



**Draft Guidance - Materials
Characterisation Baseline Data
Requirements for Mining Proposals**

Department of Mines and Petroleum

Contact
Kirillie Caldwell
k.caldwell@cmewa.com

Contents

About CME	1
Recommendations	1
Stakeholder Response Form.....	3
Conclusion	8

About CME

The Chamber of Minerals and Energy of Western Australia (CME) is the peak resources sector representative body in Western Australia.

The Western Australian resources sector is diverse and complex, covering exploration, processing, downstream value adding and refining of over 50 different types of mineral and energy resources.

In 2014-15, the value of Western Australia's mineral and petroleum production was \$99.5 billion. Iron ore accounted for approximately \$54 billion of production value to be the state's most valuable commodity. Petroleum products (including LNG, crude oil and condensate) followed at \$24 billion, with gold third at \$9 billion.¹

Notwithstanding the recent decline in the price of several export commodities, the estimated value of royalties the state received from the resources sector still composed almost 15 per cent of estimated total state revenue in 2015-16, or around \$3.8 billion.²

As at March 2016, there was approximately \$94 billion in resources sector projects committed or under construction in Western Australia and a further \$44 billion in proposed or possible projects.³

Recommendations

General Comments

- CME recommends the following amendments to the *Draft Guidance – Materials Characterisation Baseline Data Requirements for Mining Proposals* (the Guidance):
 - The title of the document updated to state “*Draft Guidance – Materials Characterisation Baseline Data for Mining Proposals*”; and
 - The words “*must*” and “*will*” updated to state “*should*”.
- CME recommends the Guidance is amended to clearly delineate materials characterisation into two waste streams, inert and non-inert material. In doing so, the sampling intensities and range of analysis for inert material should be updated to reflect the lower risk.
- CME recommends the Guidance is amended to ensure sampling and analysis for soils characterisation and subsurface materials characterisation undertaken by proponents is proportionate to the risk.
- CME recommends the Guidance explicitly acknowledges, for existing operations, management practices and geological conditions may also be utilised to inform the Mining Proposal risk assessment.
- CME recommends the Guidance is amended to clarify what level of information is required for the Mining Proposal risk assessment where a project has been assessed and approved under Part IV or Part V of the *Environmental Protection Act 1986* (EP Act).

¹ Department of Mines and Petroleum (DMP), 2015, *Mineral and Petroleum Industry 2014-15 Review*, www.dmp.wa.gov.au/1525.aspx, p. 1

² Department of Treasury, 2015, *2015-16 Government Mid-year Financial Projections Statement*, p. 14

³ DMP, 2016, *Latest Statistics Release*, www.dmp.wa.gov.au/About-Us-Careers/Latest-Statistics-Release-4081.aspx

- CME considers the Department of Mines and Petroleum (DMP) should clarify the interaction between the Guidance and materials characterisation data required for mine closure plans.
- CME recommends the Guidance is updated to cross-reference existing guidelines relevant to materials characterisation.

Section 4 Subsurface Materials Characterisation

- CME considers the screening of materials to determine suitability as a growth medium should be limited to the material which will be used for rehabilitation.

Section 4.2 Subsurface Materials Sampling Requirements

- CME recommends the Guidance is amended to ensure subsurface materials sampling frequency is proportionate to the risk.

Section 4.3 Recommended Subsurface Analyses

- CME recommends the Guidance is updated to provide appropriate justification (i.e. peer-reviewed Western Australian case examples) for the proposed trigger level for potentially acid forming (PAF) of ≥ 0.05 wt% S in Table 5, Figure 2 and Figure 3.

If appropriate justification cannot be provided, then the proposed trigger level for PAF is set at ≥ 0.3 wt% S (consistent with current industry practice).

- CME recommends the Guidance is amended to allow proponents to apply their own satisfactory trigger level for PAF, where appropriate.

Section 4.3.3 Materials with Metalliferous Drainage Potential

- CME recommends Section 4.3.3 is amended to include a comparison of material against background levels prior to conducting further leaching or kinetic testing to determine mobility.

Section 4.3.6 Fibrous and Silicate Materials

- CME recommends Section 4.3.6 is amended to provide a reference to justify the threshold of “*silicates less than 16 microns*”.

Stakeholder Response Form

Context

CME welcomes the opportunity to review and provide comment on the *Draft Guidance - Materials Characterisation Baseline Data Requirements for Mining Proposals* (the Guidance). The Guidance has been developed to support the new *Guidelines for Mining Proposals in Western Australia* which is an essential component of DMP establishing a risk and outcome-based framework for environmental assessment.

In developing this Guidance, CME is aware it is not intended to mandate set requirements for sampling, data collection and analysis for every mine site, but rather provide examples of how adequate materials characterisation can be achieved.

If a proponent can justify instances where parts of the Guidance are not relevant or necessary to be able to successfully determine the environmental risks, this can be accepted by DMP.

CME supports the intent of the Guidance, however, recommends consideration of the matters outlined below.

General Comments

Application of Guidance

The recent Supreme Court ruling on the Western Australia Government's approval of Roe Highway Stage 8 extension as invalid has highlighted the importance of decision making authorities taking account of their own published policy statements. Further, a decision making authority must take into account mandatory considerations including policy enunciated in its own published policy statements.

Following the Supreme Court ruling in December 2015, the Minister for Environment, Hon. Albert Jacob MLA announced a third party legal and governance review of the Environmental Protection Authority's (EPA) policies and procedures and the *Environment Protection Act 1986* (EP Act). While this review is currently underway and the findings are yet to be released, the review could have broader implications across Government. Specifically, how policies and procedures are written to clearly identify the distinction between documents which are policy statements and applied during decision making or supporting documentation which assists proponents in preparing surveys or studies to support approval documentation, for example, technical guidance.

The Guidance has stated "*this guidance is not intended to mandate set requirements for sampling, data collection and analysis for every mine site*", however, the terminology used throughout the document is not consistent with this intention. For example, the title of the document "*Draft Guidance – Materials Characterisation Baseline Data Requirements for Mining Proposals*". The use of the words "*must*" and "*will*" instead of "*should*" also implies sections of the Guidance is compulsory. In light of the recent Supreme Court ruling, CME considers technical guidance is not compulsory and therefore, the terminology used throughout the document should be updated to reflect this.

CME recommends the following amendments to the Guidance:

- **The title of the document updated to state "*Draft Guidance – Materials Characterisation Baseline Data for Mining Proposals*"; and**
- **The words "*must*" and "*will*" updated to state "*should*".**

Scope of the Guidance

The Guidance appears to be trying to achieve the following:

1. Provide guidance for the characterisation of inert wastes to ensure properties such as erodibility, dispersivity and potential for use as growth medium are understood.
2. Provide guidance on sampling regimes and testing to identify high risk materials, such as potentially acid forming (PAF) waste, which allows these materials to be quantified and associated risks understood.

The risks associated with these two types of waste are distinctly different, as are the sampling requirements and testing. As such, the characterisation information would benefit from being separated into two streams; inert and non-inert materials. While this has been partially done, the Guidance could be improved if the delineation is made clearer. In delineating between inert and non-inert materials, CME considers the sampling intensities and range of analyses for the inert materials should be scaled back in line with a lower risk.

CME recommends the Guidance is amended to clearly delineate materials characterisation into two waste streams, inert and non-inert material. In doing so, the sampling intensities and range of analysis for inert material should be updated to reflect the lower risk.

Risk-based Approach to Materials Characterisation

A risk-based approach to materials characterisation should be undertaken to prevent excessive sampling or soil testing regimes which would come at a significant cost to the resources sector. A risk-based approach also aligns with DMP's broader reform agenda to move to a risk and outcomes-based regulatory framework.

CME considers the Guidance does not provide proponents with the opportunity to apply a risk-based approach to materials characterisation. An example of where the Guidance deviates from a risk-based approach is shown in Section 4.3 Subsurface Materials Sampling Requirements which states "*The level of information should be proportionate to the size of the operation*" instead of being proportionate to the risk.

Further, the proposed soil testing regimes for both soils characterisation and subsurface materials characterisation appear to be excessive and will have limited benefit in terms of operational or closure-planning activities. The erodibility risks of waste types are well understood by the mining industry and this informs the waste dump design. Proponents currently identify and selectively handle PAF and fibrous wastes within their operations to ensure risks are adequately managed. In some instances, a proponent may utilise waste dump data from other nearby deposits to inform the risk assessment.

For inert materials, the value of undertaking testing and characterisation at the pre-disturbance stage would not be practical given the potential for soil stripping and stockpiling to influence soil properties. It would be more practical to undertake the testing and characterisation of only those specific materials intended for use as growth media (e.g. topsoil, subsoil, possibly some specific wastes).

The information provided in the Guidance is a useful toolbox for proponents in outlining what information may be required to inform the Mining Proposal risk assessment. However, all of the requirements listed may not be practical due to site specific circumstances and the Guidance, in its current form, implies all requirements must be addressed by proponents.

Flexibility should be provided for proponents to apply a risk-based approach to the soil testing regimes for both the soils characterisation and subsurface materials characterisation.

CME recommends the Guidance is amended to ensure sampling and analysis for soils characterisation and subsurface materials characterisation undertaken by proponents is proportionate to the risk.

Existing Operations

The Guidance is more appropriate for proponents justifying whether material is PAF or where co-mingling of materials during operations is planned. However, for existing operations where the material is known to be PAF and will be managed via containment, the Guidance may not be practical. In these circumstances, it would be more practical for the proponent to demonstrate the management practices will adequately manage the risks, rather than conduct sampling and analysis for soils characterisation and subsurface materials characterisation.

Further, proponents of existing operations understand the geological conditions which influence the amount of PAF generated. The geological conditions inform the management practices and should also be considered as part of the Mining Proposal risk assessment. This is particularly relevant where geological conditions will limit the generation of PAF and management is therefore built around this.

CME recommends the Guidance explicitly acknowledges, for existing operations, management practices and geological conditions may also be utilised to inform the Mining Proposal risk assessment.

Intersection with other Environmental Approvals and Closure Planning

The Guidance will inform the Mining Proposal risk assessment in accordance with the draft *Guidelines for Mining Proposals in Western Australia*. However, it is unclear whether the proponents will be required to provide the same level of information in the event the project activities have already been assessed and approved under Part IV and/or Part V of the EP Act.

CME considers the level of information required for the Mining Proposal risk assessment should be aligned with the information provided for Part IV or Part V approvals and duplication minimised as much as possible. As such, **CME recommends the Guidance is amended to clarify what level of information is required for the Mining Proposal risk assessment where a project has been assessed and approved under Part IV or Part V of the EP Act.**

The Guidance refers to the critical role materials characterisation plays in responsible mine closure planning and the success of rehabilitation and closure. The *Guidelines for Preparing Mine Closure Plans* requires proponents to undertake comprehensive materials characterisation during the exploration phase and throughout the life of mine. Currently, the Guidance is focused on the Mining Proposal risk assessment and is not clear on what data would be included or utilised within a mine closure plan. **CME considers DMP should clarify the interaction between the Guidance and materials characterisation data required for mine closure plans.**

Existing Government Guidelines

There is a number of existing Government guidelines which intersect or support the Guidance. The Guidance could be improved by cross-referencing to the following guidelines relevant to materials characterisation:

- *Guidelines for Mining Proposals in Western Australia;*
- *Guidelines for Preparing Mine Closure Plans;*
- *Guidance Note on Public Health Risk Management of Asbestiform Minerals Associated with Mining;*

- *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia May 2009*; and
- *Guideline Management of fibrous minerals in Western Australian mining operations.*

Cross-referencing would clarify the terms used throughout the Guidance which are not defined, such as “*generic fibre assay*”, would also assist proponents with determining risk and appropriately management of the risks.

CME recommends the Guidance is updated to cross-reference existing guidelines relevant to materials characterisation.

Section 4 Subsurface Materials Characterisation

Growth Medium Suitability

The Guidance states “*All material below the soil layers should be screened to determine suitability as a growth medium*”. CME considers the screening of all materials may be unnecessary as significant portions of subsurface materials will either be:

- a) sold as product;
- b) backfilled into pit voids; or
- c) incorporated into waste landforms with only a portion on the outer surface.

Proponents would only undertake an assessment of material as a suitable growth medium if there is a final landform ready for rehabilitation and insufficient top/subsoil available. Screening all materials would be costly and time consuming for little benefit if it is sold or unlikely to ever be used as growth medium.

CME considers the screening of materials to determine suitability as a growth medium should be limited to the material which will be used for rehabilitation.

Section 4.2 Subsurface materials sampling requirements

Table 4 outlines suggested sampling frequency based on tonnage (when sampled without prior information). CME considers the recommended sampling intensity would produce an unmanageably large number of samples, and incur significant costs for limited benefit. This level of sampling and testing may be necessary for operations with little existing knowledge of their materials, or new sites with large volumes of high risk materials, but is excessive for sites dominated by inert, low risk waste types.

Further, the Guidance is proposing this sampling intensity be applied at Stage 1 to confirm the presence or absence of sulphur. However, the number of samples proposed in Table 4 has been adapted from the MEND Report 1.20.1, *Prediction manual for drainage chemistry from sulphidic geologic materials*. The MEND Report has been produced for assessment of geological units which are known to be sulphidic and therefore, high risk. As stated above, the sampling should be risk-based and specific to the sites circumstances.

CME recommends the Guidance is amended to ensure subsurface materials sampling frequency is proportionate to the risk.

Section 4.3 Recommended Subsurface Analyses

Trigger Level for Potentially Acid Forming (PAF) Materials

Section 4.3 outlines the recommended subsurface materials screen testing to be undertaken by proponents. The requirements fall into two categories:

- If Total Sulphur is < 0.05 wt% S, then selected samples from each weathering profile within each lithology should be analysed for bulk chemistry and leachate water quality; or
- If Total Sulphur is ≥ 0.05 wt% S, then all samples from each alteration within each weathering profile within each lithology should be analysed for Net Acid Generation (NAGpH), Acid Neutralising Capacity (ANC) and leachable materials.

CME is concerned this new approach will establish a trigger level for PAF materials of ≥ 0.05 wt% S, however, an appropriate justification (e.g. peer-reviewed Western Australian case examples) for this proposed trigger level has not been provided within the Guidance.

Currently, trigger levels for PAF of 0.1 or 0.3 (wt% S) are used for the mining sector and the level proposed in the Guidance may be too low. A trigger of ≥ 0.05 wt% S will result in a greater proportion of waste rock requiring upfront geochemical testing, which will result in:

- (i) significant additional time and cost in pre-mining geochemical characterisation testing (due to a greater number of samples for collection, analysis and assessment);
- (ii) a possible shortage of covering waste rock (due to a greater proportion of material being classified as PAF);
- (iii) additional costs during operations to control waste rock placement; and/or
- (iv) additional costs in monitoring/management during mine closure.

Whilst pre-mining geochemical characterisation is an important step in assessing and planning for potential environmental risks, such works must be appropriately targeted to ensure they achieve the environmental outcome sought. If the trigger level is set too conservatively (as may be the case here), then unnecessary time/cost implications may be incurred whilst failing to achieve any improved environmental outcome.

Due to an absence of any appropriate justification for the new trigger level within the Guidance, CME considers 0.3 wt% S is an acceptable trigger level for the Guidance to align with current industry practice. While this trigger level is intended to provide guidance on the screen testing requirements, proponents should be able to apply an alternative trigger level which is dependent upon their individual circumstances (e.g. net acid generating potential of the material and the local climatic factors which influence acid generation rate) if they are able to demonstrate a low environmental risk.

CME recommends the Guidance is amended to provide appropriate justification (i.e. peer-reviewed Western Australian case examples) for the proposed trigger level for PAF of ≥ 0.05 wt% S in Table 5, Figure 2 and Figure 3.

If appropriate justification cannot be provided, then the proposed trigger level for PAF is set at ≥ 0.3 wt% S (consistent with current industry practice).

CME recommends the Guidance is updated to allow proponents to apply their own satisfactory trigger level for PAF, where appropriate.

Section 4.3.3 Materials with Metalliferous Drainage Potential

The interpretation of results in Section 4.3.3 states “*the risk of mobilisation can be determined in accordance with standard short-term leaching tests and/or kinetic testing, as applicable.*” CME considers materials should be compared against background levels using a process such as the Global Abundance Index (GAI) in the first instance to help determine what elements are elevated. Following this, targeted short-term leach tests can be used to determine mobility. As such, **CME recommends Section 4.3.3 is amended to include a comparison of material against background levels prior to conducting further leaching or kinetic testing to determine mobility.**

Section 4.3.6 Fibrous and Silicate Materials


The Guidance states “*The indicative volume and location of material with silicates less than 16 microns should be provided.*” Understanding the presence of silicate materials is important to manage potential risks, however the significance of silicates less than 16 microns is unclear as no reference has been provided to justify this threshold.

Given there is no current standard for silicates, **CME recommends Section 4.3.6 is amended to provide a reference to justify the threshold of “silicates less than 16 microns”.**

Conclusion

CME welcome the opportunity to review and provide comment on DMP’s *Draft Guidance - Materials Characterisation Baseline Data Requirements for Mining Proposals*. We look forward to working with DMP on delivering an objective and risk-based regulatory framework.

If you have any further queries regarding the above matters, please contact Kirrillie Caldwell, Policy Adviser – Environment on (08) 9220 8507 or k.caldwell@cmewa.com.

Authorised by	Position	Date	Signed
Nicole Roocke	Deputy Chief Executive	06/05/16	
Document reference	160413-ENV-Draft Guidance-Materials Characterisation Data Proposal-v0.4		