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# Appendix A

Preliminary documentation requirements

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## Preliminary documentation requirements

Preliminary documentation includes the information about the action and its relevant impacts already outlined in the referral. It also includes additional information identified by the Minister as being necessary to adequately assess the acceptability of the proposed action.

This document sets out the general and specified information required by the Minister under section 95A of the EPBC Act for the assessment of the impacts of your proposed action ('the preliminary documentation').

The department applied the precautionary principle in determining that there was a risk of significant impacts in relation to water resources from a large coal mining development and by extension to threatened ecological communities and species associated with the water resources. The request for further information is for the purpose of addressing some of the uncertainty in the assessment of subsidence, fracturing and groundwater effects and the proposed management of risk through Trigger Action Response Plans (TARPs).

### 1 Subsidence and height of fracturing effects

The referral documentation, including geotechnical assessments, asserts that the proposed mine layout for the two panels would limit height of fracturing and subsidence effects to the extent necessary to avoid significant impacts to water resources and dependent ecosystems. The department acknowledges the comprehensiveness of the referral documentation, however, notes that there is the possibility of underprediction of effects, including:

- that shortwall panel extraction has not previously been undertaken and, therefore, there is no monitoring data to support the conclusion reached
- that previous subsidence movements from panel extraction nearby have not been adequately assessed
- that the uncertainty analyses for some parameters were not sufficiently conservative to support the conclusion of negligible effects
- previous instances where modelling undertaken to predict likely subsidence effects underestimated the subsidence that actually occurred (e.g. Airly; and also Clarence 906/908/910).

The department is seeking clarification and further information on cumulative effects and the conservativeness of model assumptions to support the conclusion that the proposed mine design will not result in significant impacts to water resources and by extension, dependent ecosystems.

<b>Information required</b>	
1.1	<p><b>Spatial pattern of subsidence effects</b></p> <p>The spatial pattern of subsidence effects as shown by the contours in Figure 11 of the MSEC report shows that the 80 mm maximum subsidence contour occurs as two distinct areas. If the subsidence monitoring line is located outside areas where maximum subsidence is predicted, it may not be sensitive enough to the subsidence risk to inform the trigger action response plan.</p> <p>The department requests further explanation for the modelled spatial pattern of subsidence from panels 918/920 and the spatial uncertainty, having regard to mapping of depth of cover, thickness of geological layers, thickness of Katoomba seam, other factors that might be influencing the pattern.</p> <p>The department requests that Figure 11 in the MSEC report is updated to show the uncertainty bounds (if possible) and the location of the subsidence monitoring line(s).</p> <p>The referral provides some examples of observed v predicted subsidence from panels 906-910. If available, the department requests a map of observed v. predicted subsidence for panels 906-910 that provide a 2-dimensional validation of the numerical modelling prediction method.</p>
1.2	<p><b>Effect of Caley Formation on maximum subsidence and height of fracturing</b></p> <p>While the information provided in the referral generally supports a conclusion that the Mount York Claystone will not be compromised by the PPPE method, the UNSW modelling showed that maximum subsidence is sensitive to the thickness of the Caley Formation (CF). In decreasing the CF thickness from 57 m to 49 m, the maximum subsidence estimate increased from 79 mm to 87 mm.</p> <p>Bore hole logs in the proposed extraction area indicate that the Caley Formation is around ~40 m in some areas (40.2 m at CLRP 43 and 42.9 at CLRP 42).</p> <p>The department requests further testing of the sensitivity of Caley Formation thickness and total Caley Formation-Burra-Moko Head thickness to understand the effect that Caley Formation thickness has on the height of fracturing. As a minimum, thicknesses of 30 m and 40 m should be considered (using appropriate thicknesses (60-70 m) of the Burra-Moko Head Formation).</p>
1.3	<p><b>Depth of cover</b></p> <p>Depth of cover is a key factor in determining subsidence related movements. Depth of cover varies across the site and is shallowest beneath 918B near Paddy's Creek. Different depths of cover have been used in the analyses, some of which have not been clearly justified. Values reported include:</p> <ul style="list-style-type: none"> <li>i) 175-315 m (Referral, p. 17)</li> <li>ii) 175-295 m (Extraction Plan – Main report, p. 20)</li> <li>iii) 280 m for beam analysis (Strata2 report, e-page 13)</li> </ul>

	<p>iv) 250 m for calculating width to height ratios and whether these are subcritical (GW report, p. 133)</p> <p>v) 220-285 m in the groundwater modelling (GW report, p. 226)</p> <p>The department requests clarification for the different ranges used and implications for modelling results and confirmation that depth of cover parameters are appropriately conservative for predicting subsidence related movements.</p>
1.4	<p><b>Factors that could be causing underprediction of subsidence</b></p> <p>Several factors have previously been observed at Clarence Colliery to affect total vertical subsidence including floor strength (Strata2 2023, e-page 11), high density of geological structures (Strata2 2023, e-page 12), roof deformation (Strata2 2023, e-pages 13-14) and flooding of workings (Strata2 2023, e-page 27).</p> <p>These factors are said to be unlikely to affect the project site but justifications for these assumptions are not clear. If some of these mechanisms were to occur, then vertical subsidence could exceed 100 mm.</p> <p>The SCT report (s4.3.1) reports a maximum subsidence of 131 mm at panels 906-910, possibly due to flooded workings, additional subsidence effects from 906, some geological anomaly. The Strata2 report considers eventual flooding of workings can add 15-20 mm of additional subsidence to subsidence predictions (although it considers this effect is captured in the empirical model). The UNSW modelling does not appear to consider effects on subsidence of flooded workings.</p> <p>The department seeks further information on the factors that might be leading to under-prediction, including but not limited to:</p> <ul style="list-style-type: none"> <li>- Flooding</li> <li>- Floor and roof strength</li> <li>- Geological anomalies</li> </ul> <p>Information on how they have been accounted for in estimating maximum subsidence for panels 918/920 is also sought (e.g. is flooding inevitable? what effect will it have? can it be managed?).</p> <p>In addition, the department requests clarification as to whether there have been changes to the modelling approaches in their application to 918/920 that improve on the approaches that previously led to underprediction.</p>
1.5	<p><b>Cumulative subsidence effects from nearby extraction</b></p> <p>The department is concerned that the cumulative effects on subsidence from extraction of nearby panels was not adequately addressed in the assessments of subsidence effects, and notes:</p> <ul style="list-style-type: none"> <li>• UNSW model predicts vertical subsidence &gt;100 mm for panels 908/910 when the adjoining panel 906 is included in the analysis.</li> </ul>

	<ul style="list-style-type: none"> <li>• The SCT reports observed subsidence of 133 mm at panels 906-910, which is thought could be in part to additional subsidence effects from extraction of panel 906. SCT recommends further assessment to determine potential increase in subsidence from any adjacent secondary extraction panels.</li> <li>• Hebblewhite states that the impact of extraction of 906 panel on the 918/920 panel layout is outside the scope of the current project and is not considered as part of the review.</li> </ul> <p>The department requests further information to demonstrate that there will not be cumulative effects on subsidence and height of fracturing at panels 918 and 920 from extraction that has already occurred at nearby panels (and potentially from future panels). This could include modelling, angle of draw analyses, barrier panel width analyses, monitoring of tensile and compressive forces in other extraction areas or other sources information that can be used to show whether panels 918/902 are isolated from nearby subsidence effects or likely to be affected by them.</p>
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## 2 Groundwater effects

The department notes that the groundwater modelling report provides considerable detail on the model set-up and parameterisation, and that it was assessed by independent reviewers as constructed and implemented in accordance with Australian Groundwater Modelling Guidelines.

The department sought and received advice on the referral from the department's Office of Water Science (OWS) and Geoscience Australia (GA), who provided comments as delegate for the Commonwealth Minister for Resources.

OWS considers the groundwater model highly complex, which makes clear communication of model functions and assumptions challenging. OWS acknowledged the considerable effort that has gone into representing goafing and fracturing characteristics for different mining approaches in the model to and the characterisation of lineaments and their potential reactivation but were concerned that the level of model complexity may not be justified by the data available to constrain model parameters through calibration, nor for the scale of the model for assessing impacts to individual swamps. OWS considered more discussion was needed about the sensitivity of the model to its parameters, which parameters were appropriate to calibrate and the interdependency of parameters to increase confidence in the model predictions, and the model's capability in predicting near surface changes in water tables.

GA raised concerns about the implementation of subsidence and fracturing assumptions and that the representation of Mining Method 3 may be too tightly constrained in its portrayal and testing of geological, hydrogeological and numerical groundwater simulation assumptions and may underpredict impacts to groundwater-dependent ecosystems. GA was unable to verify the claim of no significant impact to water resources.

The department concurs that it is difficult to conclude that the proposed action will have a negligible impact on water resources and dependent ecosystems and species. Further information is sought

through the preliminary documentation on the effects on groundwater for a broader (more conservative) range of subsidence and height of fracturing effects

<b>Information required</b>	
2.1	<p><b>Key parameters in the groundwater model</b></p> <p>The department requests a summary of key model parameters, the main sources of uncertainty and how uncertainty is handled, and the implications for the assessment of applying a regional scale model to local-scale assessment.</p> <p>This means providing a clearer understanding of which parameters the model is most sensitive to, how they are represented in the model (fixed, calibrated), justifications for parameter choices – in particular range of subsidence and height of fracture values considered in the model.</p>
2.2	<p><b>Representation of fracturing in the groundwater model</b></p> <p>The Tammetta equation appears to form the basis of implementation of continuous fracturing in the groundwater model (JBS&amp;G 2023, p. 54) but this approach results in some of the smallest estimates of the height of continuous fracturing (see Paragraph 2biii). Figure 4.31b (JBS&amp;G 2023, p. 135) indicates that continuous fracturing is implemented to a height of approximately 30 m above the Katoomba Seam.</p> <p>The department requests a more fulsome assessment of the effect of fracturing height on mine water inflows and groundwater levels in the outcropping aquifers (Burralow and Banks Wall) using the more conservative estimates from the geotechnical reports, including cumulative effects and considering the scenario that continuous fracturing breaches the Mount York Claystone. While the latter scenario may be very low likelihood, it will provide an indication of the risks associated with the aquitard being breached.</p> <p>OWS noted that the stacked drains, which are used to implement continuous fracturing, are turned off within 3-6 months of subsidence occurring (JBS&amp;G 2023, p. 55) and that a ramp function may be used to represent changes to hydraulic properties in the long-term (JBS&amp;G 2023, p. 60).</p> <p>Further discussion is needed on how connected fracturing is represented over time in the groundwater model.</p>
2.2	<p><b>Width of extraction panels</b></p> <p>The groundwater model specifies the extraction panel width for 918 and 920 based on scaling another mining method. This results in an extraction panel width that is smaller than the 85 m in the design.</p> <p>The department requests:</p> <ul style="list-style-type: none"> <li>• a more fulsome assessment of the effect of extraction panel width on groundwater levels in the outcropping aquifers (Burralow and Banks Wall), including for panels of 85 m width and also wider panels to demonstrate the sensitivity of the model to this parameter.</li> <li>• justification for use of narrower widths than will be undertaken.</li> </ul>

<p>2.3</p>	<p><b>Depth of cover</b></p> <p>See 1.3 above.</p> <p>The department requests clarification for the depth of cover ranges assumed in the model, the implications for modelling results and confirmation that depth of cover parameters are appropriately conservative for predicting groundwater effects.</p>
<p>2.4</p>	<p><b>Storage parameters</b></p> <p>The groundwater modeller notes issues with MODFLOW-USG numerical engine prevent changes to the storage parameters (e.g., JBS&amp;G 2023, p. 64).</p> <p>The department requests discussion of implications of this for mine inflows and drawdown of water tables in the Burrell and Banks Wall Sandstone formations.</p>
<p>2.5</p>	<p><b>Representation of hydraulic conductivity</b></p> <p>Plots showing hydraulic conductivity in selected stress periods and various model layers (JBS&amp;G 2023, Appendix C) show limited variation between original values and post-mining when continuous fracturing would be expected to be present (increasing hydraulic conductivity).</p> <p>Further discussion of how parameters are varying over time is required to determine if the groundwater model adequately simulates the conceptualised impact pathways.</p>
<p>2.6</p>	<p><b>Groundwater drawdown predictions</b></p> <p>The figures of change in groundwater elevation (4.51a and 4.51b in JBS&amp;G 2023) do not use contour intervals aligned with the impact classes defined in Table NM-A4 (p xii of JBS&amp;G 2023) and that the impact classification does not include drawdowns of 1-2 m.</p> <p>The department requests that the impact classification is updated.</p> <p>Having regard to the conclusions from the sensitivity testing of model parameters, that updated maps of change in drawdown elevations are provided that:</p> <ul style="list-style-type: none"> <li>• use contours consistent with the impact classification and provide the extent of drawdown to at least the 0.2 m contour and show water table lowering</li> <li>• show 10, 50 and 90<sup>th</sup> percentiles (as required) at 1, 2, 5 and 10 years from commencement of extraction (longer if changes are still propagating through the system) for the uppermost water table of each of:             <ul style="list-style-type: none"> <li>▪ Burrell Formation</li> <li>▪ Banks Wall Sandstone</li> </ul> </li> </ul> <p>With the relevant creeks and swamps identified in the maps for each formation</p>

### 3 Impacts on water resources

The department determined there was insufficient information in the groundwater assessment about the water requirements of creeks and swamps in the proposed extraction area against which to evaluate the model results and requests that further information be provided for the creeks and swamps in the vicinity of the proposed extraction area.

The presentation of results in the groundwater report was not always clear (too many lines, scales too squashed, colours hard to distinguish, labels that don't identify formations, results not presented using the defined impact threshold scales, etc). Results suggested groundwater elevations could increase in some swamps and this requires further explanation, else it throws into question all the groundwater modelling results.

The department is seeking further clarification of impacts on streamflow and swamps from the proposed action having regard to their water requirements and using appropriate metrics and maps to support any conclusion reached. It is requested that when reporting changes in percentage terms, that details of how the percentage change was calculated are included – including what the percentage is a percentage of, rationale for metric used, what period of record, how representative of (climate/flow) conditions it is.

The assessment of impact on water resources should be undertaken in accordance with the [Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments - impacts on water resources - DCCEEW](#).

<b>Information required</b>	
2.4.1	<p><b>Impact assessment – streamflow</b></p> <p>To the extent that the information is available, the department requests:</p> <ul style="list-style-type: none"> <li>a) Characterisation of Paddys Ck, Pine Ck, Nine Mile Ck and Bungleboori Ck                             <ul style="list-style-type: none"> <li>– Stream order, geological formation, groundwater connection, flow regime</li> </ul> </li> <li>b) Information on low flow characteristics – e.g. flow duration curves, flow rating curves (i.e. information that shows the role of groundwater in sustaining flow and how it fluctuates over time)</li> <li>c) Interpret and make conclusions about the impacts on streamflow                             <ul style="list-style-type: none"> <li>a. Summarise impacts of proposed action on zero flow days (number, duration of dry spells) and low flow days (where low flow is 10<sup>th</sup> percentile flow for flow days) – compare pre- and post- extraction FDCs</li> </ul> </li> </ul>
2.4.2	<p><b>Impact assessment – swamps</b></p> <p>To the extent that the information is available, the department requests:</p> <ul style="list-style-type: none"> <li>a) Characterisation of Paddys Ck, Pine Ck, Nine Mile Ck shrub and hanging swamps                             <ul style="list-style-type: none"> <li>– geological formation, peat development, groundwater connection, flow regime, resilience to periods of drying</li> <li>– include conceptual model of swamps figure</li> </ul> </li> <li>b) Summarise swamp monitoring data (map with monitoring locations, length of record, frequency of records) and comment on representativeness of data. Include (if possible):                             <ul style="list-style-type: none"> <li>– flow rating curve (flow depth v flow rate)</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>– flow (water depth) duration curves</li> <li>c) Interpret and make conclusions about the impacts on swamps <ul style="list-style-type: none"> <li>a. Provide maps of water table lowering for 10, 50 and 90<sup>th</sup> percentiles (as required) at 1, 2, 5 and 10 years from commencement of extraction, using drawdown contours of 0.1, 0.2, 0.5, 1, 2, 3 m for uppermost water table of each of: <ul style="list-style-type: none"> <li>i. Burrell Formation</li> <li>ii. Banks Wall Sandstone</li> </ul> </li> </ul> </li> <li>Highlight the relevant swamps for each formation</li> <li>d) Summarise impacts of proposed action on zero flow days (number, duration, frequency of dry spells) and low flow days (where low flow is 10<sup>th</sup> percentile flow for flow days)</li> <li>e) Discuss level of confidence in results.</li> </ul>
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#### 4 Impacts on listed species and ecological communities

In the referral decision for the proposed action, the department considered that there was a risk of potentially significant impacts on the following EPBC listed threatened species and ecological communities:

- Temperate Highland Peat Swamps on Sandstone ecological community – Endangered
- Blue Mountains Water Skink (*Eulamprus leuraensis*) – Endangered
- Giant Burrowing Frog (*Heleioporous australiacus*) – Vulnerable
- Deane's Boronia (*Boronia deanei*) – Vulnerable
- Smooth Bush-pea (*Pultenaea glabra*) – Vulnerable
- Swamp everlasting Daisy (*Xerochrysum palustre*) – Vulnerable
- Large-eared Pied Bat (*Chalinobus dwyeri*) – Endangered
- Broad-headed Snake (*Hoplocephalus bungaroides*) – Endangered

At this time, the department is not seeking further information on the potential impacts to these protected matters based on assumed presence, and because the information sought in relation to subsidence, fracturing and groundwater effects and impacts to streams and swamps will clarify the risk to these matters.

#### 5 Avoidance, mitigation, management and monitoring

Avoidance and mitigation measures are the primary methods of eliminating and reducing significant impacts on MNES.

The proposed mine design is intended to avoid impacts to MNES through minimising subsidence effects, height of continuous fracturing and effects on the uppermost groundwater aquifers that support swamps, streams and economic users.

The referral documentation includes a draft of the extraction management plan and associated sub-management plans, which include Trigger Action Response Plans (TARPs), that are intended to allow changes to the extraction plan in the event that subsidence, fracturing and groundwater effects are more than what has been assumed or more than prescribed guidelines.

The department supports the approach, however, as currently drafted, the proposed TARP actions mostly initiate additional monitoring, review and updating of modelling, and consideration of remediation approaches and do not clearly commit to implementing actions to prevent further impact or remediate existing impacts.

The department understands that the draft extraction plan is going through a review process in NSW and is likely to be refined through that process. The department requests that in finalising the extraction plan and associated TARPs, concerns raised by the OWS in relation to those plans and the monitoring locations (see table below) are considered and addressed with a view to providing the best possible safety net for protecting Commonwealth protected matters.

To this end the department requests further information through the preliminary documentation and/or through the proposed and final decision stage, that demonstrates that appropriate triggers, responses and actions are specified to avoid significant impacts to swamps, streams and associated biota, including:

- details on monitoring locations for control and potentially affected sites (what is being monitored, frequency of measurement, accuracy and reliability of measurements, distance to extraction panels)
- (related to above) assessment of the sensitivity of the monitoring locations to effects of mining panels 918/920 (e.g. lag time between extraction and propagation of groundwater depressurisation effects by depth and monitoring location)
- how climate signals in monitoring data will be differentiated from mining effects
- other relevant information to demonstrate that the monitoring network has been designed to provide the earliest possible warning of possible mining induced impacts
- appropriate subsidence, height of fracturing and groundwater triggers having regard to conclusions about the monitoring network and the further information obtained in relation to the requests in sections 1,2 and 3 above.
- strong and precautionary commitments to stop mining, revise the extraction footprint and/or undertake other actions designed to contain the risk of significant impacts.

**Comments from the Office of Water Science on the Trigger Action Response Plans and monitoring network**

5.1

**Subsidence and height of fracturing**

- Monitoring line 900H only provides partial coverage of the 918 panel and almost no coverage of the 920 panel in the northern area of predicted maximum subsidence. GNSS subsidence monitoring does not appear to be planned in this area of predicted maximum subsidence (Figure 4, p. 17 of Subsidence Monitoring Program).
- Monitoring line 900F does not appear to align with the southern area of predicted subsidence maximums and no GNSS monitoring appears to be planned for the southern area of predicted maximum subsidence. If no monitoring occurs in the areas of predicted maximum subsidence then it is less likely that maximum subsidence levels will be identified and that the TARP will be initiated or mine layouts altered.
- A surface extensometer is planned for CLRP41 to confirm that the height of continuous fracturing does not extend above the Mt York Claystone (Centennial 2024c, p. 21). It does not appear to be located in the area of predicted maximum vertical subsidence and may not capture the maximum height to which continuous fracturing occurs.
- The proposed TARP (SMP, App. 3) actions mostly initiate additional monitoring, review and updating of modelling, engagement with independent experts and consideration of remediation approaches. Even when subsidence > 100 mm is observed, the TARP does not commit to altering the mine layout, only considering the option (e.g. SMP, p. 35 and App. 3).
  - the TARP allows for the mine layout and design parameters to be exceeded rather than committing to a specific layout (see the TARP for the aspect ‘Underground Mining Control’, SMP, App. 3).
  - the process to review data, update modelling and change the mine layout in the TARP (SMP, App. 3) is lengthy with changes likely only possible for the 920 panel given the proposed frequency of data analysis.
  - when subsidence triggers are exceeded, proposed actions in the TARP will allow mining to continue, even when a red trigger is exceeded (i.e. subsidence of >100 mm). This will result in further subsidence above the current state approved limits.
  - mining will also continue if the extensometer data indicate that continuous fracturing through the entire Mt York Claystone has occurred (red trigger status). In this scenario impacts to the overlying THPSS are more likely to occur and be more severe. An adaptive management strategy would be agreed, however remediation of impacted swamps is extremely difficult, if at all possible.

	<ul style="list-style-type: none"> <li>The TARP proposes updates to the current modelling. SCT has highlighted that the current modelling may not be able to predict the onset of non-elastic strata compression (SCT 2023, p. 18) or make accurate subsidence predictions once non-elastic strata compression commences. The peer reviewer also noted this (Hebblewhite 2023a, p. 20). The TARP should include an analysis of all monitoring data associated with subsidence, especially pillar monitoring data, by a suitable expert so that potential non-elastic strata compression can be identified and new modelling undertaken that is able to simulate this behaviour if needed.</li> </ul>
<p>5.2</p>	<p><b>Groundwater</b></p> <ul style="list-style-type: none"> <li>Groundwater monitoring of potential impacts on swamps will only be undertaken at two locations in each of Lower Nine Mile and Paddy’s Creek swamps (4 in all).</li> <li>Table 2.4 (GHD 2024, pp. 12-13) lacks details on the depth of monitoring at many of the listed monitoring bores, thus it is unclear that all 3 groundwater systems in the conceptualisation are being adequately monitored. The parameters being monitored at each site are also not clear.</li> <li>No comparison of observed and predicted groundwater inflows is proposed in the monitoring plan. This could be undertaken to validate the groundwater model and as a trigger in the TARP. Also monitoring/triggers associated with inflows would be useful to meet the state requirement that there are no significant inflows to mine workings (GHD 2024, Table 4.5, p. 37).</li> <li>How the groundwater level triggers were derived is not comprehensively explained. It is only stated that the triggers are based on “review of groundwater elevation observations, 135 years of climatic data and numerical groundwater model predictions.” (GHD 2024, p. 35). The site-specific triggers provided range between 0.50 mbgl to 1.30 mbgl (GHD 2024, Table 4.2, p. 35). For CSP2/BSE2 and CSP5/PHS2 the trigger appears to correlate with the bottom of the monitoring bore meaning there is no way to determine how much the trigger is exceeded by once it is reached.</li> <li>The plan proposes to compare groundwater model predictions with observed levels and inflows every 2 years (GHD, 2024, p. 38). Given the proposed 22-month life of this project, this means comparison will not occur during the active mining phase.</li> </ul>
<p>5.3</p>	<p><b>Creek and swamp monitoring</b></p> <ul style="list-style-type: none"> <li>The department notes that flow/water level monitoring is too short in duration and has too few readings to provide a good baseline for assessing the effects of extraction and therefore no stream flow triggers have not been specified. It is unclear how the state requirement of no reduction in surface water flows is to be assessed.</li> <li>The stream water quality monitoring generally is also very limited, but the WMP defines trigger values based on default guideline values from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) to</li> </ul>

	<p>provide a species protection level of 99%. However, the department notes that the analytes monitored differ between sites and recommends that the same analytes are monitored at all locations to enable more meaningful assessments of changes over time.</p>
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## 6 Ecologically sustainable development

A description of how the proposed action meets the principles of **ecologically sustainable development** (as defined in section 3A of the EPBC Act), as follows:

- decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations;
- if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- the principle of inter generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making;
- improved valuation, pricing and incentive mechanisms should be promoted.

## 7 Economic and social matters

The preliminary documentation must address the economic and social impacts (both positive and negative) of the proposed action. Consideration of economic and social matters may include:

- Details of any public consultation undertaken, and the outcomes (if additional to the referral information, noting that the draft PD will be published for public consultation and must be addressed in finalising the PD).
- Details of any indigenous stakeholder consultation (if additional to referral information)
- Projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies.
- Any employment opportunities expected to be generated by the project at each phase of the proposed action.
- Any benefits to the local and wider community as a result of the proposed action. the points listed below.

## APPENDIX A General content, format and style

The purpose of the preliminary documentation is to enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development on protected matters, including matters of national environmental significance (MNES).

<b>A1. Content requirements</b>	
A1.1	Be a stand-alone document containing sufficient information to avoid the need to search out previous or supplementary reports.
A1.2	Enable interested stakeholders and the Minister to easily understand the consequences of the project on matters of national environmental significance (MNES).
A1.3	Be written so that any conclusions reached can be independently assessed. Include all key claims, findings, proposals and undertakings in the main document.
A1.4	Refer to all relevant standards, policies and other guidance material published by the department. Any instances where published guidance is not followed must be justified. Where no Commonwealth standards exist, state government and industry standards may be useful.
A1.5	Include the names, roles and qualifications (where relevant) of all persons involved in preparing the preliminary documentation.
A1.6	Include a copy of this request for information and a cross-reference table indicating where the information fulfilling this request is included in the preliminary documentation (e.g. Section 4.2.2 and Appendix A, Chapter 2.1).
A1.7	The preliminary documentation must state the following for all information provided: <ul style="list-style-type: none"> <li>– The source and date of the information;</li> <li>– How the reliability of the information was tested;</li> <li>– The uncertainties (if any) in the information;</li> <li>– The guidelines, plans, and/or policies considered.</li> </ul>
<b>A2. Format and style requirements</b>	
A2.1	Be in a suitable format to be published in hardcopy (A4 or A3 size, with maps and diagrams in A4 or A3 size and in colour) and published in electronic format (e.g. MSWord or PDF) on the internet.
A2.2	Include detailed technical information, studies or investigations necessary to support the information in the stand-alone document as appendices.
A2.3	Be objective, clear, succinct, avoid technical jargon and, where appropriate, be supported by maps, plans, diagrams, data or other descriptive detail.
A2.4	Reference all sources using the Harvard standard of referencing. Ensure that other supporting documents (e.g. academic studies, regulatory standards) are publicly accessible, with electronic links provided where possible.
A2.5	Redact the contact details of departmental officers.

A2.6	Not contain any commercial in confidence markings. If the preliminary documentation contains sensitive information, please discuss this with the assessment officer.
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