	**53.08**	**127.41**
Deep Sandstone	-	-	-	-	-	-	**-**	**-**
TOTAL	**72.48**	**160.68**	**-**	**-**	**-**	**-**	**72.48**	**160.68**

The Pozzolanic Sandstone remains undefined at depth. Regional state geology has indicated that the sandstone has a thickness of up to 80 metres. If this is the case, it would increase the volume of the pit by 226.10 M tonne as shown in **Table 10 – Future Volumes**. Further investigation and definitions are required to increase confidence levels and classify as a resource.

Table 10 - Future Volumes

Pit	Pozzolanic Sandstone	
	Volume (M bcm)	Tonnes (Mt)
Deep Sandstone	94.20	226.10
TOTAL	**94.20**	**226.10**

5.0 Mining Methodology

The extraction of the resource is proposed to be undertaken by traditional drill and blast and load and haul methodology. Vegetation will be cleared and soils removed and stockpiled for later use in rehabilitation.

Stripping of the overlying sand will be undertaken with an appropriately sized loading tool, i.e. excavator or front end loader into haulage vehicles for transportation to stockpile for sales and excess volume will be placed in a waste dump which can be later reclaimed.

The sandstone unit will require drilling and blasting to aid in the efficient extraction. The blasted material will be loaded and hauled to a designated area for primary processing. The primary processing is likely to involve a crushing process to produce suitable sized material before dispatch to a secondary offsite plant for further processing and sales.

Refer to **Section 7.1.1 - Expected Capital Costs** for anticipated fleet sizing and configuration.

6.0 Site Infrastructure

Infrastructure requirements are determined to include:

- Amenities – including Offices, Toilet, Lunchroom etc
- Workshop Facilities – including Equipment Parking Areas
- Primary Processing Infrastructure
- Weighbridge

To operate this infrastructure, Utilities such as electricity and water will require to be connected to the site.

7.0 Financial Evaluation

7.1 CapEx and OpEx Analysis

7.1.1 Expected Capital Costs

Table 11 – Capital Expenditure Costs, provides estimated capital costs associated with establishing the activity. Whilst these costs have been provided for budgetary purposes and most have been derived from contact with relevant suppliers, all costs should be confirmed through quotation based on specific requirements prior to commencement.

Table 11 - Capital Expenditure Costs

Item	Cost
Trucking Access Road	$2,300,000
SSD Costs	$1,055,000
Processing Plant	$20,000,000
CAT 982 Front End Loader	$900,000
CAT 770 Haul Truck	$1,000,000
50 Tonne Excavator	$1,000,000
Site Infrastructure	$2,000,000
Further Geological Investigation Costs	$300,000
Material and Property Testing	$100,000
General CapEx	$10,000 per year

7.1.2 Cost of Production

The estimated cost of production for an operation of the proposed scale and intensity such as the Warialda Quarry site shown in **Table 12 – Operational Costs**, would be expected to be $11.30 per tonne.

Production costs can vary depending on a number of factors including resource quality, consistency, utilisation, asset costs (depreciation or hire), fuel price and unplanned maintenance/breakdowns. As a general rule, the higher the utilisation rate of the plant and production rate (tonnes per hour) the lower the production cost unit rate will be as the total costs are divided by the tonnes produced.

Table 12 - Operational Costs

Department	Cost per tonne
Clearing & Stripping	$1.00
Drill & Blast	$1.80
Load & Haul	$2.00
Crush & Screen	$3.00
Sales, Load & Dispatch	$1.50
Quarry General	$2.00

7.2 Transport Costs and Price

UPSA have provided a list of prospective customers and assumed selling prices for the Pozzolanic Sandstone. These customers are at various stages of agreement (Non-Disclosure Agreement, Strategic Alliance Agreement, product trials) with prices ranging from $300 to $385 per tonne FOB Brisbane. Based on the information provided, for the purpose of this assessment, $342.50 per tonne has been adopted, the mean of the price range supplied.

The Warialda Quarry site is 470 km from the Port of Brisbane. Transport costs are estimated to be $0.15 per tonne per km (industry accepted rate), resulting in road transport costs from the site to the Port of Brisbane being $70.50 per tonne.

A cost of $13.20 per tonne has been used for loading sand onto the ship for transport.

Using the above calculations, the ex-bin price for the Pozzolanic Sandstone is **$258.80 per tonne.**

7.3 Environmental and Social

7.3.1 Rehabilitation and Closure Liabilities

Rehabilitation obligations are currently imposed under the conditions of Development Consent 32/97 which requires that any uncompleted quarries are rehabilitated, erosion is controlled, rehabilitation is affected and ensuring the site is not left in an unsightly condition.

General obligations also exist under the *Protection of the Environment Operations Act 1997* which apply to the site post extraction including ensuring the site is non-polluting.

Notification of the closure of the quarry is also required to be made to the Environment Protection Agency and the NSW Resources Regulator.

The *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022* (s37) also requires that the Operator must at the time of closure, ensure as far as reasonably practicable that the site is safe, including being secure against unauthorised entry by a person.

A detailed assessment of rehabilitation has not been undertaken for the current operations. Given the limited historical development of the quarry and current area of disturbance, rehabilitation costs for the site at the date of this report are estimated to be $100,000 to $200,000.

A detailed rehabilitation and closure plan would form part of the future SSD application supported by appropriate technical assessments. As part of the financial model, $1.00 per tonne has been allocated to fund progressive and final rehabilitation activities including compliance and monitoring costs associated with rehabilitation.

7.3.2 Approvals and Permit Status

Development Consent 32/97 and EPL No. 20792 are current and continue to take effect as at the date of this report.

No site inspections have been undertaken in the preparation of this report, as such, a current status of compliance with conditions of the development consent and EPL is unable to be provided.

From information provided by UPSA and reviewing publicly available information including the NSW Protection of the Environment Operations Act 1997 Public Register[1], no non-compliances were identified.

7.4 Financial Model

A financial model has been developed to assess the financial viability of the quarry and its operation. The financial models can be found in **Appendix C – Financial Models**.

7.4.1 Methodology

It is important to note that undertaking a financial analysis of the Warialda Quarry project in isolation is a difficult exercise. Industry practice as is accepted in various court matters throughout Australia is to adopt a Discounted Cash Flow methodology. This approach assumes that as a going concern, profits are discounted over the life of the operation at an acceptable discount rate for risk. The discount rate applied for risk in this project is 15% and is further discussed below.

The Discounted Cash Flow method estimates the likely level of future maintainable profits of the trading business and then discounts that level of profit at a rate commensurate with the return an investor would expect to earn when investing in such a business. The likely future maintainable profits are generally based on actual profits immediately preceding the evaluation. In this case however, due to the operations being in their infancy and adequate financial information being unable to be referenced, experience and market evidence have been used and applied to the methodology to enable the modelling to be completed. This is also an accepted method for undertaking an evaluation when a trading history isn't evident or available.

7.4.2 Forecast Mining Schedule

Quarry product groups have been identified with average selling price per product group with annual sales by product equating to 400,000 tonne in FY2027, made up of 300,000 tonne of Pozzolanic Sandstone and 100,000 tonne of sand for masonry products. It is assumed that production of Pozzolanic Sandstone will grow substantially each year to a maximum of 3,000,000 tonne, reaching this capacity in 2029. Production of Pozzolanic Sandstone is

[1] NSW EPA POEO Public Register - https://app.epa.nsw.gov.au/prpoeoapp/

capped at 3,000,000 tonne per year as this would reach the assumed capacity that could be transported on the road network and assumed maximum approved extraction limit from a future SSD application. Extraction of masonry sand is assumed to grow at 2% per year to 157,700 tonne in 2050 as presented in **Figure 11 – Forecast Production Schedule 2026-2050**.

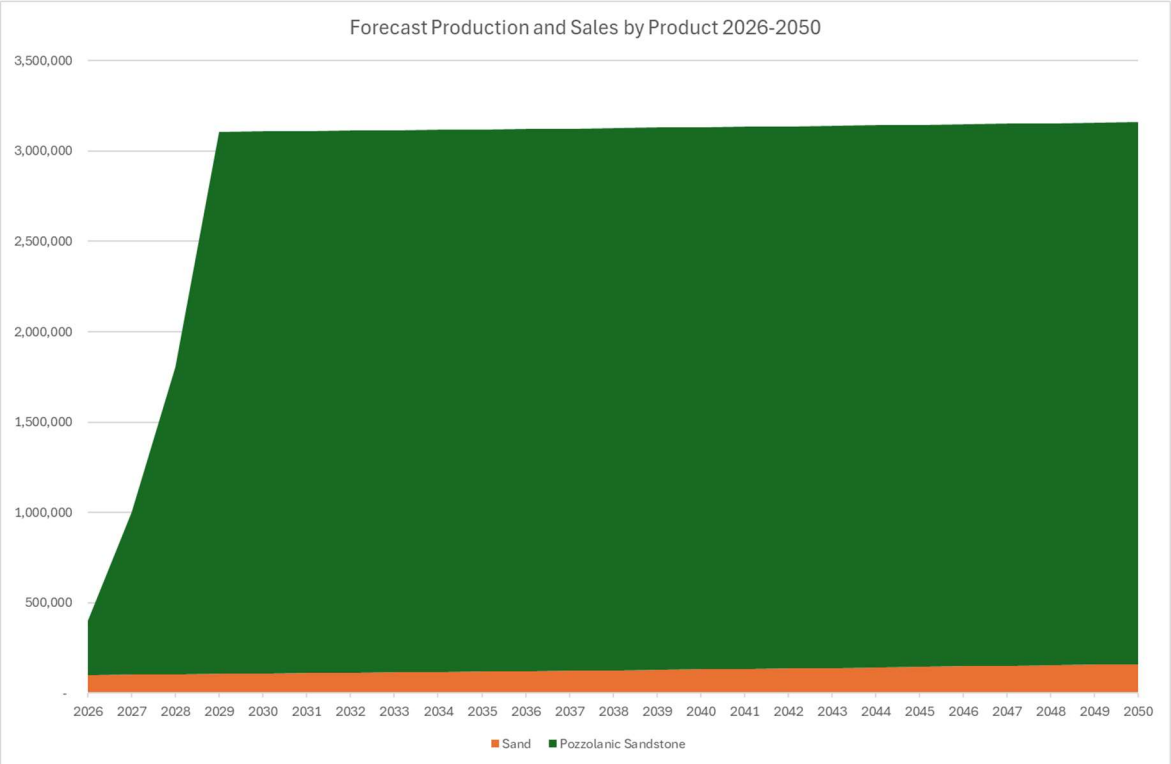


Figure 11 - Forecast Production Schedule 2026-2050

7.4.3 Financial Model Outputs

The financial model outputs are shown in **Table 13 - Financial Model Output** below. Costs including operating costs, DA/consent and environmental costs, rehabilitation, royalty and capital costs were also included in the model.

Table 13 - Financial Model Output

Item	Value
FY2026 Volume	400,000 tonnes
FY2026 Revenue	$80,140,000
FY2026 Operational Costs	$11.30/tonne
Max Revenue	$1,411,567,883 (FY2050)
Max EBIT (pre-tax)	$1,309,310,335 (FY2050)
Max Volume	3,160,844 tonnes (FY2050) • *Pozzolanic Sandstone – 3,000,000 tonne*

Item	Value
	• *Masonry Sand – 160,844 tonne*
FY2050 Operational Costs	$20.44/tonne
Initial CapEx Investment	$32,155,000 *(From FY2026 to FY2028 to cover Purchase of equipment, business case, DA costs, construction of trucking access road and rail spur)*
NPV	**$3,304,007,612**

7.4.4 Discount Rate

General industry practice is to determine an appropriate discount rate based on industry expectations for project returns, risk factors associated with the specific project and risks related to extractive projects in general. Discount rates commonly used within the quarry industry range between 5% and 15%. Higher discount rates may be used for especially high-risk projects or projects in early stages of development. The build-up method is used to determine the discount rate, taking into consideration three (3) principal components of risk:

1. **Risk-free Interest Rate**
    - Based on the value of a government bond from the country of operation that has the same duration as the project life.
    - Australia 10Y bond yield as of August 2025 is 4.197% - **Use 4%**
2. **Project Risk**
    - Risks associated with the resource and reserves, operation, management experience, environmental compliance, tenure, market conditions and competition. Values range between 2-3% for low risk to 7-10% for high risk.
    - A **project risk of 7%** is to be adopted due to internal demand and use with exposure to external markets, experience in industry and operations, resource information and reserves, project life and remaining lease term with options available.
3. **Country Risk**
    - Risks associated with political environments and government policy, geographic location, economic stability and social factors. Values range from 0% to 14% depending on the country of operation and level of risk. Australia has a stable political and economic environment, but certain risks, particularly those related to the environment and the economy's reliance on commodity exports, should be noted.
    - Political and Governance Risk
        i. Australia, as a whole, has a very low political risk. It's a stable parliamentary democracy with a strong legal system and low levels of corruption. For a development in New South Wales, this means there's

a predictable and transparent regulatory environment. The state government of New South Wales is well-established, and the policy-making process is generally stable. Whilst there is risk for State Significant Development proposals, provided the application is supported by appropriately detailed technical assessments to support the development, this risk is not considered to be at a level that would preclude the development. As with any extractive industry development, there is a risk of potential legal proceedings from submitters or in an appeal to a refusal of the application.

- Economic Environment
    i. Economically, Australia is a high-income nation with a diversified, service-based economy. New South Wales has the largest state economy in the country, contributing about one-third of the national GDP. Key factors to consider include:
        - Strong Economy: NSW's economy is resilient and service-driven, with major sectors including finance, professional services, and tourism. This provides a stable foundation for investment.
        - Moderate Public Debt: Australia has moderate levels of public debt, which contributes to its financial stability.
        - Household Debt: A key weakness is the substantial household debt, which could pose a risk to consumer spending if interest rates or unemployment were to rise significantly.
            - Global Exposure: The Australian economy, including New South Wales, is exposed to fluctuations in global commodity prices (e.g., coal, iron ore) and remains dependent on demand from key trading partners, particularly China.
- Environmental and Climate Risk
    i. This is arguably one of the most significant and growing risks for any long-term development in New South Wales. The state is highly vulnerable to climate change and natural hazards.
    ii. Extreme Weather Events: New South Wales has experienced an increasing frequency and intensity of events like bushfires, droughts, and floods. These events can directly impact a development's physical infrastructure, supply chains, and insurance costs.
    iii. Climate-related Policy: The NSW government has policies aimed at achieving net-zero emissions, and a development would need to align with these regulations, which could involve additional costs or technological requirements.
- A **country risk of 4%** is to be adopted.

A total **discount rate of 15%** will be used in this project.

7.4.5 Cash Flow Analysis

Detailed financial projections and cost considerations for the project have been provided from FY2026 to FY2050. This analyses the cash flows, depreciation impacts, and the overall net present value (NPV) calculation to gauge the financial viability of this project. Cash flow analysis has been done on a commercial basis broken down into pre-tax and after-tax figures, factoring in revenues from product and equipment sales, various costs (operating, DA/consent and EA, rehabilitation, capital and royalties).

The pre-tax cash flow starts as a negative due to the initial capital cost investment (plant, trucking access road and rail spur and equipment purchasing) but turns positive as revenue from sales begins to offset the ongoing operational and capital costs.

The after-tax cash flow takes into account the impact of income taxes, providing a more accurate depiction of net cash inflows available to UPSA. It's notable that after-tax cash flow improves over time, suggesting increasing profitability or efficiency in operations.

7.4.6 Depreciation and Tax Implications

Commercially, depreciation is a significant factor as it can reduce taxable income, hence affecting the cash flow after taxes.

The provided depreciation schedules for various assets (i.e. Processing Plant, Front End Loader, Excavator, Haul Trucks etc.) highlight the annual depreciation expenses.

The inclusion of income tax calculations shows the effort to accurately predict the net cash flows which is essential for understanding the actual financial benefit to the UPSA.

7.4.7 Net Present Value (NPV)

The NPV calculation is crucial for assessing the project's viability. By discounting future cash flows at a rate of 15%, the NPV provides insight into the project's profitability over its lifespan.

An NPV of **$3,304 M** suggests that, after accounting for the cost of capital, the project is expected to add value to the UPSA’s financial position.

This positive NPV is a strong indicator of the project's financial attractiveness, assuming the discount rate accurately reflects UPSA cost of capital and risk appetite.

7.5 Sensitivity Analysis

The below table shows a Sensitivity Analysis which provides for the impact of changing variables on the Net Present Value (NPV) given the likelihood of such a change occurring. This analysis shows that a number of variables may have an impact on the NPV and evaluation of the quarry.

As stated in **Section 7.1.2 – Cost of Production**, the estimated production cost is $11.30/tonne. The below **Table 14 – Sensitivity Analysis** shows what would be the impact on the NPV if the production cost increased or decreased. Both scenarios are possible due to the increases in the costs or a more cost-effective mining technique used.

The estimated Average Selling Price (APS) for the Pozzolanic Sandstone is $258.80. Five (5) different scenarios were calculated to see how the change in the APS would affect the NPV. These are shown in **Table 14 – Sensitivity Analysis**. An increase of 5%, 10%, 15% or to $300 per tonne could be possible if sales of the sandstone prove to be popular. The value of the product is unlikely to reduce to $200 per tonne.

With the current global financial uncertainties, the assumed escalation impact to CAPEX is likely to be in the order of $10 million. **Table 14 – Sensitivity Analysis** shows how this CAPEX increase would affect the NPV.

The financial model was run at various production volumes to predict the impact on the NPV. This is shown in **Table 14 – Sensitivity Analysis**. Due to transport limitations, it is unlikely that the site would be able to supply more than 3 million tonne of product to the market. It is possible that production could reduce to 2 million tonnes per annum due to plant constraints.

Table 14 - Sensitivity Analysis

Variable	Impact on NPV	Likelihood
Operational Costs at $16 per tonne	-$68,094,844	Possible
Operational Costs at $8 per tonne	+$47,811,274	Possible
Increase average product selling price by 5%	+$179,422,313	Possible
Increase average product selling price by 10%	+$357,983,224	Possible
Increase average product selling price by 15%	+$536,544,135	Possible
Average selling price at $200 per tonne	-$811,389,611	Unlikely
Average selling price at $300 per tonne	+$568,524,694	Possible
Increased CAPEX and purchase of mobile equipment by $10M	-$6,016,690	Likely
Pozzolanic Sandstone Production at 10,000,000 tonne per year	+$4,506,031,210	Unlikely
Pozzolanic Sandstone Production at 5,000,000 tonne per year	+$1,644,142,579	Unlikely
Pozzolanic Sandstone Production at 2,000,000 tonne per year.	-$941,256,759	Possible
Pozzolanic Sandstone Production at 1,000,000 tonne per year.	-$1,998,833,502	Unlikely

8.0 Uncertainties, Risk and Opportunities

An assessment of uncertainties, risks and opportunities of the UPSA, Warialda Quarry has been undertaken to evaluate:

- Material risk
- Operational risk
- Financial risk
- Project risk

Risks have been ranked as High, Medium or Low using a 3 x 3 risk matrix in terms of likelihood of occurrence and the perceived resultant consequence or impact.

Table 15 - Risk Matrix

LIKELIHOOD	CONSEQUENCE (IMPACT)		
	Minor	Moderate	Major
Likely	Medium	High	High
Possible	Low	Medium	High
Unlikely	Low	Low	Medium

Consequence ranking has been defined as listed in **Table 16 – Consequence Definition**.

Table 16 - Consequence Definition

CONSEQUENCE	PEOPLE	ENVIRONMENTAL	PLANT AND EQUIPMENT	MATERIAL	FINANCIAL
Major	Accident causing injury requiring hospitalization, death or permanent disability	Significant irreversible impact	Total loss of plant and equipment	Material not defined or present upon excavation	>$500,000
Moderate	Injury causing lost time of workday(s), permanent or partial disability	Significant reversible impact	Damage requiring out of service for repair	Variation in definition change of material properties	$50,000 to $500,000

Minor	Injury requiring first aid, no lost time to Workday(s)	Minimum impact	Damage but can still safely operate	Change of material properties	<$50,000

The identified risks are presented in **Table 17 - Risk Assessment**.

Table 17 - Risk Assessment

RISK	RISK DESCRIPTION	RISK RANKING	MITIGATION
Geological Definition	Unable to define interfaces between geological materials	High	Drilling and material property testing.
Pit Design	Changes to pit design parameters or additional constraints restricting excavation area and depth	Moderate	Additional studies such as fauna and flora, water, community. Establish a development plan and extraction schedule. Undertake a wall stability analysis and establish a Ground Control Management Plan (GCMP).
Resource Estimation	Low confidence level and variation of material volume	High	Extra data from geological definition and geological modelling.
Operational Plan	Extraction methodology and equipment is not suitable or unable to achieve production requirements.	Moderate	Additional equipment or exchange. Blast management plan.
Material Processing	Material will require processing to generate product specifications.	Moderate	Laboratory material analysis and testing. Bulk sample extraction and processing.
Fauna and Flora	Identification of endangered fauna and flora. Unable to remove vegetation to enable full resource extraction.	Moderate to High	Conduct studies. Establish vegetation offsets

Financial Modelling	The provided unit costs vary impacting project analysis.	Moderate	Verification of assumptions
Project Approval	Development approval is not granted	High	Prepare and submit a SSD application supported by detailed technical assessments.

9.0 Conclusion

An **inferred** resource totalling **160.68 M tonne** to the base of a second Pozzolanic Sandstone bench, has been estimated from the limited information provided. It is assumed that the resource consists of a sand for masonry use and Pozzolanic Sandstone.

The following activities are recommended to improve definition and understanding of material characteristics and properties to increase the confidence level of the resource.

- Drilling and test pitting
- Source material testing and analysis
- Resource Modelling to increase material definition and volume estimates
- Operational Pit design

Following the above activities, the sandstone below the resource with an estimated volume potential of **226.10 M tonne**, will increase the confidence level and allow this material to be upgraded into a resource.

A financial model was developed to assess the financial viability of the quarry and its operation. If the material is proven, the financial model provides a positive NPV of **$3,304 M** based on a 25 year timeframe. After accounting for the cost of capital, the project is expected to add value to the UPSA's financial position.

In order to upgrade the resource classification there is a requirement to increase the confidence level of the geological knowledge, understanding and definition. This can be achieved through drilling and sample testing for material characteristics and properties.

Regards,

Tim Hunter, BAppSc (Geology), Grad Dip (Mining), MAIG, MIQ
Principal Mining Engineer – Construction Materials & Services

Daniel Crowe, BEng (Mechanical), MIQ
Principal Consultant – Construction Materials & Services

Appendix A Wesral Mintec Reports

Warialda Quarry

Resource Estimation and Financial Evaluation

Atlas Metals Group

SLR Project No.: 625.010787.00001

25 August 2025

WE CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF THE ORIGINAL SIGHTED 02/08/22

John Crossland
Bank Officer

COMMONWEALTH BANK 064-844
02 AUG 2022
MERMAID WATERS QLD

WESRAL MINTEC PTY LIMITED
19/28 ROSEBANK AVENUE,
DURAL, N.S.W. 2158
TELEPHONE: 612) 9654 1848
MOBILE: 0419 214 298
EMAIL: rickwest4@bigpond.com

R F WEST BE, FAIMM,CP(min),
CONSULTING MINING ENGINEER

27th July 2022.

The Director,
Claystone International Pty Ltd.
P.O. Box 6507,
Q Super Centre,
Mermaid Waters,
Queensland 4218.

Dear Sir,

VALUATION OF SANDS AND SANDSTONE CONTAINED IN CLAYSTONE INTERNATIONAL PTY LTD'S LOT 5 QUARRY, YAMMACOONA ESTATES.

R F West, (Principal of Wesral Mintec Pty Ltd (ABN 23 118 847 199) has been requested to provide a valuation of the pigmented sand and quartz sandstone contained within Lot 5 in DP 264346, Gwydir Shire Council, Parish Adams, County Burnett, in northern New South Wales which is part of the Yammacoona Estates.

This valuation is prepared for the information of the Directors, Claystone International Pty Ltd. (CIPL) and may be used in discussions with lenders and banks.

The valuation is based on geological information contained in inhouse CIPL reports, visits to the site (the most recent being 24th to 28th October 2018), marketing information and cost information that is common knowledge through the sand quarrying industry within Australia and an expected 60-year programme of quarrying.

It includes sand and sandstone resources contained only within Lot 5 and assumes the concurrent mining of resources contained in the other adjoining Lots adjoining Lot 5, which result in the non-sterilisation of resource in batters at the boundaries of Lot 5 as pit batter walls. Lot 5 area is approximately 60.4Ha.

A 7.3 metre overlying layer of naturally pigmented sand to be used in the manufacture of masonry products will be removed and stockpiled during the mining cycle. It will be sold and delivered to a masonry plant located approximately 4 kilometres north of the CIPL quarries. While the masonry plant and manufacturing project is not part of this valuation and is not included in this assessment.

Over the total life of the CIPL Lot 5 quarry, a total of 101.1 million tonnes of the high tensile sand/sandstone will be mined down to 70 metres depth, crushed, sized, and rail transported to Newcastle for overseas shipment. Thus, a total of 101.1 million tonnes are included in this valuation.

This angular fine grained high tensile sand/sandstone will be used in concrete structures as an enhancing pozzolanic material add mix product, to increase its tensile strength and reduce its porosity. It has an FOB sale value of Aus$150 per tonne and is expected to achieve a profit of more than A$30 per tonne. The sand

is approximately 70% to 80% quartz and 10% to 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concrete.

1. SUMMARY

Claystone International Pty Ltd. (CIPL) holds Development Consent 32/87 being for the extraction of sand (amongst other things). This was issued by Yallaroi (now Gwydir) Shire Council in relation to Lot 7 as well as Lots 6 and 5 in DP 264346 on the 15th April 1988.

Also, CIPL in joint venture with the Australian Inland Railway Expressway Pty Ltd (AIRE) is in the process of applying for consent from the NSW State Government for a State Significant Development to extract additional concrete sand material to the project's future market requirements. That sand will be extracted from Lot 5 and other quarries in CIPL's other adjoining Lots. Anticipated total annual production is 5 million tonnes per annum.

The total in-situ resources contained in Lot 5 is 7.5 million tonnes of pigmented sand that is to be sent to a masonry plant about 4 kilometres north of the quarry and is excluded from this valuation. Under this is 101 million tonnes of high tensile concrete quality angular grained quartz pozzolanic sand and pozzolanic sandstone. Potential exists for these resources to be increased by deeper excavation.

This pozzolanic sand/sandstone is approximately 70% - 80% quartz and 10% - 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concretes.

CIPL owns Lot 5, DP 264346 and Gwydir Mining Pty Ltd (GMPL) holds the right to mine it for and on behalf of CIPL.

The pozzolanic sandstone, when crushed and screened, produces an angular grained quartz rich sand, which is highly suited to the manufacture of high tensile concrete.

The replacement of between ten and 40 percent of this sand with the cement in a concrete mix has been demonstrated to increase the strength and water resistance properties of that concrete mix.

An associated company, Claystone Masonry Pty Ltd (CMPL), holds an exploration licence, EL 8286 granted under the New South Wales Mining Act for group 1 and 2 minerals, which surrounds the sand quarry. This tenement is unrelated to CIPL's sand quarry. (Refer Figure 1 below.)

It is planned to commence quarrying in 2022-3 and build up production to a manageable rate from half a million tonnes in the first year of production to more than 5 million tonnes per annum being what the market can carry.

Due to the knowledge of the sand resource and planned production schedule, an 'In situ' or 'Rules of Thumb' Method have been chosen to assess the value of sand and sandstone in Lot 5. This was back checked against planned production figures with considered risk factors.

Fig. 1. Layout of Lots 2,3,5 to 8 DP 264346 and Lots 5 and 6 in DP 263715 within EL8286.

Due to the knowledge of the sand resource and planned production schedule, an 'In situ' or 'Rules of Thumb' Method have been chosen to assess the value of sand and sandstone in Lot 5. This was back checked against planned production figures with considered risk factors.

Using the above, it is my opinion that the value of the Sand and Sandstone in Lot 5 is within a range of Aus$2,332 million and Aus$1,724 million with a preferred value of Aus$2,028 million.

2. INTRODUCTION

CIPL owns the right to quarry several tenements in northern New South Wales, that contain both naturally pigmented sand (ideal for masonry manufacture) and an underlying fine grained sub-angular to angular pozzolanic quartz sand and pozzolanic sandstone.

This unusually pure quartz and alumina sand and sandstone (approximately 70% - 80% quartz and 10% - 14% alumina), when crushed and screened, produces a quartz rich sand, which is highly suited to the manufacture of high tensile concrete due to its spread of fine sized and angular to sub-angular grains, which act as a very efficient pozzolan when used in high tensile concretes.

Structural concrete is slightly porous and as the concrete ages, it shrinks and fine cracks form within it. These fine cracks allow water, containing corrosives such as dissolved oxygen, carbon dioxide, chlorides and various salts, to soak into the concrete and corrode and rust its reinforcing steel. This corrosion and rusting results in expansion within the concrete and eventually causes failure of the concrete (concrete cancer).

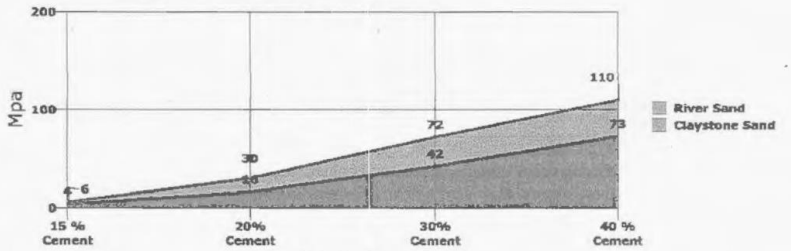
CIPL's quartz sand grains are finely sized and are angular to sub-angular. They are not the normal well-rounded water and wind deposited grains but are like the angular pyroclastic flow volcanic deposited sandstones of Mount Vesuvius and Mount Etna in Italy and they act as a pozzolan, when mixed with sand cement and aggregate to make high strength concrete. When this fine sand is mixed with other sands, it fills

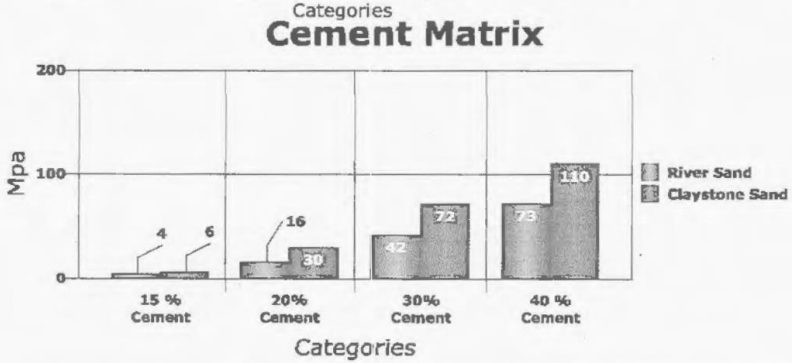
or partially fills voids and becomes compacted within the concrete, reducing the concrete's porousness. The overall effect is to reduce water penetration and increase the effective life of the concrete.

A "pozzolan" is defined as "A siliceous or siliceous and aluminous material, which possesses little or no cementing property, but will in a finely divided form - and in the presence of moisture - chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties."

Peter Greenham, National Association of Testing Authorities Technical Assessor for Construction Materials, carried out tests to compare the Gwydir sand with a control sample of sand maintaining the same water cement ratio and determine the difference in strength by casting test specimens and testing them with a crushing machine after 7 and 28 days. The test method of the casting and crushing of the concrete cubes were in accordance with Australian and international standards.

Cement Matrix





The water cement ratio was in equal portions with both sand types. The mix design for the materials was 3 Parts Sand, 2 Parts Cement and 1 Part Water. Each mix design was mixed in 2-kilogram batches, where there were 1500 grams of Sand, 1000 Grams of Cement and 500 Grams of Water.

A sample of sand was used as a control sample, that has been used as a benchmark. The sample sand was well graded fine sand designed for render and grout products.

From the Trials, the laboratory was able to project "Achievable Results" at different percentages of cement. Note: The 28-day Results of MPa for Test data 2 were projected as an indication until the final confirming results were received.

Crushing and screening the quarried quartz sandstone, produces a finely sized quartz sand containing approximately 70% quartz and 14% alumina, which has excellent properties for making high tensile strength concrete and masonry products. The four principal concrete hardening compounds formed resulting from the CIPL sand and the cement include Tricalcium Silicate (Ca_3SiO_5), Dicalcium Silicate (Ca_2SiO_4), Tricalcium Aluminate ($Ca_3Al_2O_6$) and Tetracalcium Aluminoferrite ($Ca_4Al_2Fe_2O_{10}$).

The blending of ten percent of this sand with other sands in concrete mixes has demonstrated a considerable increase in the strength and water resistance properties of various concrete mixes.

CIPL's sole owner and Director is Mr. William Clift. His contact details are:
Mr. W. L. Clift,
Mobile Phone: 0431 619 211
Email wsanna_anna@yahoo.com.

3. PROJECT LOCATION

Claystone Masonry Pty Ltd (CMPL) a company owned by CIPL, is the registered owner of land at Koloona 19 kilometres west of Delungra, near the Provincial centre of Warialda in Northern New South Wales. The land comprises the Yammacoona Estates, Adamscrub Road, Warialda, 2403 (Lots 7 and 8 in DP 264346) Gwydir Shire Council, Parish Adams, County Burnett), in northern New South Wales.

This quarry site is approximately 12 kilometres south of the Provincial centre of Warialda in northern New South Wales and is accessible via the Adams Scrub Road, 10 kilometres west from Koloona.

Warialda is situated on the Gwydir Highway between Inverell and Moree and is 100 kilometres south of the Queensland-New South Wales border town of Goondiwindi. It is on the North-West Slopes of the New England Tablelands and has an elevation above sea level of 400 metres. The Warialda area experiences cold winters and warm to hot summers with a temperature range from minus 8°C to 44°C throughout the year. Its average annual rainfall is 680 mm with a definite summer dominance.

The subject land covered by EL 8286 in 2014 includes Lots 2,3,5, 6, 7, and 8 in DP 264346 and Lots 5 and 6 in DP 263715. The land is zoned RU1 – Primary Production. Extractive industries are permissible in this zone with the consent of Council.

Lot 5 in DP 264346 has an average length of approximately 1,700 metres and an average width of approximately 355 metres and drilling has indicated the material of interest extends to a depth of approximately 80 metres, an area of approximately 60.2 hectares. However, the top 7.5 metres consists of approximately 200 millimetres of surface soil and 7.3 metres of a natural pigmented sand having a bulk density of 1.7.

For the purposes of this valuation a quarry land area of 60.2 hectares has been evaluated for an extraction thickness of 70 metres of soft friable sandstone under the pigmented sand. The in-situ specific gravity of

this material is 2.4. and there are more than 101.1 million tonnes of the soft friable sandstone of interest contained within this 60.2 hectare area of interest.

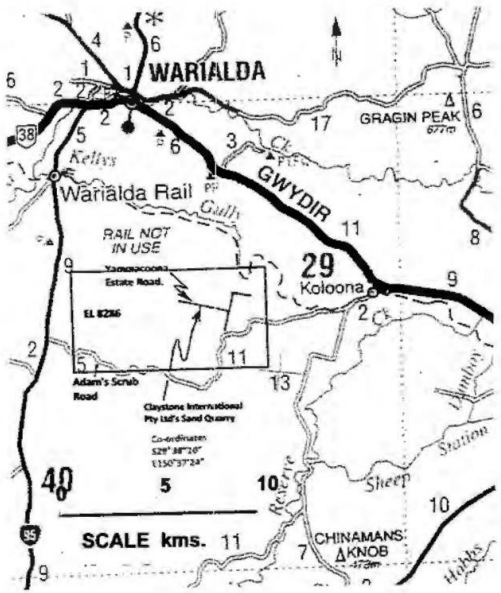


Fig. 2. Claystone International's Sand Quarry Location.

At present, the quarry is accessed via Adams Scrub Road, Warialda, in northern New South Wales.

4. REGIONAL GEOLOGY

The regional geology between Warialda and Bingara lies within the New England fold belt.

There are two major north south trending geological belts separated by the regionally extensive Peel Fault. This fault extends several hundred kilometres from Warialda in northern NSW, to Forster on the coast.

The serpentinites emplaced along the Peel fault, appear to extend further north of Warialda under the cover of the Great Australian Basin. It has been an active fault for about 350 million years. Its location is indicated by a prominent escarpment and a change in the rock types on either side of it.

PERIOD	YEARS AGO	LIFE FORMS ORIGINATING	GEOLOGICAL EVENTS IN AREA
QUATERNARY	Present to 2,000,000	Human Beings	Continued alluvial deposition.
TERTIARY	65,000,000	Grazing and carnivorous mammals	Volcanic activity produced basalts over *much* of area.
CRETACEOUS	144,000,000	Last dinosaurs First flowering plants	*Continued deposition on land.*
JURASSIC	213,000,000	First birds	No rocks preserved from this period in local area.
TRIASSIC	248,000,000	First dinosaurs and mammals	Deposition on land and in shallow sea giving rise to the giving rise to Gunnedah coal field.
PERMIAN	286,000,000	*Mammal-like* reptiles, last Trilobites	Deformation, metamorphism, major activity of Peel fault
CARBONIFEROUS	360,000,000	First reptiles; fern forests	Progressive glaciation and volcanic activity deformation, alteration and progressive shallowing of sea, and volcanic activity in west. *'Emplacement'* of serpentine.
DEVONIAN	408,000,000	First amphibians and insects	Deposition of deep sea sediments and basaltic lavas.
SILURIAN	438,000,000	Vascular land plants	Deposition of deep marine sediments.
ORDOVICIAN	505,000,000	First corals, fish with vertebrae	Formation of oldest seafloor *lavas and intrusions which* were subsequently altered to form serpentine.
CAMBRIAN	590,000,000	Shellfish, Trilobites	No record
PROTEROZOIC	700,000,000 1,500,000,000	Algae Complex cells	
ARCHEAN	2,500,000,000 3,500,000,000 4,500,000,000	Primitive cells Formation of the Earth	No record

The oldest rocks are of igneous and sedimentary origin formed more than 500 million years ago in the ocean floor. The igneous rocks have been altered to serpentine.

Volcanic muds, cherts, jaspers and lavas were deposited in the ocean floor about 400 million years ago. These now consist of low grade regionally metamorphosed, modified, deformed and thinly bedded chert, mudstone, wacke, basic volcanic and rare limestones. This was followed by uplifting, folding and faulting of these rocks around 300 million years ago. Then, about 36 million years ago, major basalt lava flows covered

much of eastern Australia. Volcanic basalt activity occurred between both 36-38 million years ago and 18-20 million years ago. Since then, the region has settled into the stable area that exists today.

The geological history is summarised in the chart above, starting with the formation of the oldest seafloor lava and intrusions during the Cambrian Period, 590 million years ago.

Gold was first discovered in the Bingara region in 1852 and both small alluvial deposits and hard rock deposits were worked by both Chinese and European miners. From 1931 to 1948, the All Nations Gold Mine was worked and developed down to the 326-foot level within a shear zone containing quartz-calcite gold bearing greywackes.

Copper was discovered in the general area in the 1880's.

From 1968, the Mines Department and various companies have carried out exploration in the general area from Warialda rail to Bingara, without any major successful mineral discoveries being made.

CIPL will carry out exploration for viable mineralisation, but it will also examine prospective areas for industrial materials suited to masonry manufacture and for pozzolanic sands suited to concrete production.

5. GEOLOGY

The land, in the CIPL quarry area, consists of flat to gently sloping terrain with several hills having steep escarpments along their southern faces. The CIPL quarry area is in sands and friable sandstone within the Warialda Trough to the east of the Peele Fault.

The hills consist of tenacious friable, fine to very coarse-grained, quartz sandstones and minor pebbly sandstones and shales, which dip gently to the north. Outcropping sandstones are variably ferruginised, with local to extensive superficial, dark brown to black and purple, laterised sandstones rich in haematite and limonite. The sandstones are at least several tens of metres thick persisting beyond the tenements.

Within the tenement area the iron content is low, not exceeding 6% in any area of interest. The sand is approximately 70% - 80% quartz and 10% - 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as efficient pozzolans when used in high tensile concretes. These sands and sandstones appear to be Permo-Triassic basin pyroclastic flows, ash fall deposited from Permian volcanics unconformably on a basement of Carboniferous to Permian age as a shallow marine and post marine sequence.

The hills are bordered to the east, northeast and north by an area of no outcrop, comprised of a sandy loam underlain in part by massive red to yellow fine sand. The sand, exposed in roadside excavations and dams has homogeneity, massive structure, a high degree of friability and persistence of colour laterally and vertically. There is minor fine stony material scattered randomly throughout the sand. The contained clay content is very low.

6. HISTORICAL WORK

Early geological surveys (registered with NSW Primary Industry and Mineral Resources) indicated more than 7 million tonnes of high quality, commercially unique quartz sand and quartz sandstone with minor valuable minerals including haematite, limonite etc. to a depth of 139 metres in 1989.

A locally based experienced operator, Inverell Aggregate Supplies Pty Ltd, then used 22 test sites averaging 15 metres in depth to indicate an open-ended resource of 50 million tonnes of naturally pigmented sand

material suitable to be used in the manufacture of terrazzo and masonry type products. The bottom and extent of the deposit was not found at any point over the 2000 metre by 200 metre area tested.

CIPL's technical advisers identified that the site contains substantial deposits of oxide pigmented sand, suitable for colouring masonry overlying a soft, friable, fine grained high quartz sandstone. The masonry colours of this naturally coloured sand include red, yellow, and other colours that cannot be produced using sands mixed with chemically manufactured oxides which are not included in this valuation.

Professor David Stevens, Senior Partner and Cliff Barker, Senior Partner of HRC Partnership; assessed the project to be viable based on an estimated 50 million tonnes resource. They stated that the quality of the material was such, that high-quality low-cost masonry products could be mass produced using conventional machinery (HRC Partnership Pty Ltd., 12th August 2004). They reported a resource of 50 million tonnes of sand, which was open ended to depth and appeared to be conservative, based on a Mines Department bore hole.

Subsequent augur drilling and local bore drilling, carried out by CIPL technical advisers to a depth of up to 30 metres, showed the sand bed to be consistent throughout the 22 separate sites. Following analysis and tests, CIPL and its technical advisers believe the quality of the material is such, that high-quality low-cost masonry products can be mass-produced using conventional machinery.

Recent work has shown the pigmented sand to be overlying a fine angular grained quartz pozzolanic sandstone. CIPL centrally sited and drilled a water bore, which indicates this sandstone has a thickness greater than 80 metres.

Bulk sampling has shown that it can be "free dig" extracted, without the need for drilling or blasting. This bed appears to be formed by Permo-Triassic basin pyroclastic flows and ash fall, deposited from Permian volcanics unconformably on a basement of Carboniferous to Permian age as a shallow marine and post marine sequence.

Besser Company Pty Ltd (Asia Pacific) carried out test work on the manufacture of masonry and lent its expertise to the CIPL project (described in the HRC Partnership report dated 12th August 2004).

7. PROJECT DESCRIPTION

CIPL holds Development Consent 32/87 being for the extraction of sand (amongst other things). This was issued by Yallaroi (now Gwydir) Shire Council in relation to Lot 5 as well as lots 6 and 7 in DP 264346 on the 15th April 1988.

Also, CIPL in joint venture with the Australian Inland Railway Expressway Pty Ltd (AIRE) is in the process of applying for consent from the NSW State Government for a State Significant Development to extract additional concrete sand material to the project's future market requirements. That sand will be extracted from Lot 5 and quarries in CIPL's other adjoining Lots.

This valuation is only for Lot 5 in DP264346.

The nature of the sand is such that rainwater soaks in rapidly rather than pooling or running off elevated areas. However, the water does not penetrate the underlying sandstone, which has poor porosity due to its fine angular well packed grains.

Previous test pitting has shown the sand to stand well rather than to slump or fret away. The sand and the sandstone can be free dug without any drilling and blasting and can be readily bulldozer ripped.

The planned project includes an open cut operation to mine the sand. Fine lump material will be crushed and screened on site prior to rail transport to Newcastle for FOB shipment.

Existing low scrub and small shallow rooting trees ahead of the advancing pit area will be cleared and utilised in the quarry's protective bund walls. This material consists of 15 to 20 cm of sandy surface topsoil, scrub and roots.

The 7.3 metre layer of naturally pigmented sand will be stripped off from above the high tensile sand and friable sandstone and sold to a masonry product manufacturing plant which is not part of this valuation.

With the advance of the pit, the worked-out area will be re-contoured to safe slopes and the bund wall material swept back to provide the topsoil for natural and possibly assisted revegetation.

It is planned to set up a sinking fund to cover this reclamation work, which will be necessary later in the life of the project.

It is planned to commence quarrying this sand deposit in late 2022 and build up production to a manageable rate from half a million tonnes in the first year of production to more than 5 million tonnes per annum being what the market can carry.

A water bore drilled to a depth of 90metres to test for the existence of perched water tables was found to be dry to its full depth. Analysis of grab samples taken during the drilling averaged approximately 70% quartz and 14% alumina together with minor unquantified rare earths and heavy minerals. The rare earths have not been considered, when preparing this valuation.

8. PROJECT VALUATION

Wesral Mintec Pty Ltd associates have made several site inspections since 2010 (the last being in October 2018) and have had access to CIPL's files and supporting data. It considers that the contained data are consistent and that this valuation complies with the VALMIN Code.

The process of mineral valuation involves the initial categorisation of the asset to be valued, the identification of the relevant valuation method; evaluation of the mineral asset using applicable method or methods; grouping and comparing the resulting estimates; consideration of sensitivities, identification of a valuation range and finally adoption of a "preferred valuation". That is the process, which is adopted and followed here in respect of this valuation.

There have been quarrying activities conducted on the quarry site that have demonstrated that the assumed quarrying methods are effective in practice and have produced bulk sample material.

The fair market value of a mine, quarry or production asset or security, is the amount of money (or cash equivalent of some other consideration) determined by the expert, in accordance with the provisions of the VALMIN Code, for which the mineral asset or security should change hands on the valuation date in an open and unrestricted market between a willing buyer and a willing seller in an "arm's length" transaction, with each party acting knowledgeably, prudently and without compulsion.

Wholesale bank valuations require a valuation of the in-situ asset in the ground that may be extracted less extraction costs and suitable risk reductions.

The recognised mining valuation methods (Bruce et al, 1994) may be summarised as follows:

- Cost – being past exploration expenditure (and book value).
- Market – being akin to a real estate valuation.
- Joint Venture Terms – where a farm-in is involved.
- In situ or Rules of Thumb Method – such as the in-situ sand or mineral value.
- Net Present Value – where a discounted cash flow may be modelled.
- Geoscience Rating Methods – the modified Kilburn method.

The use of a Net Present Value (NPV)modelling method is not suitable on this occasion due to the length of life of the project of 60 years. The discounting effect of the NPV mathematics will result in an unrealistic low valuation beyond about 15 operating years.

Due to the knowledge of the sand resource, an 'In situ' or' Rules of Thumb Method' has been chosen to assess the value of sand and sandstone in Lot 5.

This valuation is for wholesale banking purposes and is based on the in situ material that can be recovered considering the potential mining and economic conditions and risks.

In applying the In-Situ or Rules of Thumb Valuation Method, the following have been considered:

a) The geological and physical factors of Lot 5 and surrounding Lots have been considered in this valuation.

b) The mining of the resource does not require drilling or blasting as the pozzolanic sand and sandstone is soft and friable, however, the mining may utilise widely space drilling with light blasting to shatter, but not to throw the ground as an aid to initially soften and shatter the friable sandstone prior to its extraction from areas where natural evaporation at the top of the water table has caused high levels of natural increased sandstone cementation.

c) Over the total life of the Lot 5 quarry, a total of 101.1 million tonnes of the pozzolanic sand/sandstone under the pigmented sand overburden, will be mined down to a depth of 70 metres, crushed, screened and transported by railway to Port Newcastle and sold FOB.

d) The mining of the resource does not require drilling or blasting as the pozzolanic sand and sandstone is soft and friable, however, the mining may utilise widely space drilling with light blasting to shatter, but not to throw the ground as an aid to initially soften and shatter the friable sandstone prior to its extraction from areas where natural evaporation at the top of the water table has caused high levels of natural increased cementation.

e) CIPL, in a joint venture with the Inland Rail, is in the process of applying for consent from the NSW State Government for a State Significant Development with the Inland Rail to extract additional sand up to the market's future requirements from the Lot 5 and other quarries in CIPL's adjoining Lots.

f) General Australian sand quarrying industry costs and masonry costs based on quotations where practical, have been considered while preparing this valuation assessment.

g) The marketing risk for the pozzolanic sandstone material in the high tensile concrete market is low, due to the declining power generation in coal fired power stations and the resulting reduction in coal flue ash, that is in general used as pozzolan material.

h) Currency exchange rate changes are the major economic risk considering the long life of the project, where revenue from exports is received in foreign currencies. Some protection can be provided by writing contracts in Australian dollar terms or with built in rise and fall clauses covering currency variation formulae.

i) Australia and its state of New South Wales are regarded as having low sovereign risk. Also, the CIPL quarries operating in the Warialda area are in a sparsely populated rural area and have minimal impact on people. There are no public health issues, labour issues or land rights issues associated with this area and the clearing of the quarry area has received the Government approval.

j) Some signed sales agreements are in place.

k) The cost of removal of the overburden pigmented sand to be used for the production of masonry is credited to this valuation, as the pigmented sand sold for $Aus120 per tonne to a masonry company and the masonry manufacture and sale is subject to a separate valuation.

In valuing the in-situ high tensile concrete sand and friable sandstone, the in-situ value of 101.1 million tonnes for the sale price of Aus$150 per tonne is Aus$15170 million and the covering pigmented sand overburden sold to the masonry plant at Aus$120 per tonne has a value of Aus$897, the two totalling Aus16067.

Considering mining conditions allow for the extraction of 66% (two thirds) of this material and the covering pigmented overburden, giving a sales value of Aus$10,604 million.

- A normal profitability factor of a sand project is 30% of this value resulting in a return of Aus$3,181 million.
- The project is moderately isolated so adopt a project difficulty/advantage factor of 75% for private haul road and rail transport and ex-tenement expenditure giving a value of Aus$2,386million.
- Allow a risk/advantage factor covering marketing and currency exchange rate of 85% giving a preferred value of Aus$2,028 million.
- For margin of error allow + 15% and – 15%. This gives a value range of Aus$2,332 million and Aus$1,724 million.

Therefore, Considering the above, it is my opinion that the value of the Sand and Sandstone in Lot 5 is within a range of Aus$2,332 million and Aus$1,724 million with a preferred value of Aus$2,028 million.

9. CONCLUSION -VALUATION OF SAND IMATERIAL IN LOT 5

Considering the above, it is my opinion that the value of the pigmented masonry sand and the high tensile pozzolan sand and sandstone contained within Lot 5 DP264346, using the 'In situ' or 'Rules of Thumb Valuation Method' lies within a range of Aus$2,332 million and Aus$1,724 million with a preferred value of Aus$2,028 million.

Major areas of operational risk considered and addressed include:

- Poor operational control resulting in the failure to meet shipping deadlines which is to be addressed by regular technical auditing and loss of production insurance and stockpiling material in the port area.
- Traffic congestion of local, trunk and major roads, used by trucks transporting the sand materials, is being addressed by re-opening of the Warialda railway line from Warialda Rail to Moree and using a dedicated private haul road running from the quarry site to the rail loading area and the use of rail transport and shipping through Port Newcastle together with maintaining a stockpile of material at the port area.
- Estimation of economic and other operating factors beyond twenty years, greatly increases such a project's valuation risks. This has been factored into the value assessment.

DISCLAIMER

A lender or purchaser should not rely upon the accuracy of the information contained in this memorandum for the acquisition of any interest, long term sales, investments, loans etc., but should rely upon their own due diligence and independent enquiries prior to the completion of any purchase or entering any loan agreement.

Rick West

R. F. West BE, Hon F. AusIMM, CP.
Mining Consultant
27th July 2022.

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SAND COMPARISON ASSESSMENT, Revised July 2018 Compiled by Peter Greenham, National Association of Testing Authorities Technical Assessor for Construction Materials. Member of the Australian Organisation for Quality.

WESRAL MINTEC PTY LIMITED
19/28 ROSEBANK AVENUE,
DURAL, N.S.W. 2158

R F WEST BE, FAIMM,CP(min),
CONSULTING MINING ENGINEER

TELEPHONE: 612) 9654 1848
MOBILE: 0419 214 298
EMAIL: rickwest4@bigpond.com
11th June 2019.

The Director,
Claystone International Pty Ltd.
P.O. Box 6507,
Q Super Centre,
Mermaid Waters,
Queensland 4218.

Dear Sir,

VALUATION OF SANDS AND SANDSTONE CONTAINED IN CLAYSTONE INTERNATIONAL PTY LTD'S LOT 7 QUARRY, YAMMACOONA ESTATES.

R F West, (Principal of Wesral Mintec Pty Ltd (ABN 23 118 847 199) has been requested to provide a valuation of the pigmented sand and quartz sandstone contained within Lot 7 in DP 264346, Gwydir Shire Council, Parish Adams, County Burnett, in northern New South Wales which is part of the Yammacoona Estates. 20 million tonnes of this is not to be mined at this time and is not included from this valuation.

This valuation is prepared for the information of the Directors, Claystone International Pty Ltd. (CIPL) and may be used in discussions with lenders and banks.

The valuation is based on geological information contained in inhouse CIPL reports, visits to the site (the most recent being 24th to 28th October 2018), marketing information and cost information that is common knowledge through the sand quarrying industry within Australia and an expected 60-year programme of quarrying.

It includes sand and sandstone resources contained only within Lot 7 and assumes the concurrent mining of resources contained in the other adjoining lots surrounding Lot 7, which result in the non-sterilisation of resource in batters at the boundaries of Lot 7 as pit batter walls.

A 7metre overlying layer of naturally pigmented sand to be used in the manufacture of masonry products will be removed and stockpiled during the mining cycle. It will be sold and delivered to a masonry plant located approximately 4 kilometres north of the CIPL Lot 7 quarry. While the masonry plant and manufacturing project is not part of this valuation and is not included in this assessment, the stockpiled is included.

Over the total life of the CIPL Lot 7 quarry, a total of 109 million tonnes of the high tensile sand/sandstone will be mined down to 80 metres depth, crushed, sized, and rail transported to Newcastle for overseas shipment. Of this shipment, 20 million tonnes are subject to a separate agreement. Only 89 million tonnes are included in this valuation.

This angular fine grained high tensile sand/sandstone will be used in concrete structures as an enhancing pozzolanic material add mix product, to increase its tensile strength and reduce its porosity. It has an FOB sale value of Aus$125 per tonne. The sand is approximately 70% quartz and 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concrete.

XRF analysis of exploratory bore hole samples indicate that this angular grained quartz sandstone consists of about 69% silica, 14% alumina, 3.2% iron oxides, 4.7% other minerals, 0.76% heavy minerals, 7.73% LOI and 210.5 ppm rare earths. Detailed systematic drilling is being carried out to confirm these exploration results.

1. SUMMARY

Claystone International Pty Ltd. (CIPL) holds Development Consent 32/87 being for the extraction of sand (amongst other things). This was issued by Yallaroi (now Gwydir) Shire Council in relation to Lot 7 as well as lots 6 and 5 in DP 264346 on the 15th April 1988.

Also, CIPL in joint venture with the Australian Inland Railway Expressway Pty Ltd (AIRE) is in the process of applying for consent from the NSW State Government for a State Significant Development to extract additional concrete sand material to the project's future market requirements. That sand will be extracted from Lot 7 and quarries in CIPL's other adjoining Lots. Anticipated annual production is 5 million tonnes per annum.

The total in-situ resources contained in Lot 7 is 8 million tonnes of pigmented sand that is to be sold to a masonry plant about 4 kilometres north of the quarry for $120 per tonne and more than 100 million tonnes of high tensile concrete quality angular grained quartz sand and sandstone. Potential exists for these resources to be increased by deeper excavation.

This sand/sandstone is approximately 70% quartz and 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concretes.

CIPL owns Lot 7, DP 264346 and Gwydir Mining Pty Ltd (GMPL) holds the right to mine it for and on behalf of CIPL.

The sandstone, when crushed and screened, produces an angular grained quartz rich sand, which is highly suited to the manufacture of high tensile concrete.

The blending of ten percent of this sand with other sands in concrete mixes has been demonstrated to increase the strength and water resistance properties of a concrete mix.

An associated company, Claystone Masonry Pty Ltd (CMPL), holds an exploration licence, EL 8286 granted under the New South Wales Mining Act for group 1 and 2 minerals, which surrounds the sand quarry. This tenement is unrelated to CIPL's sand quarry. (Refer Figure 1 below.)

It is planned to commence quarrying this sand deposit in early 2019 and build up production to a manageable rate from half a million tonnes in the first year of production to more than 5 million tonnes per annum being what the market can carry.

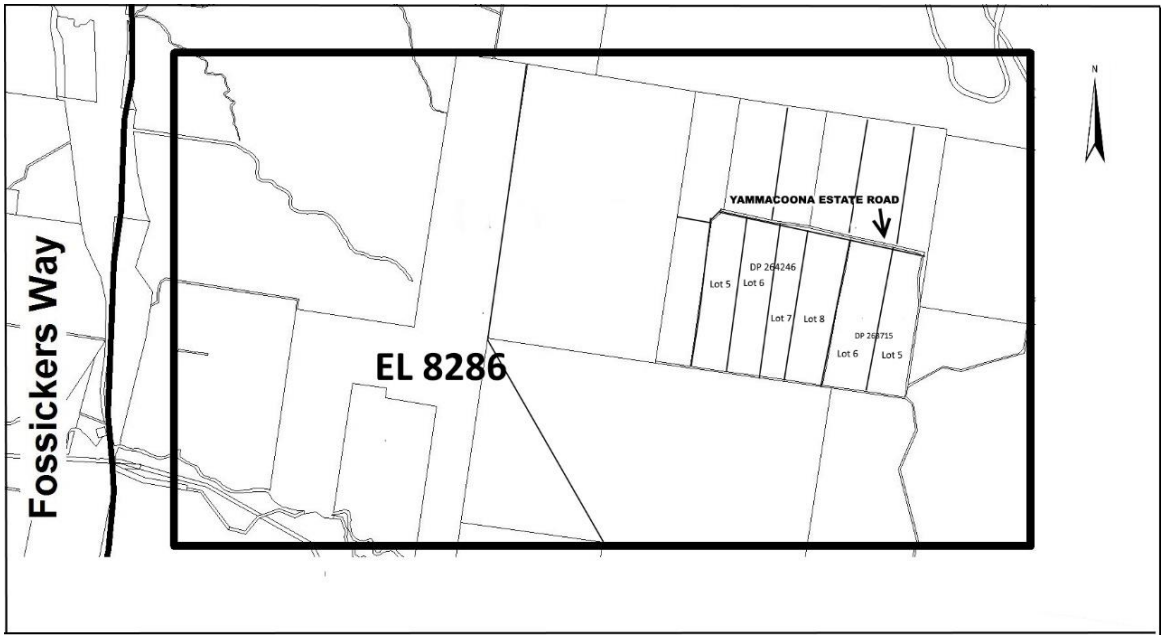


Fig. 1. Layout of Lots 5 to 8 DP 264346 and Lots 5 and 6 in DP 263715 within EL8286.

Due to the knowledge of the sand resource and planned production schedule, an 'In situ' or 'Rules of Thumb' Method have been chosen to assess the value of sand and sandstone in Lot 7. This was back checked against planned production figures with considered risk factors.

'In situ" or 'Rules of Thumb Valuation Method' value is within a range of Aus$1169 million and Aus$864 million with a preferred value of Aus$1017 million.

Considering this valuation, the value lies within a range of Aus$1169 million and Aus$864 million, with a preferred value of Aus$1017 million.

2. INTRODUCTION

CIPL owns the right to quarry tenements in northern New South Wales, that contain both naturally pigmented sand (ideal for masonry manufacture) and an underlying fine grained sub-angular to angular quartz sand and sandstone (highly suited to the manufacture of high tensile concrete).

The unusually pure quartz and alumina sand and sandstone (approximately 70% quartz and 14% alumina), when crushed and screened, produces a quartz rich sand, which is highly suited to the manufacture of high tensile concrete due to its spread of fine sized and angular to sub-angular grains, which act as an efficient pozzolan when used in high tensile concretes.

Structural concrete is slightly porous and as the concrete ages, it shrinks and fine cracks form within it. These fine cracks allow water, containing corrosives such as dissolved oxygen, carbon dioxide, chlorides and various salts, to soak into the concrete and corrode and rust its reinforcing steel. This corrosion and rusting results in expansion within the concrete and eventually causes failure of the concrete.

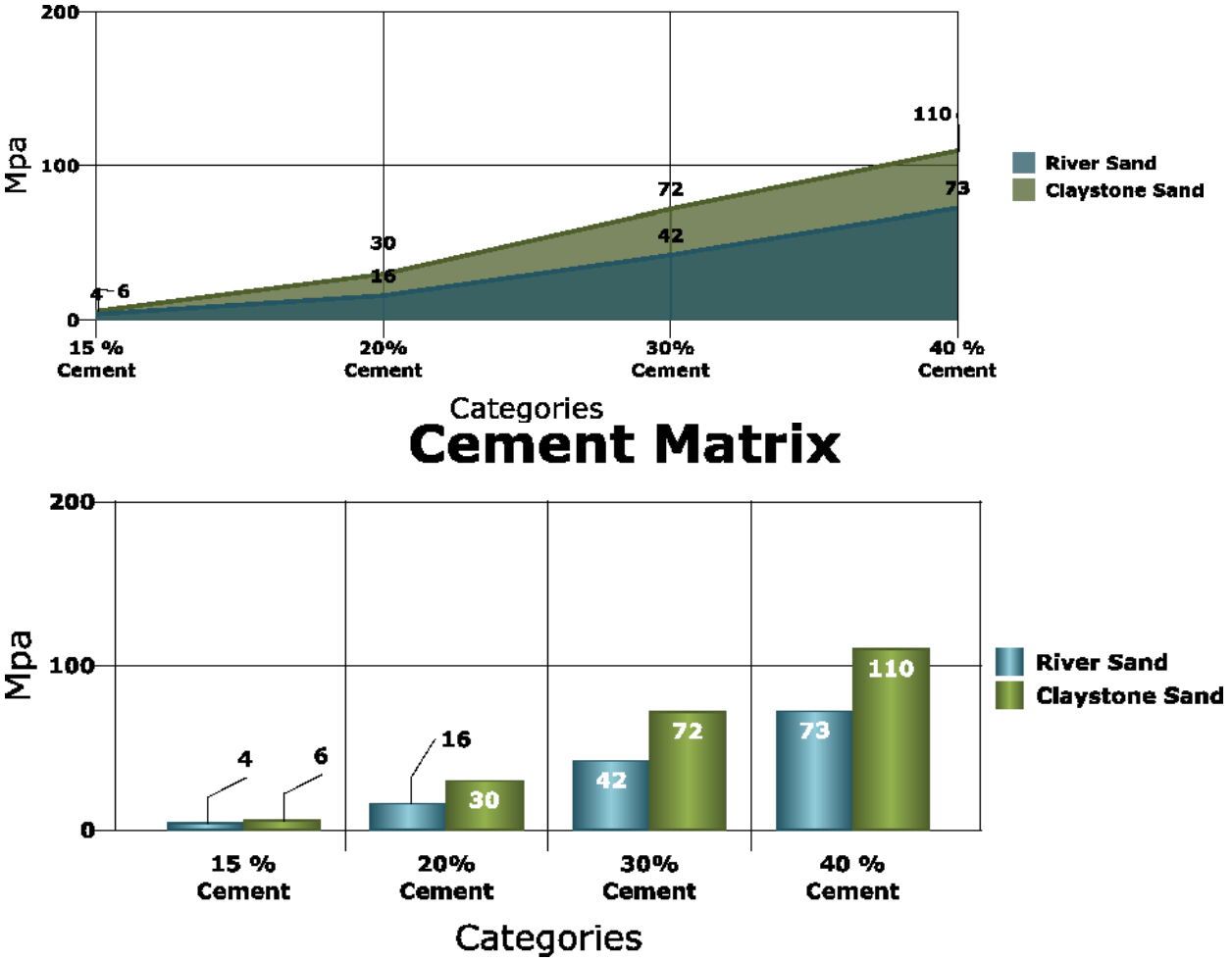
CIPL's quartz sand grains are finely sized and are angular to sub-angular. They are not the normal well-rounded water deposited grains but are like the angular pyroclastic flow volcanic deposited sandstones of Mount Vesuvius and Mount Etna in Italy and they act as a pozzolan when mixed with sand cement and aggregate to make concrete. When this fine sand is mixed with other sands, it fills or partially fills voids and

becomes compacted within the concrete, reducing the concrete's porousness. The overall effect is to reduce water penetration and increase the effective life of the concrete.

A "pozzolan" is defined as "A siliceous or siliceous and aluminous material, which possesses little or no cementing property, but will in a finely divided form - and in the presence of moisture - chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties."

Peter Greenham, National Association of Testing Authorities Technical Assessor for Construction Materials, carried out tests to compare the Gwydir sand with a control sample of sand maintaining the same water cement ratio and determine the difference in strength by casting test specimens and testing them with a crushing machine after 7 and 28 days. The test method of the casting and crushing of the concrete cubes were in accordance with Australian and international standards.

Cement Matrix



The water cement ratio was in equal portions with both sand types. The mix design for the materials was 3 Parts Sand, 2 Parts Cement and 1 Part Water. Each mix design was mixed in 2-kilogram batches, where there were 1500 grams of Sand, 1000 Grams of Cement and 500 Grams of Water.

A sample of sand was used as a control sample, that has been used as a benchmark. The sand is well graded fine sand that is designed for render and grout products

From the Trials, the laboratory was able to project Achievable Results at different percentages of cement. Note: The 28-day Results of MPa for Test data 2 have been projected as an indication until the final results are received.

Crushing and screening the quarried quartz sandstone, produces a finely sized quartz sand containing approximately 70% quartz and 14% alumina, which has excellent properties for making high tensile strength concrete and masonry products. The four principal concrete hardening compounds formed resulting from the CIPL sand and the cement include Tricalcium Silicate (Ca_3SiO_5), Dicalcium Silicate (Ca_2SiO_4), Tricalcium Aluminate (Ca_3Al2O_6) and Tetracalcium Aluminoferrite ($Ca_4Al2Fe_2O_{10}$).

The blending of ten percent of this sand with other sands in concrete mixes has been demonstrated to increase the strength and water resistance properties of a concrete mix.

CIPL's sole owner and Director is Mr. William Clift. His contact details are:
Mr. W. L. Clift,
Mobile Phone: 0431 619 211
Email wsanna_anna@yahoo.com.

3. PROJECT LOCATION

Claystone Masonry Pty Ltd (CMPL) a company owned by CIPL, is the registered owner of land at Koloona 19 kilometres west of Delungra, near the Provincial centre of Warialda in Northern New South Wales. The land comprises the Yammacoona Estates, Adamscrub Road, Warialda, 2403 (Lots 7 and 8 in DP 264346) Gwydir Shire Council, Parish Adams, County Burnett), in northern New South Wales.

This quarry site is approximately 12 kilometres south of the Provincial centre of Warialda in northern New South Wales and is accessible via the Adams Scrub Road, 10 kilometres west from Koloona.

Warialda is situated on the Gwydir Highway between Inverell and Moree and is 100 kilometres south of the Queensland-New South Wales border town of Goondiwindi. It is on the North-West Slopes of the New England Tablelands and has an elevation above sea level of 400 metres. The Warialda area experiences cold winters and warm to hot summers with a temperature range from minus 8°C to 44°C throughout the year. Its average annual rainfall is 680 mm with a definite summer dominance.

The subject land covered by EL 8286 in 2014 includes Lots 5, 6, 7, and 8 in DP 264346 and Lots 5 and 6 in DP 263715. The land is zoned RU1 – Primary Production. Extractive industries are permissible in this zone with the consent of Council.

Lot 7 has an average length of approximately 1,720 metres by a width of approximately 378 metres and drilling has indicated the material of interest extends to a depth of approximately 80 metres, an area of approximately 65 hectares. However, the top 7.5 metres consists of approximately 200 millimetres of surface soil and 7.3 metres of a natural pigmented sand.

For the purposes of this valuation a quarry land area of 65 hectares has been evaluated for an extraction thickness of 70 metres of soft friable sandstone. The in-situ specific gravity of this material is 2.4. and there are more than 100 million tonnes of the soft friable sandstone of interest contained within this 65 hectare area of interest.

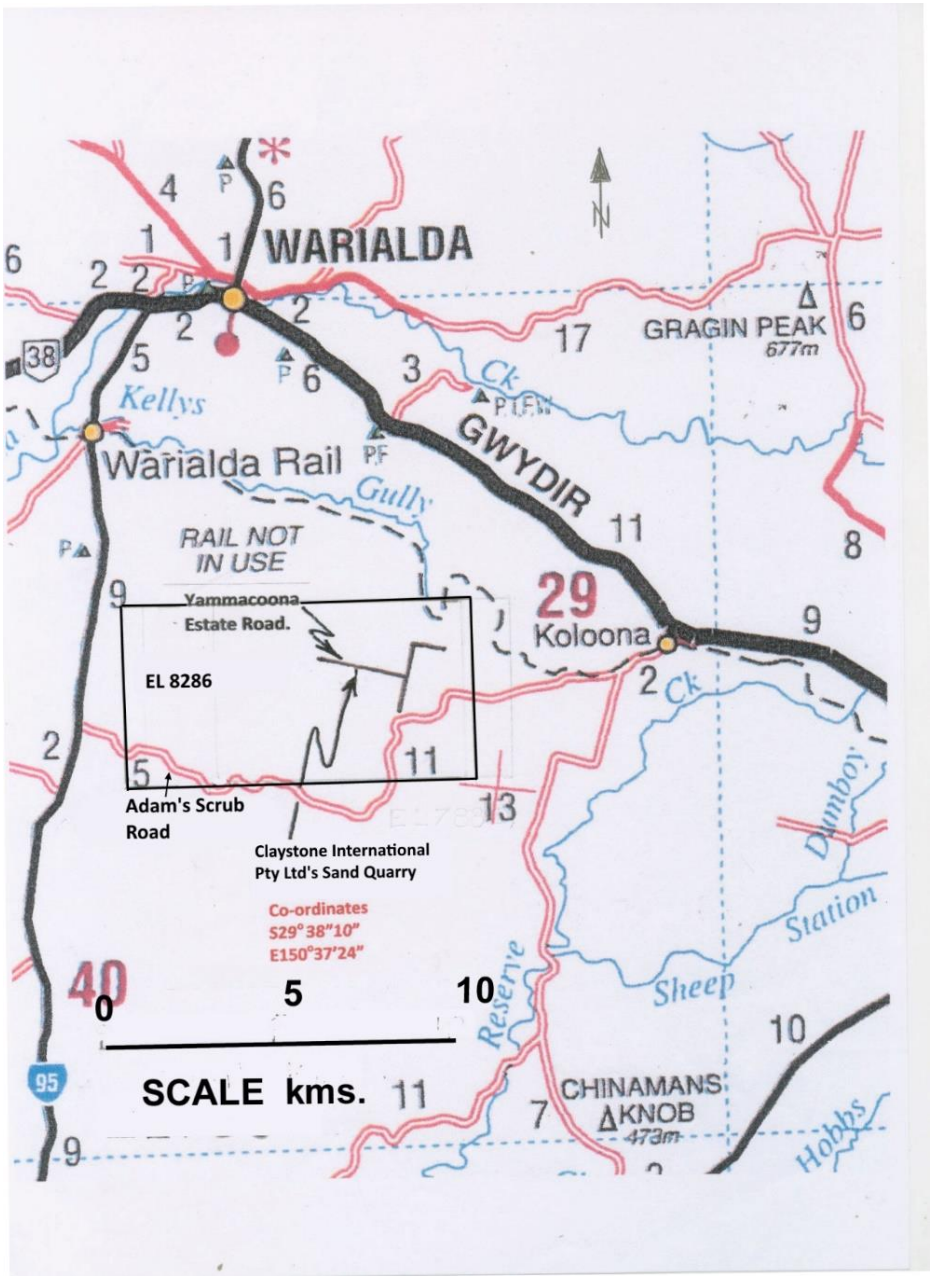


Fig. 2. Claystone International's Sand Quarry Location.

At present, the quarry is accessed via Adams Scrub Road, Warialda, in northern New South Wales.

4. REGIONAL GEOLOGY

The regional geology between Warialda and Bingara lies within the New England fold belt.

There are two major north south trending geological belts separated by the regionally extensive Peel Fault. This fault extends several hundred kilometres from Warialda in northern NSW, to Forster on the coast.

PERIOD	YEARS AGO	LIFE FORMS ORIGINATING	GEOLOGICAL EVENTS IN AREA
QUATERNARY	Present to 2,000,000	Human Beings	Continued alluvial deposition.
TERTIARY	65,000,000	Grazing and carnivorous mammals	Volcanic activity produced basalts over *much* of area.
CRETACEOUS	144,000,000	Last dinosaurs First flowering plants	Continued deposition on land.
JURASSIC	213,000,000	First birds	No rocks preserved from this period in local area.
TRIASSIC	248,000,000	First dinosaurs and mammals	
PERMIAN	286,000,000	Mammal-like reptiles, last Trilobites	Deposition on land and in shallow sea giving rise to the giving rise to Gunnedah coal field.
CARBONIFEROUS	360,000,000	First reptiles; fern forests	Deformation, metamorphism, major activity of Peel fault
DEVONIAN	408,000,000	First amphibians and insects	Progressive glaciation and volcanic activity deformation, alteration and progressive shallowing of sea, and volcanic activity in west. *'Emplacement'* of serpentine.
SILURIAN	438,000,000	Vascular land plants	
ORDOVICIAN	505,000,000	First corals, fish with vertebrae	Deposition of deep sea sediments and basaltic lavas.
CAMBRIAN	590,000,000	Shellfish, Trilobites	Deposition of deep marine sediments.
PROTEROZOIC	700,000,000 1,500,000,000	Algae Complex cells	Formation of oldest seafloor lavas and intrusions which were subsequently altered to form serpentine. .
ARCHEAN	2,500,000,000 3,500,000,000 4,500,000,000	Primitive cells Formation of the Earth	No record No record

The serpentinites emplaced along the Peel fault, appear to extend further north of Warialda under the cover of the Great Australian Basin. It has been an active fault for about 350 million years. Its location is indicated by a prominent escarpment and a change in the rock types on either side of it.

The oldest rocks are of igneous and sedimentary origin formed more than 500 million years ago in the ocean floor. The igneous rocks have been altered to serpentine.

Volcanic muds, cherts, jaspers and lavas were deposited in the ocean floor about 400 million years ago. These now consist of low grade regionally metamorphosed, modified, deformed and thinly bedded chert, mudstone, wacke, basic volcanic and rare limestones.

This was followed by uplifting, folding and faulting of these rocks around 300 million years ago. Then, about 36 million years ago, major basalt lava flows covered much of eastern Australia. Volcanic basalt activity occurred between both 36-38 million years ago and 18-20 million years ago. Since then the region has settled into the stable area that exists today.

The geological history is summarised in the chart above, starting with the formation of the oldest seafloor lava and intrusions during the Cambrian Period, 590 million years ago.

Gold was first discovered in the Bingara region in 1852 and both small alluvial deposits and hard rock deposits were worked by both Chinese and European miners. Copper was discovered in the 1880's.

From 1931 to 1948, the All Nations Gold Mine was worked and developed down to the 326-foot level within a shear zone containing quartz-calcite gold bearing greywackes.

From 1968, the Mines Department and various companies have carried out exploration in the general area from Warialda rail to Bingara, without any major successful discoveries being made.

GMPL will carry out exploration for viable mineralisation, but it will also examine prospective areas for industrial materials suited to masonry manufacture and for sands suited to concrete production.

5. GEOLOGY

The land, in the CIPL quarry area, consists of flat to gently sloping terrain with several hills having steep escarpments along their southern faces. The CIPL quarry area is in sands and friable sandstone within the Warialda Trough to the east of the Peele Fault.

The hills consist of tenacious friable, fine to very coarse-grained, quartz sandstones and minor pebbly sandstones and shales, which dip gently to the north. Outcropping sandstones are variably ferruginised, with local to extensive superficial, dark brown to black and purple, laterised sandstones rich in haematite and limonite. The sandstones are at least several tens of metres thick persisting beyond the tenements.

Within the tenement area the iron content is low, not exceeding 6% in any area of interest. The sand is approximately 70% quartz and 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as efficient pozzolans when used in high tensile concretes. These sands and sandstones appear to be Permo-Triassic basin pyroclastic flows, ash fall deposited from Permian volcanics unconformably on a basement of Carboniferous to Permian age as a shallow marine and post marine sequence.

The hills are bordered to the east, north east and north by an area of no outcrop, comprised of a sandy loam underlain in part by massive red to yellow fine sand. The sand, exposed in road side excavations and dams has homogeneity, massive structure, a high degree of friability and persistence of colour laterally and vertically. There is minor fine stony material scattered randomly throughout the sand. The contained clay content is very low.

6. HISTORICAL WORK

Early geological surveys (registered with NSW Primary Industry and Mineral Resources) indicated more than 7 million tonnes of high quality, commercially unique quartz sand and quartz sand stone with minor valuable minerals including haematite, limonite etc. to a depth of 139 metres in 1989.

A locally based experienced operator, Inverell Aggregate Supplies Pty Ltd, then used 22 test sites averaging 15 metres in depth to indicate an open-ended resource of 50 million tonnes of naturally pigmented sand material suitable to be used in the manufacture of terrazzo and masonry type products.

The bottom and extent of the deposit was not found at any point over the 2000 metre by 200 metre area tested.

CIPL's technical advisers identified that the site contains substantial deposits of oxide pigmented sand, suitable for colouring masonry overlying a soft, friable, fine grained high quartz sandstone. The masonry colours of this naturally coloured sand include red, yellow, and other colours that cannot be produced using sands mixed with chemically manufactured oxides which are not included in this valuation.

Subsequent augur drilling and local bore drilling, carried out by CIPL technical advisers to a depth of up to 30 metres, showed the sand bed to be consistent throughout the 22 separate sites. Following analysis and tests, CIPL and its technical advisers believe the quality of the material is such, that high-quality low-cost masonry products can be mass-produced using conventional machinery.

There is a 75metre thick bed of angular to sub-angular soft friable quartz sandstone underlying the pigmented sand indicated in boreholes. Bulk sampling has shown that it can be "free dig" extracted, without the need for drilling or blasting. This bed appears to be formed by Permo-Triassic basin pyroclastic flows and ash fall, deposited from Permian volcanics unconformably on a basement of Carboniferous to Permian age as a shallow marine and post marine sequence.

Besser Company Pty Ltd (Asia Pacific) carried out test work on the manufacture of masonry and lent its expertise to the CIPL project (described in the HRC Partnership report dated 12th August 2004).

Professor David Stevens, Senior Partner and Cliff Barker, Senior Partner of HRC Partnership; assessed the project to be viable based on an estimated 50 million tonnes resource. They stated that the quality of the material was such, that high-quality low-cost masonry products could be mass produced using conventional machinery (HRC Partnership Pty Ltd., 12th August 2004). They reported a resource of 50 million tonnes of sand, which was open ended to depth and appeared to be conservative, based on a Mines Department bore hole.

Recent work has shown the sand to be overlying a fine angular grained quartz sandstone. CIPL centrally sited and drilled a water bore, which indicates this sandstone has a thickness greater than 80 metres.

7. PROJECT DESCRIPTION

CIPL holds Development Consent 32/87 being for the extraction of sand (amongst other things). This was issued by Yallaroi (now Gwydir) Shire Council in relation to Lot 7 as well as lots 6 and 5 in DP 264346 on the 15th April 1988.

Also, CIPL in joint venture with the Australian Inland Railway Expressway Pty Ltd (AIRE) is in the process of applying for consent from the NSW State Government for a State Significant Development to extract additional concrete sand material to the project's future market requirements. That sand will be extracted from Lot 7 and quarries in CIPL's other adjoining Lots.

This valuation is only for Lot 7.

The nature of the sand is such that rain water soaks in rapidly rather than pooling or running off elevated areas. However, the water does not penetrate the underlying sandstone, which has poor porosity due to its fine angular well packed grains.

Previous test pitting has shown the sand to stand well rather than to slump or fret away. The sand and the sandstone can be free dug without any drilling and blasting and can be readily bulldozer ripped.

The planned project includes an open cut operation to mine the sand. Fine lump material will be crushed and screened on site prior to rail transport to Newcastle for FOB shipment.

Existing low scrub and small shallow rooting trees ahead of the advancing pit area will be cleared and utilised in the quarry's protective bund walls. This material consists of 15 to 20 cm of sandy surface top soil, scrub and roots.

The 7-metre layer of naturally pigmented sand will be stripped off from above the high tensile sand and friable sandstone and sold to a masonry product manufacturing plant which is not part of this valuation.

With the advance of the pit, the worked-out area will be re-contoured to safe slopes and the bund wall material swept back to provide the top soil for natural and possibly assisted revegetation.

It is planned to set up a sinking fund to cover this reclamation work, which will be necessary later in the life of the project.

Production will commence at around 500,000 tonnes and increased to around 1.5 million tonnes per annum within the first few years.

A water bore drilled to a depth of 90metres to test for the existence of perched water tables was found to be dry to its full depth. Analysis of grab samples taken during the drilling revealed the existence of approximately 70% quartz and 14% alumina together with minor unquantified rare earths and have minerals. The rare earths have not been considered, when preparing this valuation.

8. PROJECT VALUATION

Wesral Mintec Pty Ltd associates have made several site inspections since 2010 (the last being in October 2018) and have had access to CIPL's files and supporting data. It considers that the contained data are consistent and that this valuation complies with the VALMIN Code.

The process of mineral valuation involves the initial categorisation of the asset to be valued, the identification of the relevant valuation method; evaluation of the mineral asset using applicable method or methods; grouping and comparing the resulting estimates; consideration of sensitivities, identification of a valuation range and finally adoption of a "preferred valuation". That is the process, which is adopted and followed here in respect of this valuation.

There have been quarrying activities conducted on the quarry site that have demonstrated that the assumed quarrying methods are effective in practice and have produced bulk sample material.

The fair market value of a mine, quarry or production asset or security, is the amount of money (or cash equivalent of some other consideration) determined by the expert, in accordance with the provisions of the VALMIN Code, for which the mineral asset or security should change hands on the valuation date in an open and unrestricted market between a willing buyer and a willing seller in an "arm's length" transaction, with each party acting knowledgeably, prudently and without compulsion.

Wholesale bank valuations require a valuation of the in-situ asset in the ground that may be extracted less extraction costs and suitable risk reductions.

The recognised mining valuation methods (Bruce et al, 1994) may be summarised as follows:

- Cost – being past exploration expenditure (and book value).
- Market – being akin to a real estate valuation.
- Joint Venture Terms – where a farm-in is involved.
- In situ or Rules of Thumb Method – such as the in-situ sand or mineral value.
- Net Present Value – where a discounted cash flow may be modelled.
- Geoscience Rating Methods – the modified Kilburn method.

The use of a Net Present Value (NPV)modelling method is not suitable on this occasion due to the length of life of the project of 60 years. The discounting effect of the NPV mathematics will result in an unrealistic low valuation beyond about 15 operating years.

Due to the knowledge of the sand resource and planned production schedule, both a twenty year production plan cash flow has been examined and an 'In situ' or' Rules of Thumb Method' has been chosen to assess the value of sand and sandstone in Lot 7.

8.1 Assumptions and Schedule of Production.

For initial feasibility purposes a 20-year production schedule has been prepared and assessed based on the extractable ore blocks.

AS part of this the following have been considered bases on quotations, sales agreements, and the geological factors of Lot 7 and are in this valuation:

a) General Australian sand quarrying industry costs and masonry costs based on quotations where practical, have been used in the valuation assessment.

b) The total resource in Lot 7 of high tensile concrete producing quartz sand and sandstone is assessed at 109 million tonnes. High potential exists for this resource to be increased.

c) Twenty million tonnes of this high tensile sand/sandstone reserved for another purpose and are not included in this valuation. Therefore, only 89 million tonnes in included in this valuation.

d) The 8 million tonnes of masonry sand covering the above resource is sold to a nearby masonry plant for Aus$120 per tonne.

e) Over the total life of the Lot 7 quarry, a total of 109 million tonnes of the high tensile sand/sandstone will be mined down to a depth of 80 metres, crushed and shipped FOB and 8 million tonnes of pigmented masonry sand overburden will be extracted and sold for masonry product manufacture.

f) During the first 20 years of operations only 28.25 million tonnes of the above 89 million tonnes will be mined, crushed and screened and transported by railway to Newcastle port and sold FOB. The remainder will be extracted over the following 40 years.

g) A signed sales agreement exists with Hinduja of Mumbai, India states an FOB Newcastle sales price of A$125 per tonne.

h) CIPL, in a joint venture with the Inland Rail, is in the process of applying for consent from the NSW State Government for a State Significant Development with the Inland Rail to extract additional sand up to the market's future requirements from the Lot 7 and other quarries in CIPL's adjoining Lots.

i) A total capital expenditure of A$10million has been assessed to set up the project.

j) Although the mining of the resources does not require drilling or blasting as the sand and sandstone is soft and friable, the mining may utilise widely space drilling with light blasting to shatter, but not to throw the ground as an aid to initially soften and shatter the friable sandstone prior to its extraction.

k) The planned concrete sand production build up in the planned production cashflow, is 500 thousand tonnes in the year 2019 to more than 5 million tonnes per annum being what the market can carry from Lot 7 and quarries in CIPL's other adjoining Lots.

l) The 20-year planned production cashflow indicates a project average post taxation profit of Aus$62 million per annum and a return of Aus$33 per total tonne mined.

m) Contractors have been engaged to carry out the mining and the quarry to port transportation of sand and masonry.

n) A taxation rate of 28.5% has been assumed.

Based on the annual return of Aus$33 per total tonne mined, and the in-situ resources the total cash flow return for mining 89 million tonnes of concrete sand and selling the pigmented overburden to the nearby masonry plant is assessed at Aus$2940 million without taking risk into account.
It is planned to commence quarrying this sand deposit in early 2019 and build up production to a manageable rate from half a million tonnes in the first year of production to more than 5 million tonnes per annum being what the market can carry.

8.2 In-Situ or Rules of Thumb Valuation Method.

In applying the In-Situ or Rules of Thumb Valuation Method, the following have also been considered:

a) The marketing risk for the pozzolanic sandstone material in the high tensile concrete market is low, due to the declining power generation in coal fired power stations and the resulting reduction in coal ash, that is in general used as pozzolan material.

b) Currency exchange rate changes are the major economic risk considering the long life of the project, where revenue from exports is received in foreign currencies. Some protection can be provided by writing contracts in Australian dollar terms or with built in rise and fall clauses covering currency variation formulae.

c) Australia and its state of New South Wales are regarded as having low sovereign risk. Also, the CIPL quarries operating in the Warialda area are in a sparsely populated rural area and have minimal impact on people. There are no public health issues, labour issues or land rights issues associated with this area and the clearing of the quarry area has received the Government approval.

d) Planned production is 500 thousand tonnes in first year increasing to 1.5 million tonnes in the 4th year and remaining at that level for more than 60 years.

e) Signed sales agreements are in place.

f) The production of masonry from the oxidised near surface material is excluded from this valuation as it is subject to a separate valuation.

In valuing the in-situ naturally pigmented masonry sand, the in-situ value of 8 million tonnes at a sale price of Aus$120 per tonne is Aus$960 million.

In valuing the in-situ high tensile concrete sand and friable sandstone, the in-situ value of 89 million tonnes for the sale price of Aus$125 per tonne is Aus$11,125 million.

Total value of the two ore types is Aus$12,085 million.

- Conservatively allow for the extraction of 66% (two thirds) of this material giving a sales value of Aus$87976 million.
- A normal profitability factor of a sand project is 20% of this value resulting in a return of Aus$1,595 million.
- The project is moderately isolated so adopt a project difficulty/advantage factor of 75% for private haul road and rail transport and ex-tenement expenditure giving a value of Aus$1196million.
- Allow a risk/advantage factor covering marketing and currency exchange rate of 85% giving a preferred value of Aus$1017 million.
- For margin of error allow + 15% and – 15%. This gives a value range of Aus$1169 million and Aus$864 million.

Therefore, Considering the above, it is my opinion that the value of the Sand and Sandstone in Lot 7 is within a range of Aus$1169 million and Aus$864 million with a preferred value of Aus$1017 million.

9. CONCLUSION -VALUATION OF SAND MATERIAL IN LOT 7

'In situ" or 'Rules of Thumb Valuation Method' value of the Sand and Sandstone in Lot 7 is within a range of Aus$1169 million and Aus$864 million with a preferred value of Aus$1017 million

Based on the planned mining rates and negotiated costs and sales, annual return of Aus$33 per total tonne mined, and the in-situ resources the total post taxation cash flow return for mining 89 million tonnes of concrete sand and selling the pigmented overburden to the nearby masonry plant is assessed at Aus$2940 million without taking risk into account.

Considering the sixty years of operations it is reasonable to apply an advantage risk factor to this of 50% giving a check valuation of Aus$1470 million.

The estimation of economic and other operating factors beyond twenty years, also greatly increases such a project's valuation risks, which become difficult to quantify over extended time periods.

The estimation of economic and other operating factors beyond twenty years, also greatly increases such a project's valuation risks, which become difficult to quantify over extended time periods.

The re-opening of the Warialda railway line from Warialda Rail to Moree will give railway transportation to the port of Newcastle and shipment from that port resulting in reduced freight costs.

Considering the above, it is my opinion that the value of the pigmented masonry sand and the high tensile sand and sandstone in Lot 7 is within a range of Aus$1169 million and Aus$864 million with a preferred value of Aus$1017 million

Thus, I assess the value lies within a range of Aus$1169 million to Aus$864 million, with a preferred value of Aus$1017 million.

Major areas of operational risk considered include:

- Poor operational control resulting in the failure to meet shipping deadlines which is to be addressed by regular technical auditing and loss of production insurance and stockpiling material in the port area.
- In later years, roads, used by trucks transporting the sand materials, may become traffic congested, reducing the rates of delivery. This will be addressed by using a dedicated private haul road running from the quarry site to the rail loading area and maintaining a stockpile of material at the port area and the use of rail transport and shipping through Newcastle.

DISCLAIMER

A lender or purchaser should not rely upon the accuracy of the information contained in this memorandum for the acquisition of any interest, long term sales, investments, loans etc., but should rely upon their own due diligence and independent enquiries prior to the completion of any purchase or entering any loan agreement.

Rick West

R. F. West BE, Hon F. AusIMM, CP.
Mining Consultant
11th June 2019.


CHARTERED PROFESSIONAL
THE AUSTRALASIAN INSTITUTE OF
MINING
&
METALLURGY
RICHARD F WEST
MINING

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SAND COMPARISON ASSESSMENT, Revised July 2018 Compiled by Peter Greenham, National Association of Testing Authorities Technical Assessor for Construction Materials. Member of the Australian Organisation for Quality.

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R F WEST BE, Hon FAIMM,
CONSULTING MINING ENGINEER

30th May 2025.

The Director,
Claystone International Pty Ltd.
P.O. Box 6507,
Q Super Centre,
Mermaid Waters,
Queensland 4218.

Dear Sir,

CONTAINED IN CLAYSTONE INTERNATIONAL PTY LTD'S LOTS 5 6 AND 7 YAMMACOONA QUARRY.

R F West, (Consulting Mining Engineer) has been requested to provide a report concerning the pozzolanic sandstone contained within Lots 5, 6, and 7 in DP 264346 within the Yammacoona Quarry, Gwydir Shire Council, Parish Adams, County Burnett, in northern New South Wales which is part of the Yammacoona Estates.

This tonnage assessment is prepared for the information of the Director, Claystone International Pty Ltd. (CIPL) and may be used in discussions with lenders, banks and other parties.

CIPL's sole owner and Director is Mr. William Clift. His contact details are:
Mr. W. L. Clift,
Mobile Phone: 0431 619 211
Email wsanna_anna@yahoo.com.

This assessment is based on geological information contained in inhouse CIPL reports and several visits to the site.

This Yammacoona Quarry site is approximately 12 kilometres south of the Provincial centre of Warialda in northern New South Wales and is accessible via the Adams Scrub Road, 10 kilometres west from Koloona.

Warialda is situated on the Gwydir Highway between Inverell and Moree and is 100 kilometres south of the Queensland-New South Wales border town of Goondiwindi. It is on the North-West Slopes of the New England Tablelands and has an elevation above sea level of 400 metres. The Warialda area experiences cold winters and warm to hot summers with a temperature range from minus 8°C to 44°C throughout the year. Its average annual rainfall is 680 mm with a definite summer dominance.

At present, the quarry is accessed via Adams Scrub Road, Warialda, in northern New South Wales.

The subject land includes Lots 5, 6, and 7 in DP 264346. The land is zoned RU1 – Primary Production. Extractive industries are permissible in this zone with the consent of Council.

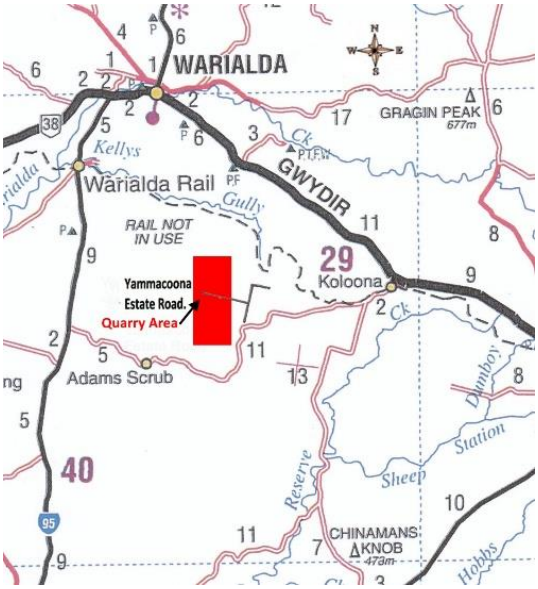

Figure 1. Quarry Access Plan.

The Yammacoona Quarry contains a soft friable pozzolanic sandstone resource contained within Lots 5, 6, and 7. Under normal quarrying conditions approximately 80% of this material can be extracted due to batters and haul roads etc.

Lot 5 area is approximately 64ha. Lot 6 area is approximately 67ha. Lot 7 area is approximately 64ha.

A 0.3 metre overlying layer soil and an 8 metre of covering sand will be removed and stockpiled during the mining cycle because it is overburden material. Portion of this material will be bulldozed back over the worked-out areas of the quarry at the conclusion of quarrying as part of the rehabilitation process.

The underlaying soft friable pozzolanic sandstone resource contained within Lots 5, 6, and 7 based on RAB drilling and a deeper borehole drilled in Lot 7 has a thickness of about 82 metres.

BORE HOLE IN LOT 7 BR11019867 - Finalized
CLIENT : "WILCLI - William Clift"
# of SAMPLES : 14
DATE RECEIVED : 2011-02-23 DATE FINALIZED : 2011-02-28
PROJECT : ' MS82"

SAMPLE	Al2O3	BaO	CaO	MgO	SiO2	Fe2O3	K2O	Na2O	TiO2	LOI	Total	DESCRIPTION
INTERVAL	%	%	%	%	%	%	%	%	%	%	%	
4M	4.15	0.01	0.01	0.04	91.7	1.65	0.04	0	0.33	2.01	99.94	Soil sand
6M	3.33	0.01	0.04	0.03	93.8	1.1	0.04	0	0.15	1.42	99.92	sand
9M	12.05	0.02	0.08	0.2	77.6	3.72	0.42	0.05	0.85	4.91	99.9	sandstone
15M	18.75	0.06	0.51	1.04	66.1	2.99	1.93	0.46	1.14	6.64	99.62	sandstone
20M	17.75	0.09	1.02	1.52	63.5	4.88	1.97	0.97	0.99	6.91	99.6	sandstone
26M	17.2	0.16	2.18	1.73	62.6	4.88	2.3	1.47	0.94	6.06	99.52	sandstone
30M	14.55	0.09	2.43	1.5	62.8	6.63	2.04	0.86	0.81	7.82	99.53	sandstone
42M	15.6	0.12	2.54	1.47	66.8	3.23	2.39	1.75	0.72	4.96	99.58	sandstone
45M	15.15	0.1	2.09	1.28	66.8	3.75	2.16	1.9	0.89	5.44	99.56	sandstone
51M	16.55	0.06	1.53	1.82	66.5	3.67	2.14	0.59	0.76	6.08	99.7	sandstone
60M	13.2	0.05	2.12	0.75	64.8	7.34	2.33	0.69	0.55	7.6	99.43	sandstone
72M	19.9	0.02	0.36	0.23	51.9	0.77	0.59	0.1	1.27	24.57	99.71	sandstone
81M	8.8	0.04	0.18	0.17	84.6	0.97	1.91	0.13	0.36	2.66	99.82	sandstone
90M	11	0.05	0.15	0.25	80.5	1.41	2.76	0.13	0.36	3.2	99.81	sandstone

Figure 2. Lot 7 bore hole key XRF assay results.

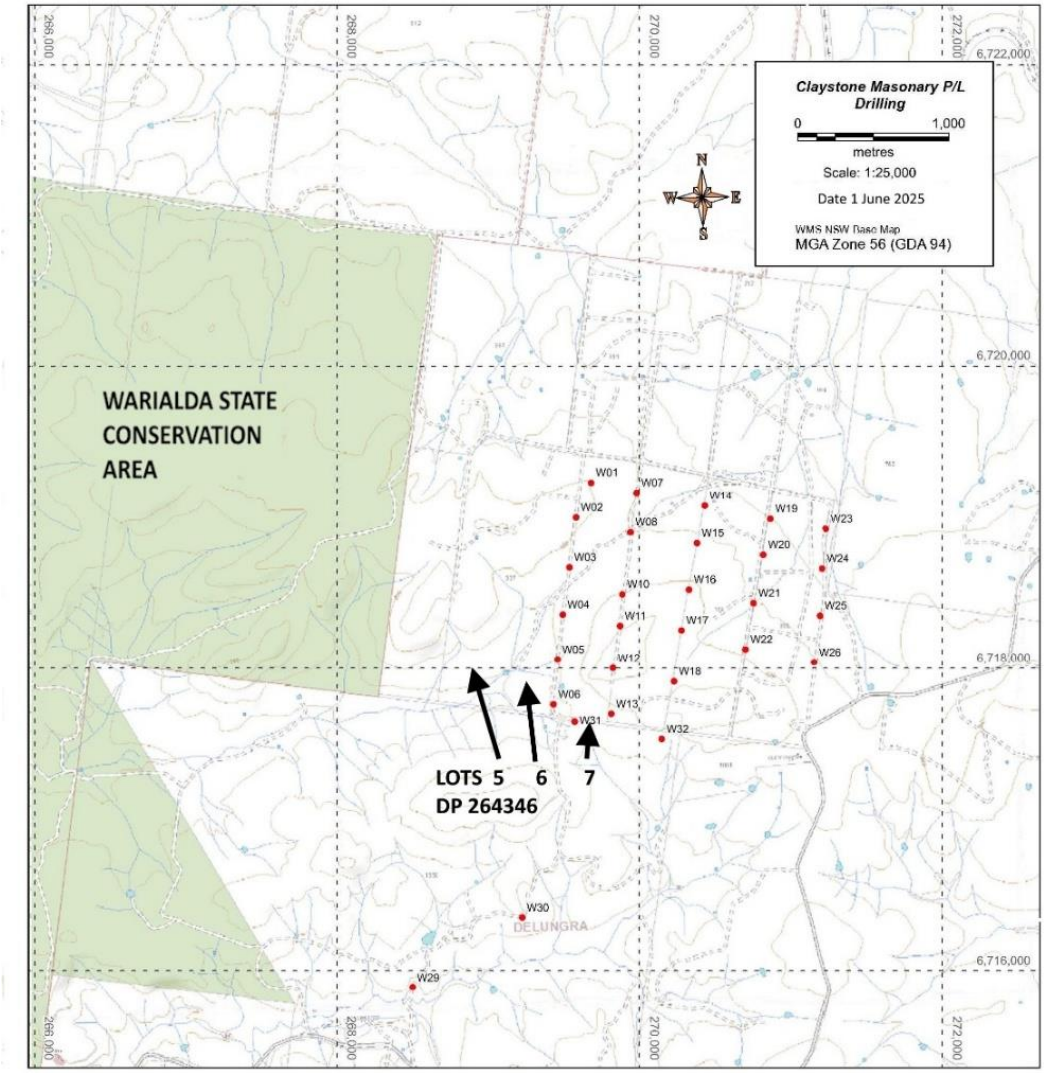

Figure 3. Layout of Lots 5,6 and 7 DP 264346 and location of RAB drill Holes.

Based on the above and the in-situ bulk density of 2.4 the total amount of pozzolanic mining of resources contained in the other adjoining Lots which result in the non-sterilisation of resource in batters at the boundaries of Lots 5, 6, and 7 as pit batter walls. Lot 5 area is approximately 64ha. Lot 6 area is approximately 67ha. Lot 7 area is approximately 64ha. Total area is approximately 195ha or 1,950,000 square metres.

The pozzolanic sandstone thickness is expected above drilling, general area geology etc. to have an extractable 82 metres under the overburden sand and soil and a bulk density of 2.4. Based on the recovery of 80% of this material there is 307 million tonnes of the pozzolanic sandstone which quarrying would recover (rounded). However, it should be noted that the Lot 7 bore hole bottomed in sandstone indicating the possibility of more sandstone at depth.

Therefore, I expect that 307 million tonnes of the pozzolanic sandstone will be recovered.

General information about the pozzolanic sandstone is included for the general interest of potential investors. The soft friable pozzolanic sandstone resource will be used in concrete structures as an enhancing pozzolanic material add mix product, to increase their tensile strengths and reduce their porosity. This sand is approximately 70% to 80% quartz and 10% to 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concrete. Borehole and RAB drilling indicates that this pozzolanic material a thickness of at least 82metres.

The pozzolanic sandstone, when crushed and screened, produces an angular grained quartz rich sand, which is highly suited to the manufacture of high tensile concrete. The replacement of between ten and 40 percent of this sand with the cement in a concrete mix has been demonstrated to increase the strength and water resistance properties of that concrete mix. In a reaction with the slaked lime released from the cement four principal concrete hardening compounds formed during and beyond the concrete time being Tricalcium Silicate (Ca_3SiO_5), Dicalcium Silicate (Ca_2SiO_4), Tricalcium Aluminate ($Ca_3Al_2O_6$) and Tetracalcium Aluminoferrite ($Ca_4Al_2Fe_2O_{10}$). These make the concrete stronger, reduce the tendency for the concrete to shrink and crack and fill in concrete cracks.

General structural concrete is slightly porous and as the concrete ages, it shrinks and fine cracks form within it. These fine cracks allow water, containing corrosives such as dissolved oxygen, carbon dioxide, chlorides and various salts, to soak into the concrete and corrode and rust its reinforcing steel. This corrosion and rusting results in expansion within the concrete and eventually causes failure of the concrete (concrete cancer). This is greatly reduced with the replacement of some of the cement in the concrete mix by a volcanic Pozzolan.

In conclusion it is expected that 307 million tonnes of the pozzolanic sandstone will be recovered.

DISCLAIMER

A lender or purchaser should not rely upon the accuracy of the information contained in this memorandum for the acquisition of any interest, long term sales, investments, loans etc., but should rely upon their own due diligence and independent enquiries prior to the completion of any purchase or entering any loan agreement.

Rick West

R. F. West BE, Hon F. AusIMM.
Mining Consultant
30th May 2025.

R F WEST BE, HonFAIMM, CP(Ret),
CONSULTING MINING ENGINEER

R. F. WEST and ASSOCIATES,
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DURAL, N.S.W. 2158
Mobile: +61 419 214 298
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14 July 2024.

Mining Engineer's Study of The UPSA Pozzolanic Sand Within The Claystone Tenements Warialda Region New South Wales.

Contents

1. EXECUTIVE SUMMARY AND CONCLUSIONS

The agreed UPSA area covering approximately 1.3 km^2 (Lots 5 and 6 DP 264346 Gwydir Shire Council) is assessed to contain an in-situ Measured Resource of 250 million tonnes of Pozzolanic sand and sandstone. The UPSA area is wholly contained within Claystone Masonry Pty Ltd's Yammacoona Quarry consisting of about 17 km^2 of Tenements which contain extensive resources of in-situ Pozzolanic sand and sandstone down to 90 metres. Drill holes bottomed in pozzolanic sandstone.

Figure 1. Test Pit showing the Start of Pozzolanic Sandstone

This Pozzolanic material is a siliceous and aluminous material which alone, possesses little or no cementitious value. But, in finely crushed form and with moisture the Pozzolanic material chemically reacts with calcium hydroxide in concrete mixes at ordinary temperatures, to form compounds possessing enhanced cementitious properties and replacing up to about 40% of the Portland cement

resulting in increased durability and/or compressive strength. Pozzolans combine with the lime to produce additional calcium silicate and aluminium hydrate crystal compounds, the material responsible for holding concrete together.

Mining will be started on a small scale with the bulldozer ripping and heaping working a series of 200m faces to a depth of 6m. The soft pozzolanic sandstone will not require any drilling or blasting. A frontend loader will load the pozzolanic sandstone and sand into a hopper feeding a mobile screening station which will deliver the fine shipping material to 33 tonne highway common 3 axle rigid trucks and 4 axle dog trailers and common 33.5 tonne 7 axle B-double highway trucks. The trucks will initially haul the pozzolanic sandstone fines to Port Brisbane to be FOB loaded for shipment.

All oversized pozzolanic sandstone will be stored within the quarry for future crushing, when the primary and secondary crushers and associated screening stations are installed.

Trucking initially will be along council service roads until the quarry access and railway private service road has been installed and commissioned. This will connect to the NSW State service road system allowing the project faster transport to Port Brisbane.

When the Moree to Warialda Rail has been installed and commissioned, the project's product will be rail-freighted FOB through Port Newcastle and the production rate will be expanded to a nominal 10 million tonnes per annum.

The small amount of overburden and soil that covers the Pozzolanic sandstone will be used in water-control bund walls and later as back fill in mined out areas during the rehabilitation process when the area is refurbished for cattle and perhaps sheep grazing.

2. INTRODUCTION.

R F West, (Principal of R. F. West and Associates) has been requested to provide a Mining Engineer's Report about the Pozzolanic quartz sandstone contained in the UPSA Area within Claystone Masonry Pty Ltd's the Yammacoona Quarry consisting of about 17 km^2 of Tenements that contain extensive in-situ resources of Pozzolanic sand and sandstone. (Refer to Figure 2 below). Claystone Masonry Pty Ltd (Claystone) is the registered owner of land and the Yammacoona Quarry at Koloona, 19 kilometres west of Delungra, near the Provincial centre of Warialda in Northern New South Wales. The land comprises the Yammacoona Estates, Adams Scrub Road, Warialda, 2403.

R. F. West is a consulting mining engineer who has been an independent consultant from 1987 to the present and has had more than 60 years of experience in the mining industry including production management and supervision, mineral resource and ore reserve appraisal, mine planning and production scheduling, feasibility studies, project valuations, mineral valuation reports, technical and due diligence audits with risk assessment, expert witness work, project construction coordination and progress audits in base metal, iron ore, nickel laterite, mineral sands, pozzolanic sandstone, industrial and semiprecious minerals and precious metal mines and projects within Australia, and overseas.

The UPSA area covers approximately 1.3 km^2 (best described as Lots 5 and 6 DP 264346 Gwydir Shire Council) is assessed to contain an in-situ Measured Resource of 250 million tonnes of Pozzolanic sand and sandstone based on drilling and costeaning.

This quarry site is approximately 12 kilometres south of the Provincial centre of Warialda in northern New South Wales and is accessible via the Adams Scrub Road and is 10 kilometres west from Koloona.

CIPL's sole owner and Director is Mr. William Clift. His contact details are:
Mr. W. L. Clift,
Mobile Phone: 0431 619 211
Email wsanna_anna@yahoo.com.

The JORC Code (2012) and the VALMIN Code (2015) set out the principles and matters, which should be considered and applied in the preparation of a Mining Engineers report concerned with mining assets, including resources and reserves.

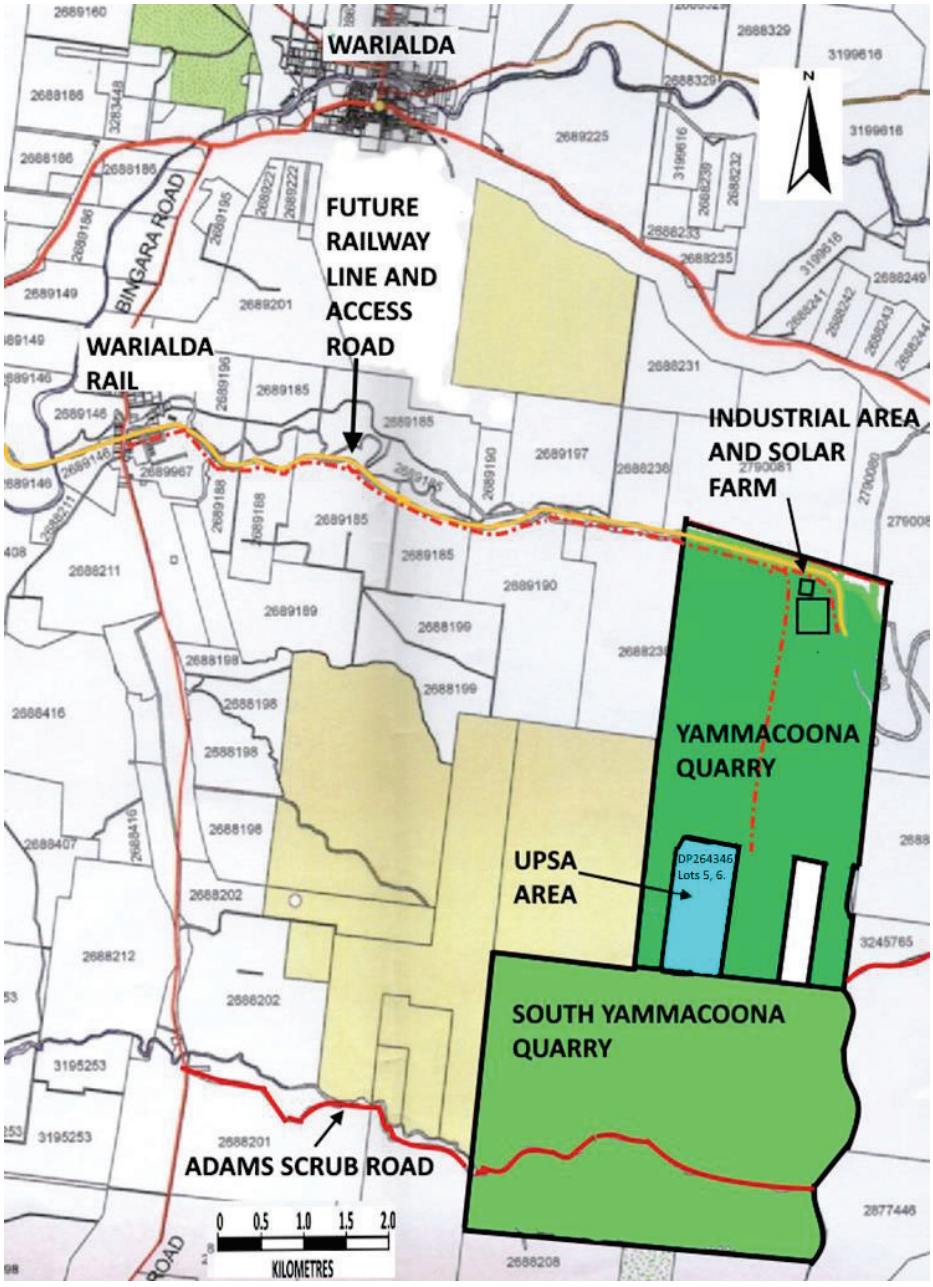


Figure 2. Claystone Masonry Pty Ltd's Yammacoona Quarry.

Mining engineering consultants R. F. West and Associates have made several site inspections since 2010 (the last being in 2018) and have had access to Claystone's files and supporting data. It considers that the contained data are comprehensive and comply with the requirements of both the JORC Code (2012) and

the VALMIN Code (2015) principles and requirements, which should be considered and applied when preparing a Mining Engineers Report concerned with mining assets, including resources and reserves. There have been quarrying activities conducted on the quarry site that have demonstrated that the assumed quarrying methods are effective in practice and have produced bulk sample material.

3. BENEFITS OF POZZOLANS IN CONCRETE MIXES

A pozzolan is usually defined as “siliceous or siliceous and aluminous material which in itself, possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties”.

In other words, a simple everyday definition of a 'pozzolan' could be 'a finely powdered material which can be added to Portland cement concrete mix replacing up to about 40% of the Portland cement to increase durability and/or compressive strength’.
Calcium hydroxide (lime) accounts for up to 25% of the hydrated Portland cement, and lime does not contribute to the concrete’s strength or durability. Pozzolans combine with the lime to produce additional calcium silicate and aluminium hydrate crystal compounds, the material responsible for holding concrete together.

By consuming the excess lime:

- The strength of the concrete is increased,
- Its density is increased,
- Efflorescence is decreased,

The propensity for alkali-silica reaction (reaction with glass) is decreased, or even virtually eliminated. Typically, pozzolans are used as cement replacements rather than cement additions. Adding pozzolans to an existing concrete mix without removing an equivalent amount of cement increases the paste content and decreases the water/cement ratio. In other words, adding more pozzolans to a mix changes the mix proportions. Replacing some of the cement with pozzolans preserves the mix proportions. Pozzolans not only strengthen and seal the concrete, but they also have many other beneficial features.

Concrete permeability to water is decreased and density increased and in the long-term, pozzolanic chemical reaction ties up free lime, resulting in fewer bleed channels and decreased permeability within the concrete. The contained Pozzolanic material combines with the cements surplus alkalis within the concrete over many years reducing alkali silica reactivity that otherwise combine with silica from aggregates. This reduces the potentially destructive expansion caused by that alkali silica reaction. The addition of pozzolans also gives the concrete improved water tightness and makes it more impermeable to fresh and sea water and gives it resistance to repetitive water freeze and thaw failure. The Pozzolan cement reaction also tends to fill shrinkage cracks that form over many years within the concrete.

To be effective, the pozzolan material must contain reactive silicates or alumino-silicates.
The particles must be fine enough to provide a sufficient reactive surface area for the solid-state chemical reactions. The particles react with the alkalis and calcium hydroxide from the cement to produce cementitious compounds (calcium-silicate hydrate gel, calcium-alumino silicates, etc.).
Pozzolan material must have a particle size generally less than 45 µm (micron). Above this size, they are too big to allow a timely reaction between the lime that is given off as the cement hardens, and the silicate or alumino-silicate of the pozzolan. Some researchers in the field insist that even this is normally still too big, and they specify a maximum of 10 µm.

4. BRIEF DESCRIPTION OF THE PROJECT

Mining will be started on a small scale with the bulldozer ripping and heaping working a series of 200m faces to a depth of 6m. The soft pozzolanic sandstone will not require any drilling or blasting. A front-end loader will load the pozzolanic sandstone and sand into a hopper feeding a mobile screening station which will deliver the fine shipping material to 33 tonne highway common 3 axle rigid trucks and 4 axle dog trailers and common 33.5 tonne 7 axle B-double highway trucks. The trucks will initially haul the pozzolanic sandstone fines to Port Brisbane to be FOB loaded for shipment.

All oversized pozzolanic sandstone will be stored within the quarry for future crushing, when the primary and secondary crushers and associated screening stations are installed.

Figure 3. Loader loading screened Pozzolanic sand and sandstone into highway trucks for shipment.

Trucking initially will be along council service roads until the quarry access and railway private service road has been installed and commissioned. This will connect to the NSW State service road system allowing the project faster transport to Port Brisbane.

When the Moree to Warialda Rail has been installed and commissioned, the project's product will be rail- freighted FOB through Port Newcastle. At that time the production rate will be expanded to a nominal 10 million tonnes per annum.

At that time a project supporting industrial plant area containing a workshop, warehouse, laboratory, office etc, will have been constructed beside the railway and railway loading station. Refer to Figure 4.

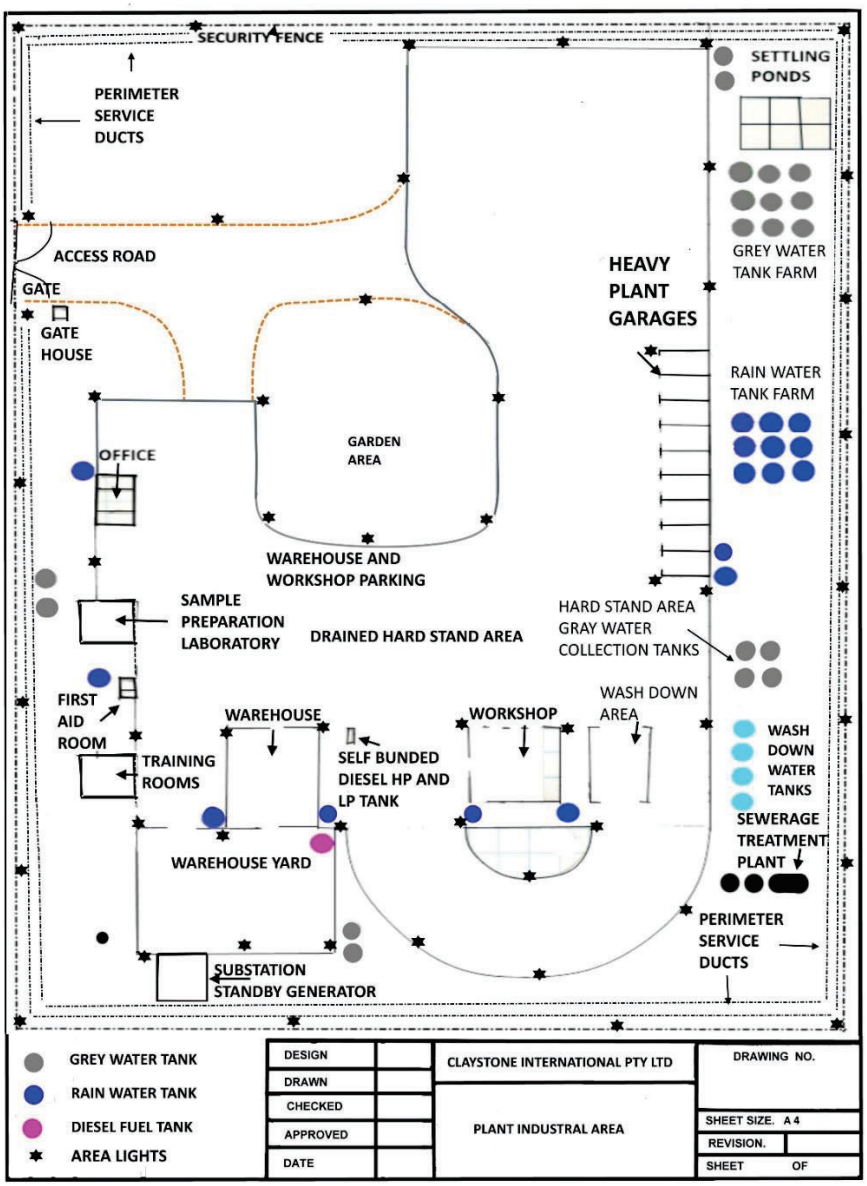


Figure 4. Planned Layout of Quarry Industrial Area.

Rick West

R. F. West
14July 2024.

Appendix 1

This Appended file:-

"VALUATION OF SANDS AND SANDSTONE CONTAINED IN CLAYSTONE MASONRY PTY LTD'S LOT 5 QUARRY, YAMMACOONA ESTATES."

Was researched and written by R F West, (Principal of Wesral Mintec Pty Ltd (ABN 23 118 847 199) on 27th July 2022. Although it has not been updated, permission is given to Mr. W. L. Clift to append it to this Mining Engineers Report. The Pozzolanic quartz sandstone is contained in the UPSA Area within Claystone Masonry Pty Ltd's Yammacoona Quarry.

In the valuation Report on Lot 5 written by the author dated 27 July 2022, the valuation was set out on Page 20, it stated that for the 101.1 million metric tonnes 'in situ' valuation is in the range of Aus $2,332 Million & Aus $1,724 Million with a preferred value of Aus $2,028 Million. This equates to Aus $ 20 per metric tonne.

This valuation is now two years out of date and has increased during that period.

WESRAL MINTEC PTY LIMITED
19/28 ROSEBANK AVENUE,
DURAL, N.S.W. 2158

R F WEST BE, FAIMM,CP(min),
CONSULTING MINING ENGINEER

TELEPHONE: 612) 9654 1848
MOBILE: 0419 214 298
EMAIL: rickwest4@bigpond.com
27th July 2022.

The Director,
Claystone Masonry Pty Ltd.
P.O. Box 6507,
Q Super Centre,
Mermaid Waters,
Queensland 4218.

Dear Sir,

VALUATION OF SANDS AND SANDSTONE CONTAINED IN CLAYSTONE MASONRY PTY LTD'S LOT 5 QUARRY, YAMMACOONA ESTATES.

R F West, (Principal of Wesral Mintec Pty Ltd (ABN 23 118 847 199) has been requested to provide a valuation of the pigmented sand and quartz sandstone contained within Lot 5 in DP 264346, Gwydir Shire Council, Parish Adams, County Burnett, in northern New South Wales which is part of the Yammacoona Estates.

This valuation is prepared for the information of the Directors, Claystone Masonry Pty Ltd. (Claystone) and may be used in discussions with lenders and banks.

The valuation is based on geological information contained in inhouse Claystone reports, visits to the site (the most recent being 24th to 28th October 2018), marketing information and cost information that is common knowledge through the sand quarrying industry within Australia and an expected 60-year programme of quarrying.

It includes sand and sandstone resources contained only within Lot 5 and assumes the concurrent mining of resources contained in the other adjoining Lots adjoining Lot 5, which result in the non-sterilisation of resource in batters at the boundaries of Lot 5 as pit batter walls. Lot 5 area is approximately 60.4Ha.

A 7.3 metre overlying layer of naturally pigmented sand to be used in the manufacture of masonry products will be removed and stockpiled during the mining cycle. It will be sold and delivered to a masonry plant located approximately 4 kilometres north of the claystone quarries. While the masonry plant and manufacturing project is not part of this valuation and is not included in this assessment.

Over the total life of the Claystone Lot 5 quarry, a total of 101.1 million tonnes of the high tensile sand/sandstone will be mined down to more than 70 metres depth, crushed, sized, and rail transported to Newcastle for overseas shipment. Thus, a total of 101.1 million tonnes are included in this valuation.

This angular fine grained high tensile sand/sandstone will be used in concrete structures as an enhancing pozzolanic material add mix product, to increase its tensile strength and reduce its porosity. It has an FOB sale value of Aus$150 per tonne and is expected to achieve a profit of more than A$30 per tonne. The sand is approximately 70% to 80% quartz and 10% to 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concrete.

1. SUMMARY

Claystone Masonry Pty Ltd. (Claystone) holds Development Consent 32/87 being for the extraction of sand (amongst other things). This was issued by Yallaroi (now Gwydir) Shire Council in relation to Lot 7 as well as Lots 6 and 5 in DP 264346 on the 15th April 1988.

Also, Claystone in joint venture with the Australian Inland Railway Expressway Pty Ltd (AIRE) is in the process of applying for consent from the NSW State Government for a State Significant Development to extract additional concrete sand material to the project's future market requirements. That sand will be extracted from Lot 5 and other quarries in Claystone's other adjoining Lots. Anticipated total annual production is 5 million tonnes per annum.

The total in-situ resources contained in Lot 5 is 7.5 million tonnes of pigmented sand that is to be sent to a masonry plant about 4 kilometres north of the quarry and is excluded from this valuation. Under this is 101 million tonnes of high tensile concrete quality angular grained quartz pozzolanic sand and pozzolanic sandstone. Potential exists for these resources to be increased by deeper excavation.

This pozzolanic sand/sandstone is approximately 70% - 80% quartz and 10% - 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as an efficient pozzolan when used in high tensile concretes.

Claystone owns Lot 5, DP 264346 and Gwydir Mining Pty Ltd (GMPL) holds the right to mine it for and on behalf of Claystone.

The pozzolanic sandstone, when crushed and screened, produces an angular grained quartz rich sand, which is highly suited to the manufacture of high tensile concrete.

The replacement of between ten and 40 percent of this sand with the cement in a concrete mix has been demonstrated to increase the strength and water resistance properties of that concrete mix.

An associated company, Claystone International Pty Ltd (CIPL), holds an exploration licence, EL 8286 granted under the New South Wales Mining Act for group 1 and 2 minerals, which surrounds the sand quarry. This tenement is unrelated to Claystone sand quarry. (Refer Figure 1 below.)

It is planned to commence quarrying in 2022-3 and build up production to a manageable rate from half a million tonnes in the first year of production to more than 5 million tonnes per annum being what the market can carry.

Due to the knowledge of the sand resource and planned production schedule, an 'In situ' or 'Rules of Thumb' Method have been chosen to assess the value of sand and sandstone in Lot 5. This was back checked against planned production figures with considered risk factors.

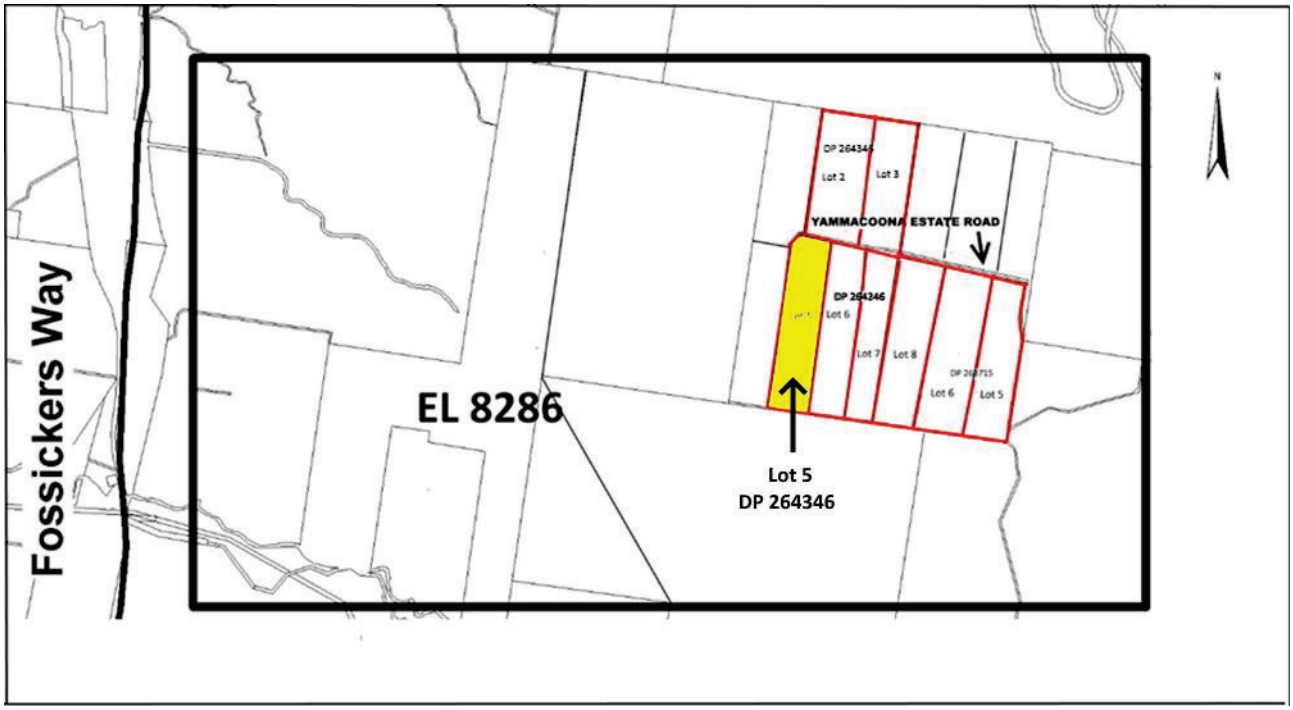


Fig. 1. Layout of Lots 2,3,5 to 8 DP 264346 and Lots 5 and 6 in DP 263715 within EL8286.

Due to the knowledge of the sand resource and planned production schedule, an 'In situ' or 'Rules of Thumb' Method have been chosen to assess the value of sand and sandstone in Lot 5. This was back checked against planned production figures with considered risk factors.

Using the above, it is my opinion that the value of the Sand and Sandstone in Lot 5 is within a range of Aus$2,332 million and Aus$1,724 million with a preferred value of Aus$2,028 million.

2. INTRODUCTION

Claystone owns the right to quarry several tenements in northern New South Wales, that contain both naturally pigmented sand (ideal for masonry manufacture) and an underlying fine grained sub-angular to angular pozzolanic quartz sand and pozzolanic sandstone.

This unusually pure quartz and alumina sand and sandstone (approximately 70% - 80% quartz and 10% - 14% alumina), when crushed and screened, produces a quartz rich sand, which is highly suited to the manufacture of high tensile concrete due to its spread of fine sized and angular to sub-angular grains, which act as a very efficient pozzolan when used in high tensile concretes.

Structural concrete is slightly porous and as the concrete ages, it shrinks and fine cracks form within it. These fine cracks allow water, containing corrosives such as dissolved oxygen, carbon dioxide, chlorides and various salts, to soak into the concrete and corrode and rust its reinforcing steel. This corrosion and rusting results in expansion within the concrete and eventually causes failure of the concrete (concrete cancer).

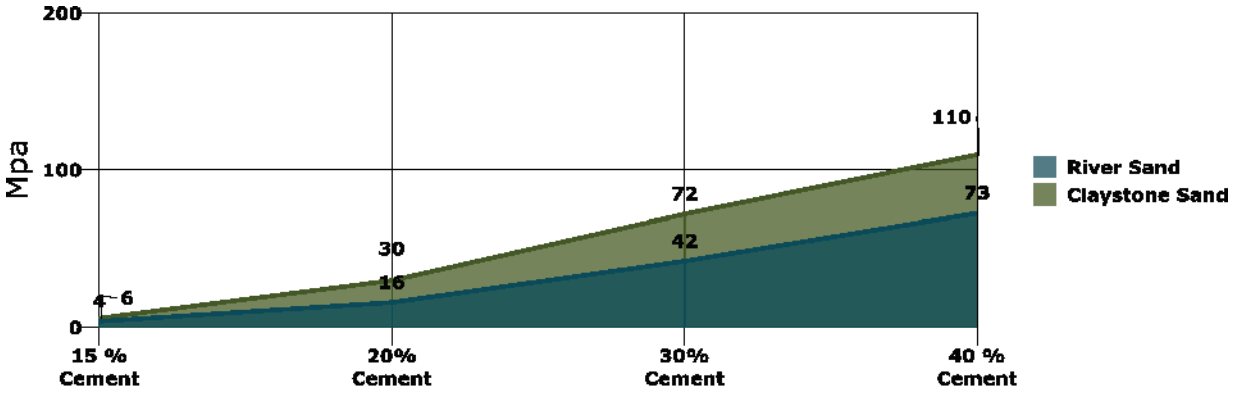
Claystone's quartz sand grains are finely sized and are angular to sub-angular. They are not the normal well-rounded water and wind deposited grains but are like the angular pyroclastic flow volcanic deposited sandstones of Mount Vesuvius and Mount Etna in Italy and they act as a pozzolan, when mixed with sand cement and aggregate to make high strength concrete. When this fine sand is mixed with other sands, it

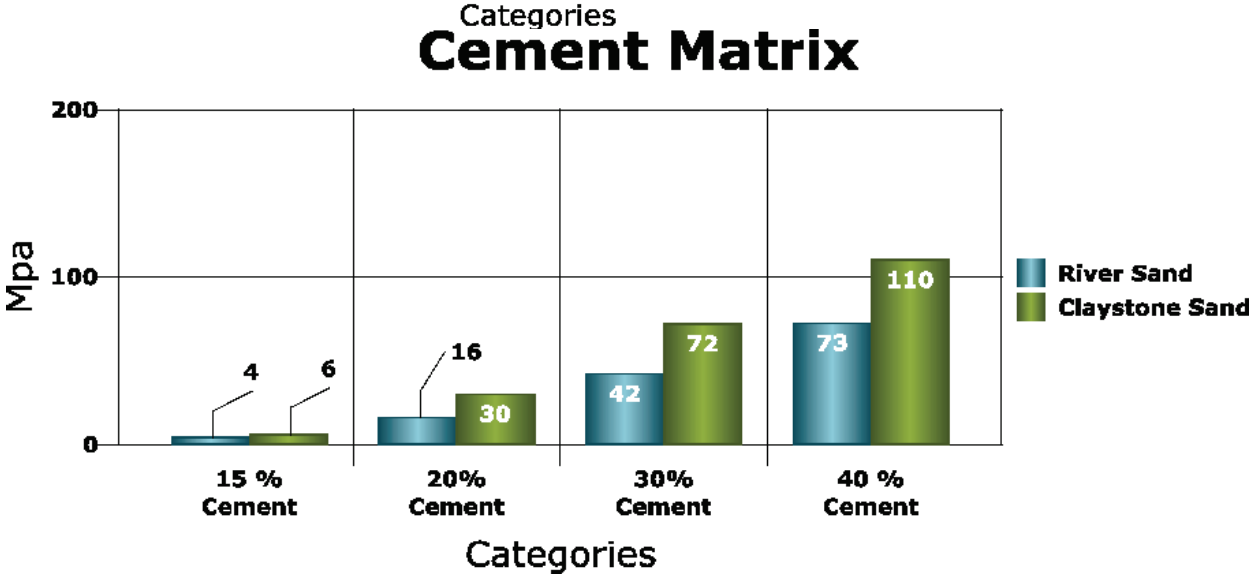
fills or partially fills voids and becomes compacted within the concrete, reducing the concrete's porousness. The overall effect is to reduce water penetration and increase the effective life of the concrete.

A "pozzolan" is defined as "A siliceous or siliceous and aluminous material, which possesses little or no cementing property, but will in a finely divided form - and in the presence of moisture - chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties."

Peter Greenham, National Association of Testing Authorities Technical Assessor for Construction Materials, carried out tests to compare the Gwydir sand with a control sample of sand maintaining the same water cement ratio and determine the difference in strength by casting test specimens and testing them with a crushing machine after 7 and 28 days. The test method of the casting and crushing of the concrete cubes were in accordance with Australian and international standards.

Cement Matrix





The water cement ratio was in equal portions with both sand types. The mix design for the materials was 3 Parts Sand, 2 Parts Cement and 1 Part Water. Each mix design was mixed in 2-kilogram batches, where there were 1500 grams of Sand, 1000 Grams of Cement and 500 Grams of Water.

A sample of sand was used as a control sample, that has been used as a benchmark. The sample sand was well graded fine sand designed for render and grout products.

From the Trials, the laboratory was able to project "Achievable Results" at different percentages of cement.
Note: The 28-day Results of MPa for Test data 2 were projected as an indication until the final confirming results were received.

Crushing and screening the quarried quartz sandstone, produces a finely sized quartz sand containing approximately 70% quartz and 14% alumina, which has excellent properties for making high tensile strength concrete and masonry products. The four principal concrete hardening compounds formed resulting from the CIPL sand and the cement include Tricalcium Silicate (Ca_3SiO_5), Dicalcium Silicate (Ca_2SiO_4), Tricalcium Aluminate ($Ca_3Al_2O_6$) and Tetracalcium Aluminoferrite ($Ca_4Al_2Fe_2O_{10}$).

The blending of ten percent of this sand with other sands in concrete mixes has demonstrated a considerable increase in the strength and water resistance properties of various concrete mixes.

Claystone's sole owner and Director is Mr. William Clift. His contact details are:
Mr. W. L. Clift,
Mobile Phone: 0431 619 211
Email wsanna_anna@yahoo.com.

3. PROJECT LOCATION

Claystone Masonry Pty Ltd is the registered owner of land at Koloona 19 kilometres west of Delungra, near the Provincial centre of Warialda in Northern New South Wales. The land comprises the Yammacoona Estates, Adam scrub Road, Warialda, 2403 (Lots 7 and 8 in DP 264346) Gwydir Shire Council, Parish Adams, County Burnett), in northern New South Wales.

This quarry site is approximately 12 kilometres south of the Provincial centre of Warialda in northern New South Wales and is accessible via the Adams Scrub Road, 10 kilometres west from Koloona.

Warialda is situated on the Gwydir Highway between Inverell and Moree and is 100 kilometres south of the Queensland-New South Wales border town of Goondiwindi. It is on the North-West Slopes of the New England Tablelands and has an elevation above sea level of 400 metres. The Warialda area experiences cold winters and warm to hot summers with a temperature range from minus 8°C to 44°C throughout the year. Its average annual rainfall is 680 mm with a definite summer dominance.

The subject land covered by EL 8286 in 2014 includes Lots 2,3,5, 6, 7, and 8 in DP 264346 and Lots 5 and 6 in DP 263715. The land is zoned RU1 – Primary Production. Extractive industries are permissible in this zone with the consent of Council.

Lot 5 in DP 264346 has an average length of approximately 1,700 metres and an average width of approximately 355 metres and drilling has indicated the material of interest extends to a depth of approximately 80 metres, an area of approximately 60.2 hectares. However, the top 7.5 metres consists of approximately 200 millimetres of surface soil and 7.3 metres of a natural pigmented sand having a bulk density of 1.7.

For the purposes of this valuation a quarry land area of 60.2 hectares has been evaluated for an extraction thickness of 70 metres of soft friable sandstone under the pigmented sand. The in-situ specific gravity of this material is 2.4. and there are more than 101.1 million tonnes of the soft friable sandstone of interest contained within this 60.2 hectare area of interest.

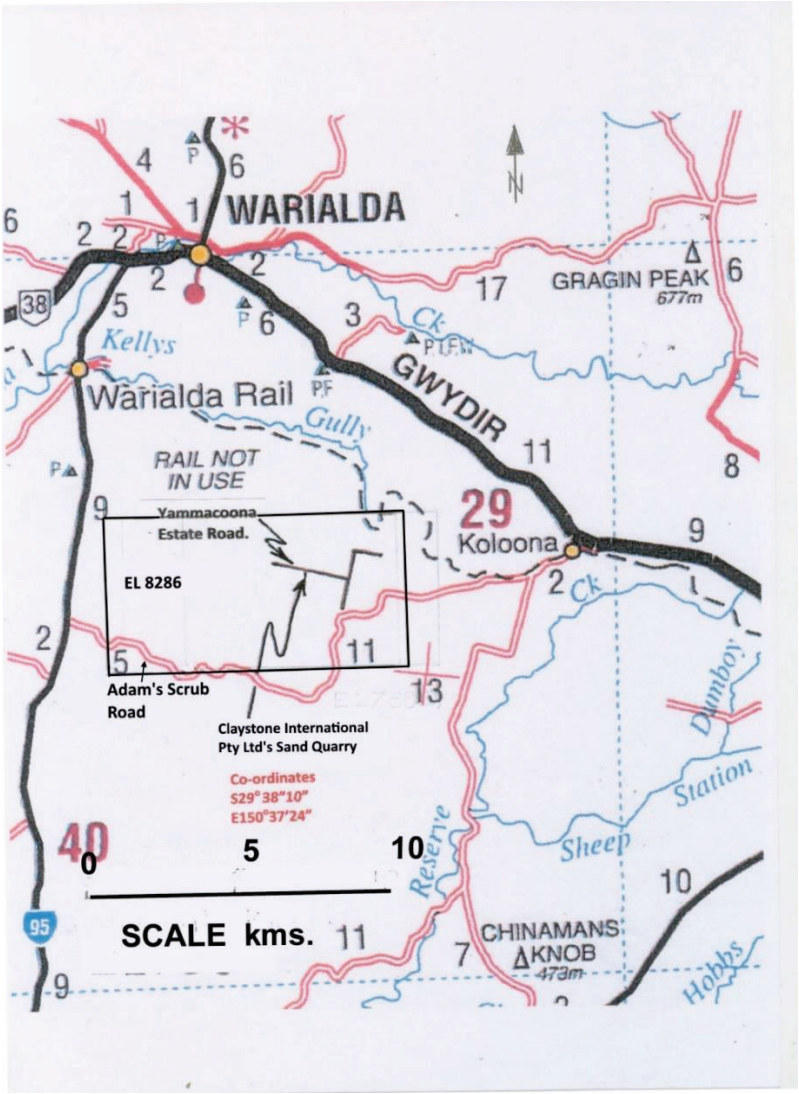


Fig. 2. Claystone International's Sand Quarry Location.

At present, the quarry is accessed via Adams Scrub Road, Warialda, in northern New South Wales.

4. REGIONAL GEOLOGY

The regional geology between Warialda and Bingara lies within the New England fold belt.

There are two major north south trending geological belts separated by the regionally extensive Peel Fault. This fault extends several hundred kilometres from Warialda in northern NSW, to Forster on the coast.

The serpentinites emplaced along the Peel fault, appear to extend further north of Warialda under the cover of the Great Australian Basin. It has been an active fault for about 350 million years. Its location is indicated by a prominent escarpment and a change in the rock types on either side of it.

PERIOD	YEARS AGO	LIFE FORMS ORIGINATING	GEOLOGICAL EVENTS IN AREA
QUATERNARY	Present to 2,000,000	Human Beings	Continued alluvial deposition.
TERTIARY	65,000,000	Grazing and carnivorous mammals	Volcanic activity produced basalts over *much* of area.
CRETACEOUS	144,000,000	Last dinosaurs First flowering plants	Continued deposition on land.
JURASSIC	213,000,000	First birds	No rocks preserved from this period in local area.
TRIASSIC	248,000,000	First dinosaurs and mammals	
PERMIAN	286,000,000	Mammal-like reptiles, last Trilobites	Deposition on land and in shallow sea giving rise to the giving rise to Gunnedah coal field.
CARBONIFEROUS	360,000,000	First reptiles; fern forests	Deformation, metamorphism, major activity of Peel fault
DEVONIAN	408,000,000	First amphibians and insects	Progressive glaciation and volcanic activity deformation, alteration and progressive shallowing of sea, and volcanic activity in west. *'Emplacement'* of serpentine.
SILURIAN	438,000,000	Vascular land plants	
ORDOVICIAN	505,000,000	First corals, fish with vertebrae	Deposition of deep sea sediments and basaltic lavas.
CAMBRIAN	590,000,000	Shellfish, Trilobites	Deposition of deep marine sediments.
PROTEROZOIC	700,000,000 1,500,000,000	Algae Complex cells	Formation of oldest seafloor lavas and intrusions which were subsequently altered to form serpentine.
ARCHEAN	2,500,000,000 3,500,000,000 4,500,000,000	Primitive cells Formation of the Earth	No record No record

The oldest rocks are of igneous and sedimentary origin formed more than 500 million years ago in the ocean floor. The igneous rocks have been altered to serpentine.

Volcanic muds, cherts, jaspers and lavas were deposited in the ocean floor about 400 million years ago. These now consist of low grade regionally metamorphosed, modified, deformed and thinly bedded chert, mudstone, wacke, basic volcanic and rare limestones. This was followed by uplifting, folding and faulting of these rocks around 300 million years ago. Then, about 36 million years ago, major basalt lava flows covered much of eastern Australia. Volcanic basalt activity occurred between both 36-38 million years ago and 18-20 million years ago. Since then, the region has settled into the stable area that exists today.

The geological history is summarised in the chart above, starting with the formation of the oldest seafloor lava and intrusions during the Cambrian Period, 590 million years ago.

Gold was first discovered in the Bingara region in 1852 and both small alluvial deposits and hard rock deposits were worked by both Chinese and European miners. From 1931 to 1948, the All Nations Gold Mine was worked and developed down to the 326-foot level within a shear zone containing quartz-calcite gold bearing greywackes.

Copper was discovered in the general area in the 1880's.

From 1968, the Mines Department and various companies have carried out exploration in the general area from Warialda rail to Bingara, without any major successful mineral discoveries being made.

Claystone will carry out exploration for viable mineralisation, but it will also examine prospective areas for industrial materials suited to masonry manufacture and for pozzolanic sands suited to concrete production.

5. GEOLOGY

The land, in the Claystone quarry area, consists of flat to gently sloping terrain with several hills having steep escarpments along their southern faces. The CIPL quarry area is in sands and friable sandstone within the Warialda Trough to the east of the Peele Fault.

The hills consist of tenacious friable, fine to very coarse-grained, quartz sandstones and minor pebbly sandstones and shales, which dip gently to the north. Outcropping sandstones are variably ferruginised, with local to extensive superficial, dark brown to black and purple, laterised sandstones rich in haematite and limonite. The sandstones are at least several tens of metres thick persisting beyond the tenements.

Within the tenement area the iron content is low, not exceeding 6% in any area of interest. The sand is approximately 70% - 80% quartz and 10% - 14% alumina. The sand grains are finely sized and are angular to sub-angular and act as efficient pozzolans when used in high tensile concretes. These sands and sandstones appear to be Permo-Triassic basin pyroclastic flows, ash fall deposited from Permian volcanics unconformably on a basement of Carboniferous to Permian age as a shallow marine and post marine sequence.

The hills are bordered to the east, northeast and north by an area of no outcrop, comprised of a sandy loam underlain in part by massive red to yellow fine sand. The sand, exposed in roadside excavations and dams has homogeneity, massive structure, a high degree of friability and persistence of colour laterally and vertically. There is minor fine stony material scattered randomly throughout the sand. The contained clay content is very low.

6. HISTORICAL WORK

Early geological surveys (registered with NSW Primary Industry and Mineral Resources) indicated more than 7 million tonnes of high quality, commercially unique quartz sand and quartz sandstone with minor valuable minerals including haematite, limonite etc. to a depth of 139 metres in 1989.

A locally based experienced operator, Inverell Aggregate Supplies Pty Ltd, then used 22 test sites averaging 15 metres in depth to indicate an open-ended resource of 50 million tonnes of naturally pigmented sand material suitable to be used in the manufacture of terrazzo and masonry type products. The bottom and extent of the deposit was not found at any point over the 2000 metre by 200 metre area tested.

Claystone's technical advisers identified that the site contains substantial deposits of oxide pigmented sand, suitable for colouring masonry overlying a soft, friable, fine grained high quartz sandstone. The masonry colours of this naturally coloured sand include red, yellow, and other colours that cannot be produced using sands mixed with chemically manufactured oxides which are not included in this valuation.

Professor David Stevens, Senior Partner and Cliff Barker, Senior Partner of HRC Partnership; assessed the project to be viable based on an estimated 50 million tonnes resource. They stated that the quality of the material was such, that high-quality low-cost masonry products could be mass produced using conventional machinery (HRC Partnership Pty Ltd., 12th August 2004). They reported a resource of 50 million tonnes of sand, which was open ended to depth and appeared to be conservative, based on a Mines Department bore hole.

Subsequent augur drilling and local bore drilling, carried out by Claystone's technical advisers to a depth of up to 30 metres, showed the sand bed to be consistent throughout the 22 separate sites. Following analysis and tests, Claystone and its technical advisers believe the quality of the material is such, that high-quality low-cost masonry products can be mass-produced using conventional machinery.

Recent work has shown the pigmented sand to be overlying a fine angular grained quartz pozzolanic sandstone. Claystone centrally sited and drilled a water bore, which indicates this sandstone has a thickness greater than 80 metres.

Bulk sampling has shown that it can be "free dig" extracted, without the need for drilling or blasting. This bed appears to be formed by Permo-Triassic basin pyroclastic flows and ash fall, deposited from Permian volcanics unconformably on a basement of Carboniferous to Permian age as a shallow marine and post marine sequence.

Besser Company Pty Ltd (Asia Pacific) carried out test work on the manufacture of masonry and lent its expertise to the Claystone project (described in the HRC Partnership report dated 12th August 2004).

7. PROJECT DESCRIPTION

Claystone holds Development Consent 32/87 being for the extraction of sand (amongst other things). This was issued by Yallaroi (now Gwydir) Shire Council in relation to Lot 5 as well as lots 6 and 7 in DP 264346 on the 15th April 1988.

Also, Claystone in joint venture with the Australian Inland Railway Expressway Pty Ltd (AIRE) is in the process of applying for consent from the NSW State Government for a State Significant Development to extract

additional concrete sand material to the project's future market requirements. That sand will be extracted from Lot 5 and quarries in Claystone's other adjoining Lots.

This valuation is only for Lot 5 in DP264346.

The nature of the sand is such that rainwater soaks in rapidly rather than pooling or running off elevated areas. However, the water does not penetrate the underlying sandstone, which has poor porosity due to its fine angular well packed grains.

Previous test pitting has shown the sand to stand well rather than to slump or fret away. The sand and the sandstone can be free dug without any drilling and blasting and can be readily bulldozer ripped.

The planned project includes an open cut operation to mine the sand. Fine lump material will be crushed and screened on site prior to rail transport to Newcastle for FOB shipment.

Existing low scrub and small shallow rooting trees ahead of the advancing pit area will be cleared and utilised in the quarry's protective bund walls. This material consists of 15 to 20 cm of sandy surface topsoil, scrub and roots.

The 7.3 metre layer of naturally pigmented sand will be stripped off from above the high tensile sand and friable sandstone and sold to a masonry product manufacturing plant which is not part of this valuation.

With the advance of the pit, the worked-out area will be re-contoured to safe slopes and the bund wall material swept back to provide the topsoil for natural and possibly assisted revegetation.

It is planned to set up a sinking fund to cover this reclamation work, which will be necessary later in the life of the project.

It is planned to commence quarrying this sand deposit in late 2022 and build up production to a manageable rate from half a million tonnes in the first year of production to more than 5 million tonnes per annum being what the market can carry.

A water bore drilled to a depth of 90metres to test for the existence of perched water tables was found to be dry to its full depth. Analysis of grab samples taken during the drilling averaged approximately 70% quartz and 14% alumina together with minor unquantified rare earths and heavy minerals. The rare earths have not been considered, when preparing this valuation.

8. PROJECT VALUATION

Wesral Mintec Pty Ltd associates have made several site inspections since 2010 (the last being in October 2018) and have had access to CIPL's files and supporting data. It considers that the contained data are consistent and that this valuation complies with the VALMIN Code.

The process of mineral valuation involves the initial categorisation of the asset to be valued, the identification of the relevant valuation method; evaluation of the mineral asset using applicable method or methods; grouping and comparing the resulting estimates; consideration of sensitivities, identification of a valuation range and finally adoption of a "preferred valuation". That is the process, which is adopted and followed here in respect of this valuation.

There have been quarrying activities conducted on the quarry site that have demonstrated that the assumed quarrying methods are effective in practice and have produced bulk sample material.

The fair market value of a mine, quarry or production asset or security, is the amount of money (or cash equivalent of some other consideration) determined by the expert, in accordance with the provisions of the VALMIN Code, for which the mineral asset or security should change hands on the valuation date in an open and unrestricted market between a willing buyer and a willing seller in an "arm's length" transaction, with each party acting knowledgeably, prudently and without compulsion.

Wholesale bank valuations require a valuation of the in-situ asset in the ground that may be extracted less extraction costs and suitable risk reductions.

The recognised mining valuation methods (Bruce et al, 1994) may be summarised as follows:

- Cost – being past exploration expenditure (and book value).
- Market – being akin to a real estate valuation.
- Joint Venture Terms – where a farm-in is involved.
- In situ or Rules of Thumb Method – such as the in-situ sand or mineral value.
- Net Present Value – where a discounted cash flow may be modelled.
- Geoscience Rating Methods – the modified Kilburn method.

The use of a Net Present Value (NPV)modelling method is not suitable on this occasion due to the length of life of the project of 60 years. The discounting effect of the NPV mathematics will result in an unrealistic low valuation beyond about 15 operating years.

Due to the knowledge of the sand resource, an 'In situ' or' Rules of Thumb Method' has been chosen to assess the value of sand and sandstone in Lot 5.

This valuation is for wholesale banking purposes and is based on the in situ material that can be recovered considering the potential mining and economic conditions and risks.

In applying the In-Situ or Rules of Thumb Valuation Method, the following have been considered:

a) The geological and physical factors of Lot 5 and surrounding Lots have been considered in this valuation.

b) The mining of the resource does not require drilling or blasting as the pozzolanic sand and sandstone is soft and friable, however, the mining may utilise widely space drilling with light blasting to shatter, but not to throw the ground as an aid to initially soften and shatter the friable sandstone prior to its extraction from areas where natural evaporation at the top of the water table has caused high levels of natural increased sandstone cementation.

c) Over the total life of the Lot 5 quarry, a total of 101.1 million tonnes of the pozzolanic` sand/sandstone under the pigmented sand overburden, will be mined down to a depth of 70 metres, crushed, screened and transported by railway to Port Newcastle and sold FOB.

d) The mining of the resource does not require drilling or blasting as the pozzolanic sand and sandstone is soft and friable, however, the mining may utilise widely space drilling with light blasting to shatter, but not to throw the ground as an aid to initially soften and shatter the friable sandstone prior to its extraction from areas where natural evaporation at the top of the water table has caused high levels of natural increased cementation.

e) Claystone, in a joint venture with the Inland Rail, is in the process of applying for consent from the NSW State Government for a State Significant Development with the Inland Rail to extract additional sand up to the market's future requirements from the Lot 5 and other quarries in CIPL's adjoining Lots.

f) General Australian sand quarrying industry costs and masonry costs based on quotations where practical, have been considered while preparing this valuation assessment.

g) The marketing risk for the pozzolanic sandstone material in the high tensile concrete market is low, due to the declining power generation in coal fired power stations and the resulting reduction in coal flue ash, that is in general used as pozzolan material.

h) Currency exchange rate changes are the major economic risk considering the long life of the project, where revenue from exports is received in foreign currencies. Some protection can be provided by writing contracts in Australian dollar terms or with built in rise and fall clauses covering currency variation formulae.

i) Australia and its state of New South Wales are regarded as having low sovereign risk. Also, the Claystone quarries operating in the Warialda area are in a sparsely populated rural area and have minimal impact on people. There are no public health issues, labour issues or land rights issues associated with this area and the clearing of the quarry area has received the Government approval.

j) Some signed sales agreements are in place.

k) The cost of removal of the overburden pigmented sand to be used for the production of masonry is credited to this valuation, as the pigmented sand sold for $Aus120 per tonne to a masonry company and the masonry manufacture and sale is subject to a separate valuation.

In valuing the in-situ high tensile concrete sand and friable sandstone, the in-situ value of 101.1 million tonnes for the sale price of Aus$150 per tonne is Aus$15170 million and the covering pigmented sand overburden sold to the masonry plant at Aus$120 per tonne has a value of Aus$897, the two totalling Aus16067.

Considering mining conditions allow for the extraction of 66% (two thirds) of this material and the covering pigmented overburden, giving a sales value of Aus$10,604 million.

- A normal profitability factor of a sand project is 30% of this value resulting in a return of Aus$3,181 million.
- The project is moderately isolated so adopt a project difficulty/advantage factor of 75% for private haul road and rail transport and ex-tenement expenditure giving a value of Aus$2,386million.
- Allow a risk/advantage factor covering marketing and currency exchange rate of 85% giving a preferred value of Aus$2,028 million.
- For margin of error allow + 15% and – 15%. This gives a value range of Aus$2,332 million and Aus$1,724 million.

Therefore, Considering the above, it is my opinion that the value of the Sand and Sandstone in Lot 5 is within a range of Aus$2,332 million and Aus$1,724 million with a preferred value of Aus$2,028 million.

9. CONCLUSION -VALUATION OF SAND MATERIAL IN LOT 5

Considering the above, it is my opinion that the value of the pigmented masonry sand and the high tensile pozzolan sand and sandstone contained within Lot 5 DP264346, using the 'In situ' or 'Rules of Thumb Valuation Method' lies within a range of Aus$2,332 million and Aus$1,724 million with a preferred value of Aus$2,028 million.

Major areas of operational risk considered and addressed include:

- Poor operational control resulting in the failure to meet shipping deadlines which is to be addressed by regular technical auditing and loss of production insurance and stockpiling material in the port area.
- Traffic congestion of local, trunk and major roads, used by trucks transporting the sand materials, is being addressed by re-opening of the Warialda railway line from Warialda Rail to Moree and using a dedicated private haul road running from the quarry site to the rail loading area and the use of rail transport and shipping through Port Newcastle together with maintaining a stockpile of material at the port area.
- Estimation of economic and other operating factors beyond twenty years, greatly increases such a project's valuation risks. This has been factored into the value assessment.

DISCLAIMER

A lender or purchaser should not rely upon the accuracy of the information contained in this memorandum for the acquisition of any interest, long term sales, investments, loans etc., but should rely upon their own due diligence and independent enquiries prior to the completion of any purchase or entering any loan agreement.

Rick West

R. F. West BE, Hon F. AusIMM, CP.
Mining Consultant
27th July 2022.

CHARTERED PROFESSIONAL
THE AUSTRALASIAN INSTITUTE OF MINING & METALLURGY
RICHARD F WEST
MINING

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SAND COMPARISON ASSESSMENT, Revised July 2018 Compiled by Peter Greenham, National Association of Testing Authorities Technical Assessor for Construction Materials. Member of the Australian Organisation for Quality.

Appendix B XRF Test Reports

Warialda Quarry

Resource Estimation and Financial Evaluation

Atlas Metals Group

SLR Project No.: 625.010787.00001

25 August 2025

WORKORDER CONFIRMATION FOR BR11019867

Print date Feb 23, 2011

Client Code **WILCLI**

To:

William Clift
William Clift
Unit 4
111 Makeri Street
Mermaid Waters QLD
Australia 4218

WO Billing address:

William Clift
William Clift
Unit 4
111 Makeri Street
Mermaid Waters QLD
Australia 4218

WORKORDER DISTRIBUTION

REPORT DESCRIPTION	DESTINATION PERSON	DELIVERY
Australian A4 Invoice	William Clift	Email
A4 version of the COA	William Clift	Email
A4 QC Certificate	William Clift	Email
A4 version of Client WOKO	William Clift	Email
ALS Minerals Standard CSV format	William Clift	Email

Samples submitted by:		Total Samples Received:	14
Project:	XRF12s, MS82	Pulp Disposition:	Paid Storage after 90 Days
P. O. #:		Reject Disposition:	Monthly Storage
Sample Type:	Soil	First Sample Description:	4M
Date Received:	February 23, 2011	Carrier and Waybill:	
Sample Origin:	Australia		

ANALYTICAL WORK REQUESTED:

PREP

14	LEV- 01	Waste Disposal Levy
14	LOG- 22	Sample login - Rcd w/o BarCode

ANALYTICAL

14 ME- GRA05 H2O/LOI by TGA furnace
Analytes Requested: LOI

14 ME- MS82 Complete rare earth package
Analytes Requested: Ce,Dy,Er,Eu,Gd,Ho,La,Lu,Nd,Pr,Sm,Tb,Th,Tm,U,Y,Yb

14 ME- XRF12s Silicates by Fusion XRF
Analytes Requested:
Al2O3,BaO,CaO,Cr2O3,Fe2O3,K2O,MgO,MnO,Na2O,P2O5,SiO2,SrO,TiO2,Total

MISCELLANEOUS ITEMS:

1 BAT- 01 Administration Fee

Invoice Comments: Client paid in advance by cheque.

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Finalized Date: 28- FEB- 2011
This copy reported on 3- MAR- 2011
Account: WILCLI

CERTIFICATE BR11019867

Project: XRF12s, MS82

P.O. No.:

This report is for 14 Soil samples submitted to our lab in Brisbane, QLD, Australia on 23- FEB- 2011.

The following have access to data associated with this certificate:

WILLIAM CLIFT		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
LOG- 22	Sample login - Rcd w/o BarCode
LEV- 01	Waste Disposal Levy
PUL- 21	Pulverize entire sample

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME- XRF12s	Silicates by Fusion XRF	XRF
ME- GRA05	H2O/LOI by TGA furnace	TGA
ME- MS82	Complete rare earth package	ICP- MS

To: **WILLIAM CLIFT**
ATTN: WILLIAM CLIFT
UNIT 4
111 MAKERI STREET
MERMAID WATERS QLD 4218

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature:

Shaun Kenny, Brisbane Laboratory Manager

Australian Laboratory Services Pty. Ltd.

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Project: XRF12s, MS82

CERTIFICATE OF ANALYSIS BR11019867

Sample Description	Method	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- XRF12s	ME- GRA05
	Analyte	Al2O3	BaO	CaO	Cr2O3	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	SrO	TiO2	Total	LOI
	Units	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
	LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
4M		4.15	0.01	0.01	0.02	1.65	0.04	0.04	<0.01	<0.01	0.02	91.7	<0.01	0.33	100.05	2.01
6M		3.33	<0.01	0.04	0.02	1.10	0.04	0.03	<0.01	<0.01	0.01	93.8	<0.01	0.15	99.97	1.42
9M		12.05	0.02	0.08	0.01	3.72	0.42	0.20	<0.01	0.05	0.04	77.6	<0.01	0.85	100.05	4.91
15M		18.75	0.06	0.51	<0.01	2.99	1.93	1.04	<0.01	0.46	0.13	66.1	0.02	1.14	99.93	6.64
20M		17.75	0.09	1.02	<0.01	4.88	1.97	1.52	0.02	0.97	0.19	63.5	0.02	0.99	100.05	6.91
26M		17.20	0.16	2.18	<0.01	4.88	2.30	1.73	0.07	1.47	0.22	62.6	0.03	0.94	100.00	6.06
30M		14.55	0.09	2.43	<0.01	6.63	2.04	1.50	0.12	0.86	0.16	62.8	0.02	0.81	100.00	7.82
42M		15.60	0.12	2.54	<0.01	3.23	2.39	1.47	0.07	1.75	0.14	66.8	0.03	0.72	99.98	4.96
45M		15.15	0.10	2.09	0.03	3.75	2.16	1.28	0.05	1.90	0.16	66.8	0.02	0.89	100.00	5.44
51M		16.55	0.06	1.53	<0.01	3.67	2.14	1.82	0.02	0.59	0.06	66.5	0.02	0.76	100.05	6.08
60M		13.20	0.05	2.12	0.02	7.34	2.33	0.75	0.28	0.69	0.12	64.8	0.02	0.55	100.00	7.60
72M		19.90	0.02	0.36	<0.01	0.77	0.59	0.23	<0.01	0.10	0.04	51.9	<0.01	1.27	99.95	24.57
81M		8.80	0.04	0.18	<0.01	0.97	1.91	0.17	0.01	0.13	0.04	84.6	<0.01	0.36	100.00	2.66
90M		11.00	0.05	0.15	<0.01	1.41	2.76	0.25	0.02	0.13	0.03	80.5	<0.01	0.36	99.95	3.20

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Project: XRF12s, MS82

CERTIFICATE OF ANALYSIS BR11019867

Sample Description	Method	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82	ME- MS82
	Analyte	Ce	Dy	Er	Eu	Gd	Ho	La	Lu	Nd	Pr	Sm	Tb	Th	Tm	U
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.5	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.5	0.1	0.1	0.1	1	0.1	0.5
4M		40.3	1.6	1.0	0.3	2.8	0.3	19.1	0.2	14.7	4.1	2.7	0.3	8	0.1	1.2
6M		21.0	0.9	0.6	0.2	1.4	0.2	13.9	0.1	7.2	2.4	1.2	0.1	4	0.1	0.6
9M		42.7	2.7	2.0	0.5	2.8	0.6	22.6	0.4	14.0	4.3	2.4	0.4	9	0.3	1.9
15M		179.0	14.7	7.5	6.1	23.4	2.6	73.1	1.1	97.9	23.5	22.3	2.7	9	1.0	2.1
20M		57.9	5.9	3.7	2.0	7.8	1.2	26.9	0.5	29.2	7.0	6.4	1.0	7	0.5	1.7
26M		57.4	4.6	2.8	1.9	6.6	0.9	25.9	0.5	27.7	6.9	5.9	0.7	7	0.4	1.6
30M		49.8	4.4	2.9	1.5	5.8	0.9	23.2	0.5	23.4	6.0	5.1	0.7	6	0.4	2.0
42M		61.2	4.7	3.0	1.8	6.6	1.0	27.3	0.5	28.0	7.0	5.9	0.7	8	0.4	1.6
45M		69.8	5.6	3.5	2.3	7.7	1.1	28.9	0.5	31.9	7.9	7.0	0.9	6	0.5	1.5
51M		73.6	4.7	2.7	1.4	6.4	0.9	35.1	0.4	29.7	8.1	5.9	0.8	12	0.4	3.0
60M		61.4	4.1	2.4	1.5	5.7	0.8	27.9	0.4	26.0	6.8	5.2	0.7	8	0.4	1.9
72M		64.2	7.0	4.8	1.6	8.2	1.5	33.4	0.7	29.4	7.6	6.6	1.1	14	0.7	4.1
81M		56.2	3.9	2.6	0.8	4.9	0.8	28.3	0.4	21.6	6.2	4.4	0.6	11	0.4	2.8
90M		70.6	5.2	3.4	1.0	6.9	1.1	35.4	0.6	29.1	8.0	5.9	0.8	12	0.5	3.2

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Project: XRF12s, MS82

CERTIFICATE OF ANALYSIS BR11019867

Sample Description	Method Analyte Units LOR	ME- MS82 Y ppm 0.5	ME- MS82 Yb ppm 0.1
4M		9.4	1.0
6M		5.9	0.7
9M		17.3	2.3
15M		62.0	6.9
20M		41.4	3.3
26M		25.5	2.9
30M		26.8	3.0
42M		28.0	3.0
45M		31.3	3.3
51M		25.4	2.8
60M		22.9	2.5
72M		43.5	4.7
81M		23.0	2.7
90M		30.1	3.5

Appendix C Finanical Model

Warialda Quarry

Resource Estimation and Financial Evaluation

Atlas Metals Group

SLR Project No.: 625.010787.00001

25 August 2025

	DCF Value
Quarry Value	$3,304,007,612

				0	1	2	3	4	5	6	7	8	9	10	11	12
Variables		Input	Initial		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Market Demand																
	Soil	0			-	-	-	-	-	-	-	-	-	-	-	-
	Cumulative tonnes Product 1				-	-	-	-	-	-	-	-	-	-	-	-
	Sand	0			100,000	102,000	104,040	106,121	108,243	110,408	112,616	114,869	117,166	119,509	121,899	124,337
	Cumulative tonnes Product 2				100,000	202,000	306,040	412,161	520,404	630,812	743,428	858,297	975,463	1,094,972	1,216,872	1,341,209
	Pozzolanic Sandstone	0			300,000	900,000	1,700,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
	Cumulative tonnes Product 3				300,000	1,200,000	2,900,000	5,900,000	8,900,000	11,900,000	14,900,000	17,900,000	20,900,000	23,900,000	26,900,000	29,900,000
	Market volume growth	2%														
Production and Sales																
	Soil				-	-	-	-	-	-	-	-	-	-	-	-
	Sand				100,000	102,000	104,040	106,121	108,243	110,408	112,616	114,869	117,166	119,509	121,899	124,337
	Pozzolanic Sandstone				300,000	900,000	1,700,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
	Total Tonnes				400,000	1,002,000	1,804,040	3,106,121	3,108,243	3,110,408	3,112,616	3,114,869	3,117,166	3,119,509	3,121,899	3,124,337
Prices																
	Soil	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Sand	$ 25.00			$ 25.00	$ 25.63	$ 26.27	$ 26.92	$ 27.60	$ 28.29	$ 28.99	$ 29.72	$ 30.46	$ 31.22	$ 32.00	$ 32.80
	Pozzolanic Sandstone	$ 258.80			$ 258.80	$ 265.27	$ 271.90	$ 278.70	$ 285.67	$ 292.81	$ 300.13	$ 307.63	$ 315.32	$ 323.21	$ 331.29	$ 339.57
		2.50%														
Operating Costs																
	Operating Costs $ per Tonne	$ 11.30			$ 11.30	$ 11.58	$ 11.87	$ 12.17	$ 12.47	$ 12.78	$ 13.10	$ 13.43	$ 13.77	$ 14.11	$ 14.46	$ 14.83
		2.50%														
Royalties																
	Lease - Royalty	$ 6.00			$ 6.00	$ 6.15	$ 6.30	$ 6.46	$ 6.62	$ 6.79	$ 6.96	$ 7.13	$ 7.31	$ 7.49	$ 7.68	$ 7.87
	Road Maintenance Contribution - TMR	$ -			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Royalty Escalation Rate	2.50%														
Capital Costs																
	Trucking Access Road	$ 2,300,000			-$ 2,300,000											
	SSD Costs	$ 1,055,000			-$ 200,000	-$ 600,000	-$ 255,000									
	Crushing Plant	$ 20,000,000			-$ 500,000	-$ 5,000,000	-$ 14,500,000									
	982 Loader	$ 900,000			-$ 900,000	-$ 900,000	-$ 900,000								-$ 900,000	-$ 900,000
	770 Haul Truck	$ 1,000,000			-$ 1,000,000	-$ 1,000,000	-$ 1,000,000								-$ 1,000,000	-$ 1,000,000
	50 tonne Excavator	$ 1,000,000			-$ 700,000										-$ 700,000	
	Site Infrastructure	$ 2,000,000			-$ 2,000,000											
	Geological Investigation Costs	$ 300,000			-$ 300,000											
	Material and Property Testing	$ 100,000			-$ 100,000											
	General CAPEX	$ 10,000			-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000
	Total Capex				-$ 8,010,000	-$ 7,510,000	-$ 16,665,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 2,610,000	-$ 1,910,000
Cash Flow Calculations					2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
	Discount Period															
Revenue																
	Total sales				$ 80,140,000	$ 241,356,750	$ 464,965,651	$ 838,954,894	$ 859,987,335	$ 881,548,252	$ 903,650,978	$ 926,309,185	$ 949,536,893	$ 973,348,477	$ 997,758,680	$ 1,022,782,618
	Total Revenue				$ 80,140,000	$ 241,356,750	$ 464,965,651	$ 838,954,894	$ 859,987,335	$ 881,548,252	$ 903,650,978	$ 926,309,185	$ 949,536,893	$ 973,348,477	$ 997,758,680	$ 1,022,782,618
Costs																
	Operating Costs				-$ 4,520,000	-$ 11,605,665	-$ 21,417,676	-$ 37,797,962	-$ 38,769,384	-$ 39,766,296	-$ 40,789,390	-$ 41,839,379	-$ 42,916,993	-$ 44,022,987	-$ 45,158,136	-$ 46,323,236
2.50%	DA and EA Costs	$ 100,000			-$ 100,000	-$ 102,500	-$ 105,063	-$ 107,689	-$ 110,381	-$ 113,141	-$ 115,969	-$ 118,869	-$ 121,840	-$ 124,886	-$ 128,008	-$ 131,209
	Rehabilitation Costs	$ 1.00			-$ 400,000	-$ 1,002,000	-$ 1,804,040	-$ 3,106,121	-$ 3,108,243	-$ 3,110,408	-$ 3,112,616	-$ 3,114,869	-$ 3,117,166	-$ 3,119,509	-$ 3,121,899	-$ 3,124,337
	Capital Costs				-$ 8,010,000	-$ 7,510,000	-$ 16,665,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 2,610,000	-$ 1,910,000
	Lease - Royalty				-$ 2,400,000	-$ 6,162,300	-$ 11,372,217	-$ 20,069,714	-$ 20,585,514	-$ 21,114,847	-$ 21,658,083	-$ 22,215,599	-$ 22,787,784	-$ 23,375,038	-$ 23,977,771	-$ 24,596,409
	TMR				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Costs				-$ 15,430,000	-$ 26,382,465	-$ 51,363,995	-$ 61,091,486	-$ 62,583,522	-$ 64,114,692	-$ 65,686,059	-$ 67,298,715	-$ 68,953,784	-$ 70,652,421	-$ 74,995,815	-$ 76,085,191
	Cash Flow (pre-tax)				$ 64,710,000	$ 214,974,285	$ 413,601,655	$ 777,863,408	$ 797,403,813	$ 817,433,559	$ 837,964,918	$ 859,010,470	$ 880,583,109	$ 902,696,056	$ 922,762,865	$ 946,697,427
	Income tax				-$ 16,061,917	$ -	$ -	-$ 194,051,719	-$ 198,936,820	-$ 203,944,256	-$ 209,077,096	-$ 214,338,484	-$ 219,731,644	-$ 225,259,881	-$ 230,276,583	-$ 236,260,223
	Cash Flow (after-tax)				$ 48,648,083	$ 214,974,285	$ 413,601,655	$ 583,811,689	$ 598,466,993	$ 613,489,303	$ 628,887,822	$ 644,671,986	$ 660,851,465	$ 677,436,176	$ 692,486,282	$ 710,437,204
	Cumulative Cash Flows				$ 48,648,083	$ 263,622,368	$ 677,224,024	$ 1,261,035,713	$ 1,859,502,706	$ 2,472,992,008	$ 3,101,879,831	$ 3,746,551,816	$ 4,407,403,281	$ 5,084,839,457	$ 5,777,325,739	$ 6,487,762,942
	Discount Rate	15%														
	After-tax NPV Factor															
	NPV	$3,304,007,612														
Income Tax Calculations																
	Depreciation															
	Trucking Access Road	$ 38,333			-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333
	SSD Costs	$ 42,200			-$ 8,000	-$ 33,333	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200
	Crushing Plant	$ 800,000			-$ 20,000	-$ 229,167	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000
	982 Loader	$ 90,000			-$ 90,000	-$ 180,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000
	770 Haul Truck	$ 100,000			-$ 100,000	-$ 200,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000
	50 tonne Excavator	$ 100,000			-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000
	Site Infrastructure	$ 80,000			-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000
	Geological Investigation Costs	$ 12,000			-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000
	Material and Property Testing	$ 4,000			-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000
	General CAPEX	$ 10,000			-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000
	Total Depreciation				-$ 462,333	-$ 886,833	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533
	Taxable income and tax paid															
	Net pre-tax operating cash flow				$ 64,710,000	$ 214,974,285	$ 413,601,655	$ 777,863,408	$ 797,403,813	$ 817,433,559	$ 837,964,918	$ 859,010,470	$ 880,583,109	$ 902,696,056	$ 922,762,865	$ 946,697,427
	Less: Depreciation				-$ 462,333	-$ 886,833	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533
	Taxable Income				$ 64,247,667	$ 214,087,452	$ 411,945,122	$ 776,206,874	$ 795,747,279	$ 815,777,026	$ 836,308,385	$ 857,353,936	$ 878,926,576	$ 901,039,523	$ 921,106,331	$ 945,040,894
	Taxable income to company				$ 64,247,667	$ 214,087,452	$ 411,945,122	$ 776,206,874	$ 795,747,279	$ 815,777,026	$ 836,308,385	$ 857,353,936	$ 878,926,576	$ 901,039,523	$ 921,106,331	$ 945,040,894
	Tax at company tax rate				$ 16,061,917	$ -	$ -	$ 194,051,719	$ 198,936,820	$ 203,944,256	$ 209,077,096	$ 214,338,484	$ 219,731,644	$ 225,259,881	$ 230,276,583	$ 236,260,223
	Total tax				$ 16,061,917	$ -	$ -	$ 194,051,719	$ 198,936,820	$ 203,944,256	$ 209,077,096	$ 214,338,484	$ 219,731,644	$ 225,259,881	$ 230,276,583	$ 236,260,223

		13	14	15	16	17	18	19	20	21	22	23	24	25
Variables		2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Market Demand														
	Soil	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cumulative tonnes Product 1	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sand	126,824	129,361	131,948	134,587	137,279	140,024	142,825	145,681	148,595	151,567	154,598	157,690	160,844
	Cumulative tonnes Product 2	1,468,033	1,597,394	1,729,342	1,863,929	2,001,207	2,141,231	2,284,056	2,429,737	2,578,332	2,729,898	2,884,496	3,042,186	3,203,030
	Pozzolanic Sandstone	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
	Cumulative tonnes Product 3	32,900,000	35,900,000	38,900,000	41,900,000	44,900,000	47,900,000	50,900,000	53,900,000	56,900,000	59,900,000	62,900,000	65,900,000	68,900,000
Production and Sales														
	Soil	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sand	126,824	129,361	131,948	134,587	137,279	140,024	142,825	145,681	148,595	151,567	154,598	157,690	160,844
	Pozzolanic Sandstone	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
	Total Tonnes	3,126,824	3,129,361	3,131,948	3,134,587	3,137,279	3,140,024	3,142,825	3,145,681	3,148,595	3,151,567	3,154,598	3,157,690	3,160,844
Prices														
	Soil	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Sand	$ 33.62	$ 34.46	$ 35.32	$ 36.21	$ 37.11	$ 38.04	$ 38.99	$ 39.97	$ 40.97	$ 41.99	$ 43.04	$ 44.12	$ 45.22
	Pozzolanic Sandstone	$ 348.06	$ 356.76	$ 365.68	$ 374.82	$ 384.19	$ 393.79	$ 403.64	$ 413.73	$ 424.07	$ 434.68	$ 445.54	$ 456.68	$ 468.10
Operating Costs														
	Operating Costs $ per Tonne	$ 15.20	$ 15.58	$ 15.97	$ 16.37	$ 16.77	$ 17.19	$ 17.62	$ 18.06	$ 18.52	$ 18.98	$ 19.45	$ 19.94	$ 20.44
Royalties														
	Lease - Royalty	$ 8.07	$ 8.27	$ 8.48	$ 8.69	$ 8.91	$ 9.13	$ 9.36	$ 9.59	$ 9.83	$ 10.08	$ 10.33	$ 10.59	$ 10.85
	Road Maintenance Contribution - TMR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Capital Costs														
	982 Loader	-$ 900,000								-$ 900,000	-$ 900,000	-$ 900,000		
	770 Haul Truck	-$ 1,000,000								-$ 1,000,000	-$ 1,000,000	-$ 1,000,000		
	50 tonne Excavator									-$ 700,000				
	General CAPEX	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000
	Total Capex	-$ 1,910,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 2,610,000	-$ 1,910,000	-$ 1,910,000	-$ 10,000	-$ 10,000
Cash Flow Calculations		2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Revenue														
	Total sales	$ 1,048,435,794	$ 1,074,734,103	$ 1,101,693,847	$ 1,129,331,743	$ 1,157,664,934	$ 1,186,711,000	$ 1,216,487,970	$ 1,247,014,333	$ 1,278,309,049	$ 1,310,391,564	$ 1,343,281,819	$ 1,377,000,267	$ 1,411,567,883
	Total Revenue	$ 1,048,435,794	$ 1,074,734,103	$ 1,101,693,847	$ 1,129,331,743	$ 1,157,664,934	$ 1,186,711,000	$ 1,216,487,970	$ 1,247,014,333	$ 1,278,309,049	$ 1,310,391,564	$ 1,343,281,819	$ 1,377,000,267	$ 1,411,567,883
Costs														
	Operating Costs	-$ 47,519,109	-$ 48,746,598	-$ 50,006,572	-$ 51,299,925	-$ 52,627,577	-$ 53,990,474	-$ 55,389,592	-$ 56,825,934	-$ 58,300,532	-$ 59,814,450	-$ 61,368,782	-$ 62,964,655	-$ 64,603,231
	DA and EA Costs	-$ 134,489	-$ 137,851	-$ 141,297	-$ 144,830	-$ 148,451	-$ 152,162	-$ 155,966	-$ 159,865	-$ 163,862	-$ 167,958	-$ 172,157	-$ 176,461	-$ 180,873
	Rehabilitation Costs	-$ 3,126,824	-$ 3,129,361	-$ 3,131,948	-$ 3,134,587	-$ 3,137,279	-$ 3,140,024	-$ 3,142,825	-$ 3,145,681	-$ 3,148,595	-$ 3,151,567	-$ 3,154,598	-$ 3,157,690	-$ 3,160,844
	Capital Costs	-$ 1,910,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 2,610,000	-$ 1,910,000	-$ 1,910,000	-$ 10,000	-$ 10,000
	Lease - Royalty	-$ 25,231,385	-$ 25,883,149	-$ 26,552,162	-$ 27,238,898	-$ 27,943,846	-$ 28,667,508	-$ 29,410,403	-$ 30,173,062	-$ 30,956,035	-$ 31,759,885	-$ 32,585,194	-$ 33,432,560	-$ 34,302,600
	TMR	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Costs	-$ 77,921,808	-$ 77,906,959	-$ 79,841,979	-$ 81,828,240	-$ 83,867,152	-$ 85,960,169	-$ 88,108,786	-$ 90,314,542	-$ 95,179,023	-$ 96,803,859	-$ 99,190,731	-$ 99,741,366	-$ 102,257,547
	Cash Flow (pre-tax)	$ 970,513,986	$ 996,827,144	$ 1,021,851,868	$ 1,047,503,503	$ 1,073,797,782	$ 1,100,750,832	$ 1,128,379,185	$ 1,156,699,791	$ 1,183,130,026	$ 1,213,587,704	$ 1,244,091,089	$ 1,277,258,901	$ 1,309,310,335
	Income tax	-$ 242,214,363	-$ 248,792,653	-$ 255,048,834	-$ 261,461,743	-$ 268,035,312	-$ 274,773,575	-$ 281,680,663	-$ 288,760,814	-$ 295,368,373	-$ 302,982,793	-$ 310,608,639	-$ 318,900,592	-$ 326,913,450
	Cash Flow (after-tax)	$ 728,299,623	$ 748,034,491	$ 766,803,034	$ 786,041,761	$ 805,762,470	$ 825,977,257	$ 846,698,522	$ 867,938,976	$ 887,761,653	$ 910,604,912	$ 933,482,450	$ 958,358,309	$ 982,396,885
	Cumulative Cash Flows	$ 7,216,062,565	$ 7,964,097,056	$ 8,730,900,090	$ 9,516,941,851	############	############	############	$ 12,863,319,076	$ 13,751,080,729	$ 14,661,685,640	$ 15,595,168,090	$ 16,553,526,399	$ 17,535,923,284
Income Tax Calculations														
	Trucking Access Road	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333	-$ 38,333
	SSD Costs	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200	-$ 42,200
	Crushing Plant	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000	-$ 800,000
	982 Loader	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000	-$ 270,000
	770 Haul Truck	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000	-$ 300,000
	50 tonne Excavator	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000	-$ 100,000
	Site Infrastructure	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000	-$ 80,000
	Geological Investigation Costs	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000	-$ 12,000
	Material and Property Testing	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000	-$ 4,000
	General CAPEX	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000
	Total Depreciation	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533
	Net pre-tax operating cash flow	$ 970,513,986	$ 996,827,144	$ 1,021,851,868	$ 1,047,503,503	$ 1,073,797,782	$ 1,100,750,832	$ 1,128,379,185	$ 1,156,699,791	$ 1,183,130,026	$ 1,213,587,704	$ 1,244,091,089	$ 1,277,258,901	$ 1,309,310,335
	Less: Depreciation	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533	-$ 1,656,533
	Taxable Income	$ 968,857,453	$ 995,170,610	$ 1,020,195,334	$ 1,045,846,970	$ 1,072,141,249	$ 1,099,094,298	$ 1,126,722,651	$ 1,155,043,257	$ 1,181,473,493	$ 1,211,931,171	$ 1,242,434,555	$ 1,275,602,367	$ 1,307,653,802
	Taxable income to company	$ 968,857,453	$ 995,170,610	$ 1,020,195,334	$ 1,045,846,970	$ 1,072,141,249	$ 1,099,094,298	$ 1,126,722,651	$ 1,155,043,257	$ 1,181,473,493	$ 1,211,931,171	$ 1,242,434,555	$ 1,275,602,367	$ 1,307,653,802
	Tax at company tax rate	$ 242,214,363	$ 248,792,653	$ 255,048,834	$ 261,461,743	$ 268,035,312	$ 274,773,575	$ 281,680,663	$ 288,760,814	$ 295,368,373	$ 302,982,793	$ 310,608,639	$ 318,900,592	$ 326,913,450
	Total tax	$ 242,214,363	$ 248,792,653	$ 255,048,834	$ 261,461,743	$ 268,035,312	$ 274,773,575	$ 281,680,663	$ 288,760,814	$ 295,368,373	$ 302,982,793	$ 310,608,639	$ 318,900,592	$ 326,913,450

Appendix D JORC Code (2012)

Warialda Quarry

Resource Estimation and Financial Evaluation

Atlas Metals Group

SLR Project No.: 625.010787.00001

25 August 2025

Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves

JORC
Joint Ore Reserves Committee

The JORC Code
2012 Edition

Australian Institute of Geoscientists
Supporting Geoscientists

AusIMM
THE MINERALS INSTITUTE

Minerals Council of Australia

Effective 20 December 2012 and mandatory from 1 December 2013

Prepared by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC)

Contents

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Foreword

1. The *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (the 'JORC Code' or 'the Code') sets out minimum standards, recommendations and guidelines for Public Reporting in Australasia of Exploration Results, Mineral Resources and Ore Reserves. The Joint Ore Reserves Committee ('JORC') was established in 1971 and published several reports containing recommendations on the classification and Public Reporting of Ore Reserves prior to the release of the first edition of the JORC Code in 1989.

   Revised and updated editions of the Code were issued in 1992, 1996, 1999, and 2004. This 2012 edition supersedes all previous editions.

   Since 1994, the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) has worked to create a set of standard international definitions for reporting Mineral Resources and Mineral (Ore) Reserves, based on the evolving JORC Code's definitions. CRIRSCO was initially a committee of the Council of Mining and Metallurgical Institutions (CMMI).

   Representatives of bodies from Australia, Canada, South Africa, USA and the UK reached provisional agreement on standard definitions for reporting resources and reserves in 1997. This was followed in 1998 by an agreement to incorporate the CMMI definitions into the International Framework Classification for Reserves and Resources – Solid Fuels and Mineral Commodities, developed by the United Nations Economic Commission for Europe (UN-ECE).

   CMMI was disbanded in 2002 but CRIRSCO remained as a separate entity and now has a relationship with the International Council on Mining and Metals (ICMM). An initiative was commenced by CRIRSCO to develop a Template, largely based on the JORC Code, that was designed to assist countries to develop their own code in line with world best practice. The Template has been recognised as a commodity-specific code in UNFC 2009.

   CRIRSCO's members are National Reporting Organisations (NROs) who are responsible for developing mineral reporting codes or standards and guidelines. The NROs are: Australasia (JORC), Canada (CIM Standing Committee on Reserve Definitions), Chile (National Committee), Europe (PERC), Russia (NAEN), South Africa (SAMCODES) and USA (SME). As a result of the CRIRSCO/CMMI initiative, considerable progress has been made towards widespread adoption of consistent reporting standards throughout the world. In this edition of the JORC Code defined terms are aligned to the CRIRSCO Standard Definitions as revised in October 2012.

Introduction

2. In this edition of the JORC Code, important terms and their definitions are highlighted in bold text. The guidelines are placed after the respective Code Clauses using indented italics. Guidelines are not part of the Code but are intended to provide assistance and guidance to readers and should be considered persuasive when interpreting the Code.

3. The Code has been adopted by The Australasian Institute of Mining and Metallurgy (The AusIMM) and the Australian Institute of Geoscientists (AIG) and is binding on members of those organisations. The Code is endorsed by the Minerals Council of Australia and the Financial Services Institute of Australasia as a contribution to good practice. The Code has also been adopted by and included in the listing rules of the Australian Securities Exchange (ASX) and the New Zealand Stock Exchange (NZX).

   The ASX and NZX have, since 1989 and 1992 respectively, incorporated the Code into their listing rules. Under these listing rules, a Public Report must be prepared in accordance with the Code if it includes a statement on Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves. The incorporation of the Code imposes certain specific requirements on mining or exploration companies reporting to the ASX and NZX. There remain a number of other issues outside of the JORC Code associated with Public Reports that are addressed specifically within the listing rules.

As such, it is strongly recommended that users of the Code familiarise themselves with the listing rules of the relevant exchange that relates to Public Reporting of Exploration Results, Mineral Resources and Ore Reserves.

For Public Reports of initial or materially changed Exploration Results, Mineral Resources or Ore Reserves the JORC Code requires the Competent Person, on whose documentation the Public Report is based, to be named in the Public Report. The Public Report or attached statement must say that the Competent Person consents to the inclusion in the Public Report of the matters based on their information in the form and context in which it appears, and must include the name of the Competent Person's firm or employer.

Users of the Code should refer to Clause 9.

Scope

4. The principles governing the operation and application of the JORC Code are Transparency, Materiality and Competence.

   - **Transparency requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled by this information or by omission of material information that is known to the Competent Person.**
   - **Materiality requires that a Public Report contains all the relevant information that investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Ore Reserves being reported. Where relevant information is not supplied an explanation must be provided to justify its exclusion.**
   - **Competence requires that the Public Report be based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics (the Competent Person).**

   Transparency and Materiality are guiding principles of the Code, and the Competent Person must provide explanatory commentary on the material assumptions underlying the declaration of Exploration Results, Mineral Resources or Ore Reserves.

   In particular, the Competent Person must consider that the benchmark of Materiality is that which includes all aspects relating to the Exploration Results, Mineral Resources or Ore Reserves that an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person. The Competent Person must not remain silent on any material aspect for which the presence or absence of comment could affect the public perception or value of the mineral occurrence.

5. Table 1 provides a checklist or reference of criteria to be considered by the Competent Person in developing their documentation and in preparing the Public Report.

   In the context of complying with the principles of the Code, comments relating to the items in the relevant sections of Table 1 should be provided on an 'if not, why not' basis within the Competent Person's documentation. Additionally comments related to the relevant sections of Table 1 must be complied with on an 'if not, why not' basis within Public Reporting for significant projects (see Appendix 1 Generic Terms and Equivalents) when reporting Exploration Results, Mineral Resources or Ore Reserves for the first time. Table 1 also applies in instances where these items have materially changed from when they were last Publicly Reported. Reporting on an 'if not, why not' basis is to ensure that it is clear to an investor whether items have been considered and deemed of low consequence or are not yet addressed or resolved.

   For the purposes of the JORC Code the phrase 'if not, why not' means that each item listed in the relevant section of Table 1 must be discussed and if it is not discussed then the Competent Person must explain why it has been omitted from the documentation.

The Code requires in Clauses 19, 27 and 35 that reporting of first time or materially changed Exploration Results, Mineral Resources or Ore Reserves estimates be accompanied by a technical summary of all relevant sections of Table 1 on an 'if not, why not' basis as an appendix to the Public Report.

A material change could be a change in the estimated tonnage or grade or in the classification of the Mineral Resources or Ore Reserves. Whether there has been a material change in relation to a significant project must be considered by taking into account all of the relevant circumstances, including the style of mineralisation. This includes considering whether the change in estimates is likely to have a material effect on the price or value of the company's securities.

6. **Public Reports are reports prepared for the purpose of informing investors or potential investors and their advisers on Exploration Results, Mineral Resources or Ore Reserves. They include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations.**

These Public Reports may be to the Australian Securities Exchange and the New Zealand Stock Exchange, or other regulatory authorities or as required by law.

The Code is a required minimum standard for Public Reporting. JORC also recommends its adoption as a minimum standard for other reporting. Companies are encouraged to provide information in their Public Reports that is as comprehensive as possible.

The Code applies to other publicly released company information in the form of postings on company websites and presentation material used in briefings for shareholders, stockbrokers and investment analysts. The Code also applies to the following reports if they have been prepared for the purposes described in Clause 6 including but not limited to: environmental statements, information memoranda, expert reports, and technical papers referring to Exploration Results, Mineral Resources or Ore Reserves.

For companies issuing concise annual reports, inclusion of all material information relating to Exploration Results, Mineral Resources and Ore Reserves is recommended. In cases where summary information is presented it should be clearly stated that it is a summary, and a reference attached giving the location of the Code-compliant Public Reports or Public Reporting on which the summary is based.

It is recognised that companies can be required to issue reports into more than one regulatory jurisdiction, with compliance standards that may differ from this Code. It is recommended that such reports include a statement alerting the reader to this situation. Where members of The AusIMM and the AIG are required to report in other jurisdictions, they are obliged to comply with the requirements of those jurisdictions.

Reference in the Code to 'documentation' is to internal company documents prepared as a basis for, or to support, a Public Report.

It is recognised that situations may arise where documentation prepared by a Competent Person for internal company or similar non-public purposes does not comply with the JORC Code. In such situations, it is recommended that the documentation includes a prominent statement to this effect. This will make it less likely that non-complying documentation will be used to compile Public Reports, since Clause 9 requires Public Reports to fairly reflect Exploration Results, Mineral Resource and/or Ore Reserve estimates, and supporting documentation, prepared by a Competent Person.

While every effort has been made within the Code and Guidelines (including Table 1) to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists as to the appropriate form of disclosure. On such occasions, users of the Code and those compiling reports to comply with the Code should be guided by its intent, which is to provide a minimum standard for Public Reporting, and to ensure that such reporting contains all information that investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Ore Reserves being reported.

The JORC Code is a Code for Public Reporting not a Code that regulates the manner in which a Competent Person estimates Mineral Resources or Ore Reserves. The term 'JORC compliant' therefore refers to the manner of reporting not to the estimates. Use of the words 'JORC compliant' to describe resources or estimates is potentially misleading. The words 'JORC compliant' should be interpreted to mean: 'Reported in accordance with the JORC Code and estimated (or based on documentation prepared) by a Competent Person as defined by the JORC Code'.

7. The Code is applicable to all solid minerals, including diamonds, other gemstones, industrial minerals and coal, for which Public Reporting of Exploration Results, Mineral Resources and Ore Reserves is required by the Australian Securities Exchange and the New Zealand Stock Exchange.

   The JORC Code is cited by the 'Code and Guidelines for Technical Assessment and/or Valuation of Mineral and Petroleum Assets and Mineral and Petroleum Securities for Independent Expert Reports' (the 'VALMIN Code') as the applicable standard for the Public Reporting of Exploration Results, Mineral Resources and Ore Reserves. References to 'technical and economic studies' and 'feasibility studies' in the JORC Code are not intended as references to Technical Assessments or Valuations as defined in the VALMIN Code.

8. JORC recognises that further review of the Code and Guidelines will be required from time to time.

Competence and Responsibility

9. A Public Report concerning a company's Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is the responsibility of the company acting through its Board of Directors. Any such report must be based on, and fairly reflect, the information and supporting documentation prepared by a Competent Person. A company issuing a Public Report shall disclose the name(s) of the Competent Person, state whether the Competent Person is a full-time employee of the company, and, if not, name the Competent Person's employer.

   Any potential for a conflict of interest by the Competent Person or a related party must be disclosed in accordance with the Transparency principle. Any other relationship of the Competent Person with the Company making the report must also be disclosed in the Public Report. The report must be issued with the prior written consent of the Competent Person as to the form and context in which it appears.

   Where a company is re-issuing information previously issued with the written consent of the Competent Person, it must state the original report name, the name(s) of the Competent Person responsible for the original report, and state the date and reference the location of the original source public report for public access. In these circumstances the Company is not required to obtain the Competent Person's prior written consent as to the form and context in which the information appears, provided:

   - The company confirms in the subsequent public presentation that it is not aware of any new information or data that materially affects the information included in the relevant market announcement. In the case of estimates of Mineral Resources or Ore Reserves, the company confirms that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.
   - The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified. Note that for the subsequent public presentation it is the responsibility of the company acting through its Board of Directors to ensure the form and context has not been materially altered.

   This relaxation of the requirement to obtain the Competent Person's prior written consent does not apply to the requirements for annual reporting of Mineral Resources and Ore Reserves contained in Clause 15.

   All such public disclosure should be specifically reviewed by the company to ensure that the form and context in which the Competent Person's findings are presented have not been materially modified, and to

ensure that the previously issued Exploration Results, Mineral Resources or Ore Reserve remain valid in the light of any more recently-acquired data.

Examples of appropriate forms of compliance statements are provided in Appendix 3.

In order to assist Competent Persons and companies to comply with these requirements a Competent Person's Consent Form has been devised that incorporates the requirements of the Code. The Competent Person's Consent Form is provided in Appendix 2.

The completion of a consent form, whether in the format provided or in an equivalent form, is recommended as good practice and provides readily available evidence that the required prior consent has been obtained.

The Competent Person's Consent Form(s), or other evidence of the Competent Person's written consent, should be retained by the company and the Competent Person to ensure that the written consent can be promptly provided if required.

10. Documentation detailing Exploration Results, Mineral Resource and Ore Reserve estimates, on which a Public Report on Exploration Results, Mineral Resources and Ore Reserves is based, must be prepared by, or under the direction of, and signed by, a Competent Person. If an Exploration Target is included in a Public Report, documentation must also be prepared by, or under the direction of, and signed by, a Competent Person. The documentation must provide a fair representation of the matters being reported.

11. **A 'Competent Person' is a minerals industry professional who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy, or of the Australian Institute of Geoscientists, or of a 'Recognised Professional Organisation' (RPO), as included in a list available on the JORC and ASX websites. These organisations have enforceable disciplinary processes including the powers to suspend or expel a member.**

    A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking.

    If the Competent Person is preparing documentation on Exploration Results, the relevant experience must be in exploration. If the Competent Person is estimating, or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources. If the Competent Person is estimating, or supervising the estimation of Ore Reserves, the relevant experience must be in the estimation, assessment, evaluation and economic extraction of Ore Reserves.

    The key qualifier in the definition of a Competent Person is the word 'relevant'. Determination of what constitutes relevant experience can be a difficult area and common sense has to be exercised. For example, in estimating Mineral Resources for vein gold mineralisation, experience in a high-nugget, vein-type mineralisation (such as tin, uranium, etc) may be relevant, whereas experience in (say) massive base metal deposits may not be. As a second example, to qualify as a Competent Person in the estimation of Ore Reserves for alluvial gold deposits, considerable (at least five years) experience in the evaluation and economic extraction of this type of mineralisation may be needed. This is due to the properties of gold in alluvial systems, the particle sizing of the host sediment, and the low grades involved. Experience with placer deposits containing minerals other than gold may not necessarily provide appropriate relevant experience.

    The key word 'relevant' also means that it is not always necessary for a person to have five years experience in each and every type of deposit to act as a Competent Person if that person has relevant experience in other deposit types. For example, a person with (say) 20 years experience in estimating Mineral Resources for a variety of metalliferous hard-rock deposit types may not require five years specific experience in (say) porphyry copper deposits to act as a Competent Person. Relevant experience in the other deposit types could count towards the required experience in relation to porphyry copper deposits.

In addition to experience in the style of mineralisation, a Competent Person taking responsibility for the compilation of Exploration Results or Mineral Resource estimates should have sufficient experience in the sampling and analytical techniques relevant to the deposit under consideration to be aware of problems that could affect the reliability of data. Some appreciation of extraction and processing techniques applicable to that deposit type may also be important.

As a general guide, a person being called upon to act as Competent Person should be clearly satisfied in their own mind that they could face their peers and demonstrate competence in the commodity, type of deposit and situation under consideration. If doubt exists, the person should either seek opinions from appropriately experienced peers or should decline to act as a Competent Person.

Estimation of Mineral Resources may be a team effort (for example, involving one person or team collecting the data and another person or team preparing the estimate). Estimation of Ore Reserves is very commonly a team effort involving several technical disciplines. It is recommended that, where there is clear division of responsibility within a team, each Competent Person and his or her contribution should be identified, and responsibility accepted for that particular contribution. If only one Competent Person signs the Mineral Resource or Ore Reserve documentation, that person is responsible and accountable for the whole of the documentation under the Code. It is important in this situation that the Competent Person accepting overall responsibility for a Mineral Resource or Ore Reserve estimate and supporting documentation prepared in whole or in part by others, is satisfied that the work of the other contributors is acceptable.

Complaints made with respect to the professional work of a Competent Person will be dealt with under the disciplinary procedures of the professional organisation to which the Competent Person belongs.

When an Australian Securities Exchange or New Zealand Stock Exchange listed company with overseas interests wishes to report overseas Exploration Results, Mineral Resource or Ore Reserve estimates prepared by a person who is not a member of The AusIMM, the AIG or a RPO, it is necessary for the company to nominate a Competent Person or Persons to take responsibility for the Exploration Results, Mineral Resource or Ore Reserve estimate. The Competent Person undertaking this activity should appreciate that they are accepting full responsibility for the estimate and supporting documentation under Australian Securities Exchange and/or the New Zealand Stock Exchange listing rules and should not treat the procedure merely as a 'rubber-stamping' exercise.

Reporting Terminology

12. Public Reports dealing with Exploration Results, Mineral Resources or Ore Reserves must only use the terms set out in Figure 1.

Figure 1 sets out the framework for classifying tonnage and grade estimates to reflect different levels of geological confidence and different degrees of technical and economic evaluation. Mineral Resources can be estimated on the basis of geoscientific information with some input from other disciplines. Ore Reserves, which are a modified sub-set of the Indicated and Measured Mineral Resources (shown within the dashed outline in Figure 1), require consideration of the Modifying Factors affecting extraction, and should in most instances be estimated with input from a range of disciplines.

'Modifying Factors' are considerations used to convert Mineral Resources to Ore Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

Measured Mineral Resources may be converted to either Proved Ore Reserves or Probable Ore Reserves. The Competent Person may convert Measured Mineral Resources to Probable Ore Reserves because of uncertainties associated with some or all of the Modifying Factors which are taken into account in the conversion from Mineral Resources to Ore Reserves. This relationship is shown by the broken arrow in Figure 1. Although the trend of the broken arrow includes a vertical component, it does not, in this instance, imply a reduction in the level of geological knowledge or confidence. In such a situation these Modifying Factors should be fully explained.

Refer also to the guidelines to Clause 32.

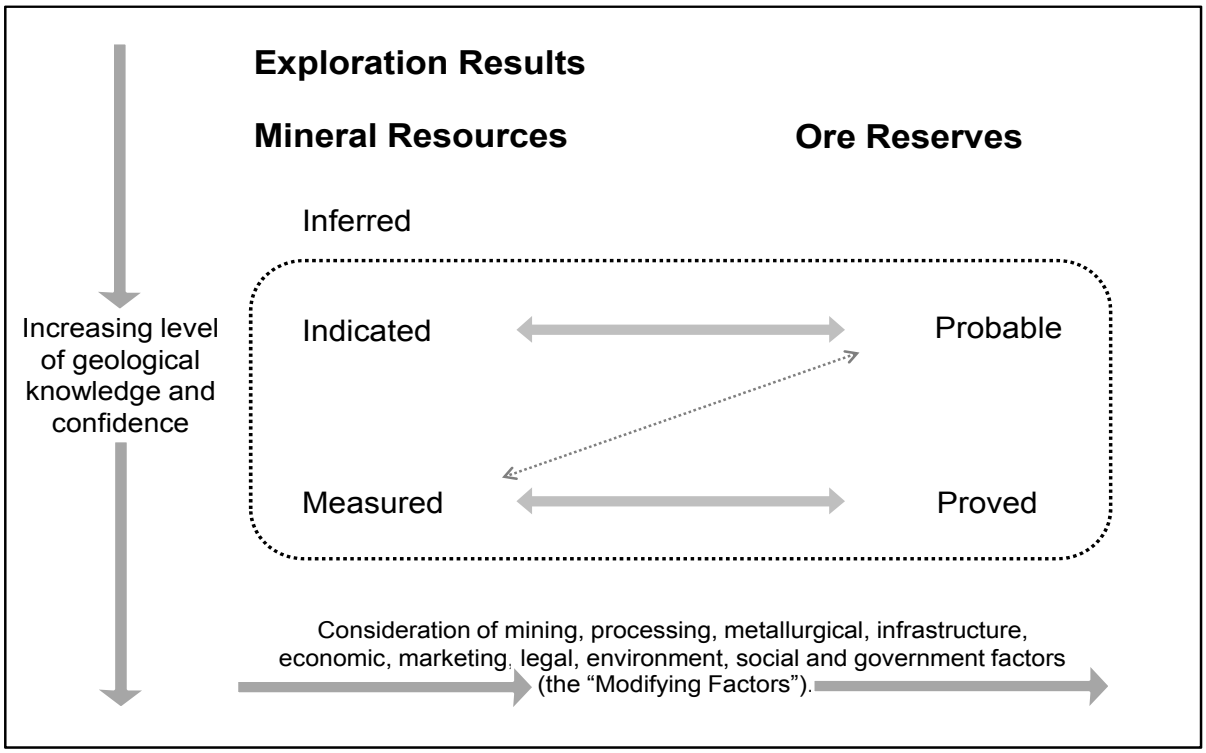


Figure 1 General relationship between Exploration Results, Mineral Resources and Ore Reserves.

Reporting General

13. Public Reports concerning a company's Exploration Results, Mineral Resources or Ore Reserves must include a description of the style and nature of the mineralisation.

14. A company must disclose all relevant information concerning Exploration Results, Mineral Resources or Ore Reserves that could materially influence the economic value of those Exploration Results, Mineral Resources or Ore Reserves to the company. A company must promptly report any material changes in its Mineral Resources or Ore Reserves.

15. Companies must review and publically report their Mineral Resources and Ore Reserves annually. The annual review date must be nominated by the Company in its Public Reports of Mineral Resources and Ore Reserves and the effective date of each Mineral Resource and Ore Reserve statement must be shown. The Company must discuss any material changes to previously reported Mineral Resources and Ore Reserves at the time of publishing updated Mineral Resources and Ore Reserves.

16. Throughout the Code, if appropriate, 'quality' may be substituted for 'grade' and 'volume' may be substituted for 'tonnage'. (Refer to Appendix 1 Generic Terms and Equivalents.)

17. It is recognised that it is common practice for a company to comment on and discuss its exploration in terms of target size and type. However, any such comment in a Public Report must comply with the following requirements.

    An Exploration Target is a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade (or quality), relates to mineralisation for which there has been insufficient exploration to estimate a Mineral Resource.

    Any such information relating to an Exploration Target must be expressed so that it cannot be misrepresented or misconstrued as an estimate of a Mineral Resource or Ore Reserve. The terms Resource or Reserve must not be used in this context. In any statement referring to potential quantity and grade of the target, these must both be expressed as ranges and must include:

- a detailed explanation of the basis for the statement, including specific description of the level of exploration activity already completed, and
- a clarification statement within the same paragraph as the first reference of the Exploration Target in the Public Report, stating that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to estimate a Mineral Resource and that it is uncertain if further exploration will result in the estimation of a Mineral Resource.

Given the level of uncertainty surrounding the supporting data, an Exploration Target tonnage or grade must not be reported as a 'headline statement' in a Public Report.

If a Public Report includes an Exploration Target the proposed exploration activities designed to test the validity of the exploration target must be detailed and the timeframe within which those activities are expected to be completed must be specified.

If an Exploration Target is shown pictorially (for instance as cross sections or maps) or with a graph, it must be accompanied by text that meets the requirements above.

A Public Report that includes an Exploration Target must be accompanied by a Competent Person statement taking responsibility for the form and context in which the Exploration Target appears.

All disclosures of an Exploration Target must clarify whether the target is based on actual Exploration Results or on proposed exploration programmes. Where the Exploration Target statement includes information relating to ranges of tonnages and grades these must be represented as approximations. The explanatory text must include a description of the process used to determine the grade and tonnage ranges used to describe the Exploration Target.

For an Exploration Target based on Exploration Results, a summary of the relevant exploration data available and the nature of the results should also be stated, including a disclosure of the current drill hole or sampling spacing and relevant plans or sections. In any subsequent upgraded or modified statements on the Exploration Target, the Competent Person should discuss any material changes to potential scale or quality arising from completed exploration activities.

Reporting of Exploration Results

18. **Exploration Results include data and information generated by mineral exploration programmes that might be of use to investors but which do not form part of a declaration of Mineral Resources or Ore Reserves.**

    The reporting of such information is common in the early stages of exploration when the quantity of data available is generally not sufficient to allow any reasonable estimates of Mineral Resources.

    If a company reports Exploration Results in relation to mineralisation not classified as a Mineral Resource or an Ore Reserve, then estimates of tonnages and average grade must not be assigned to the mineralisation unless the situation is covered by Clause 17, and then only in strict accordance with the requirements of that Clause.

    Examples of Exploration Results include results of outcrop sampling, assays of drill hole intersections, geochemical results and geophysical survey results.

19. Public Reports of Exploration Results must contain sufficient information to allow a considered and balanced judgement of their significance. Reports must include relevant information such as exploration context, type and method of sampling, relevant sample intervals and locations, distribution, dimensions and relative location of all relevant assay data, methods of analysis, data aggregation methods, land tenure status plus information on any of the other criteria listed in Table 1 that are material to an assessment.

    Public Reports of Exploration Results must not be presented so as to unreasonably imply that potentially economic mineralisation has been discovered. If true widths of mineralisation are not reported, an appropriate qualification must be included in the Public Report.

Where assay and analytical results are reported, they must be reported using one of the following methods, selected as the most appropriate by the Competent Person:

- either by listing all results, along with sample intervals (or size, in the case of bulk samples), or
- by reporting weighted average grades of mineralised zones, indicating clearly how the grades were calculated.

Clear diagrams and maps designed to represent the geological context must be included in the report. These must include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.

Reporting of selected information such as isolated assays, isolated drill holes, assays of panned concentrates or supergene enriched soils or surface samples, without placing them in perspective is unacceptable.

While it is not necessary to report all assays or drill holes, it is a requirement that sufficient information about the omitted data is provided so that a considered and balanced judgement can be made by the reader of the report. Where reports of Exploration Results do not include all drill holes or all intersections of drill holes the Competent Person must provide an explanation of why this information is not considered relevant or why it has not been provided.

As required under Clauses 4 and 5, the Competent Person must not 'remain silent on any issue for which the presence or absence of comment could impact the public perception or value of the mineral occurrence'. For significant projects the reporting of all criteria in sections 1 and 2 of Table 1 on an 'if not, why not basis' is required, preferably as an appendix to the Public Report. Additional disclosure is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results; for example, poor sample recovery, poor repeatability of assay or laboratory results, etc.

Reporting of Mineral Resources

20. **A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.**

All reports of Mineral Resources must satisfy the requirement that there are reasonable prospects for eventual economic extraction (ie more likely than not), regardless of the classification of the resource.

Portions of a deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource. The basis for the reasonable prospects assumption is always a material matter, and must be explicitly disclosed and discussed by the Competent Person within the Public Report using the criteria listed in Table 1 for guidance. The reasonable prospects disclosure must also include a discussion of the technical and economic support for the cut-off assumptions applied.

Where untested practices are applied in the determination of reasonable prospects, the use of the proposed practices for reporting of the Mineral Resource must be justified by the Competent Person in the Public Report.

Geological evidence and knowledge required for the estimation of Mineral Resources must include sampling data of a type, and at spacings, appropriate to the geological, chemical, physical, and mineralogical complexity of the mineral occurrence, for all classifications of Inferred, Indicated and Measured Mineral Resources. A Mineral Resource cannot be estimated in the absence of sampling information.

The term 'Mineral Resource' covers mineralisation, including dumps and tailings, which has been identified and estimated through exploration and sampling and within which Ore Reserves may be defined by the consideration and application of the Modifying Factors.

The term 'reasonable prospects for eventual economic extraction' implies an assessment (albeit preliminary) by the Competent Person in respect of all matters likely to influence the prospect of economic extraction including the approximate mining parameters. In other words, a Mineral Resource is not an inventory of all mineralisation drilled or sampled, regardless of cut-off grade, likely mining dimensions location or continuity. It is a realistic inventory of mineralisation which, under assumed and justifiable technical, economic and development conditions, might, in whole or in part, become economically extractable.

Where considered appropriate by the Competent Person, Mineral Resource estimates may include material below the selected cut-off grade to ensure that the Mineral Resources comprise bodies of mineralisation of adequate size and continuity to properly consider the most appropriate approach to mining. Documentation of Mineral Resource estimates should clearly identify any diluting material included and Public Reports should include commentary on the matter if considered material.

Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron ore, bauxite and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However for the majority of smaller deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time. In all cases, the considered time frame should be disclosed and discussed by the Competent Person.

Any adjustment made to the data for the purpose of making the Mineral Resource estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

Certain reports (eg inventory coal reports, exploration reports to government and other similar reports not intended primarily for providing information for investment purposes) may require full disclosure of all mineralisation, including some material that does not have reasonable prospects for eventual economic extraction. Such estimates of mineralisation would not qualify as Mineral Resources or Ore Reserves in terms of the JORC Code (refer also to the guidelines to Clauses 6 and 42).

21. **An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.**

    An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

    Where the Mineral Resource being reported is predominantly an Inferred Mineral Resource, sufficient supporting information must be provided to enable the reader to evaluate and assess the risk associated with the reported Mineral Resource.

    In circumstances where the estimation of the Inferred Mineral Resource is presented on the basis of extrapolation beyond the nominal sampling spacing and taking into account the style of mineralisation, the report must contain sufficient information to inform the reader of:

    - the maximum distance that the resource is extrapolated beyond the sample points
    - the proportion of the resource that is based on extrapolated data
    - the basis on which the resource is extrapolated to these limits
    - a diagrammatic representation of the Inferred Mineral Resource showing clearly the extrapolated part of the estimated resource.

The Inferred category is intended to cover situations where a mineral concentration or occurrence has been identified and limited measurements and sampling completed, but where the data are insufficient to allow the geological and grade continuity to be confidently interpreted. While it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur.

Confidence in the estimate of Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning in Pre-Feasibility (Clause 39) or Feasibility (Clause 40) Studies. For this reason, there is no direct link from an Inferred Mineral Resource to any category of Ore Reserves (see Figure 1).

Caution should be exercised if Inferred Mineral Resources are used to support technical and economic studies such as Scoping Studies (refer to Clause 38).

22. **An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.**

    Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered.

    An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

    Mineralisation may be classified as an Indicated Mineral Resource when the nature, quality, amount and distribution of data are such as to allow confident interpretation of the geological framework and to assume continuity of mineralisation.

    Confidence in the estimate is sufficient to allow application of Modifying Factors within a technical and economic study as defined in Clauses 37 to 40.

23. **A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.**

    Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered.

    A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

    Mineralisation may be classified as a Measured Mineral Resource when the nature, quality, amount and distribution of data are such as to leave no reasonable doubt, in the opinion of the Competent Person determining the Mineral Resource, that the tonnage and grade of the mineralisation can be estimated to within close limits, and that any variation from the estimate would be unlikely to significantly affect potential economic viability.

    This category requires a high level of confidence in, and understanding of, the geological properties and controls of the mineral deposit.

    Confidence in the estimate is sufficient to allow application of Modifying Factors within a technical and economic study as defined in Clauses 37 to 40.

Depending upon the level of confidence in the various Modifying Factors it may be converted to a Proved Ore Reserve (high confidence in Modifying Factors), Probable Ore Reserve (some uncertainty in Modifying Factors) or may not be converted at all (low or no confidence in some of the Modifying Factors; or no plan to mine, eg pillars in an underground mine or outside economic pit limits).

24. The choice of the appropriate category of Mineral Resource depends upon the quantity, distribution and quality of data available and the level of confidence that attaches to those data. The appropriate Mineral Resource category must be determined by a Competent Person.

    Mineral Resource classification is a matter for skilled judgement and a Competent Person should take into account those items in Table 1 that relate to confidence in Mineral Resource estimation.

    In deciding between Measured Mineral Resources and Indicated Mineral Resources, Competent Persons may find it useful to consider, in addition to the phrases in the two definitions relating to geological and grade continuity in Clauses 22 and 23, the phrase in the guideline to the definition for Measured Mineral Resources: '... any variation from the estimate would be unlikely to significantly affect potential economic viability'.

    In deciding between Indicated Mineral Resources and Inferred Mineral Resources, Competent Persons may wish to take into account, in addition to the phrases in the two definitions in Clauses 21 and 22 relating to geological and grade continuity, that part of the definition for Indicated Mineral Resources: **'sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit***', which contrasts with the guideline to the definition for Inferred Mineral Resources: 'Confidence in the estimate of Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning in Pre-Feasibility (Clause 39) or Feasibility (Clause 40) Studies' and 'Caution should be exercised if Inferred Mineral Resources are used to support technical and economic studies such as Scoping Studies (refer to Clause 38)'.*

    The Competent Person should take into consideration issues of the style of mineralisation and cut-off grade when assessing geological and grade continuity for the purposes of classifying the resource.

    Cut-off grades chosen for the estimation should be realistic in relation to the style of mineralisation and the anticipated mining and processing development options.

25. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. Reporting of tonnage and grade figures should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures and, in the case of Inferred Mineral Resources, by qualification with terms such as 'approximately' and to emphasise the imprecise nature of a Mineral Resource, the final result should always be referred to as an estimate not a calculation.

    In most situations, rounding to the second significant figure should be sufficient. For example 10,863,000 tonnes at 8.23 per cent should be stated as 11 million tonnes at 8.2 per cent. There will be occasions, however, where rounding to the first significant figure may be necessary in order to convey properly the uncertainties in estimation. This would usually be the case with Inferred Mineral Resources.

    Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Mineral Resource estimates with consideration of at least sampling, analytical and estimation errors. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).

26. Public Reports of Mineral Resources must specify one or more of the categories of 'Inferred', 'Indicated' and 'Measured'. Categories must not be reported in a combined form unless details for the individual categories are also provided. Mineral Resources must not be reported in terms of contained metal or mineral content unless corresponding tonnages and grades are also presented.

Mineral Resources must not be aggregated with Ore Reserves.

Public Reporting of tonnages and grades outside the categories covered by the Code is not permitted unless the situation is covered by Clause 17, and then only in strict accordance with the requirements of that Clause.

Estimates of tonnage and grade outside of the categories covered by the Code may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports is not permitted.

27. In a Public Report of a Mineral Resource for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided or, if a particular criterion is not relevant or material, a disclosure that it is not relevant or material and a brief explanation of why this is the case must be provided.

    For a significant project, when Mineral Resource estimates are first Publicly Reported or when a material change occurs (including classification changes), there is an increased need for transparent discussion of the basis for the new Mineral Resource estimate in order that investors are appropriately informed of the basis for the changes. As noted in Clauses 4 and 5 the benchmark of Materiality is that which an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person, thus the reporting of all relevant criteria in Table 1 on an 'if not, why not' basis is required.

    The Code specifies reporting against relevant sections of Table 1 in this Clause. This may be satisfied by reporting against section 3 on the presumption that matters related to sections 1 and 2 will already have been included in a still current Public Report and this Report can be referenced. If this is not the case then these sections are also relevant and should be included in the Public Report.

    The technical summary based against Table 1 criteria should be presented as an appendix to the Public Report.

    Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Mineral Resources (for example, poor sample recovery, poor repeatability of assay or laboratory results, limited information on bulk densities, etc) those unresolved issues should also be reported.

    If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

    Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over-statement of Mineral Resources should be disclosed.

    Mineral Resource estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Mineral Resources and the nature of the adjustment or modification described.

28. The words 'ore' and 'reserves' must not be used in describing Mineral Resource estimates as the terms imply technical feasibility and economic viability and are only appropriate when all relevant Modifying Factors have been considered. Reports and statements should continue to refer to the appropriate category or categories of Mineral Resources until technical feasibility and economic viability have been established. If re-evaluation indicates that the Ore Reserves are no longer viable, the Ore Reserves must be reclassified as Mineral Resources or removed from Mineral Resource/Ore Reserve statements.

    It is not intended that re-classification from Ore Reserves to Mineral Resources or vice versa should be applied as a result of changes expected to be of a short term or temporary nature, or where company management has made a deliberate decision to operate on a non-economic basis. Examples of such situations might be commodity price fluctuations expected to be of short duration, mine emergency of a non-permanent nature, transport strike, etc.

Reporting of Ore Reserves

29. **An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.**

The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

The key underlying assumptions and outcomes of the Pre-Feasibility Study or Feasibility Study must be disclosed at the time of reporting of a new or materially changed Ore Reserve.

Pre-Feasibility and Feasibility Studies are defined in Clauses 39 and 40 below.

Ore Reserves are sub-divided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves.

In reporting Ore Reserves, information on estimated mineral processing recovery factors is very important, and should always be included in Public Reports.

Ore Reserves are those portions of Mineral Resources that, after the application of all Modifying Factors, result in an estimated tonnage and grade which, in the opinion of the Competent Person making the estimates, can be the basis of a technically and economically viable project, after taking account of material relevant Modifying Factors. Deriving an Ore Reserve without a mine design or mine plan through a process of factoring of the Mineral Resource is unacceptable.

Ore Reserves are reported as inclusive of marginally economic material and diluting material delivered for treatment or dispatched from the mine without treatment.

The term 'economically mineable' implies that extraction of the Ore Reserves has been demonstrated to be viable under reasonable financial assumptions. This will vary with the type of deposit, the level of study that has been carried out and the financial criteria of the individual company. For this reason, there can be no fixed definition for the term 'economically mineable'.

In order to achieve the required level of confidence in the Modifying Factors, appropriate Feasibility or Pre-Feasibility level studies will have been carried out prior to determination of the Ore Reserves. The studies will have determined a mine plan and production schedule that is technically achievable and economically viable and from which the Ore Reserves can be derived.

The term 'Ore Reserves' need not necessarily signify that extraction facilities are in place or operative, or that all necessary approvals or sales contracts have been received. It does signify that there are reasonable grounds to expect that such approvals or contracts will eventuate within the anticipated time frame required by the mine plans. There must be reasonable grounds to expect that all necessary Government approvals will be received. The Competent Person should highlight and discuss any material unresolved matter that is dependent on a third party on which extraction is contingent.

If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

Any adjustment made to the data for the purpose of making the Ore Reserve estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

Where companies prefer to use the term 'Mineral Reserves' in their Public Reports, eg for reporting industrial minerals or for reporting outside Australasia, they should state clearly that this is being used with the same meaning as 'Ore Reserves', defined in this Code. If preferred by the reporting company,

'Ore Reserve' and 'Mineral Resource' estimates for coal may be reported as 'Coal Reserve' and 'Coal Resource' estimates.

JORC prefers the term 'Ore Reserve' because it assists in maintaining a clear distinction between a 'Mineral Resource' and an 'Ore Reserve', whereas other codes feel it is better to reference Mineral Exploration Results, Mineral Resources and Mineral Reserves.

30. **A 'Probable Ore Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Ore Reserve is lower than that applying to a Proved Ore Reserve.**

    Consideration of the confidence level of the Modifying Factors is important in conversion of Mineral Resources to Ore Reserves.

    A Probable Ore Reserve has a lower level of confidence than a Proved Ore Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.

31. **A 'Proved Ore Reserve' is the economically mineable part of a Measured Mineral Resource. A Proved Ore Reserve implies a high degree of confidence in the Modifying Factors.**

    A Proved Ore Reserve represents the highest confidence category of reserve estimate and implies a high degree of confidence in geological and grade continuity, and the consideration of the Modifying Factors. The style of mineralisation or other factors could mean that Proved Ore Reserves are not achievable in some deposits.

32. The choice of the appropriate category of Ore Reserve is determined primarily by the relevant level of confidence in the Mineral Resource and after considering any uncertainties in the consideration of the Modifying Factors. Allocation of the appropriate category must be made by a Competent Person.

    The Code provides for a direct two-way relationship between Indicated Mineral Resources and Probable Ore Reserves and between Measured Mineral Resources and Proved Ore Reserves. In other words, the level of geological confidence for Probable Ore Reserves is similar to that required for the determination of Indicated Mineral Resources, and the level of geological confidence for Proved Ore Reserves is similar to that required for the determination of Measured Mineral Resources.

    The Code also provides for a two-way relationship between Measured Mineral Resources and Probable Ore Reserves. This is to cover a situation where uncertainties associated with any of the Modifying Factors considered when converting Mineral Resources to Ore Reserves may result in there being a lower degree of confidence in the Ore Reserves than in the corresponding Mineral Resources. Such a conversion would not imply a reduction in the level of geological knowledge or confidence.

    A Probable Ore Reserve derived from a Measured Mineral Resource may be converted to a Proved Ore Reserve if the uncertainties in the Modifying Factors are removed. No amount of confidence in the Modifying Factors for conversion of a Mineral Resource to an Ore Reserve can override the upper level of confidence that exists in the Mineral Resource. Under no circumstances can an Indicated Mineral Resource be converted directly to a Proved Ore Reserve (see Figure 1).

    Application of the category of Proved Ore Reserve implies the highest degree of geological, technical and economic confidence in the estimate at the level of production increments used to support mine planning and production scheduling, with consequent expectations in the minds of the readers of the report. These expectations should be considered when categorising a Mineral Resource as Measured.

    Refer also to the guidelines in Clause 24 regarding classification of Mineral Resources.

33. Ore Reserve estimates are not precise calculations. Reporting of tonnage and grade estimates should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures. Refer also to Clause 25.

    To emphasise the imprecise nature of an Ore Reserve, the final result should always be referred to as an estimate and not a calculation.

Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Ore Reserve estimates with consideration of both underlying estimation and Modifying Factor uncertainties. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).

34. Public Reports of Ore Reserves must specify one or other or both of the categories of 'Proved' and 'Probable'. Reports must not contain combined Proved and Probable Ore Reserve figures unless the relevant figures for each of the categories are also provided. Reports must not present metal or mineral content figures unless corresponding tonnage and grade figures are also given.

    Public Reporting of tonnage and grade outside the categories covered by the Code is not permitted unless the situation is covered by Clause 17, and then only in strict accordance with the requirements of that Clause.

    Estimates of tonnage and grade outside of the categories covered by the Code may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports could cause confusion, and is not permitted.

    Ore Reserves may incorporate material (dilution) that is not part of the original Mineral Resource. It is essential that this fundamental difference between Mineral Resources and Ore Reserves is considered and caution exercised if attempting to draw conclusions from a comparison of the two.

    When revised Ore Reserve and Mineral Resource statements are publicly reported, the Company must discuss any material changes from the previous estimate, and supply sufficient comment to enable the basis for significant changes to be understood by the reader.

35. In a Public Report of an Ore Reserve estimate for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided or, if a particular criterion is not relevant or material, a disclosure that it is not relevant or material and a brief explanation of why this is the case must be provided.

    For a significant project, when Ore Reserve estimates are first Publicly Reported or when a material change occurs (including classification changes), there is an increased need for transparent discussion of the basis for the new Ore Reserve estimate in order that investors are appropriately informed of the basis for the changes. As noted in Clauses 4 and 5 the benchmark of Materiality is that which an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person, thus the reporting of all criteria in Table 1 on an 'if not, why not' basis is required.

    The Code specifies reporting against relevant sections of Table 1 in this Clause. This may be satisfied by reporting against section 4 on the presumption that matters related to sections 1, 2 and 3 will already have been included in a still current Public Report and this Report can be referenced. If this is not the case then these sections are also relevant and should be included in the Public Report.

    The Technical summary based against Table 1 criteria should be presented as an appendix to the Public Report.

    Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Ore Reserves (for example, limited geotechnical information, complex orebody metallurgy, uncertainty in the permitting process, etc) those unresolved issues should also be reported.

    If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

    Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over- statement of Ore Reserves should be disclosed.

Ore Reserve estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Ore Reserves and the nature of the adjustment or modification described.

36. In situations where figures for both Mineral Resources and Ore Reserves are reported, a statement must be included in the report which clearly indicates whether the Mineral Resources are inclusive of, or additional to the Ore Reserves.

    Ore Reserve estimates must not be aggregated with Mineral Resource estimates to report a single combined figure.

    In some situations there are reasons for reporting Mineral Resources inclusive of Ore Reserves and in other situations for reporting Mineral Resources additional to Ore Reserves. It must be made clear which form of reporting has been adopted. Appropriate forms of clarifying statements may be:

    - *'The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Ore Reserves.' or*
    - *'The Measured and Indicated Mineral Resources are additional to the Ore Reserves.'*

    In the former case, if any Measured and Indicated Mineral Resources have not been modified to produce Ore Reserves for economic or other reasons, the relevant details of these unmodified Mineral Resources should be included in the report. This is to assist the reader of the report in making a judgement of the likelihood of the unmodified Measured and Indicated Mineral Resources eventually being converted to Ore Reserves.

    Inferred Mineral Resources are by definition generally additional to Ore Reserves except where included as dilution in the Ore Reserves.

    For reasons stated in the guidelines to Clause 34 and in this paragraph, the reported Ore Reserve estimates must not be aggregated with the reported Mineral Resource estimates (eg in graphs, figures or tables). The resulting total is misleading and is capable of being misunderstood or of being misused to give a false impression of a company's prospects.

Technical Studies

37. These definitions are included in the Code to provide clarity on what is expected when reporting using these terms. The definition of a Scoping Study has been included because of the common usage of the term in Public Reports. However attention is drawn to the requirement for a Pre-Feasibility Study or a Feasibility study to have been completed for the Public Reporting of an Ore Reserve in Clause 29. An Ore Reserve must not be reported based on the completion of a Scoping Study.

38. **A Scoping Study is an order of magnitude technical and economic study of the potential viability of Mineral Resources. It includes appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably justified.**

    A Scoping Study must not be used as the basis for estimation of Ore Reserves.

    If the outcome of a Scoping Study is partially supported by Inferred Mineral Resources and/or an Exploration Target, the Public Report must state both the proportion and relative sequencing of the Inferred Mineral Resources and/or an Exploration Target within the Scoping Study.

    For all Scoping Studies, the entity must include a cautionary statement in the same paragraph as, or immediately following, the disclosure of the Scoping Study.

    An example cautionary statement follows:

    'The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.'

In discussing 'reasonable prospects for eventual economic extraction' in Clause 20, the Code requires an assessment (albeit preliminary) in respect of all matters likely to influence the prospect of economic extraction including the approximate mining parameters by the Competent Person. While a Scoping Study may provide the basis for that assessment, the Code does not require a Scoping Study to have been completed to report a Mineral Resource.

Scoping Studies are commonly the first economic evaluation of a project undertaken and may be based on a combination of directly gathered project data together with assumptions borrowed from similar deposits or operations to the case envisaged. They are also commonly used internally by companies for comparative and planning purposes. Reporting the general results of a Scoping Study needs to be undertaken with care to ensure there is no implication that Ore Reserves have been established or that economic development is assured. In this regard it may be appropriate to indicate the Mineral Resource inputs to the Scoping Study and the processes applied, but it is not appropriate to report the diluted tonnes and grade as if they were Ore Reserves.

While initial mining and processing cases may have been developed during a Scoping Study, it must not be used to allow an Ore Reserve to be developed.

39. **A Preliminary Feasibility Study (Pre-Feasibility Study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resources may be converted to an Ore Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.**

As noted in Clause 29, formal assessment of all Modifying Factors is required in order to determine how much available Measured and Indicated Mineral Resources can be converted to Ore Reserves.

A Pre-Feasibility Study will consider the application and description of all Modifying factors (as outlined in Table 1, section 4) to demonstrate economic viability and to support an Ore Reserve Public Report. The Pre-Feasibility Study will identify the preferred mining, processing, and infrastructure requirements and capacities, but will not yet have finalised these matters. Detailed assessments of environmental and socio-economic impacts and requirements will also be well advanced. The Pre-Feasibility Study will highlight areas that require further refinement within the final study stage.

40. **A Feasibility Study is a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.**

The Code does not require that a full Feasibility Study has been undertaken to convert Mineral Resources to Ore Reserves, but it does require that at least a Pre-Feasibility Study will have been carried out that will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.

Terms such as "Bankable Feasibility Study" and "Definitive Feasibility Study" are noted as being equivalent to a Feasibility Study as defined in this Clause.

A Feasibility Study is of a higher level of confidence than a Pre-Feasibility Study and would normally contain mining, infrastructure and process designs completed with sufficient rigour to serve as the basis for an investment decision or to support project financing. Social, environmental and governmental

approvals, permits and agreements will be in place, or will be approaching finalisation within the expected development timeframe. The Feasibility Study will contain the application and description of all Modifying factors (as outlined in Table 1, section 4) in a more detailed form than in the Pre-Feasibility Study, and may address implementation issues such as detailed mining schedules, construction ramp up, and project execution plans.

Reporting of Mineralised Fill, Remnants, Pillars, Low Grade Mineralisation, Stockpiles, Dumps and Tailings

41. The Code applies to the reporting of all potentially economic mineralised material. This can include mineralised fill, remnants, pillars, low grade mineralisation, stockpiles, dumps and tailings (remnant materials) where there are reasonable prospects for eventual economic extraction in the case of Mineral Resources, and where extraction is reasonably justifiable in the case of Ore Reserves. Unless otherwise stated, all other Clauses of the Code (including Figure 1) apply.

Any mineralised material as described in this Clause can be considered to be similar to in situ mineralisation for the purposes of reporting Mineral Resources and Ore Reserves. Judgements about the mineability of such mineralised material should be made by professionals with relevant experience.

If there are no reasonable prospects for the eventual economic extraction of all or part of the mineralised material as described in this Clause, then this material cannot be classified as either Mineral Resources or Ore Reserves. If some portion of the mineralised material is currently sub-economic, but there is a reasonable expectation that it will become economic, then this material may be classified as a Mineral Resource. If technical and economic studies have demonstrated that economic extraction could reasonably be justified under realistically assumed conditions, then the material may be classified as an Ore Reserve.

The above guidelines apply equally to low-grade in situ mineralisation, sometimes referred to as 'mineralised waste' or 'marginal grade material', and often intended for stockpiling and treatment towards the end of mine life. For clarity of understanding, it is recommended that tonnage and grade estimates of such material be itemised separately in Public Reports, although they may be aggregated with total Mineral Resource and Ore Reserve figures.

Stockpiles are defined to include both surface and underground stockpiles, including broken ore in stopes, and can include ore currently in the ore storage system. Mineralised material in the course of being processed (including leaching), if reported, should be reported separately.

Reporting of Coal Resources and Reserves

42. Clauses 42 to 44 of the Code address matters that relate specifically to the Public Reporting of Coal Resources and Coal Reserves. Unless otherwise stated, Clauses 1 to 41 and Clause 51 of this Code (including Figure 1) apply. Table 1 should be considered when reporting on Coal Resources and Reserves.

For purposes of Public Reporting, the requirements for coal are those for other commodities with the replacement of terms such as 'mineral' by 'coal' and 'grade' by 'quality'.

For guidance on the estimation of Coal Resources and Reserves and on statutory reporting not primarily intended for providing information to the investing public, readers are referred to the 'Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves' or its successor document as published from time to time by the Coalfields Geology Council of New South Wales and the Queensland Resources Council. These guidelines do not override the provisions and intentions of the JORC Code for Public Reporting. Competent Persons should as always exercise their judgement in the application of these guidelines to ensure they are appropriate to the circumstances being reported. They may not be appropriate for use in all situations in Australia or overseas.

Because of its impact on planning and land use, governments may require estimates of inventory coal that are not constrained by short- to medium-term economic considerations. The JORC Code does not cover such estimates. Refer also to the guidelines to Clauses 6 and 20.

43. The terms 'Mineral Resource(s)' and 'Ore Reserve(s)', and the subdivisions of these as defined above, apply also to coal reporting, but if preferred by the reporting company, the terms 'Coal Resource(s)' and 'Coal Reserve(s)' and the appropriate subdivisions may be substituted.

44. 'Marketable Coal Reserves', representing beneficiated or otherwise enhanced coal product where modifications due to mining, dilution and processing have been considered, must be publicly reported in conjunction with, but not instead of, reports of Coal Reserves. The basis of the predicted yield to achieve Marketable Coal Reserves must be stated.

Since investors need to be informed on the products intended to be sold, reporting of Marketable Coal Reserves is required.

Reference to the terms 'coking coal' or 'metallurgical coal', or any reference to coking properties, should not be made until specific coking properties are demonstrated by analytical results for samples from a deposit.

Reporting of Diamond Exploration Results, Mineral Resources and Ore Reserves

45. Clauses 45 to 48 of the Code address matters that relate specifically to the Public Reporting of Exploration Results, Mineral Resources and Ore Reserves for diamonds and other gemstones. Unless otherwise stated, Clauses 1 to 41 and Clause 51 of this Code (including Figure 1) apply. Table 1 should be considered when reporting Exploration Results, Mineral Resources and Ore Reserves for diamonds and other gemstones.

For the purposes of Public Reporting, the requirements for diamonds and other gemstones are generally similar to those for other commodities with the replacement of terms such as 'mineral' by 'diamond' and 'grade' by 'grade and average diamond value'. The term 'quality' should not be substituted for 'grade,' since in diamond deposits these have distinctly separate meanings. Other industry guidelines on the estimation and reporting of diamond resources and reserves may be useful but will not under any circumstances override the provisions and intentions of the JORC Code.

A number of characteristics of diamond deposits are different from those of, for example, typical metalliferous and coal deposits and therefore require special consideration. These include the generally low mineral content and variability of primary and placer deposits, the particulate nature of diamonds, the specialised requirement for diamond valuation and the inherent difficulties and uncertainties in the estimation of diamond resources and reserves.

46. Reports of diamonds recovered from sampling programmes must provide material information relating to the basis on which the sample is taken, the method of recovery and the recovery of the diamonds. The weight of diamonds recovered may only be omitted from the report when the diamonds are considered to be too small to be of commercial significance. This lower cut-off size should be stated.

The stone size distribution and price of diamonds and other gemstones are critical components of the resource and reserve estimates. At an early exploration stage, sampling and delineation drilling will not usually provide this information, which relies on large diameter drilling and, in particular, bulk sampling.

In order to demonstrate that a resource has reasonable prospects for economic extraction, some description of the likely stone size distribution and price is necessary, however preliminary the analysis of these may be. To determine an Inferred Mineral Resource in simple, single-facies or single-phase deposits, such information may be obtainable by representative large diameter drilling. More often, some form of bulk sampling, such as pitting and trenching, would be employed to provide larger sample parcels.

In order to progress to an Indicated Mineral Resource, and from there to a Probable Ore Reserve, it is likely that much more extensive bulk sampling would be needed to fully determine the stone size distribution and value. Commonly such bulk samples would be obtained by underground development designed to obtain sufficient diamonds to enable a confident estimate of price.

In complex deposits, it may be very difficult to ensure that the bulk samples taken are truly representative of the whole deposit. The lack of direct bulk sampling, and the uncertainty in demonstrating spatial continuity of size and price relationships should be persuasive in determining the appropriate resource category.

47. Where diamond Mineral Resource or Ore Reserve grades (carats per tonne) are based on correlations between the frequency of occurrence of micro-diamonds and of commercial size stones, this must be stated, the reliability of the procedure must be explained and the cut-off sieve size for micro-diamonds reported.

48. For Public Reports dealing with diamond or other gemstone mineralisation, it is a requirement that any reported valuation of a parcel of diamonds or gemstones be accompanied by a statement verifying the independence of the valuation. The valuation must be based on a report from a demonstrably reputable and qualified expert.

    If a valuation of a parcel of diamonds is reported, the weight in carats and the lower cut-off size of the contained diamonds must be stated and the value of the diamonds must be given in US dollars per carat. Where the valuation is used in the estimation of diamond Mineral Resources or Ore Reserves, the valuation must be based on a parcel representative of the size, shape and colour distributions of the diamond population in the deposit.

    Diamond valuations should not be reported for samples of diamonds processed using total liberation methods.

Reporting of Industrial Minerals Exploration Results, Mineral Resources and Ore Reserves

49. Industrial minerals are covered by the JORC Code if they meet the criteria set out in Clauses 6 and 7 of the Code. For the purpose of the JORC Code, industrial minerals can be considered to cover commodities such as kaolin, phosphate, limestone, talc, etc.

    For minerals that are defined by a specification, the Mineral Resource or Ore Reserve estimation must be reported in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals.

    When reporting information and estimates for industrial minerals, the key principles and purpose of the JORC Code apply and should be borne in mind. Assays may not always be relevant, and other quality criteria may be more applicable. If criteria such as deleterious minerals or physical properties are of more relevance than the composition of the bulk mineral itself, then they should be reported accordingly.

    The factors underpinning the estimation of Mineral Resources and Ore Reserves for industrial minerals are the same as those for other deposit types covered by the JORC Code. It may be necessary, prior to the reporting of a Mineral Resource or Ore Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability.

    For some industrial minerals, it is common practice to report the saleable product rather than the 'as-mined' product, which is traditionally regarded as the Ore Reserve. JORC's preference is that, if the saleable product is reported, it should be in conjunction with, not instead of, reporting of the Ore Reserve. However, it is recognised that commercial sensitivities may not always permit this preferred style of reporting. It is important that, in all situations where the saleable product is reported, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

Some industrial mineral deposits may be capable of yielding products suitable for more than one application and/or specification. If considered material by the reporting company, such multiple products should be quantified either separately or as a percentage of the bulk deposit.

Reporting of Metal Equivalents

50. The reporting of Exploration Results, Mineral Resources or Ore Reserves for polymetallic deposits in terms of metal equivalents (a single equivalent grade of one major metal) must show details of all material factors contributing to the net value derived from each constituent.

    The following minimum information must accompany any Public Report that includes reference to metal equivalents, in order to conform to the principles of Transparency, Materiality and Competence, as set out in Clause 4:

    - individual grades for all metals included in the metal equivalent calculation,
    - assumed commodity prices for all metals (Companies should disclose the actual assumed prices. It is not sufficient to refer to a spot price without disclosing the price used in calculating the metal equivalent. However where the actual prices used are commercially sensitive, the company must disclose sufficient information, perhaps in narrative rather than numerical form, for investors to understand the methodology it has used to determine these prices),
    - assumed metallurgical recoveries for all metals and discussion of the basis on which the assumed recoveries are derived (metallurgical test work, detailed mineralogy, similar deposits, etc),
    - a clear statement that it is the company's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold, and
    - the calculation formula used.

    In most circumstances, the metal chosen for reporting on an equivalent basis should be the one that contributes most to the metal equivalent calculation. If this is not the case, a clear explanation of the logic of choosing another metal must be included in the report.

    Estimates of metallurgical recoveries for each metal must be used to calculate meaningful metal equivalents.

    Reporting on the basis of metal equivalents is not appropriate if metallurgical recovery information is not available or able to be estimated with reasonable confidence.

    For many projects at the Exploration Results stage, metallurgical recovery information may not be available or able to be estimated with reasonable confidence. In such cases reporting of metal equivalents may be misleading.

Reporting of *In Situ* or In Ground Valuations

51. The publication of *in situ* or 'in ground' financial valuations breaches the principles of the Code (as set out in Clause 4) as the use of these terms is not transparent and lacks material information. It is also contrary to the intent of Clause 28 of the Code. Such *in situ* or in ground financial valuations must not be reported by companies in relation to Exploration Results, Mineral Resources or deposit size.

    The use of such financial valuations (usually quoted in dollars) has little or no relationship to economic viability, value or potential returns to investors.

    These financial valuations can imply economic viability without the apparent consideration of the application of the Modifying Factors, (Clause 12 and Clauses 29 to 36), in particular, the mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social, and governmental factors.

In determining project viability it is necessary to include all reasonable Modifying Factors (Clauses 29 to 36) to determine the economic value that can be extracted from the mineralisation.

Many deposits with large in ground values are never developed because they have a negative Net Present Value when all reasonable Modifying Factors are considered.

By reporting such financial valuations as a component of Exploration Results or when evaluating deposits that commonly include large portions of Inferred Mineral Resources, companies are not necessarily representing the economic viability of the project, or the net economic value that can be extracted from the mineralisation.

Table 1 Checklist of Assessment and Reporting Criteria

Table 1 is a checklist or reference for use by those preparing Public Reports on Exploration Results, Mineral Resources and Ore Reserves.

In the context of complying with the Principles of the Code, comment on the relevant sections of Table 1 should be provided on an 'if not, why not' basis within the Competent Person's documentation and must be provided where required according to the specific requirements of Clauses 19, 27 and 35 for significant projects in the Public Report. This is to ensure that it is clear to the investor whether items have been considered and deemed of low consequence or have yet to be addressed or resolved.

As always, relevance and Materiality are overriding principles that determine what information should be publicly reported and the Competent Person must provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources or Ore Reserves.

The order and grouping of criteria in Table 1 reflects the normal systematic approach to exploration and evaluation. Criteria in section 1 'Sampling Techniques and Data' apply to all succeeding sections. In the remainder of the table, criteria listed in preceding sections would often also apply and should be considered when estimating and reporting.

> *It is the responsibility of the Competent Person to consider all the criteria listed below and any additional criteria that should apply to the study of a particular project or operation. The relative importance of the criteria will vary with the particular project and the legal and economic conditions pertaining at the time of determination.*
>
> *In some cases it will be appropriate for a Public Report to exclude some commercially sensitive information. A decision to exclude commercially sensitive information would be a decision for the company issuing the Public Report, and such a decision should be made in accordance with any relevant corporations regulations in that jurisdiction. For example, in Australia decisions to exclude commercially sensitive information need to be made in accordance with the Corporations Act 2001 and the ASX listing rules and guidance notes.*
>
> *In cases where commercially sensitive information is excluded from a Public Report, the report should provide summary information (for example the methodology used to determine economic assumptions where the numerical value of those assumptions are commercially sensitive) and context for the purpose of informing investors or potential investors and their advisers.*

JORC TABLE 1

Section 1 Sampling Techniques and Data

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

Criteria	Explanation
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.*

Criteria	Explanation
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).*
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.*
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.*
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.*
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.*
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.*
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.*
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.*

Criteria	Explanation
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.*
Sample security	• *The measures taken to ensure sample security.*
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*

Section 2 Reporting of Exploration Results

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

Criteria	Explanation
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.*
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*
Geology	• *Deposit type, geological setting and style of 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.*

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.*
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').*
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.*

Criteria	Explanation
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.*
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.*
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.*

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	Explanation
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.*
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *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.*

Criteria	Explanation
Estimation and modelling techniques (continued)	• *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*
Audits or reviews.	• *The results of any audits or reviews of Mineral Resource estimates.*

Criteria	Explanation
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.*

Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	Explanation
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* • *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* • *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*

Criteria	Explanation
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*
Environmental	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*

Criteria	Explanation
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*

Section 5 Estimation and Reporting of Diamonds and Other Gemstones

(Criteria listed in other relevant sections also apply to this section. Additional guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum.)

Criteria	Explanation
Indicator minerals	• *Reports of indicator minerals, such as chemically/physically distinctive garnet, ilmenite, chrome spinel and chrome diopside, should be prepared by a suitably qualified laboratory.*
Source of diamonds	• *Details of the form, shape, size and colour of the diamonds and the nature of the source of diamonds (primary or secondary) including the rock type and geological environment.*
Sample collection	• *Type of sample, whether outcrop, boulders, drill core, reverse circulation drill cuttings, gravel, stream sediment or soil, and purpose (eg large diameter drilling to establish stones per unit of volume or bulk samples to establish stone size distribution).* • *Sample size, distribution and representivity.*

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

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

Criteria	Explanation
Security and integrity	• *Accredited process audit.* • *Whether samples were sealed after excavation.* • *Valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones.* • *Core samples washed prior to treatment for micro diamonds.* • *Audit samples treated at alternative facility.* • *Results of tailings checks.* • *Recovery of tracer monitors used in sampling and treatment.* • *Geophysical (logged) density and particle density.* • *Cross validation of sample weights, wet and dry, with hole volume and density, moisture factor.*
Classification	• *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive grade (carats per tonne). The elements of uncertainty in these estimates should be considered, and classification developed accordingly.*

Appendix 1 Generic Terms and Equivalents

Throughout the Code, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the industry. In order to avoid unnecessary duplication, a non-exclusive list of generic terms is tabulated below together with other terms that may be regarded as synonymous for the purposes of this document.

Generic Term	Synonyms and similar terms	Intended generalised meaning
assumption	*value judgements*	*The Competent Person in general makes value judgements when making assumptions regarding information not fully supported by test work.*
Competent Person	*Qualified Person (Canada), Qualified Competent Person (Chile)*	*Refer to the Clause 11 of the Code for the definition of a Competent Person. Any reference in the Code to the singular (a Competent Person) includes a reference to the plural (Competent Persons). It is noted that reporting in accordance with the Code is commonly a team effort.*
cut-off grade	*product specifications*	*The lowest grade, or quality, of mineralised material that qualifies as economically mineable and available in a given deposit. May be defined on the basis of economic evaluation, or on physical or chemical attributes that define an acceptable product specification.*
grade	*quality, assay, analysis (that is value returned by the analysis)*	*Any physical or chemical measurement of the characteristics of the material of interest in samples or product. Note that the term quality has special meaning for diamonds and other gemstones. The units of measurement should be stated when figures are reported.*
metallurgy	*processing, beneficiation, preparation, concentration*	*Physical and/or chemical separation of constituents of interest from a larger mass of material. Methods employed to prepare a final marketable product from material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting, etc.* *Processing is generally regarded as broader than metallurgy and may apply to non-metallic materials where the term metallurgy would be inappropriate.*
mineralisation	*type of deposit, orebody, style of mineralisation.*	*Any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralisation might occur, whether by class of deposit, mode of occurrence, genesis or composition.*
mining	*quarrying*	*All activities related to extraction of metals, minerals and gemstones from the earth whether surface or underground, and by any method (eg quarries, open cast, open cut, solution mining, dredging, etc)*
Ore Reserves	*Mineral Reserves*	*'Ore Reserves' is preferred under the JORC Code but 'Mineral Reserves' is in common use in other countries and is generally accepted. Other descriptors can be used to clarify the meaning (eg Coal Reserves, Diamond Reserves, etc).*
recovery	*yield*	*The percentage of material of interest that is extracted during mining and/or processing. A measure of mining or processing efficiency.*
significant project	*material project*	*An exploration or mineral development project that has or could have a significant influence on the market value or operations of the listed company, and/or has specific prominence in Public Reports and announcements.*
tonnage	*quantity, volume*	*An expression of the amount of material of interest irrespective of the units of measurement (which should be stated when figures are reported).*

Appendix 2 Competent Person's Consent Form

Companies reporting Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves are reminded that while a public report is the responsibility of the company acting through its Board of Directors, Clause 9 requires that any such report 'must be based on, and fairly reflect the information and supporting documentation prepared by a Competent Person or Persons'. Clause 9 also requires that the 'report shall be issued with the prior written consent of the Competent Person or Persons as to the form and context in which it appears'.

In order to assist Competent Persons and companies to comply with these requirements, and to emphasise the need for companies to obtain the prior written consent of each Competent Person for their material to be included in the form and context in which it appears in the public report, ASX, together with JORC, have developed a Competent Person's Consent Form that incorporates the requirements of the JORC Code.

The completion of a consent form, whether in the format provided or in an equivalent form, is recommended as good practice and provides readily available evidence that the required prior written consent has been obtained.

Having the consent form witnessed by a peer professional society member is considered leading practice and is strongly encouraged.

The Competent Person's Consent Form(s), or other evidence of the Competent Person's written consent, should be retained by the company and the Competent Person to ensure that the written consent can be promptly provided if required.

[Letterhead of Competent Person or Competent Person's employer]

Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report name

_____

(Insert name or heading of Report to be publicly released) ('Report')

_____

(Insert name of company releasing the Report)

_____

(Insert name of the deposit to which the Report refers)

If there is insufficient space, complete the following sheet and sign it in the same manner as this original sheet.

_____

(Date of Report)

Statement

I/We,

(Insert full name(s))

confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having five years experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I have reviewed the Report to which this Consent Statement applies.

I/We am a full time employee of

(Insert company name)

Or

I am a consultant working for

(Insert company name)

and have been engaged by

(Insert company name)

to prepare the documentation for

(Insert deposit name)

on which the Report is based, for the period ended

(Insert date of Resource/Reserve statement)

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources and/or Ore Reserves (*select as appropriate*).

Consent

I consent to the release of the Report and this Consent Statement by the directors of:

_____

(Insert reporting company name)

_____ _____

Signature of Competent Person | Date:

_____ _____

Professional Membership:
(insert organisation name) | Membership Number:

_____ _____

Signature of Witness: | Print Witness Name and Residence:
(eg town/suburb)

Additional deposits covered by the Report for which the Competent Person signing this form is accepting responsibility:

Additional Reports related to the deposit for which the Competent Person signing this form is accepting responsibility:

Signature of Competent Person

Date:

Professional Membership:
(insert organisation name)

Membership Number:

Signature of Witness:

Print Witness Name and Residence:
(eg town/suburb)

Appendix 3 Compliance Statements

Appropriate forms of compliance statements should be as follows (delete bullet points which do not apply).

For Public Reports of Exploration Targets, initial or materially changed reports of Exploration Results, Mineral Resources or Ore Reserves or company annual reports:

- *If the required information is in the report:*

  'The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by (insert name of Competent Person), a Competent Person who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list that is posted on the ASX website from time to time (select as appropriate and insert the name of the professional organisation of which the Competent Person is a member and the Competent Person's grade of membership).'

- *If the required information is included in an attached statement:*

  'The information in the report to which this statement is attached that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by (insert name of Competent Person), a Competent Person who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list posted on the ASX website from time to time (select as appropriate and insert the name of the professional organisation of which the Competent Person is a member and the Competent Person's grade of membership).'

- *If the Competent Person is a full-time employee of the company:*

  '(Insert name of Competent Person) is a full-time employee of the company.'

- *If the Competent Person is not a full-time employee of the company:*

  '(Insert name of Competent Person) is employed by (insert name of Competent Person's employer).'

- *The full nature of the relationship between the Competent Person and the reporting Company must be declared together with the Competent Person's details. This declaration must outline and clarify any issue that could be perceived by investors as a conflict of interest.*

- For all reports:

  '(Insert name of Competent Person) has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. (Insert name of Competent Person) consents to the inclusion in the report of the matters based on his (or her) information in the form and context in which it appears.'

For any subsequent Public Report based on a previously issued Public Report that refers to those Exploration Results or estimates of Mineral Resources or Ore Reserves:

Where a Competent Person has previously issued the written consent to the inclusion of their findings in a report, a company re-issuing that information to the Public whether in the form of a presentation or a subsequent announcement must, state the report name, date and reference the location of the original source Public Report for public access.

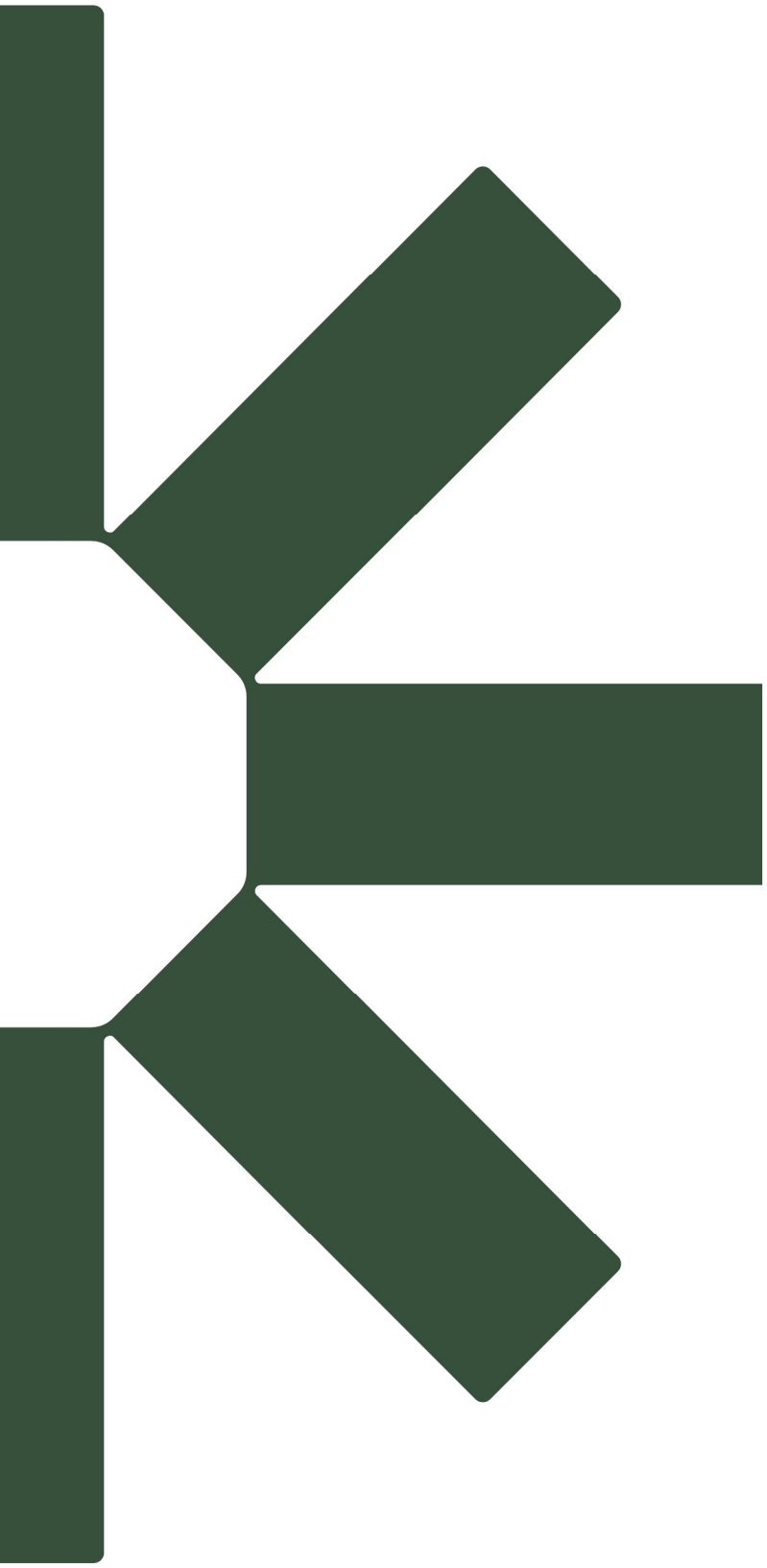
- *'The information is extracted from the report entitled (name report) created on (date) and is available to view on (website name). The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of*

estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.'

Companies should be aware this exemption does not apply to subsequent reporting of information in the company annual report.

Appendix 4 List of Acronyms

AIG	Australian Institute of Geoscientists
ASX	Australian Securities Exchange
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CMMI	Council of Mining and Metallurgical Institutions
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
ICMM	International Council on Mining and Metals
JORC	Joint Ore Reserves Committee
JORC Code	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
NAEN	The Russian Society of Subsoil Use Experts
NPV	Net Present Value
NROs	National Reporting Organisations
NZX	New Zealand Stock Exchange
UN-ECE	United Nations Economic Commission for Europe
UNFC	United Nations Framework Classification
PERC	Pan-European Reserves & Resources Reporting Committee
RPO	Recognised Professional Organisation
SAMCODES	South African Mineral Codes
SME	Society for Mining, Metallurgy & Exploration (USA)
The AusIMM	The Australasian Institute of Mining and Metallurgy
VALMIN Code	Code and Guidelines for Technical Assessment and/or Valuation of Mineral and Petroleum Assets and Mineral and Petroleum Securities for Independent Expert Reports



Making Sustainability Happen