

Date : 10/10/2018 4:50:23 PM

From : "RHODES Monika"

To : "'olivedowns@coordinatorgeneral.qld.gov.au'"

Cc : "'Maxine Hunter"' , "'Jason Richard"' , "ROWLAND Philip" , "LOVEDAY Chris"

Subject : DES submission - draft EIS - Olive Downs Coking Coal Project

Attachment : EIS_Letter-Out_DES submission_Olive Downs_20181010.pdf;EIS_Submission_DES_Olive Downs_20181010_signature.pdf;EIS_Submission_DES_Olive Downs_Attachment 1_advice on preliminary draft EIS.pdf;EIS_Submission_DES_Olive Downs_Attachment 2_MEDLI.pdf;image003.jpg;

Dear Sir or Madam

Please find attached a cover letter and the Department of Environment and Science's submission on the draft EIS for the proposed Olive Downs Coking Coal Project. The submission contains two attachments.

Kind regards

Monika

Dr Monika Rhodes

Principal Environmental Officer (Assessment)

Impact Assessment and Operational Support

Regulatory Capability and Customer Service

Department of Environment and Science

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Department of
Environment and Science

Ref 101/0022144

10 October 2018

Mr Barry Broe
Coordinator-General
Department of State Development, Manufacturing,
Infrastructure and Planning
PO Box 15517
CITY EASET QLD 4002

Dear Mr Broe *Barry,*

Thank you for the opportunity to make comments on the draft environmental impact statement (EIS) for the proposed Olive Downs Coking Coal Project. Please find attached a consolidated submission from the Department of Environment and Science (the department) in relation to matters that fall within our jurisdiction.

You will note from the submissions that, among other things, the proposal by Pembroke Resources to include final voids on the Isaac River floodplain remains an issue that requires further work.

As you are aware, the Queensland Government's Mined Land Rehabilitation Policy which clearly states "*for all new site-specific mines, the administering authority will not approve a Progressive Rehabilitation and Closure (PRC) Plan that includes a void situated wholly or partially in a floodplain unless the void will be rehabilitated to a safe and stable landform that is able to sustain an approved post-mining land use that does not cause environmental harm*" was published in 2017, and will apply to the proposed Olive Downs Coking Coal Project.

The department considers the work completed to date by Pembroke Resources to be insufficient in detail and lacking the necessary commitments in relation to the rehabilitation of these voids. Of particular concern is the proposal to 're-define' the Isaac River floodplain using waste rock emplacements as levees to alter the lateral extent of a relevant flood event (e.g. 1000 year ARI). The department considers the Isaac River floodplain exists, as it does now, independent of any structure that may be constructed on it as part of the proposed mining activity.

That being said, the department is aware that the Mineral and Energy Resources (Financial Provisioning) Bill 2018, which proposes to amend the *Environmental Protection Act 1994* (EP Act) to introduce the new requirement for PRC Plans for mining activities is yet to be placed before the Parliament for consideration. Should the Bill pass, it will provide transitional arrangements for the application of PRC Plan requirements to the Olive Downs Coking Coal Project, and the current environmental authority (EA) application will be likely be assessed under the pre-amended EP Act.

Despite this, the department has formed the view that the project is still subject to the Queensland Government's Mined Land Rehabilitation Policy, and any final voids to be located on the Isaac River floodplain must therefore be rehabilitated as per the policy.

Should you have any further enquiries, please contact Philip Rowland, Manager Environmental Impact Assessment, of the department on telephone 3330 55602.

Yours sincerely

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Chris Loveday
Director
Impact Assessment and Operational Support
Department of Environment and Science

Att Department of Environment and Science's submission on the draft EIS for the Olive Downs Coking Coal Project, including two attachments

Submission form: Environmental impact statement (EIS)

Please complete this form only if you wish to provide a submission by email, post or fax. To make an online submission, visit <https://haveyoursay.dsd.qld.gov.au>

Name of project

Olive Downs Coking Coal Project

Please write the project name exactly as it appears in the newspaper public notice or at <https://haveyoursay.dsd.qld.gov.au>

Your details (please print)**Full name**

Chris Loveday

Organisation (if relevant)

Department of Environment and Science

Postal address

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Email address

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Signature

Date

10 October 2018

A submission by more than one person must be signed by each submitter

Your comments on the EIS (please print)

Number	Section	Describe the issue	Suggested solution
General			
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9.	Section 2 – Project Description 2.5.3 p. 53	<p>The project's proposed residual voids are located in the existing floodplain of the Isaac River. The draft EIS proposes permanent levee structures to redefine the existing floodplain so the proposed final voids are no longer in the floodplain. This approach to floodplain definition is not acceptable. The status and extent of a floodplain cannot be changed by the construction of constraining landforms, irrespective of the impact they may or may not have on the flow regime of the Isaac River. In addition, the draft EIS does not address the potential environmental risks from possible failure of the levees or the expected maintenance, and hence residual risk payment, to ensure their integrity into perpetuity.</p> <p>DES released its Mined Land Rehabilitation Policy in September 2017. The policy contains the key statement <i>'for all new site-specific mines the administering authority will not approve a PRCP that includes a void situated wholly or partially in a floodplain unless the void will be rehabilitated to a safe and stable landform that is able to sustain an approved post-mining land use that does not cause environmental harm'</i>.</p> <p>The draft EIS does not demonstrate that the proposed final landform complies with the Mined Land Rehabilitation Policy. While the</p>	<p>The draft EIS should demonstrate that the proposed final landform complies with the Mined Land Rehabilitation Policy, in particular, if final voids are to be located on the Isaac River floodplain, they must be rehabilitated to a safe and stable landform that is able to support an approved post-mining land use.</p> <p>While the outcome of the Mineral and Energy Resources (Financial Provisioning) Bill 2018 is yet to be determined, it is noted that additional rehabilitation requirements will likely apply to the proposed project if the Bill is enacted.</p>

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		outcome of the Mineral and Energy Resources (Financial Provisioning) Bill 2018 is yet to be determined, it is noted that additional rehabilitation requirements will likely apply to the proposed project if the Bill is enacted.	
10.	Section 2 – Project Description 2.5.6 p. 57	Waste rock emplacement The draft EIS does not include detailed mine planning options/alternatives to demonstrate the business need for the eastern emplacement waste rock dump, including the disturbance of the Isaac River crossing haul road.	Provide detailed mine planning options to fully demonstrate that the project outcomes cannot be adequately achieved without the need for the eastern emplacement waste rock dump.
Matters of national environmental significance (MNES)			
11.	Section 3 – Assessment of MNES 3.3.5 p.49 Section 3 – Assessment of MNES 3.3.11.1 p.156	Incorrect labelling of pits <i>The draft EIS states on page 3-49 'Open Cut Extent – Geological data indicates that the coal resource targeted by the Project extends to the north from Pit 1 under the Isaac River. Pembroke defined the northern extent of the open cut to minimise encroachment on the Isaac River floodplain by standing off the river bank by 200 m to 300m.</i> <i>Similarly, in response to preliminary flood modelling results, the eastern extent of Pit 8 was pulled back by approximately 300 m to minimise changes to flood characteristics in the Isaac River and its flood plain'.</i> However, no figure can be found which shows pit 1 and pit 8. It is assumed that the reference to these pits are directly taken from the specialists report (Appendices A-C) but not referred to naming of the pits in the draft EIS (ODS1; Figure 3-13).	1. Update all sections and appendices of the draft EIS (including specialists reports in the appendices) so that the naming of the pits are consistent throughout. 2. Include a figure in Section 3 which shows the pits and the buffer zones proposed close-up. Cross-reference accordingly.
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Flora and fauna (terrestrial and aquatic)			
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19.	<p>Section 4 – Assessment of project specific matters 4.1.3 P. 28</p> <p>Section 4 – Assessment of project specific matters Figure 4-15 p. 72 to 73</p>	<p>Impacts of the final voids on GDEs</p> <p>Potential impacts of the final voids on GDEs are not adequately described. This section concluded that the project as a result of final voids will remain permanent sinks but will not have a quality-related impact on GDEs.</p> <p>Figure 4-15 does not include the predicted impacts on groundwater flow for voids that are in the current floodplain and will remain (–3, 7 and 8), it only shows the pits that will be backfilled.</p> <p>There is discrepancy in information relating to the Triassic-Rewan Group. The description of the depth/location of Triassic-Rewan Group on page 73 (section 4) is not consistent with the information presented in Figure 4-15.</p>	<ol style="list-style-type: none"> 1. Address the potential impacts of the final permanent voids, including: <ul style="list-style-type: none"> • impacts on the groundwater system • Impacts on GDEs • impacts relating to quantity/drawdown • the relationship of the alluvium with the areas of the permanent voids. 2. Monitoring must be carried out annually once mining commences at defined monitoring points (reference points) in order to show if any changes occur. 3. If any impacts are recorded on the wetland ecosystem and/or any associated vegetation (e.g. GDEs) and fauna, these impacts must be managed in accordance with the hierarchy: avoidance, minimisation/mitigation, and if necessary, offsetting. 4. Amend Figure 4-15 to show the predicted impacts on groundwater flow for the voids that will remain in the current floodplain. 5. Amend the discrepancy between page 73 (section 4) and Figure 4-15 in relation to the depth/location of Triassic.

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18-535		<p>s.73 - Irrelevant</p> <p>Published on DES Disclosure Log RTI Act 2009</p>	

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25.	Section 4 – Assessment of project specific matters 4.1.3 p. 26	<p>Dewatering activities</p> <p>Any groundwater that is pumped from the pit during mine dewatering activities is classed as mine affected water and has the potential to impact on environmental values, including wetlands, aquatic ecology, GDEs and stygofauna.</p> <p>The draft EIS did not assess any potential impacts from dewatering on aquatic values including wetlands, GDEs and stygofauna or discussed management and monitoring measures.</p>	<ol style="list-style-type: none"> 1. Assess the potential impact from dewatering on aquatic values, including stygofauna and GDEs, due to: <ul style="list-style-type: none"> • groundwater drawdown and • redirecting pit water to offset any groundwater drawdown. 2. Assess the likelihood of this strategy to achieve the desired objectives.
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28.	<p>Section 2 – Project Description 2.5.3 p.53</p> <p>Appendix F – Flood Assessment section 12 p.49</p> <p>Appendix F – Flood Assessment Figure 14 -1 p. 80</p> <p>Appendix C- Aquatic Ecology 5.1 p 52.</p>	<p>Impacts on the ecology due to the permanent highwall emplacement, in-pit waste rock emplacement areas, and temporary levees</p> <p>The potential ecological impacts from the proposed permanent highwall emplacement, the in-pit waste rock emplacement areas and the temporary flood levees have not been adequately assessed. It is considered likely that such structures will have a significant impact on the Isaac River floodplain and associated ecology. There is insufficient assessment of the link between the proposed landform changes and resultant hydraulic impacts which have been assessed and the ecological assessment throughout the draft EIS and appendices.</p> <p>The temporary levees are predicted to be in place for up to 79 years. This length of time could be considered permanent as it will have long term impacts on local terrestrial and aquatic ecology (in terms of life cycles and habitat preservation); as well as downstream impacts. After this timeframe a return to the original ecology may not be feasible. For example, floods support diverse aquatic life whose life cycles are adapted to intermittent stream conditions and allow</p>	<ol style="list-style-type: none"> 1. An ecohydrological conceptual model should be used to assess potential impacts to the ecology as per the IESC 2015 guideline <i>Modelling water-related ecological responses to coal seam gas extraction and coal mining</i>. 2. A much stronger linkage between the hydraulic and hydrological impact assessment and the ecological assessment is required. This should include: <ul style="list-style-type: none"> • figures and relevant associated tables that show the extent of flooding impacts on MSES values • downstream (off-site) impacts such as the extensive riverine wetlands on the Isaac River to the south of the Willunga domain. 3. Provide a detailed hydraulic and hydrological impact assessment where the dimensions and locations of the emplacement areas and levees must be provided for each domain. A table should be provided with impact areas of any MSES values that will be cleared within the footprint of the levees. The afflux and change in velocity should be determined and the extent of modelled flood levels mapped.

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		<p>passage of aquatic fauna upstream and downstream (Appendix C, section 5.1, p51).</p> <p>It is noted that a more detailed hydraulic impact assessment is recommended “<i>during the detailed design phase of the project to verify the height of the levee[s]</i>”, Appendix F, section 12, p. 52. The draft EIS is the appropriate detailed design phase of the project to present this information.</p> <p>Impact assessment must be based on DES’s managing hierarchy and must focus on avoidance and mitigation. This has not been addressed.</p> <p>Cumulative impacts will need to be addressed as well (refer to separate comment below).</p>	<p>4. Carry out the impact assessment based on DES’s managing hierarchy, focusing on avoidance and mitigation measures.</p> <p>5. Offset requirements as per Environmental Offsets Policy 2014 must be addressed.</p> <p>6. Address cumulative impacts (refer to separate comment below).</p>

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31.	<p>Section 2 – Project Description 2.5.3 p. 53</p> <p>Section 4 – Assessment of project specific matters 4.1.3 p.26</p> <p>Appendix C- Aquatic Ecology Assessment 5.9 p. 130</p> <p>Appendix D – Groundwater Assessment 5.6, p. 72</p> <p>Appendix D – Groundwater Assessment 12.2 p. 52</p>	<p>Quantification and management of potential cumulative impacts to hydrology</p> <p>The cumulative impacts due to changes to the hydrology (groundwater and surface water) have not been addressed in the draft EIS. Yet the proposed cumulative hydrological impacts to the floodplain and beyond are likely to be significant.</p> <p>This includes potential impacts on terrestrial and aquatic flora and fauna, including but not limited to riparian vegetation, wetlands, stygofauna and GDEs because of</p> <ul style="list-style-type: none"> • groundwater impacts (e.g. mine dewatering activities and depressurisation), and • surface water impacts (changes of catchment areas; changes to topography; temporary levees; and permanent emplacement) • the diversion of Ripstone Creek • changes to flooding frequencies, velocities and heights. <p>Cumulative impacts from proposed and existing surrounding mines would need to be taken into consideration.</p> <p>The proponent needs to propose how cumulative impacts would be monitored and managed.</p> <p>It is noted that the impact of flooding on wetlands located within the project area is considered to be negligible for the 50% AEP and 2% AEP (Appendix F, section 15.2, p. 83). There was no assessment of the 1% AEP or 0.1% AEP.</p> <p>There is no specific analysis provided of the likely impacts to GDEs from the extent, magnitude and duration of mining impacts. In the draft EIS, it is considered that terrestrial vegetation and aquatic habitat associated with a number of palustrine wetlands have a <i>'moderate potential to be associated with the surface expression of groundwater'</i> (Appendix C, s5.9, p.130).</p> <p>Specifically, the draft EIS states that the terrestrial riparian vegetation (RE 11.3.25) and aquatic habitats associated with the Isaac River are likely to be GDEs (Appendix C, s5.9, p. 130). The same RE</p>	<ol style="list-style-type: none"> 1. Assess the cumulative impacts of surface and groundwater impacts to the riparian vegetation, wetlands, stygofauna and GDEs. This includes cumulative impacts due to surface and groundwater hydrological changes of the proposed Olive Down mine operations, as well as cumulative impacts from surrounding mines (present and proposed). 2. Propose commitments and mitigation measures to ensure that the proposed Olive Down mine operations will not have a permanent and irreversible impacts on riparian vegetation, wetlands, stygofauna and GDEs. 3. Propose how cumulative impacts will be managed and monitored including what actions will be taken if monitoring indicates an impact has occurred. 4. Describe the success criteria used to assess the health and integrity of riparian vegetation, wetlands, stygofauna and GDEs, the timing and mechanisms for reporting and corrective actions to be taken if success criteria are not met. 5. Propose commitments and mitigation measures to ensure that the proposed project will not have a permanent and irreversible impact on HES wetlands. 6. DES recommends thorough pre-impact surveys of the wetlands during wet and dry conditions to record pre-impact ecosystem health. Monitoring must be carried out annually once mining commences at defined monitoring points (reference points) in order to show if any changes occur. 7. If any impacts are recorded on the wetland ecosystem and/or any associated vegetation (e.g. GDEs) and fauna (including stygofauna), these impacts must be managed in accordance with the hierarchy: avoidance, minimisation/mitigation, and if necessary, offsetting. 8. Provide an analysis of the potential impacts to GDEs from the project, including impacts to both terrestrial and aquatic ecosystems. This must incorporate analysis of the impact to floodplain ecology from the construction of levees and emplacement areas / highwall emplacement that will prevent floodplain flows over the ~52km reach of the Isaac River adjacent to the project footprint.

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Biodiversity offset strategy			
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Air			
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Noise			
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Rehabilitation			
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61.	<p>Section 2 – Project Description 2.5.3 p. 53</p> <p>Comments on preliminary draft environmental impact statement (EIS)</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 8: <i>'The preliminary draft EIS states that the permanent highwall emplacement will separate the open cut mining pits and voids, from the Isaac River floodplain. To meet the Mined Land Rehabilitation Policy (https://www.ehp.qld.gov.au/management/pdf/mined-land-rehabilitation-policy.pdf), any voids in the floodplain must be</i></p>	<ol style="list-style-type: none"> 1. Provide detailed information regarding how the proposed highwall emplacement and mining voids will meet the requirements of the Mined Land Rehabilitation Policy, having regard to the requirement for voids situated wholly or partially in a floodplain to be rehabilitated to a safe and stable landform that is able to sustain an approved post-mining land use that does not cause environmental harm. 2. Ensure that the proposed rehabilitated areas of the project will meet the goals of safe, stable, sustainable and non-polluting. With regards to final

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	<p>Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 8</p> <p>Section 5 – Rehabilitation Strategy p.1 to 2</p> <p>Section 2 – Project Description 2.10.2 p. 75</p>	<p><i>rehabilitated to a safe and stable landform that is able to support an approved post-mining land use. It appears that the proposed voids will not sustain an approved post-mining land use and therefore cannot comply with the Mined Land Rehabilitation Policy.'</i></p> <p>Recommendation: 'Demonstrate that the proposed highwall emplacement and mining voids will meet the requirements of the Mined Land Rehabilitation Policy.</p> <p><i>Note: The Mineral and Energy Resources (Financial Provisioning Bill) 2018, if enacted, may have further requirements in relation to the proposed final landform. '</i></p> <p>The draft EIS does not appear to have been amended to sufficiently demonstrate that the proposed highwall emplacement and mining voids will meet the requirements of the Mined Land Rehabilitation Policy (https://www.ehp.qld.gov.au/management/pdf/mined-land-rehabilitation-policy.pdf).</p> <p>The discussion in the draft EIS (Section 5, p. 1 to 2 and Section 2, p. 75 to 75) regarding the PRC Plans in relation to voids and backfilling operations indicate that it is unlikely the affected final voids (ODA3 and ODS7/ODS8) will meet the definition of a post mining land use based upon the values of safety; no environmental harm being caused; and sustainability.</p>	<p>voids, demonstrate how the following items will meet the rehabilitation goals:</p> <ul style="list-style-type: none"> • fencing on void highwalls to prevent access to humans and livestock (and by inference certain native animals) • permanent rock emplacements to surround the final voids and isolate them from flood events • installation of perimeter bunds to divert water around final voids and minimise the catchment areas of the final voids • permanent changes to the floodplain area and subsequent changes to flood characteristics • final voids acting as groundwater sinks, drawing in groundwater from surrounding geological units, and • ultimately, the generation of hypersaline environments with no potential land use.
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			5. The inclusion of progressive completion criteria are also recommended to ensure rehabilitated areas are effectively maintained to a suitable level prior to the full rehabilitation and surrender of the mine.
71.	<p>Section 4 – Assessment of project specific matters 4.10.3 p. 149</p> <p>Section 5 – Rehabilitation Strategy 5.2.2 p.17</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 25</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p><i>Comment 25: 'It is stated that the out-of-pit waste rock emplacements would result in the creation of a number of elevated landforms, which would have elevations of up to 315m AHD.'</i></p> <p>Recommendation: 'Section 11.42 of the TOR requires "For surface mines and projects with activities that disturb the land surface, show how the landform during and post mining will be stable and non-eroding over time (describe how current technologies will be applied)".</p> <p><i>The preliminary draft EIS considers impact to visual amenity of out of pit waste rock emplacements but require further assessment of:</i></p> <ul style="list-style-type: none"> <i>Slopes – for example, does the proposed slope of 1V:8H support the proposed post mining land use.</i> <i>Erosion potential – designed drainage from mined landforms is a fundamental requirement for ensuring long term landform stability and protection of water quality.'</i> <p>No update was made to this particular chapter of the draft EIS.</p> <p>Water will be directed off the landforms via gently sloped surfaces on the landform plateau, and as a consequence of the landform shape. No further design detail or discussion regarding whether additional drainage features are required for high volume runoff from intense rain events was provided.</p> <p>There is a lack of discussion as to the management of contour banks that will be installed on side slopes to limit effective slope lengths and reduce the potential for erosion (section 5.2.2 p. 5 -17). Contour banks require ongoing maintenance to ensure their proper function. In the long term and when not properly maintained contour banks frequently cause erosion resulting in the development of tunnelling or gullies.</p> <p>Chapter 5 mentions the following regarding stability 'Landform gradients were based on a preliminary assessment of geotechnical stability, undertaken by GeoTek Solutions' but this report was not provided as part of the draft EIS.</p>	<p>1. A discussion regarding how the proposed 1V:8H slopes of the waste rock emplacements are suitable for the proposed PMLU was provided in Section 2. This information should be incorporated into chapter 5 as it relates to post mining land use and rehabilitation.</p> <p>2. Provide information as to whether additional drainage features on the landform plateau are required. (Section 5.2.2 p.17)</p> <p>3. Provide information and a discussion regarding the removal of contour banks following the establishment of groundcover, or a plan as to their long term maintenance.</p> <p>4. Provide the report undertaken by GeoTek.</p>

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72.	Section 4 – Assessment of project specific matters 4.14.3 p. 172	More information is needed regarding the discussion of visual amenity impacts arising from the elevated landforms (Section 4.14.3, p. 172).	<ol style="list-style-type: none"> 1. Include to-scale, cross-sectional diagrams from various angles demonstrating how the proposed out-of-pit waste rock emplacements will look against the surrounding landform. 2. Profiles should be provided from a number of viewpoints including sensitive receptors (i.e. homesteads, roads), and represent the landscape over the life of the mine.
73.	<p>Section 4 – Assessment of project specific matters 4.10.3 Table 4 – 45 p. 152</p> <p>Section 5 – Rehabilitation Strategy 5.2.1 p. 10</p> <p>Section 5 – Rehabilitation Strategy Table 5-2 p. 6</p> <p>Section 5 – Rehabilitation Strategy 5.2.3 P.18</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 26</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 26: 'Table 3-29 Proposed post mining land suitability classes for final void landform states 'unsuitable for grazing and cropping.'</p> <p>Recommendation: 'The Queensland Government Mined Land Rehabilitation Policy states that "areas that are not rehabilitated to sustain a post mining land use may require additional on-going management. In these cases any residual risk payment to the administering authority will include provision for this ongoing management".'</p> <p>Provide further information on:</p> <ul style="list-style-type: none"> • the proposed final land use(s) for voids • consideration of residual risk payment to deal with ongoing management issues post mining.' <p>No update was made to this particular chapter of the draft EIS. However, Table 5–2 Preliminary Rehabilitation Requirements (p 5-6) and Section 5.2.1 (p. 10) states that the land use for final voids will be to act as a groundwater sink and provide potential habitat for native fauna (including the highwall and waterbody).</p> <p>There is insufficient discussion as to the suitability of this potential habitat.</p> <p>It is noted that the quality of the resultant waterbody is anticipated to increase in salinity throughout its life and will eventually become hypersaline (Section 5, p. 18) and consequently unsuitable for use as a water source and/or habitat for fauna and aquatic organisms. It is also noted that the final void highwalls will be fenced to prevent access by humans and livestock (and by inference certain native</p>	<ol style="list-style-type: none"> 1. Provide detailed explanation regarding how the final voids will achieve a sustainable post-mining land-use (PMLU) In accordance with the Mined Land Rehabilitation Policy. Note that for new site-specific mines, the administering authority will not approve a PCRPP that includes a void situated wholly or partially in a floodplain, unless the void will be rehabilitated to a safe and stable landform that is able to sustain an approved PMLU that does not cause environmental harm. 2. Describe the suitability of the final voids as habitat, taking into consideration the anticipated increased salinity of the proposed groundwater sinks (voids), and accessibility for native animals.

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		<p>fauna) which limits the potential of this area to sustain a Post-Mining Land Use (PMLU) as habitat.</p> <p>It is also proposed that permanent highwall emplacements will be constructed to isolate the final void landforms from flooding, which will in turn have a permanent impact on localised surface drainage and the flood plain.</p>	

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76.	<p>Section 5 – Rehabilitation Strategy</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 30</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 30: <i>'Section 11.47 of the TOR requires the draft EIS to take into account proposed avoidance and/or mitigation measures. The assessment should include but not be limited to the following key elements...</i></p> <p><i>Section 11.50 of the TOR requires ...success criteria in relation to natural values that would be used to measure progress [...].'</i></p> <p>Recommendation: <i>'The EIS needs to address the requirements of section 11.47 and 11.50 of the TOR, including by describing how the values of the floodplain have been accounted for pre and post mining, including the values, potential impacts and proposed management.'</i></p> <p>Section 5 of the draft EIS provides very little information regarding the natural values (flora and fauna) of the floodplain pre and post mining, and how these will be potentially impacted, mitigated and managed as part of rehabilitation activities. The rehabilitation success criteria (Table 5-2) do not consider such values.</p>	<ol style="list-style-type: none"> 1. Provide information regarding the natural values (flora and fauna) of the floodplain pre and post mining, and how these will be potentially impacted, mitigated and managed as part of rehabilitation activities. 2. Incorporate these natural values into the rehabilitation success criteria. 3. For example, criteria to measure impacts upon native fauna due to the increasing salinity of water retained in the final voids or impacts upon the integrity of ecological processes on the floodplain arising from the presence of final rehabilitated landforms.
s.73 - Irrelevant			

Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			
78.	<p>Section 5 – Rehabilitation Strategy 5.1.5, Table 5-2 p.7 to 8</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 32</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 32: 'Table 4-2 indicates that the void rehabilitation goal is to be a stable, sustainable land use. However, the rehabilitation objectives do not evidence the voids in being stable and sustainable land uses, as reflected in the issue below (Chapter 4, section 4.3.4 page 4-19), e.g. needing to fence the area off from humans and livestock.'</p> <p>Recommendations: 'Demonstrate that the final land form will be a stable and sustainable land use in accordance with the Mined Land Rehabilitation Policy.'</p> <p>Table 5 – 2 Preliminary Rehabilitation Requirements (p 5-6) and Section 5.2.1 (p 5-10) states that the sustainable land use for final voids will be to act as a groundwater sink and provide potential habitat for native fauna (including the highwall and waterbody).</p> <p>There is insufficient discussion as to the suitability of this potential habitat as a sustainable and stable land use.</p> <p>It is noted that the quality of the resultant waterbody is anticipated to increase in salinity throughout its life and will eventually become hypersaline (Section 5 p. 18) and consequently unsuitable for use as a water source and/or habitat for fauna and aquatic organisms. It is also noted that the final void highwalls will be fenced to prevent access by humans and livestock (and by inference certain native</p>	<p>2. Provide explanation regarding how the final voids will achieve a sustainable post-mining land-use (PMLU) in accordance with the Mined Land Rehabilitation Policy.</p> <p>Note that for new site-specific mines, the administering authority will not approve a PCRPs that includes a void situated wholly or partially in a floodplain, unless the void will be rehabilitated to a safe and stable landform that is able to sustain an approved PMLU that does not cause environmental harm.</p> <p>3. Provide discussion as to the suitability of the final voids as habitat, taking into consideration the anticipated increased salinity of the proposed groundwater sinks (voids), and accessibility for native animals.</p>

Number	Section	Describe the issue	Suggested solution
		<p>fauna) which limits the potential of this area to sustain a Post-Mining Land Use (PMLU) as habitat.</p> <p>It is also proposed that permanent highwall emplacements will be constructed to isolate the final void landforms from flooding, which will in turn have a permanent impact on localised surface drainage and the flood plain (refer to a separate comment made).</p>	
79.	<p>Section 5 – Rehabilitation Strategy 5.2.3 p.17</p> <p>Section 5 – Rehabilitation Strategy Table 5-4 p. 18</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 34</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 34: <i>'There are four voids pictured across figures 4-2 to 4-3. Table 4-3 indicates that ODS7 and ODS8 are not two separate voids, but connect as one; however, it has not been explained how this will occur.'</i></p> <p>Recommendation: <i>'Demonstrate that all voids have been reduced on site as much as possible through, for example, exploration of alternative mine operations plan.'</i></p> <p><i>Demonstrate the connection between ODS7 and ODS8 void/s, including the final water level within this void.'</i></p> <p>No explanation regarding how ODS7 and ODS8 are connected has been added to section 5.2.3 of the draft EIS.</p>	<p>Demonstrate the connection between ODS7 and ODS8 void/s, including the final water level within this void.</p>
80.	<p>Section 5 – Rehabilitation Strategy 5.2.3 Figure 5-5b</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 35</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 35: <i>'Figure 4-4b does not provide the distance between the void and the Isaac River or indicates any potential for the Isaac River to leach into the void.'</i></p> <p>Recommendation: <i>'Clearly demonstrate that the void will not have any draw down effects from the Isaac River leaching in through the alluvium and tertiary clays in the ground. Amend figure 4-4b to illustrate the distance from the Isaac River to the void.'</i></p>	<ol style="list-style-type: none"> 1. Provide information that demonstrates that the voids will not have draw-down impacts via leaching through the Isaac River alluvium and tertiary clays. 2. Demonstrate that an appropriate factor of safety has been adopted in the buffer area between the levee and permanent highwall emplacement and the Isaac River, taking into account the erosional and flow characteristics of the Isaac River.

Number	Section	Describe the issue	Suggested solution
		<p>There is a lack of discussion as to whether there is an appropriate factor of safety for the buffer area between the levee and permanent highwall emplacement and the Isaac River.</p> <p>There is little information as to whether the voids will have draw-down impacts via leaching through the Isaac River alluvium and tertiary clays.</p>	
81.	<p>Section 5 – Rehabilitation Strategy Figures 5-5a and 5-5b</p> <p>Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 36</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 36: <i>'The TOR section 11.57 requires final topography to be included in the draft EIS. Contours are shown on the figures without any numbers. The scale, relative change and areas of disturbance (e.g. waste, dams, and excavations) are unclear. Only the final voids are shown. Timing is not addressed in the table.'</i></p> <p>Recommendation: <i>'To satisfy the requirements of the TOR provide information required by section 11.57, including but not limited to:</i></p> <ul style="list-style-type: none"> <i>Add contour values to the figures so that the final topography in comparison to pre-mining is evident.</i> <i>Show on the figure what areas will be able to be used for the proposed final land use and what areas will be 'non-use' management areas.</i> <i>Show the areas of disturbance and label (e.g. waste, dams, and excavations).</i> <p><i>Address timing of rehabilitation in the table.'</i></p> <p>Contours have been removed from Figure 5-5a and no elevations are provided on either figure. Therefore the scale, relative change and areas of disturbance remain unclear.</p> <p>Neither figure indicates the area of disturbance associated with final landforms and the legend that identifies areas for grazing and woodland is not clear due to the colour selection for each polygon.</p>	<p>For Figures 5-5a and 5-5b include the following:</p> <ul style="list-style-type: none"> information regarding elevations and conceptual final land forms that allow comparison between the post-mining and pre-mining topography. the area of disturbance associated with final landforms. a clearer colour selection for each polygon that represents grazing and woodland.
82.	<p>Section 5 – Rehabilitation Strategy 5.2.4 p. 18 to 19</p>	<p>The below adequacy advice was previously provided to the proponent by DES in relation to the preliminary draft EIS. The advice given requires further consideration by the proponent.</p> <p>Comment 37: <i>'In reference to TOR section 11.59: the draft EIS does not adequately address how the proposed permanent levees (waste</i></p>	<p>Provide information demonstrating the geotechnical stability of the levees (permanent highwall emplacements).</p>

Number	Section	Describe the issue	Suggested solution
	Comments on preliminary draft environmental impact statement (EIS) Proposed Olive Downs Coking Coal Project – Pembroke Olive Downs Pty Ltd Comment 37	<p><i>rock dumps) will be capable of being managed and rehabilitated to achieve acceptable land use capabilities/suitability, to be safe, stable, non-polluting and self-sustaining.'</i></p> <p>Recommendation: 'Amend section 4-17 to address levees/waste rock dumps and how they will satisfy criteria as per TOR section 11.59.'</p> <p>No additional information regarding the geotechnical stability of the levees (permanent highwall emplacements) has been added to section 5.2.4 of the draft EIS.</p>	
83.	Section 5 – Rehabilitation Strategy 5.2.6 p.19	<p>The draft EIS did not provide sufficient information to adequately describe the final landform shape and drainage layout. There is insufficient information regarding the shape and elevation of the final excavated ILF cells.</p> <p>There is insufficient information regarding the rehabilitation of Initial Rejects Storage Facilities, including a description of the final landform.</p>	<ol style="list-style-type: none"> 1. Provide Information regarding the shape and elevation of the final excavated ILF cells. 2. Provide information specific to the rehabilitation of Initial Rejects Storage Facilities. This should include a description of the final landform.
84.	Section 5 – Rehabilitation Strategy 5.3.3, p. 34	<p>Information is lacking regarding site selection for stockpiles. For example, stockpiles located on flat areas that are not located in drainage lines or flood prone areas, delineated and located to avoid vehicle traffic.</p> <p>Lack of clarity around timeframes for revegetation of stockpiles, which is currently stated as, '<i>as soon as possible</i>'.</p>	<ol style="list-style-type: none"> 1. Include information regarding site selection for stockpiles. 2. Note that DES recommends that topsoil and subsoil are stockpiled separately, at a preferred height of 2m, rather than the maximum 3m indicated in the draft EIS, and with a working face battered down at an appropriate gradient to prevent erosion. 3. Specify a period of time for actions to revegetate/sow stockpiles. 4. Amend the topsoil inventory to ensure the locations of all topsoil and subsoil stockpiles are surveyed and recorded.
85.	Section 5 – Rehabilitation Strategy 5.3.4 p. 36.	<p>The timeframe for rehabilitating elevated landforms is not specific enough and requires a definitive timeframe that provides a measurable outcome. It is currently listed as, '<i>As soon as possible</i>' (p. 36).</p> <p>Whilst the draft EIS advised that erosion and sediment control structures will be designed and installed in accordance with best practice guidelines, there is no mention of ongoing maintenance.</p>	<ol style="list-style-type: none"> 1. Provide a specific timeframe for rehabilitating elevated landforms. 2. A period of time or descriptor of when action is required should be articulated. For example: landform areas are stabilised within x days of completion or prior to a forecast rain event of XX mm/year intensity. 3. Include statement to the effect that erosion and sediment control structures will be <i>maintained</i> in accordance with best practice guidelines.

Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			
Land and rehabilitation			
s.73 - Irrelevant			

Number	Section	Describe the issue	Suggested solution																																																					
89.	<p>Section 5 – Rehabilitation Strategy 5.2.3 p.3</p> <p>Section 5 – Rehabilitation Strategy 5.1.5 p.10</p> <p>Appendix I – Economic Assessment 3.4.1 p. 12</p>	<p>Residual risk</p> <p>A cost for initial rehabilitation is discussed in Appendix I – Economic Assessment; however, there does not appear to be consideration of ongoing maintenance of long term rehabilitation. Long term rehabilitation would include maintenance and management strategies to be employed throughout the life of the mine to maintain progressive rehabilitation areas (such as long term maintenance of fencing and final landforms).</p>	<p>Provide in the economic assessment the cost of ongoing maintenance and management of progressive rehabilitation to cover the cost of the longer term costs of maintaining progressively rehabilitated areas.</p>																																																					
90.	<p>Section 5 – Rehabilitation Strategy Figures 5-6 to 5-19 p. 20 to 33</p>	<p>Maximum disturbance limits</p> <p>Maximum disturbance limits throughout the stages of the life of the mine have been indicated in Figures 5-6 to 5-19; however, they have not been clearly quantified. It is assumed these maximum disturbance limits have been used to calculate predicted environmental impacts provided in the draft EIS appendices.</p>	<ol style="list-style-type: none"> 1. Ensure the proposed operations will be carried out in accordance with what has been approved and assessed by DES, maximum disturbance limits for the project are to be provided. To satisfy this requirement, it is recommended the following table (or similar) is provided. 2. It is also recommended that watercourse diversions are included as a domain. <p>Table X: Authorised disturbance extent</p> <table> <tr> <th>Mine Domain</th><th>Description</th><th>Location</th><th>Maximum Disturbance Area (ha)</th></tr> <tr> <td>Watercourse diversion</td><td>XXX</td><td rowspan="16">Refer to Figure A1 – Project Layout</td><td>XXX</td></tr> <tr> <td>Waste rock dump</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Mine Infrastructure Area including internal roads</td><td>XXX</td><td>XXX</td></tr> <tr> <td>ROM stockpile</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Product stockpile</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Water infrastructure</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Transport Corridor</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Train Loadout Facility</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS1</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS2</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS3</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS4</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS5</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS6</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS7</td><td>XXX</td><td>XXX</td></tr> <tr> <td>Open Cut Put ODS8</td><td>XXX</td><td>XXX</td></tr> </table>	Mine Domain	Description	Location	Maximum Disturbance Area (ha)	Watercourse diversion	XXX	Refer to Figure A1 – Project Layout	XXX	Waste rock dump	XXX	XXX	Mine Infrastructure Area including internal roads	XXX	XXX	ROM stockpile	XXX	XXX	Product stockpile	XXX	XXX	Water infrastructure	XXX	XXX	Transport Corridor	XXX	XXX	Train Loadout Facility	XXX	XXX	Open Cut Put ODS1	XXX	XXX	Open Cut Put ODS2	XXX	XXX	Open Cut Put ODS3	XXX	XXX	Open Cut Put ODS4	XXX	XXX	Open Cut Put ODS5	XXX	XXX	Open Cut Put ODS6	XXX	XXX	Open Cut Put ODS7	XXX	XXX	Open Cut Put ODS8	XXX	XXX
Mine Domain	Description	Location	Maximum Disturbance Area (ha)																																																					
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			Open Cut Put ODS9	XXX		XXX				
			WIL1	XXX		XXX				
			WIL2	XXX		XXX				
			WIL3	XXX		XXX				
			WIL4	XXX		XXX				
			WIL5	XXX		XXX				
91.	<p>Section 6 - General Environmental Protection Commitments and Model Conditions Table H1 p. 39</p> <p>Section 5 – Rehabilitation Strategy Figures 5-5a, Figure 5-5b</p> <p>Appendix M – Soil and Land Suitability Table 58 p. 100</p>	<p>Post mining land use for final voids</p> <p>Table H1 '<i>rehabilitation requirements, final voids, (d) sustainable land use</i>', indicates the final land use for final voids will be limited to a groundwater sink. This conflicts with Appendix M (Table 58), which indicates class 5 – cropping/grazing, and Figures 5-5a and 5-5b which indicate '<i>Equilibrated Void Water Body</i>' and woodland.</p>	<p>1. Update the report to ensure that a clear and consistent final land use for final voids is reflected throughout the draft EIS and in the proposed EA conditions for inclusion as stated conditions in the Coordinator General's Evaluation Report.</p> <p>2. Ensure that the PMLU considers the modelled final void water quality and its suitability of use (e.g. stock watering, fauna habitat etc.).</p>							
92.	Appendix M – Soil and Land Suitability	<p>Alternative PMLU assessment</p> <p>An assessment of alternative viable post mining land uses (PMLUs), particularly for final voids, is not detailed.</p>	<p>1. Please report on the alternative viable PMLUs considered.</p> <p>2. PMLUs options are to consider local, State and/or Commonwealth strategies or planning, and outcomes from stakeholder engagement.</p>							
93.	Section 5 – Rehabilitation Strategy figures 5-6 to 5-19 p. 20	<p>Progressive completion criteria for ongoing rehabilitation</p> <p>Progressive rehabilitation commitments have been made for as early as 2030. In order to ensure these rehabilitated areas are effectively maintained to a suitable level during the life of the mine, enabling the final completion criteria to be easily achieved when mine closure occurs, DES recommends the adoption of progressive completion criteria for areas progressively rehabilitated in accordance with Figures 5-6 to 5-19.</p>	<p>1. A clear and consistent final land use for final voids should be reflected throughout the draft EIS report and reflected in the EA conditions.</p> <p>2. The PMLU must consider the modelled final void water quality and its suitability of use (e.g. stock watering, fauna habitat etc.).</p> <p>3. It is recommended that progressive completion criteria tables are provided as the example below.</p> <table><tr><th>Domain Progressive Completion Criteria</th><th>Domain Progressive Completion Criteria</th></tr><tr><td>Waste rock emplacements</td><td><p><i>Example:</i></p><ul style="list-style-type: none"><i>Final landform reshaping completed in accordance with the rehabilitation management plan</i></td></tr></table>				Domain Progressive Completion Criteria	Domain Progressive Completion Criteria	Waste rock emplacements	<p><i>Example:</i></p> <ul style="list-style-type: none"><i>Final landform reshaping completed in accordance with the rehabilitation management plan</i>
Domain Progressive Completion Criteria	Domain Progressive Completion Criteria									
Waste rock emplacements	<p><i>Example:</i></p> <ul style="list-style-type: none"><i>Final landform reshaping completed in accordance with the rehabilitation management plan</i>									

Number	Section	Describe the issue	Suggested solution														
			<table><tr><td></td><td>(condition H8) and the relevant completion criteria identified in Table H1.<ul style="list-style-type: none">• Areas are free draining, with no ponding.• All surface cracking has been addressed in accordance with the subsidence management plan and rehabilitation management plan.• Erosion and sediment controls installed as per the certified erosion and sediment control plan, as required by condition F27.• Monitoring locations established at the rehabilitated area, as identified within the rehabilitation management plan (condition H8).</td></tr><tr><td>Mine Infrastructure Area including internal roads</td><td></td></tr><tr><td>Product stockpile</td><td></td></tr><tr><td>Water Management infrastructure</td><td></td></tr><tr><td>ILF Cells</td><td></td></tr><tr><td>Train Loadout Facility</td><td></td></tr><tr><td>Open cut pits</td><td></td></tr></table>		(condition H8) and the relevant completion criteria identified in Table H1 . <ul style="list-style-type: none">• Areas are free draining, with no ponding.• All surface cracking has been addressed in accordance with the subsidence management plan and rehabilitation management plan.• Erosion and sediment controls installed as per the certified erosion and sediment control plan, as required by condition F27.• Monitoring locations established at the rehabilitated area, as identified within the rehabilitation management plan (condition H8).	Mine Infrastructure Area including internal roads		Product stockpile		Water Management infrastructure		ILF Cells		Train Loadout Facility		Open cut pits	
	(condition H8) and the relevant completion criteria identified in Table H1 . <ul style="list-style-type: none">• Areas are free draining, with no ponding.• All surface cracking has been addressed in accordance with the subsidence management plan and rehabilitation management plan.• Erosion and sediment controls installed as per the certified erosion and sediment control plan, as required by condition F27.• Monitoring locations established at the rehabilitated area, as identified within the rehabilitation management plan (condition H8).																
Mine Infrastructure Area including internal roads																	
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94.	Section 5 – Rehabilitation Strategy Figure 5-5a and 5-5b p.15 to p.16	PMLU for woodlands The colours used to indicate PMLU of grazing and woodland in Figures 5-5a and 5-5b (Conceptual Final Land Use) are very difficult to tell apart, making these figures difficult to interpret.	Provide maps that clearly define the final land use for the mining lease.														
95.	Section 5 – Rehabilitation Strategy Table 5-2 p.5 to p.9	Mine domains Mine domains listed in Table 5-2 include waste rock emplacements, final voids, infrastructure area, water management infrastructure and ILF cells. However, other domains are not included.	Consider additional domains, including separate domains for the creek diversion, permanent highwall emplacement, ROM stockpiles, transport corridors and train load out facility.														

Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			
Water quality			
s.73 - Irrelevant			

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Number	Section	Describe the issue	Suggested solution
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102.	Appendix E- Surface Water Assessment Part A 1.2 p. 3	Advance dewatering of the Olive Downs South and Willunga domain open cut pits is mentioned in the early parts of Appendix E; however, there are no further discussion in regards to the potential impacts, mitigation or management measures proposed for these discharges.	Provide the predicted volumes, timing, quality, and potential impacts of the proposed advance dewatering of the Olive Downs South and Willunga domain open cut pits, including the mitigation and management mechanisms proposed.
103.	Appendix L – Geochemistry Assessment Appendix A	Geochemical analysis of potential overburden and interburden (collectively called spoil) and potential coal reject materials are presented in Appendix L. According to this, spoil and reject materials	1. Risks presented from the water extracts data should be considered in a risk based approach for spoil and rejects sourced metals/metalloids in potential to impact on receiving waters environmental values (Table B5, Appendix A).

Number	Section	Describe the issue	Suggested solution
	Table B5	<p>will be managed by a combination of out-of-pit and in-pit emplacements during the project life-cycle.</p> <p>Excavated spoil and reject materials could introduce non-point source metals/metalloid contaminants of coal origin into the surrounding environment.</p> <p>It is not clear which standard method was implemented for metal/metalloid extraction. Apparently, assessment of element solubility was performed on 'water extracts' without acid digestion of spoil and/or coal rejects. Therefore, soluble metal/metalloid fractions will vary highly depending upon the sample pH, salinity, interactions with organic matter and other factors affecting sorption of metals into the aquatic fractions during sample preparations.</p>	<p>2. Discuss potential impacts (or lack thereof) of metals/metalloids from leaching during various stages of project implementation. Water type classification of waste rock leachate as non-mine impacted water requires clarification and assessment, in terms of contaminant potential for metals/metalloids and nitrates (blasting proposed).</p>

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Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			
Hydrology and water management			
s.73 - Irrelevant			
114.	Section 2 – Project Description	<p>There is no discussion of analyses / cost-benefit analyses for the site chosen for the waste rock dump across the river on the floodplain at MLA700036.</p> <p>This site creates a variety of challenges:</p> <ul style="list-style-type: none"> • it creates choke in the Isaac River • it will be restricted in terms of access • it requires clearing the floodplain for the sole purpose of a waste rock dump • it proposes placement of a structure to be rehabilitated in an area subject to flooding. <p>Modelling indicates that stream velocity may exceed 4.5 m/s at the base of the waste rock dumps, which could not be considered a safe, stable or self-sustaining result.</p>	<ol style="list-style-type: none"> 1. Provide a thorough options analyses for the proposed location of the waste rock dump across the river on the floodplain at MLA700036. This discussion should addresses the immediate environmental values and associated long-term impacts. 2. Evidence should be provided to clearly demonstrate that the design of waste rock dump will result in a structure that is safe, stable or self sustaining.
115.	Section 2 – Project Description 2.5.3 p.53	<p>From the way the temporary (flood) levees are described in section 2.5.3 it appears that appropriate study-planning-design has not progressed to a stage that allows a clear understanding of the flooding and impacts of the project in the short and long term. For example, it is written '<i>by way of example, the temporary flood levees... could range from 0.5 to 4.7m</i>', which does not clearly indicate impacts nor what mitigation measures would be required.</p> <p>There is some contradiction as to whether the levees will be temporary. While overall this section indicates they are temporary, the 4th paragraph indicates that the levee would be '<i>removed or reshaped once the waste rock emplacements are rehabilitated.</i>'</p>	<ol style="list-style-type: none"> 1. Provide clear information if the levees would be removed or reshaped once the waste rock emplacements are rehabilitated. 2. Provide an appropriate assessment that describes impacts of the waste rock emplacements and how appropriate management/mitigation measures will be applied to ensure the structures remain safe, stable and provide a sustainable land use. . 3. Update flood modelling to reflect the final design of the proposed closure design of the levees.

Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			
118.	<p>Appendix D – Groundwater Assessment 10 p.113</p> <p>Section 4 – Assessment of project specific matters 4.3.2 p. 74</p>	<p>Impacts of the operations and residual voids on the water supply and environmental values</p> <p>There is no evaluation of the impacts of the operations and residual voids on the water supply and environmental values of the area in the short and long term.</p> <p>There are groundwater bores within 5km of the proposed operations installed in the shallow alluvium and used for stock and/or domestic water purposes. Page 75 (section 4) states drawdown in up to 5 of these bores in alluvium (2) and Permian coal measures (3), however the impacts, management and mitigation measures were not discussed.</p> <p>It is predicted in the draft EIS that drawdown impacts will not affect the ability to extract water (p. 79 section 4). Appendix D (p. 113) recommends developing a site specific trigger levels once sufficient data is collected.</p> <p>There is no link in the discussion between draw-down trigger levels and the impact assessment. The draft EIS does not provide information on the management/mitigation measures including any make good provisions.</p>	<ol style="list-style-type: none"> 1. Provide evaluation of the impact of the operations and residual voids on the groundwater water supply and environmental values of the area in the short and long term. 2. Include discussion on draw-down impacts on groundwater bores, including impacts, management and mitigation measures. 3. Base draw-down trigger levels on the impact assessment and management/mitigation measures. 4. Provide information on the management/mitigation measures including any make good provisions. 5. Include assessment against environmental objectives and performance outcomes as required under the EP Regulation.
119.	Section 4 – Assessment of	Impacts of increased draw-down on the Isaac River	<ol style="list-style-type: none"> 1. Assess how changes to draw-down flow will impact the system during periods of low flow. Consider both the operational and post mining

Number	Section	Describe the issue	Suggested solution
	project specific matters 4.3.3 p. 77	<p>The impacts of increased draw-down on the Isaac River have not been clearly identified or described.</p> <p>Section 4 (p.77) notes that there are impacts to groundwater during and post mining due to residual voids. The 'take' or drawdown of groundwater will result in an additional take from the Isaac River as this is a losing system. It is estimated that the rate of seepage during operations will be an average of 2.6 ML/day over the life of the project – 0.5% reduction in average flow. The peak (page 4-78) is estimated as 4.5 ML/day.</p> <p>This is an ephemeral system. It is unclear what impacts during periods of low flow (the majority of the year) will be and how this compares with the system as a whole.</p> <p>Similarly, there is a figure for post mining long-term average take of 1.9ML/day at post closure equilibrium. It is unclear how this equates during periods of low flow.</p> <p>There is also not discussion/assessment as to the positional for greater subsequent impacts to GDEs.</p> <p>Refer also to comments made on potential impacts of taking water from the Isaac River opportunistically as required.</p>	<p>impacts, as well as potential impacts to groundwater dependent vegetation during low flow periods.</p> <ol style="list-style-type: none"> 2. Include cumulative impacts from draw-down on the Isaac River and opportunistically taking water from the Isaac River. 3. Consider management strategies for these impacts. 4. Monitoring along the affected stretches of the Isaac River must be carried out annually once mining commences at defined monitoring points (reference points) in order to show if any changes occur. 5. If any impacts are recorded on the wetland ecosystem and/or any associated vegetation and fauna (e.g. GDEs and stygofauna) and fauna, these impacts must be managed to avoid, minimise/mitigate impacts, and if necessary, offset these impacts.
120.	<p>Section 4 – Assessment of project specific matters 4.3.3 p. 79</p> <p>Appendix D – Groundwater Assessment 3.3.1 P 26</p>	<p>There is insufficient information to assess whether cumulative draw-down impacts are acceptable. Any consideration of the cumulative impacts on groundwater should take into account projected and actual impacts from the Bowen Gas Project.</p>	<p>Include information regarding the timeframe around impacts from draw down of groundwater in strata down to the mined seams, noting that voids in this project will have a permanent impact on localised groundwater flow and surface water take from the system.</p>
121.	<p>Section 4 – Assessment of project specific matters 4.3.4 p. 82</p>	<p>There is a no assessment of the proposed residual voids that account for impacts on environmental values in the short and long term. Considering that the residual voids will take 100-200 year to reach equilibrium and will result in hypersaline water in 550-600 years.</p> <p>This is important due to the predicted impacts of the voids on the surrounding environment, which have included:</p> <ul style="list-style-type: none"> • increased freshwater take from the Isaac River year round 	<p>Provide an options assessment for the planned use of residual voids that accounts for the predicted impacts of the voids on environmental values in the short and long term.</p>

Number	Section	Describe the issue	Suggested solution
		<ul style="list-style-type: none"> • permanent alteration of the floodplain • 3 residual voids with saline/hypersaline water that appear to become non-use management areas • ongoing maintenance required for the levees • ongoing degradation of water quality as a result of voids acting as a long-term groundwater sink. 	
122.	Section 4 – Assessment of project specific matters 4.3.4 p.86	<p>Section 4 commits to developing a UWIR upon commencement of mining that would manage the impacts of underground water extraction by the project.</p> <p>It is unclear how any management methods can be implemented once the mine has begun operations given the drawdown and timeframes associated with the impacts.</p>	<ol style="list-style-type: none"> 1. Detail management methods that will be included in the UWIR and how they will be applied. 2. Describe the expected effectiveness of this management in keeping impacts within predicated and acceptable limits.
123.	<p>Appendix A - Terrestrial Flora Assessment</p> <p>Appendix E - Surface Water Assessment Part A 7.7.2 p. 96 (This Appendix is referred to in Draft EIS as Hatch 2018)</p>	<p>Impacts from constructed landforms in the floodplain</p> <p>Based on site water balance modelling undertaken by Hatch there is a predicted negligible impact on downstream water quality and no measurable impacts on surface water quantity and therefore, no measurable impact on surrounding habitats.</p> <p>These statements are based on the assumption that appropriate erosion and sediment control management is implemented through the life of mine, in conjunction with the progressive rehabilitation of constructed landforms, and so discharges of sediment and other contaminants remain at levels which the receiving environment can cope with.</p> <p>Consideration has only been given to sediment discharges from the mine. There is no discussion regarding the physical presence of the constructed landforms in the floodplain, or the reduced catchment areas of the affected watercourses and how that impacts on environmental values of the receiving environment.</p> <p>The AEP flood modelling results indicate the flow velocities may exceed 4m/s at the base of these structures but no information has been provided on how the constructed landforms in the floodplain be designed to withstand such flows as to be self-sustaining and not impact on the surrounding environment.</p>	<ol style="list-style-type: none"> 1. Provide evidence that the constructed landforms in the floodplains (levees, highwall emplacements, pit walls, etc) will be safe, stable, non-polluting and able to sustain a final land use. 2. Provide evidence that the flow velocities will not erode the constructed landforms in the floodplain and that they are designed to withstand such flows. 3. Demonstrate that the constructed landforms in the floodplains will not impact on the water quality of affected waterways and/or other environmental values.
124.	Appendix E - Surface Water Assessment Part A	Appendix E states that ' <i>Certain aspects of the project, such as changes to landforms due to construction of out-of-pit waste rock emplacements or mine subsidence, will create impacts that are</i>	Provide evidence to justify the conclusion that ' <i>changes to landforms due to construction of out-of-pit waste rock emplacements or mine subsidence, will create impacts that are irreversible, although this does not mean that any</i>

Number	Section	Describe the issue	Suggested solution
	10.1 p. 159 (This appendix is referred to in Draft EIS as Hatch 2018)	<i>irreversible, although this does not mean that any such impacts are necessarily detrimental to the environmental values of receiving waters.'</i> However, no explanation has been provided to substantiate this conclusion.	<i>such impacts are necessarily detrimental to the environmental values of receiving waters.'</i>
125.	Appendix E - Surface Water Assessment Part A 7.7.2 p. 96 (This Appendix is referred to in Draft EIS as Hatch 2018)	Impacts arising from changes to surface water flows on the receiving environment <i>7.7.2 Highwall Clean Water Management states that 'During the Project development, there is a large clean water catchment located between the pit highwall and the temporary flood levees and permanent highwall emplacement (which acts as a levee). Between Stage 1 and Stage 3 of the Project, this catchment will be managed by directing the runoff south via a series of clean water drains. This runoff will ultimately drain to Ripstone Creek via an unnamed drainage feature. By Stage 4 (when Pit ODS8 begins development), the south-eastern section of the proposed Ripstone Creek levee will be constructed, cutting off the unnamed drainage feature. From Stage 4 onwards, the highwall catchment (which reduces in area over the life of the Project) will be captured within a system of clean water drains and dams, which will be pumped directly to either Ripstone Creek or the Isaac River following rainfall. Design of the highwall clean water management system will be undertaken during the detailed design process'.</i> The draft EIs does not discuss how these changes to surface water flows will impact on the receiving environment (e.g. erosion, timing of flows, inundation of previously unaffected areas, resilience of vegetation, loss of habitat).	Provide evidence how the proposed changes to surface water flows will not impact on the receiving environment (e.g. erosion, timing of flows, inundation of previously unaffected areas, resilience of vegetation, loss of habitat).
126.	Appendix E - Surface Water Assessment Part A 11 p. 184 (This Appendix is referred to in Draft EIS as Hatch 2018)	The Hatch report (page 184) concludes that <i>'the potential impacts of the project on surface water resources will be mitigated through the implementation of a mine site water management plan...and a site water monitoring program will be implemented to continually assess environmental impacts'</i> . The summary of findings for impacts upon surface water resources concludes that: <ul style="list-style-type: none"><i>The performance of the mine water management system will ensure a very small risk of uncontrolled spills of mine affected water</i>	1. Provide detailed cumulative impact assessment on surface water resources (taking into account comments made throughout this submission on similar issues). 2. Provide evidence to support the conclusions that: <ul style="list-style-type: none">there will be limited impacts upon the downstream water quality arising from controlled releasesthe loss of catchment to Ripstone Creek will only affects the furthest downstream reach of the creek adjacent to the project and within the tenement area

Number	Section	Describe the issue	Suggested solution
		<ul style="list-style-type: none"> That there will be limited impacts upon the downstream water quality arising from controlled releases The loss of catchment to Ripstone Creek only affects the furthest downstream reach of the creek adjacent to the project and within the tenement area Changed topography will have some impacts via long-term reduction in catchment runoff to the Isaac River and Ripstone Creek (but not considered to be at significant levels) Final voids will act as a groundwater sink Cumulative impacts from the project will be low due to the low risk of off-site releases and the regulatory structure imposed upon all mines in the area. <p>The cumulative impacts due to changes to the surface water resources have not been addressed as the draft EIS has not provided evidence that there will be limited impacts (as cited above). At this stage, potential impacts are discussed in several technical appendices but have not been summarised in the draft EIS.</p> <p>The draft EIS has not provided evidence that avoidance and mitigation measures have been used to minimise environmental harm. Mine site water management plans and site water monitoring programs are not considered avoidance and mitigation measures; they are part of the regular monitoring requirements of a project.</p>	<ul style="list-style-type: none"> the changed topography will have minor impacts via long-term reduction in catchment runoff to the Isaac River and Ripstone Creek cumulative impacts from the project will be low due to the low risk of off-site releases and the regulatory structure imposed upon all mines in the area controlled releases will have limited impacts on water quality there is limited flow impacts on the Isaac River and Ripstone Creek as a result of changes in the landscape and water take and the resulting impacts on surface water resources that the rehabilitated structures (levees) in the floodplain will not impact on surface water resources; the take of groundwater from the surface water system as a result of final voids and impact on surface water system. <ol style="list-style-type: none"> The assessment must include DES's management hierarchy, focusing on avoidance and mitigation measures. Provide the assessment on cumulative impacts on surface water resources in one dedicated section of the draft EIS.
127.	Appendix E – Surface Water Assessment Part B 4.1 p.33	<p>Impact assessment for the Ripstone Creek diversion</p> <p>Diversion of Ripstone Creek is mentioned in the Geomorphology Report (page 33): <i>'Open cut mining would likely directly impact a portion of lower Ripstone Creek catchment (Figure 9), so consideration would need to be given to diversion of the flow from this stream channel around the pit'</i>.</p> <p>The geomorphology report does not include a dedicated impact assessment for the Ripstone Creek diversion (there is one for the Isaac River).</p> <p>The draft EIS does not discuss the impacts of the Ripstone Creek diversion upon the environmental values of the receiving environment (where the creek is constructed), and on the loss/degradation of environmental values associated with the removal of this portion of Ripstone Creek.</p>	<ol style="list-style-type: none"> Include an impact assessment for the Ripstone Creek diversion in accordance with DES's management hierarchy. Discuss impacts of the Ripstone Creek diversion on environmental values of the receiving environment (where the creek is constructed), and on the loss/degradation of environmental values associated with the removal of this portion of Ripstone Creek.

Number	Section	Describe the issue	Suggested solution
		Discussion appears limited to Section 4, Table 4-6, page 4-34 which cites negligible impacts on the extent, frequency and duration of fish passage.	
128.	<p>Appendix E – Surface Water Assessment Part B 5.2 p.80</p> <p>Appendix E – Surface Water Assessment Part B 7 p.91</p>	<p>Appendix E (page 91) concludes that <i>'while there could be isolated areas subject to somewhat higher risk of scour compared to the existing situation, the overall risk of rapid and significant geomorphic change in the Isaac River due to the proposed mining activity was low'</i>.</p> <p>Specifically for the Isaac River, the report states (page 80), <i>'Overall, the impact of the development on hydraulic variables would be small enough that a rapid catastrophic geomorphic response would not be expected. However, the channel will slowly adjust to the altered hydraulic conditions through minor changes in bed and floodplain levels or channel widths. The greatest risk to rapid catastrophic geomorphic change is loss of structural integrity and coverage of the channel bank and floodplain vegetation.'</i></p> <p>Further detail should be provided regarding how the risk associated with loss of structural integrity and coverage of the channel bank and floodplain vegetation (to the Isaac River and other impacted watercourses) will be managed.</p>	<ol style="list-style-type: none"> 1. Provide details regarding how the risk associated with loss of structural integrity and coverage of the channel bank and floodplain vegetation (to the Isaac River and other impacted watercourses) will be managed. 2. Monitoring must be carried out annually once impacts commence at defined monitoring points along impacted areas along the Isaac River (reference points) in order to show if any changes occur. 3. If any impacts are recorded on the wetland ecosystem and/or any associated vegetation (e.g. GDEs) and fauna, these impacts must be managed in accordance with the hierarchy: avoidance, minimisation/mitigation, and if necessary, offsetting.
129.	<p>Chapter 4 Assessment of Project Specific Matters 4.4 p. 87</p>	<p>Figure 4-21 shows 'dry now wet' impacts on peripheral areas associated with afflux during flood events.</p> <p>Table 4-18 summarises impacts on neighbouring/private properties in terms of predicted afflux (in metres) during modelled events.</p> <p>The distribution (length and location) of the permanent highwall emplacement indicated on Figure 4–21 is different to the closure highwall mapped on Figure 4-22b. It is unclear in the draft EIS if the changes of the different highwall designs been assessed and conclusions have been drawn for the respective modelling.</p> <p>A comment is made (page 4-91) that there is <i>'no significant change to the existing flood risk to infrastructure for surrounding privately-owned properties. This is based on the knowledge that these properties are already located within existing flood prone areas'</i>. However, it does not acknowledge the new impacts arising from higher flood levels at these properties. Further consideration of these impacts should be provided.</p> <p>The draft EIS did not include a scenario of impacts from flooding should the Olive Downs North levees not be constructed or their</p>	<ol style="list-style-type: none"> 1. Confirm if there are two different highwalls proposed (permanent highwall emplacement indicated on Figure 4–21 and the closure highwall mapped on Figure 4-22b). 2. Finalise the modelling based on the final design(s) (taking into account the length and locations of the two highwalls). 3. Undertake a flood impact assessment on surrounding properties based on the final design of the highwall(s). If several scenarios are proposed, impact assessment must be carried out for each of these. 4. Provide flooding modelling for the Olive Downs site, including impacts of the Olive Downs North levees. 5. Assess all potential impacts and how impacts can be avoided. 6. Follow DES's management hierarchy.

Number	Section	Describe the issue	Suggested solution
		design and location changed (page 4 -88). However, this must be included in the impact assessment.	
130.	<p>Appendix F- Flood Assessment Figures Appendix B</p> <p>Appendix F- Flood Assessment Appendix C</p> <p>Appendix F- Flood Assessment Appendix D</p>	<p>Similar to the abovementioned comment, Appendix F refers to different levees.</p> <p>The permanent, post mining landform levees ('closure highwall' or 'permanent highwall') are drawn differently in the figures for C-02 AEP Flood velocity and extent vs figures Appendix B Developed Case Design Flood Results and Appendix D Impact Assessment – difference maps.</p> <p>It is unclear if the final proposed landform been modelled in the draft EIS and if the conclusions presented in the draft EIS accurately represent the final outcomes.</p> <p>Given that the structure vary on the figures throughout the draft EIS and appendices, the reliability of the modelling results and impact assessment presented in the draft EIS is questionable.</p>	<ol style="list-style-type: none"> 1. The draft EIS, including all appendices, must be updated to reflect the same scenario(s). 2. If the final designs are not known at this stage, the draft EIS must present an impact assessment based on all preferred options/ scenarios. 3. Assess all potential impacts as DES's management hierarchy.
131.	<p>Appendix F- Flood Assessment 14 page 79</p>	<p>Appendix F states '<i>where estimated velocity near highwall emplacements is high, then some structural works may be required on degraded stream to control stream bed level, stabilise stream meanders and protect stream banks</i>'.</p> <p>This comment indicates that the complete impacts of the proposal are not well understood and no management measures are planned.</p> <p>Structural works in the waterway requires major management measures with a large cost and potential environmental impact associated with it. Additional assessment of the options, impacts and management/mitigation measures are required.</p>	<ol style="list-style-type: none"> 1. Include an impact assessment in accordance with DES's management hierarchy in regards to the predicted high velocities near highwalls. 2. Provide appropriate mitigation and management measures with auditable outcomes to the receiving environment (refer to comments made on ecological reference points and ongoing monitoring programs).
132.	<p>Appendix F- Flood Assessment Appendix D</p> <p>Appendix E - Surface Water Assessment Part A (This appendix is referred to in Draft EIS as Hatch 2018)</p>	<p>Maps in Appendices F and D show the areas that were '<i>wet and are not dry</i>' and the areas that were '<i>dry now wet</i>', predicted differences in the floodplain as a result of the project.</p> <p>The draft EIS and the appendices do not address the values associated with these areas (wet now dry / dry now wet) and do not provide the impacts of the project on their environmental values as a result of changes to the floodplain.</p>	<p>Address the values associated with these areas (wet now dry / dry now wet) and provide an impact assessment on their environmental values as a result of changes to the floodplain.</p>

Number	Section	Describe the issue	Suggested solution
133.	Appendix F- Flood Assessment Appendix C	<p>Figure C-02 shows PMF for final landform and Figure A-05 PMF for base case. In some instances, the stream velocity in the base case is reduced by the project but no impact assessment has been provided.</p> <p>In particular the following areas have been identified:</p> <ul style="list-style-type: none"> Northern project area at the base of the 'external levee' near reporting location 12. There is reduced flow as a result of the project. Northwest of monitoring point 4 near the marker for 'Vermont park'. Base case shows high velocity in this area, it is anticipated this would be maintained if not increased as a result of the project however this is not shown on figure C-02. Southern project area, east of 'ML boundary'. The Wilunga project area in base case shows areas subject to flooding near WIL5. These areas do not exist on the 'final landform' C02 modelling results. 	<p>Provide an impact assessment where the stream velocity is reduced in the base case, in particular in the:</p> <ul style="list-style-type: none"> Northern project area at the base of the 'external levee' near reporting location 12. Northwest of monitoring point 4 near the marker for 'Vermont park'. Southern project area, east of 'ML boundary'. The Wilunga project area in base case shows areas subject to flooding near WIL5.
134.	<p>Appendix D – Groundwater Assessment Figure 4-4 p. 33</p> <p>Appendix D – Groundwater Assessment Figure 5-1 page 46</p>	<p>The boundaries of the alluvium in relation to the residual voids (pits ODS 3, 7, 8 and WIL5) are unclear. E.g. Figure 4-4 (page 33) shows the mapped extent of alluvium based on the TEM survey. It is unclear whether alluvium may overlap with the pits' area of excavation, and what impacts this may have.</p> <p>Furthermore, there are an absence of groundwater monitoring bores in MLA700033, particularly:</p> <ul style="list-style-type: none"> in the vicinity of pits ODS7 and ODS8 in the alluvium in between ODS3 and ODS8 between the proposed residual voids (pits ODS 3, 7, 8 and WIL5) and the Isaac River to the east. <p>The proposed residual voids may intersect the alluvium where saturated thickness of alluvium is approximately 10-20m (Figure 5-5).</p> <p>There is a lack of discussion regarding the applicability of the current impact assessment of the residual void in terms of groundwater (alluvium) and surface water (Isaac River) in absence of this groundwater bore data to validate.</p>	<ol style="list-style-type: none"> Confirm the boundary of the alluvium in relation to pits ODS 3, 7, 8 and WIL5, and the anticipated impacts on alluvium flow as a result of the residual voids. For MLA70003, comment on the accuracy of the current impact assessment of the residual void in terms of groundwater (alluvium) and surface water (Isaac River) given the lack of groundwater monitoring bores. Comment on the applicability of the current impact assessment of the residual void in terms of groundwater (alluvium) and surface water (Isaac River) in absence of this data.
135.	Appendix F Flood assessment Appendix C-02	The final design of the permanent highwall emplacement is not clear.	<ol style="list-style-type: none"> Provide clarification to the final design of the permanent highwall emplacement.

Number	Section	Describe the issue	Suggested solution
	Section 2 – Project Description Figure 2-1	Figure in Appendix C-02 shows 2 separate ‘closure highwalls’, which is not consistent with figure 2-1 of the draft EIS that shows one continuous structure.	<ol style="list-style-type: none"> 2. Discuss the appropriateness of the design that has been used for modelling. 3. Carry out the impact assessment based on DES’s managing hierarchy, focusing on avoidance and mitigation measures. 4. Update draft EIS and specialist reports accordingly.
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Number	Section	Describe the issue	Suggested solution
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Number	Section	Describe the issue	Suggested solution
Flooding			
143.	Appendix F- Flood Assessment 15.4 p. 84	<p>Flooding impact on Olive Downs North Coal Mine</p> <p>The flood assessment states that the '<i>Olive Downs North levee (Peabody) could potentially increase by up to 0.5m, 0.7m and 1.6m ... due to the Olive Downs Coking Coal Project. That is, the final design and construction of the Olive Downs North (ODN) levee (when installed) should be undertaken cognisant of the potential flood level increases/afflux, noting however that the predicted flood level increases may be less subject to the installed levee location.</i>'</p> <p>This implies that the activities of the proposed project, particularly the Olive Downs South domain, may result in flood waters overflowing the approved temporary levees of Olive Downs North, and flow into active mining pits of Olive Downs North if the sites levees are not increased.</p> <p>In this regard, the draft EIS does not adequately assess the level of impact the proposal will have on the existing environment, and does not appear to take into account pre-existing approvals, such as the Olive Downs North EA.</p>	<ol style="list-style-type: none"> 1. Provide appropriate level of confidence that the activities of the proposed project, particularly the Olive Downs South domain, will not result in a potential for flood waters to enter into active mining pits of Olive Downs North. 2. Take into account any pre-existing approvals, such as the Olive Downs North EA.
144.	Appendix F- Flood Assessment 12.1 p. 52	<p>Temporary levee buffer from waterway</p> <p>The proposed temporary levees do not appear to have been located in such a way as will make them safe, stable and non-polluting. Rather, they appear to be located directly adjacent the Isaac River.</p> <p>Refer to comments made on appropriate buffer zones to riparian vegetation and wetlands.</p>	<ol style="list-style-type: none"> 1. Provide the minimum distance the temporary levees will be located from the Isaac River. A 500m buffer for the Isaac River may be adequate; however, further justification of this buffer width is required to show that this buffer width is sufficient to maintain riparian habitat, protect against pollution and maintain wetland and stream values. Justification should be provided for any buffer less than 500m. The delineation of the buffer must be described and shown on maps. 2. When determining the minimum distance, ensure that flow, erosion and other appropriate characteristics of the Isaac River are described and accounted for. 3. Ensure that the distance of levees from the Isaac River will be safe, stable and non-polluting.
145.	Appendix F- Flood Assessment 12.2 p. 52	<p>Permanent highwall emplacement buffer from waterway</p> <p>The proposed permanent highwall emplacement does not appear to have been located in such a way as will make them safe, stable and non-polluting. Rather, they appear to be located directly adjacent the Isaac River.</p>	<ol style="list-style-type: none"> 1. Provide the minimum distance the permanent highwall emplacement will be located from the Isaac River. A 500m buffer for the Isaac River may be adequate; however, further justification of this buffer width is required to show that this buffer width is sufficient to maintain riparian habitat, protect against pollution and maintain wetland and stream values. Justification should be provided for any buffer less than 500m. The delineation of the buffer must be described and shown on maps.

Number	Section	Describe the issue	Suggested solution
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Regulated structures			
149.	Section 4 – Assessment of project specific matters 4.4 p.87	The draft EIS in section 4.4 states that ‘ <i>Identification of potential flood protection works for the Project was based on the following key criteria: • 0.1% AEP design event flood protection for open cut pits in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures [‘The Manual’] (DEHP, 2016b)</i> ’ and that ‘ <i>Construction of temporary flood levees (or sufficiently robust waste rock emplacements) (Figures 2-3 to 2-9) is</i>	1. The draft EIS must be updated to be compliant with the requirements of <i>The Manual</i> , i.e. that all levees and waste rock emplacements, which are protecting mining pits from the ingress of flood water, are defined as regulated structures.

Number	Section	Describe the issue	Suggested solution
	Appendix F- Flood Assessment 12.1 p. 52 Appendix F- Flood Assessment 13.4.2 p. 57	<p><i>required to provide immunity for infrastructure and mining operations to flood levels during a 0.1% AEP flood event'. [...] 'The construction of permanent highwall emplacements to the east and south-east of the proposed Olive Downs South domain open cut pits adjacent to the Isaac River floodplain are required to provide immunity to flood levels up to at least a 0.1% AEP flood event'. Furthermore, the draft EIS states that temporary levees constructed will not be engineered but will be constructed as waste drop dumps ('waste rock emplacements'). This approach is not in accordance with requirements of the Manual.</i></p> <p>From this description it can be assumed that the construction of both temporary and permanent structures are necessary to prevent the 0.1% AEP flood events entering the pits during mining operations.</p> <p>Version 5 of <i>The Manual</i> states in section 2.3.1 that 'Where a levee is designed to prevent ingress of non-mine affected flood water into an operational area, or catchment of a containment system, the suitably qualified and experienced person conducting and certifying the assessment and construction would declare that the levee is a regulated structure where the flood modelling shows that the pit would be encroached by a flood event with a probability more likely than or equal to 1:1000 AEP.' Table 7 of <i>The Manual</i> requires that these levees must be constructed to a level which excludes the 0.1% AEP Flood Event from the pits.</p> <p>Therefore both temporary and permanent structures preventing ingress of flood waters into the pits are categorised as regulated structures, and are subject to the engineering design, construction, and certification requirements of <i>The Manual</i>.</p> <p>This is notwithstanding a notional assessment presented in this EIS that classifies the levees as of "low" consequence category.</p> <p>These regulated structures must be designed and constructed by RPEQ engineers – suitably qualified and experienced persons, and that 'Design Plans' and 'As Constructed Plans' for these regulated structures will need to be submitted to the administering authority.</p>	<ol style="list-style-type: none"> 2. All regulated structures must be designed and constructed by RPEQ engineers – suitably qualified and experienced persons. 3. 'Design Plans' and 'As Constructed Plan's for regulated structures must be submitted to the administering authority. 4. Corresponding clarifications and redrafting of content should also be undertaken in sections 12.1 and 13.4.2 of Appendix F.

Contaminated land

s.73 - Irrelevant

Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			
Sewage management			
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Number	Section	Describe the issue	Suggested solution
s.73 - Irrelevant			

- If there is not enough space on this form, please attach additional pages. Please write your full name and the name of the project on any separate pages.
- Send the completed form to the email/postal address/fax number shown in the newspaper public notice. If you require assistance, please telephone 13 QGOV (13 74 68).
- You must provide your comments by the closing date shown in the public notice and on the consultation website.
- For this submission to be 'properly made', it must be signed by each person who makes the submission and state the name and address of each person who makes the submission.

The Department of Environment and Science (DES) provided on 21 June 2018 advice on the preliminary draft EIS. It is noted that many of the comments provided were not incorporated into the draft EIS and associated appendices.

Table 1 below indicates whether the original comments have been addressed by the proponent. Any outstanding comments must be included into a revised and amended draft EIS.

Table 1: Gap analysis of DES' original comments provided on preliminary draft environmental impact statement (EIS) on 21 June 2018 against the draft EIS published on 7 September 2018

Com ment #	Chapter, section & page of preliminary draft EIS	Issue identified in DES' review of the preliminary draft EIS (dated 21 June 2018)	Recommendation provided on the preliminary draft EIS (dated 21 June 2018)	Addressed in published draft EIS (yes/no)
Specific issues				
s.73 - Irrelevant				

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s.73 - Irrelevant				
8	Chapter 2, section 2.5.3, page 2-48	The preliminary draft EIS states that the permanent highwall emplacement will separate the open cut mining pits and voids, from the Isaac River floodplain. To meet the Mined Land Rehabilitation Policy (https://www.ehp.qld.gov.au/management/pdf/mined-land-rehabilitation-policy.pdf), any voids in the floodplain must be rehabilitated to a safe and stable landform that is able to support an approved post-mining land use. It appears that the proposed voids will not sustain an approved post-mining land use and therefore cannot comply with the Mined Land Rehabilitation Policy.	Demonstrate that the proposed highwall emplacement and mining voids will meet the requirements of the Mined Land Rehabilitation Policy. Note: The Mineral and Energy Resources (Financial Provisioning Bill) 2018, if enacted, may have further requirements in relation to the proposed final landform.	No
s.73 - Irrelevant				

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s.73 - Irrelevant				
22	Chapter 3, Section 3.4, page 3-67	Some consideration has been given to final landform flood assessment. However the draft EIS requires specific detail on how the final landform will impact upstream and downstream hydrology, geomorphology and ecological values of the Isaac River over time, including erosion and sediment deposition and areas dry now wet.	Amend the draft EIS to include specific detail on how the final landform will impact upstream and downstream hydrology, geomorphology and ecology of the Isaac River over time, including erosion and sediment deposition and areas dry now wet.	No
23	Chapter 3, Section 3.4.3, page 3-70	This section of the preliminary draft EIS states that the proponent modelled the base case, developed case and post-mining case for flooding. During a meeting between DES, OCG and the proponent on 11 April 2018 it was recommended that the flood modelling include a case where the Olive Downs North site is developed and one where it is not.	Appendix F states that the impact of the Olive Downs North levee, if constructed would be negligible. The draft EIS should clarify and justify if the model considered the flood impacts without the proposed levee at the neighbouring Olive Downs North (ODN) project should ODN not go ahead.	No
24	Chapter 3, Section 3.4.3, page 3-70	Changes to flow velocity as a result of the proposed project are described as "relatively small". However, Figure 3.22 indicates an increase in flow velocity in the developed case to the northern end of Olive Downs South Domain.	The draft EIS should provide further detail assessment on the impact on flow velocity in the Isaac River as a result of the proposed final landform. Include in this information justification for the waste rock dump to the east of the Isaac River (SPMLA2), weighing up operational convenience and impacts on flooding and flow velocity.	No
25	Chapter 3, Section 3.10.3, page 3-112	It is stated that the out-of-pit waste rock emplacements would result in the creation of a number of elevated landforms, which would have elevations of up to 315m AHD.	Section 11.42 of the TOR requires 'For surface mines and projects with activities that disturb the land surface, show how the landform during and post mining will be stable and non-eroding over time (describe how current technologies will be applied)'.	No

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			<p>The preliminary draft EIS considers impact to visual amenity of out of pit waste rock emplacements but require further assessment of:</p> <ul style="list-style-type: none"> Slopes – for example, does the proposed slope of 1V:8H support the proposed post mining land use. Erosion potential – designed drainage from mined landforms is a fundamental requirement for ensuring long term landform stability and protection of water quality. 	
26	Chapter 3, Section 3.10.3, page 3-114	Table 3-29 Proposed post mining land suitability classes for final landform states 'unsuitable for grazing and cropping'.	<p>The Queensland Government Mined Land Rehabilitation Policy states that 'areas that are not rehabilitated to sustain a post mining land use may require additional on-going management. In these cases any residual risk payment to the administering authority will include provision for this ongoing management'.</p> <p>Provide further information on:</p> <ul style="list-style-type: none"> the proposed final land use(s) for voids consideration of residual risk payment to deal with ongoing management issues post mining. 	No

s.73 - Irrelevant

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<p>s.73 - Irrelevant</p> <p>Published on DES Disclosure Log RTI Act 2009</p>				

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				rehabilitation domains.
30	Chapter 4	Section 11.47 of the TOR requires the draft EIS to <i>take into account proposed avoidance and/or mitigation measures. The assessment should include but not be limited to the following key elements...</i> Section 11.50 of the TOR requires <i>...success criteria in relation to natural values that would be used to measure progress [...]</i> .	The EIS needs to address the requirements of section 11.47 and 11.50 of the TOR, including by describing how the values of the floodplain have been accounted for pre and post mining, including the values, potential impacts and proposed management.	No
31	Chapter 4, section 4.1.5, pages 4-3 to 4-8	Table 4-2 indicates that there will be retained infrastructure, however there is no mention of what this infrastructure will be.	Indicate where the retained infrastructure is listed within this section or demonstrate what infrastructure will be retained and the reason for it.	No
32	Chapter 4, section 4.1.5, pages 4-3 to 4-8	Table 4-2 indicates that the void rehabilitation goal is to be a stable, sustainable land use. However, the rehabilitation objectives do not evidence the voids in being stable and sustainable land uses, as reflected in the issue below (Chapter 4, section 4.3.4 page 4-19), e.g. needing to fence the area off from humans and livestock.	Demonstrate that the final land form will be a stable and sustainable land use in accordance with the Mined Land Rehabilitation Policy.	No
33	Chapter 4, section 4.2.3, page 4-9	The Queensland Government Mined Land Rehabilitation Policy states that "for all new site-specific mines, the administering authority will not approve a PRCP that includes a void situated wholly or partially in a floodplain unless the void will be rehabilitated to a safe and stable landform that is able to sustain an approved post mining land use that does not cause environmental harm." The retention of voids within the floodplain is contrary to this policy. Also, the creation of a 'significant landscape feature' [permanent levee] to change the floodplain raises some serious issues which must be fully addressed in the draft EIS.	The following issues should be addressed in the draft EIS including, but are not limited to: <ul style="list-style-type: none"> • Detail how the permanent levee will be engineered to resist erosion from i) incident rainfall and runoff, and ii) floodwaters from the Isaac River. • Detail the long-term post mining management options for the permanent levee and how will this impact the long-term stability of the structure. • Detail what are the long-term post mining maintenance costs for the permanent levee. • Detail what residual risks have been 	No

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			<p>contemplated for the permanent levee.</p> <ul style="list-style-type: none"> Clearly detail the modelling of the long-term water quality of the voids, including what post mining uses this water may have, if any; and what are the environmental risks and potential impacts. 	
34	Chapter 4, section 4.2.3, pages 4-9 to 4-16	There are four voids pictured across figures 4-2 to 4-3. Table 4-3 indicates that ODS7 and ODS8 are not two separate voids, but connect as one; however, it has not been explained how this will occur.	<p>Demonstrate that all voids have been reduced on site as much as possible through, for example, exploration of alternative mine operations plan.</p> <p>Demonstrate the connection between ODS7 and ODS8 void/s, including the final water level within this void/s.</p>	Not provided: clear mine development /rehabilitation layout and costing options to demonstrate that the void areas have been reduced as far as possible and to justify the residual voids
35	Chapter 4, section 4.2.3, pages 4-9 to 4-16	Figure 4-4b does not provide the distance between the void and the Isaac River or indicates any potential for the Isaac River to leech into the void.	Clearly demonstrate that the void will not have any draw down effects from the Isaac River leaching in through the alluvium and tertiary clays in the ground. Amend figure 4-4b to illustrate the distance from the Isaac River to the void.	No The draft EIS does mention potential leaching from the void.
36	Chapter 4, figures 4-5a and 4-5b	The TOR section 11.57 requires final topography to be included in the draft EIS. Contours are shown on the figures without any numbers. The scale, relative change and areas of disturbance (e.g. waste, dams, excavations) are unclear. Only the final voids are shown. Timing is not addressed in the table.	<p>To satisfy the requirements of the TOR provide information required by section 11.57, including but not limited to:</p> <ul style="list-style-type: none"> Add contour values to the figures so that the final topography in comparison to pre-mining is evident. 	No

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			<ul style="list-style-type: none"> • Show on the figure what areas will be able to be used for the proposed final land use and what areas will be 'non-use' management areas. • Show the areas of disturbance and label (e.g. waste, dams, excavations). • Address timing of rehabilitation in the table. 	
37	Chapter 4, section 4.2.4, page 4-17	In reference to TOR section 11.59: the draft EIS does not adequately address how the proposed permanent levees (waste rock dumps) <i>will be capable of being managed and rehabilitated to achieve acceptable land use capabilities/suitability, to be safe, stable, non-polluting and self-sustaining.</i>	Amend section 4-17 to address levees/waste rock dumps and how they will satisfy criteria as per TOR section 11.59.	No
38	Chapter 4, section 4.2.4 page 4-17	Additional investigations have been recommended by GeoTeck, however these investigations are not listed in this chapter.	Provide a list of recommended investigations to be undertaken, starting in 2018, and justifications for why the additional investigations are needed.	No
39	Chapter 4, section 4.2.5 page 4-17	The existing land use listed, being low intensity cattle grazing on flatter areas and low slopes, will not be reflected in the post mining land use as the voids will not allow for low intensity cattle grazing of flatter areas and low slopes.	Demonstrate that the post mining land use will reflect the existing land use, and be able to wholly allow the future land owner to continue using all of the lands.	Partially
S.73 - Irrelevant				

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s.73 - Irrelevant				
General issues				
s.73 - Irrelevant				

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s.73 - Irrelevant				

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3 May 2019

Mr Barry Broe
Coordinator-General
Department of State Development, Manufacturing,
Infrastructure and Planning
PO Box 15517
CITY EAST QLD 4002

Dear Mr Broe

Thank you for the opportunity to review the environmental impact statement (EIS) for the proposed Olive Downs Coking Coal Project. Please find attached a consolidated submission from the Department of Environment and Science (the department) in relation to matters that fall within our jurisdiction, including a number of proposed Environmental Authority (EA) conditions for the project.

You will note that the department has not provided proposed conditions for those issues where insufficient information has been provided as part of the EIS, or the information provided has not sufficiently dealt with previous submissions made by the department.

As previously stated, the proposal by Pembroke Resources to include final voids on the Isaac River Floodplain remains an issue for the department.

The department does acknowledge the work done by Pembroke in their document titled: Section 24 - **Consideration of Mined Land Rehabilitation Policy**, provided as additional information to the EIS. Upon review, the document appears to focus on the applicability of the Mined Land Rehabilitation Policy to the proposed project from a timing perspective, rather than clearly articulating how the presence of final voids and waste rock emplacements are an acceptable rehabilitation strategy for mined land located within the Isaac River floodplain.

The department has undertaken a thorough, merit-based assessment of the EIS and supporting material. This assessment indicates that the proposal by Pembroke Resources to modify the Isaac River floodplain by constructing permanent waste rock emplacements and leaving final voids does not provide sufficient information or justification to demonstrate that the proposed landform and associated rehabilitation strategy meets the government's expectations and best practice environmental management.

As a result, the department considers the EA conditions, proposed by Pembroke Resources relating to the rehabilitation of proposed final voids and permanent waste rock emplacements on the Isaac River Floodplain are unacceptable.

Should you have any further enquiries, please contact Mr Chris Loveday of the department on telephone (07) 3330 5630.

Yours sincerely

s.73 - Irrelevant

Christopher Loveday
Director – Operational Support

Introduction

On 10 April 2019, the Office of the Coordinator-General (OCG) provided the Department of Environment and Science (DES) with a revised draft environmental impact statement (EIS) for the Olive Downs Project. On 12 April 2019 the OCG requested DES to provide stated conditions for a site-specific draft environmental authority (EA) to be included in the Coordinator-General's evaluation report (CGER) for a resource activity 13 – Mining Black Coal and ancillary activities, namely:

- ERA 8 – Chemical Storage
- ERA 31 – Mineral Processing
- ERA 63 – Sewage Treatment.

DES considered the draft EIS, the revised EIS, the proponent's response to DES' submission on the draft EIS (Appendix A), and the proponent's proposed conditions (Appendix B of the revised draft EIS) in preparing the advice below.

DES determined that the draft EIS and revised draft EIS, together with the proponent's response, did not adequately address many of the issues identified in DES submission dated 10 October 2018. Issues were either not sufficiently addressed or only minimal new information was provided. In particular, the proponent did not sufficiently address the following critical matters:

1. The proposal to modify the Isaac River floodplain using waste rock emplacements as landforms is not only considered to have a high residual risk, but does not represent best practice environmental management for final voids in floodplain areas.

s.73 - Irrelevant

The information provided below is structured as follows:

- Where sufficient information is available, recommended conditions for the draft EA have been prepared.
- Where insufficient information was provided, the information required to prepare draft EA conditions is outlined.

**Recommended conditions and information required to prepare an
environmental authority under the *Environmental Protection Act 1994***

Schedule A: General	
Condition number	Condition
s.73 - Irrelevant	

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Schedule B: Air	
Condition number	Condition

s.73 - Irrelevant

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Schedule B: Air

s.73 - Irrelevant

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Schedule B: Air

s.73 - Irrelevant

Schedule C: Waste management**Condition
number****Condition**

s.73 - Irrelevant

Schedule C: Waste management

s.73 - Irrelevant

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Schedule C: Waste management

s.73 - Irrelevant

Schedule D: Noise**Condition
number****Condition**

s.73 - Irrelevant

Schedule D: Noise

s.73 - Irrelevant

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Table D1: Noise Limits

Noise level dB(A) measured as:	Noise measured at a nuisance sensitive or commercial place					
	Monday to Saturday			Sunday and Public Holidays		
	7am – 6pm	6pm – 10pm	10pm – 7am	9am – 6pm	6pm – 10pm	10pm – 9am
s.73 - Irrelevant						
s.73 - Irrelevant						
s.73 - Irrelevant						

Table D2: Blasting Noise Limits

Blasting noise limits	Sensitive or commercial place blasting noise limits	
	7am to 6pm	6pm to 7am
s.73 - Irrelevant		

	s.73 - Irrelevant	
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Schedule E: Groundwater	
Condition number	Condition
s.73 - Irrelevant	

Schedule E: Groundwater

s.73 - Irrelevant

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Schedule E: Groundwater

s.73 - Irrelevant

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Schedule E: Groundwater	
	s.73 - Irrelevant

Table E1
Groundwater Monitoring Locations and Frequency

Monitoring point ¹	Location		Surface RL (m AHD) ²	Monitoring frequency	Screen depth (m)	Target aquifer
	Easting [#]	Northing [#]				
s.73 - Irrelevant						

Monitoring point ¹	Location		Surface RL (m AHD) ²	Monitoring frequency	Screen depth (m)	Target aquifer
	Easting [#]	Northing [#]				

s.73 - Irrelevant

s.73 - Irrelevant

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Table E2
Groundwater Quality Limits

Monitoring Bore	pH (ph units)	EC (µS/cm)	Aluminium (mg/L)	Arsenic (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Lead (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
s.73 - Irrelevant															

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Monitoring Bore	pH (ph units)	EC (µS/cm)	Aluminium (mg/L)	Arsenic (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Lead (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
s.73 - Irrelevant															

s.73 - Irrelevant

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Table E3
Groundwater Level Monitoring

Monitoring points	Location		Level trigger threshold&
	Easting#	Northing#	
s.73 - Irrelevant			

s.73 - Irrelevant

Schedule F: Water	
Condition number	Condition
s.73 - Irrelevant	

Table F1
Mine Affected Water Release Points, Sources and Receiving Waters

Release point &	Easting#	Northing#	Mine affected water source and location	Monitoring point	Receiving waters description
s.73 - Irrelevant					
s.73 - Irrelevant					
s.73 - Irrelevant					

Table F2
Mine Affected Water Release Limits

Quality characteristic	Release limits ¹	Monitoring frequency
s.73 - Irrelevant		
s.73 - Irrelevant		
s.73 - Irrelevant		

Table F3

Release Contaminant Trigger Investigation Levels, Potential Contaminants

Quality characteristic ^{1,2}	Trigger levels (µg/L)	Comment on trigger level ^{3,4}	Monitoring frequency
s.73 - Irrelevant			

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File A

Mine Affected Water Release during Flow Events

Receiving water	Release points (RP) ¹	Gauging station	Gauging station easting [#]	Gauging station northing [#]	Receiving water flow recording frequency	Receiving water flow criteria for discharge (m ³ /s)	Maximum release rate (for all combined RP flows)	Electrical conductivity release limits ²
s.73 - Irrelevant						s.73 - Irrelevant		

s.73 - Irrelevant

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s.73 - Irrelevant

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s.73 - Irrelevant

Table F5

Receiving Waters Contaminant Trigger Levels

Quality characteristic	Trigger level	Monitoring frequency
s.73 - Irrelevant		
Total Suspended Solids (mg/L)	s.73 - Irrelevant	s.73 - Irrelevant
Turbidity		
Sulfate (SO ₄ ²⁻) (mg/L)		

s.73 - Irrelevant

Table F6

Receiving Water Upstream Background Sites and Downstream Monitoring Points

Monitoring points ¹	Receiving waters location description	Easting #	Northing [#]
Upstream background monitoring points			
s.73 - Irrelevant			
s.73 - Irrelevant			
Downstream monitoring points			
s.73 - Irrelevant			
s.73 - Irrelevant			

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s.73 - Irrelevant

Table F7
Water Storage Monitoring

Water Storage Description ¹	Easting [#]	Northing [#]	Monitoring Location	Frequency of Monitoring
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s.73 - Irrelevant

s.73 - Irrelevant

Schedule G: Sewage treatment	
Condition number	Condition
s.73 - Irrelevant	

Table G1
Contaminant Release Limits to Land

Release point	Quality characteristic (units)	Minimum	Median	Maximum	Minimum frequency
RP1 ¹	Irrigation volume (ML)			40	Annually
RP1 ¹	Total nitrogen (mg/L as nitrogen)			50	Monthly
RP1 ¹	Total phosphorus (mg/L as phosphorus)			16	Monthly
RP1 ¹	pH (pH units)	6.0		9.0	Monthly
RP1 ¹	Electrical conductivity (dS/m)			1.6	Monthly
RP1 ¹	Total dissolved salts (mg/L)			1000	Monthly
RP1 ¹	<i>E. coli</i> (cfu/100 mL)		1000	1500	Monthly

1. Release Point 1 = sampling point being released from the enclosed wet weather storage

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Schedule H: Land and rehabilitation

Land and rehabilitation

The sustainability and land use associated with the proposed rehabilitated landform, which includes a number of voids, is dependent upon the existence of the waste rock emplacements. The merit-based assessment of the draft EIS and supporting material, undertaken by DES indicates that the proposal to modify the Isaac River floodplain using waste rock emplacements as landforms is high risk, and does not represent best practice environmental management for floodplain areas. The current proposal for the mine plan and rehabilitation does not demonstrate how the ecological and geo-hydrological values and functions of the floodplain were considered. In addition, it is not evident that the final proposed landform and rehabilitation strategies apply a holistic approach taking into account the life of mine activities and the entire area disturbed by mining activity. As a result DES considers the conditions, as proposed by the proponent relating to mine landform and rehabilitation, are unacceptable.

Recommendation

The proponent must provide information that identifies the ecological and geo-hydrological values and functions of the Isaac River floodplain affected by the mine (may include areas off the mine site demonstrates how the mine landforms (and final landforms) will minimise impacts on these values and functions. Also that the associated rehabilitation strategy meets the government's expectations of best practice environmental management regarding the location of voids and permanent waste rock emplacements within the Isaac River floodplain. This includes providing evidence that the proposed final landform is the most appropriate landform for the Isaac River floodplain and can be progressively delivered.

It is recommended that the proponent develop and provide a progressive mine landform and rehabilitation plan that shows how and where mining (and other related environmentally relevant activities) will be carried out on land in a way that minimises impacts on the floodplain and maximises the progressive rehabilitation of land to be stable¹. The plan must also provide for the condition and land use suitability to which land must be rehabilitated, before the environmental authority can be surrendered.

The progressive rehabilitation plan must

- a) propose a rehabilitation programme in tabular format outlining the goals and timing of the progressive rehabilitation to achieve the agreed post mining land use and
- b) outline the information, investigations and assumptions used to develop the rehabilitation programme and derive the outcomes.

Progressive rehabilitation plan

In addressing b) above, the progressive rehabilitation plan must:

¹ For the purposes of this plan, stable means safe, stable, non-polluting and self-sustaining

- Describe each resource tenure, including the area of each tenure.
- Describe the relevant activities to which the application relates, the likely duration of the relevant activities, and how and where the activities will be carried out (including maps).
- Identify what the final land use of all land within the resources tenures will be and how rehabilitation outcomes will be achieved progressively throughout the life of the mine.
- Detail the consultation undertaken by the proponent in developing the progressive rehabilitation plan and how the proponent will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan.
- State how the post mining land uses identified by the plan are consistent with the outcome of consultation with the community and any strategies or plans for the land of a local government, the State or the Commonwealth.
- For each proposed post-mining land use for land, state the proposed methods or techniques for rehabilitating the land to be stable in a way that supports the rehabilitation milestones as proposed in the programme.
- Identify the risks of stable land described as a post mining land use not being achieved, and how the applicant intends to manage or minimise the risks.

The progressive rehabilitation plan must also:

- Demonstrate how the amount of land disturbed at any one time, and the residual loss of land and water bodies with ecological or productive value, will be minimised.
- Demonstrate that the final landform re-establishes a functional hydrologic system that prevents erosion, maximises connectivity, prevents upstream and downstream surface and groundwater contamination in the long term and is consistent with the surrounding natural topography and landscape. Include drawings, figures and maps to illustrate the final landform.
- Demonstrate that each post mining land use is appropriate for the region in which the land is located by stating that the use will be
 - compatible with the use of land in the surrounding region
 - viable having regard to the use of land in the surrounding region and
 - sustainable by not requiring significantly greater management in order to maintain the use in the long-term, compared to the management of land in the surrounding region.

Describe how achievement of the rehabilitation milestones will be monitored, audited and reported, and how corrective actions would be managed.

Rehabilitation programme

The rehabilitation programme to be included in the rehabilitation plan must include the following:

- For each post mining land use area provide:
 - a description of the area (name, size in hectares, disturbance type (hardstand, stockpile, pit etc.), tenure, reference to associated map
 - a map of the area
 - the date land becomes available for rehabilitation or closure
 - the milestones that will be required for rehabilitated areas to be stable
 - milestone criteria
 - completion dates for each milestone.
- For areas to be rehabilitated, a milestone must be developed for each significant event or step necessary to rehabilitate the land to be stable.

- Milestone criteria must demonstrate that the associated milestone has been successfully completed, and incorporate parameters that are measurable for achieving the milestone². Milestones must be written in a manner that delivers on 'SMART principles'³.
- The final milestone for each rehabilitation or closure area must include milestone criteria for the area to either achieve a stable condition (for rehabilitated areas) or minimise the risks to the environmental values and ensure the area is enduring (for closure areas).
- Maps showing the final rehabilitation outcomes for each area must be provided as part of the rehabilitation programme.

Matters of state environmental significance

Notwithstanding the matters outlined above, the proponent's response to the DES submission in the revised draft EIS did not demonstrate that the 'avoid, mitigate, offset' obligations under the Offsets Policy had been met.

Pursuant section 14 of the *Environmental Offsets Act 2014*, "an administering agency may impose an offset condition only if satisfied – (b) all reasonable on-site mitigation measures for the prescribed activity have been, or will be, undertaken."

An 'on-site mitigation measure for a prescribed activity' is defined under the Environmental Offsets Act as "a measure undertaken on land to which the prescribed activity relates, to avoid or minimise significant adverse impacts on prescribed environmental matters".

The revised draft EIS and response to the DES submission did not provide appropriate and effective on-site mitigation measures, and has not provided sufficient evidence that the prescribed activity avoids or mitigates impacts. Hence, DES is not able to recommend offset conditions.

Recommendation

The EIS must provide sufficient evidence that the prescribed activity avoids or mitigates impacts on matters of state environmental significance before potential offset obligations can be assessed by DES. An assessment of the proposed disturbance footprint on matters of state environmental significance based on data derived from the draft EIS is provided in **Appendix 1** of this document.

² Milestone criteria are necessary to ensure progressive rehabilitation and closure activities are completed, and are not the same as completion criteria (which demonstrate the expectations at relinquishment).

³ SMART principles are:

- **Specific** – it is clear what must be done
- **Measurable** – it must be possible to know when it has been achieved
- **Achievable** – it is capable of being achieved
- **Reasonable/relevant** – there is a clear connection between the milestone and the desired outcomes. The requirement is reasonable
- **Time specific** – it is clear when the milestone must be completed by.

Schedule I: Watercourse diversions	
I1	<p>Permanent watercourse diversions</p> <p>Permanent watercourse diversions must be designed and constructed to:</p> <ol style="list-style-type: none"> 1) incorporate natural features (including geomorphic and vegetation) present at the location of the diversion 2) maintain the pre-existing hydrologic characteristics of surface water and groundwater systems for the area in which the watercourse diversion is located 3) maintain the hydraulic characteristics of the permanent watercourse diversion that are equivalent to other local watercourses and are suitable for the area in which the diversion is located without using artificial structures that require on-going maintenance 4) maintain sediment transport and water quality regimes that allow the diversion to be self-sustaining, while minimising any impacts to upstream and downstream water quality, geomorphology or vegetation 5) maintain equilibrium and functionality in all substrate conditions at the location of the diversion 6) allow the free passage of fish both upstream and downstream in a safe manner.
I2	<p>Design plan – all diversions</p> <p>A certified Design Plan that achieves Condition I1 for permanent watercourse diversions must be submitted to the administering authority at least 10 business days before commencing construction of the diversion.</p>
I3	<p>The certified design plan for any temporary or permanent watercourse diversion must be consistent with the functional design/s that formed a part of the application documents for this authority.</p>
I4	<p>Construction and operation – all diversions</p> <p>A certified set of 'as constructed' drawings and specifications must be submitted to the administering authority within 60 business days from the completion of construction of the temporary or permanent watercourse diversion, or re-establishment of the pre-existing watercourse. These drawings and specifications must state:</p> <ol style="list-style-type: none"> 1) that the 'as constructed' drawings and specifications meet the original intent of the design plan for the watercourse diversion 2) construction of the watercourse diversion is in accordance with the design plan.
I5	<p>Register – all diversions</p> <p>The details of watercourse diversions planned and constructed under an environmental authority must be accurately recorded on the Register of Watercourse Diversions kept by the holder of this environmental authority. An electronic copy must be provided to the administering authority on request.</p>

Schedule J: Regulated structures	
Condition number	Condition
J1	<p>Assessment of consequence category</p> <p>The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>, at the following times:</p> <ol style="list-style-type: none"> 1) prior to the design and construction of the structure, if it is not an existing structure 2) prior to any change in its purpose or the nature of its stored contents.
J2	<p>A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.</p>
J3	<p>Certification must be provided by the suitably experienced and qualified person who undertook the assessment, in the form set out in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>.</p>
J4	<p>Design and construction of a regulated structure</p> <p>All regulated structures must be designed by, and constructed under the supervision of, a suitably experienced and qualified person in accordance with the requirements of the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>.</p>
J5	<p>Construction of a regulated structure is prohibited unless:</p> <ol style="list-style-type: none"> 1) the holder of this environmental authority has submitted a consequence category assessment report and certification to the administering authority 2) certification for the design, design plan and the associated operating procedures has been certified by a suitably experienced and qualified person in compliance with the relevant condition of this authority.
J6	<p>Certification must be provided by the suitably experienced and qualified person who oversees the preparation of the design plan in the form set out in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>, and must be recorded in the Register of Regulated Structures.</p>
J7	<p>Regulated structures must:</p> <ol style="list-style-type: none"> 1) be designed and constructed in compliance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> 2) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: <ol style="list-style-type: none"> a) floodwaters from entering the regulated dam from any watercourse or drainage line b) wall failure due to erosion by floodwaters arising from any watercourse or drainage line 3) have the floor and sides of the dam designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants

	through either the floor or sides of the dam during the operational life of the dam and for any period of decommissioning and rehabilitation of the dam.
J8	<p>Certification by the suitably qualified experienced and qualified person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that:</p> <ol style="list-style-type: none"> 1) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure 2) construction of the regulated structure is in accordance with the design plan.
J9	<p>All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure:</p> <ol style="list-style-type: none"> 1) for existing structures that are regulated structures, within ten business days of this condition taking effect 2) prior to the operation of the new regulated structure 3) if the emergency action plan is amended, within five business days of it being amended.
J10	<p>Operation of a regulated structure</p> <p>Operation of a regulated structure, except for an existing structure, is prohibited unless the holder of this environmental authority has submitted to the administering authority in respect of regulated structure, all of the following:</p> <ol style="list-style-type: none"> 1) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with Condition J4 2) a set of 'as constructed' drawings and specifications 3) certification of the 'as constructed drawings and specifications' in accordance with Condition J6 4) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan 5) the requirements of this authority relating to the construction of the regulated structure have been met 6) the holder of this environmental authority has entered the details required under this authority, into a Register of Regulated Structures 7) there is a current operational plan for the regulated structure.
J11	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
J12	<p>Mandatory reporting level</p> <p>Conditions J13 to J16 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.</p>
J13	The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.
J14	The holder of this environmental authority must, as soon as practical and within forty-eight hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.

J15	The holder of this environmental authority must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.
J16	The holder of this environmental authority must record any changes to the MRL in the Register of Regulated Structures.
J17	Design storage allowance The holder of this environmental authority must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system, taken prior to 1 July of each year.
J18	By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).
J19	The holder of this environmental authority must, as soon as possible and within forty eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
J20	The holder of this environmental authority must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.
J21	Annual inspection report Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
J22	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably experienced and qualified person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
J23	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
J24	The holder of this environmental authority must within twenty business days of receipt of the annual inspection report, provide to the administering authority: 1) the recommendations section of the annual inspection report 2) if applicable, any actions being taken in response to those recommendations 3) if, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the holder of this environmental authority, provide this to the administering authority within ten business days of receipt of the request.
J25	The holder of this environmental authority must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited

	to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.
J26	Register of regulated structures A Register of Regulated Structures must be established and maintained by the holder of this environmental authority for each regulated structure:
J27	The holder of this environmental authority must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.
J28	The holder of this environmental authority must make a final entry of the required information in the Register of Regulated Structures once compliance with Condition J10 has been achieved.
J29	The holder of this environmental authority must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
J30	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this environmental authority, or their delegate, as being accurate and correct.
J31	The holder of this environmental authority must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.

Definitions

Words and phrases used throughout this document are defined below. Where a definition for a term used in this document is not provided within this environmental authority, but is provided in the *Environmental Protection Act 1994* or subordinate legislation, the definition in the *Environmental Protection Act 1994* or subordinate legislation must be used.

‘acid mine drainage’ means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata are disturbed and exposed to oxygen and moisture.

‘administering authority’ is the agency or department that administers the environmental authority provisions under the *Environmental Protection Act 1994*.

‘affected person’ is someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life can be put at risk due to dwellings or workplaces being in the path of a dam break flood.

‘airblast overpressure’ means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dBL).

‘annual exceedance probability or AEP’ the probability that at least one event in excess of a particular magnitude will occur in any given year.

‘annual inspection report’ means an assessment prepared by a ‘suitably qualified and experienced person’ containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan);

- 1) against recommendations contained in previous annual inspections reports;

- 2) against recognised dam safety deficiency indicators;
- 3) for changes in circumstances potentially leading to a change in consequence category;
- 4) for conformance with the conditions of this authority;
- 5) for conformance with the 'as constructed' drawings;
- 6) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems);
- 7) for evidence of conformance with the current operational plan.

'appropriately qualified person' means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.

'assessed or assessment' by a 'suitably qualified and experienced person' in relation to a consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

- 1) exactly what has been assessed and the precise nature of that determination;
- 2) the relevant legislative, regulatory and technical criteria on which the assessment has been based;
- 3) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- 4) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

'associated works' in relation to a dam, means:

- 1) operations of any kind and all things constructed, erected or installed for that dam; and
- 2) any land used for those operations.

'background', with reference to the water schedule means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

'blasting' means the use of explosive materials to fracture:

- 1) rock, coal and other minerals for later recovery; or
- 2) structural components or other items to facilitate removal from a site or for reuse.

'certified', with respect to watercourse diversions, means assessed and approved by a suitably qualified and experienced person. In relation to 'as constructed' drawings and specifications, the certification must be by the suitably qualified person who supervised the construction of the watercourse diversion, or re-establishment of the watercourse.

'certification' means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

'certification', 'certifying' or 'certified' by an appropriately qualified and experienced person in relation to a design plan or an annual report regarding dams/structures, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

- 1) exactly what is being certified and the precise nature of that certification;
- 2) the relevant legislative, regulatory and technical criteria on which the certification has been based;
- 3) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- 4) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

‘chemical’ means:

- 1) an agricultural chemical product or veterinary chemical product within the meaning of the *Agricultural and Veterinary Chemicals Code Act 1994* (Commonwealth); or
- 2) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council; or
- 3) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997;
- 4) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the
- 5) Australian Health Ministers’ Advisory Council and published by the Commonwealth; or
- 6) any substance used as, or intended for use as:
 - a. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
 - b. a surface active agent, including, for example, soap or related detergent; or
 - c. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
 - d. a fertiliser for agricultural, horticultural or garden use; or
 - e. a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
 - f. manufacture of plastic or synthetic rubber.

‘commercial place’ means a workplace used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees’ accommodation or public roads.

‘consequence’ in relation to a structure as defined, means the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting or controlling flowable substances.

‘consequence category’ means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*.

‘Consecutive sampling occasion’ means consecutive sequential sampling occasions regardless of frequency.

‘construction’ or **‘constructed’** in relation to a regulated structure includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.

‘dam’ means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

‘dam crest volume’ means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).

‘design plan’ is a document smtting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

‘design plan’ in relation to a watercourse diversion is a document that contains the design, operation, monitoring and revegetation criteria of a watercourse diversion that addresses the outcomes stated in conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

- 1) required information under a functional design
- 2) the location, function and description of geomorphic and riparian vegetation features within the proposed watercourse diversion
- 3) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion
- 4) a revegetation and vegetation management plan (a revegetation plan) for the diversion
- 5) engineering drawings depicting the physical attributes and dimensions of the diversion
- 6) (if relevant) the staged development of a permanent watercourse diversion including the proposed use of temporary watercourse diversions with identified lifespans
- 7) all investigation and other reports relied on by the design
- 8) plans and specifications sufficient to complete construction and revegetation in accordance with the design.

‘design storage allowance or DSA’ means an available volume, estimated in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that manual.

‘designer’ for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.

‘emergency action plan’ means documentation forming part of the operational plan held by the holder of this environmental authority or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact information.

‘existing structure’ means a structure that prior to 18 September 2014 meets any or both of the following, a structure:

- 1) with a design that is in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* and that is considerably in progress;
- 2) that is under considerable construction or that is constructed.

‘extreme storm storage’ means a storm storage allowance determined in accordance with the criteria in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority.

‘flowable substance’ means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

‘hazard category’ means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in ‘Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)’.

‘holder of this environmental authority’ means:

- 1) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or

- 2) where this document is a development approval, any person who is the registered operator for that development approval.

‘hydraulic performance’ means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

‘infrastructure’ means water storage dams, levees, roads and tracks, buildings and other structures built for the purpose of the mining activity.

‘leachate’ means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

‘low consequence dam’ means any dam that is not a high or significant consequence category as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures*.

Median means the middle value, where half the data are smaller and half the data are larger. If the number of samples is even, the median is the arithmetic average of the two middle values.

‘m’ means metres.

‘mandatory reporting level or MRL’ means a warning and reporting level determined in accordance with the criteria in the *Manual for assessing consequence categories and hydraulic performance of structures* published by the administering authority.

‘manual’ means the *Manual for assessing consequence categories and hydraulic performance of structures* published by the administering authority.

‘measures’ includes any measures to prevent or minimise environmental impacts of the mining activity such as bunds, silt fences, diversion drains, capping, and containment systems.

‘mine affected water’:

- 1) means the following types of water:
 - a) pit water, tailings dam water, processing plant water;
 - b) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity;
 - c) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
 - d) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
 - e) groundwater from the mine’s dewatering activities;
 - f) a mix of mine affected water (under any of paragraphs i)-v) and other water.
- 2) does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:
 - a) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or

- b) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:
 - i) areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;
 - ii) evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or \
 - iii) both.

'mining waste' means waste rock, spoil, overburden and interburden.

'modification or modifying' (see definition of 'construction').

'NATA' means National Association of Testing Authorities.

'natural flow' means the flow of water through waters caused by nature.

'non polluting' means having no adverse impacts upon the receiving environment.

'operational plan' includes:

- 1) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA);
- 2) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

'peak particle velocity (ppv)' means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).

'protected area' means – a protected area under the *Nature Conservation Act 1992*; or

- 1) a marine park under the *Marine Parks Act 1992*; or
- 2) a World Heritage Area.

'permanent watercourse diversion' is a man-made structure that incorporates the geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained according to an engineering standard that ultimately achieves a self-sustaining watercourse able to function without features or characteristics that rely on ongoing maintenance or that impose a financial or other burden on the proponent, government or the community.

'register of regulated structure' includes:

- 1) date of entry in the register;
- 2) name of the structure, its purpose and intended/actual contents;
- 3) the consequence category of the dam as assessed using the '*Manual for assessing consequence categories and hydraulic performance of structures*';
- 4) dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;
- 5) name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
- 6) for the regulated dam, other than in relation to any levees –
- 7) the dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
 - a) coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area;
 - b) dam crest volume (megalitres);

- c) spillway crest level (metres AHD).
 - d) maximum operating level (metres AHD); vi) storage rating table of stored volume versus level (metres AHD);
 - e) design storage allowance (megalitres) and associated level of the dam (metres AHD);
 - f) mandatory reporting level (metres AHD);
- 8) the design plan title and reference relevant to the dam;
 - 9) the date construction was certified as compliant with the design plan;
 - 10) the name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;
 - 11) details of the composition and construction of any liner;
 - 12) the system for the detection of any leakage through the floor and sides of the dam;
 - 13) dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;
 - 14) dates when recommendations and actions arising from the annual inspection were provided to the administering authority;
 - 15) dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

‘receiving environment’ in relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to):

- 1) a watercourse;
- 2) groundwater; and
- 3) an area of land that is not specified in this environmental authority.

The term does not include land that is specified in Authorised Activities of this environmental authority.

‘receiving waters’ means the waters into which this environmental authority authorises releases of mine affected water.

‘Receiving environment monitoring program’ means a monitoring program designed to monitor and assess the potential impacts of controlled and/or uncontrolled releases of contaminants to the environment from the activity.

‘regulated structure’ means any structure in the significant or high consequence category as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures* published by the administering authority. A regulated structure does not include:

- 1) a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container;
- 2) a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities;
- 3) a flare pit.

‘rehabilitation’ the process of reshaping and revegetating land to restore it to a stable landform.

‘release event’ means a surface water discharge from mine affected water storages or contaminated areas on the licensed place meaning the mining activities carried out at the mining tenements detailed in Figure 1 – Site map, domains and groundwater monitoring locations of this environmental authority.

‘resample’ means the resampling that is required to take place within 10 business days of the exceedance of a sampling occasion to verify the result.

‘residual drilling material’ means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

‘RL’ means reduced level, relative to mean sea level as distinct from depths to water.

‘representative’ means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.

‘saline drainage’ The movement of waters, contaminated with salts, as a result of the mining activity

‘sampling occasion’ means the collection of a sample undertaken in accordance with the sampling frequency specified, and where an exceedance is recorded the sampling occasion together with the resample.’

‘self-sustaining’ means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics

‘sensitive place’ means:

- 1) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- 2) a motel, hotel or hostel; or
- 3) an educational institution; or
- 4) a medical centre or hospital; or
- 5) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or
- 6) a public park or gardens.

Note: The definition of ‘sensitive place’ and ‘commercial place’ is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling; library; educational institution; childcare; kindergarten; school; playground; hospital, surgery or other medical institution; commercial and retail activities; protected area or an area identified under a conservation plan under *Nature Conservation Act 1992* as a critical habitat or an area of major interest; marine park under *Marine Parks Act 2004*; park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

A township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

‘significant residual impact’ has the meaning in section 8 *Environmental Offsets Act 2014*.

‘spillway’ means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges from the dam, normally under flood conditions or in anticipation of flood conditions.

‘strategic environmental areas’ has the meaning in section 11(1) of the *Regional Planning Interest Act 2014*.

‘structure’ means dam or levee.

‘substantial low frequency noise’ means a noise emission that has an unbalanced frequency spectrum shown in a one-third octave band measurements, with a predominant component located within the frequency range 10 to 200 Hz.

‘suitably qualified and experienced person’ in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002*, and has demonstrated competency and relevant experience:

- 1) for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.
- 2) for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

‘system design plan’ means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.

‘Total Dissolved Salts’ is to be determined using the “gravimetric” method of analysis.

‘Total Nitrogen (TN)’ means the sum of Organic Nitrogen, Ammonia Nitrogen, Nitrite plus Nitrate Nitrogen, expressed as mg/L as Nitrogen. This includes both the inorganic and organic fraction of nitrogen.

‘Total Phosphorus (TP)’ means the sum of the reactive phosphorus, acid-hydrolysable phosphorus and organic phosphorus, as mg/L of Phosphorus. This includes both the inorganic and organic fraction of phosphorus.

‘treated sewage’ means treated sewage released from sewage treatment plants.

‘ $\mu\text{S/cm}$ ’ means micro siemens per centimetre.

‘void’ means an area of land to be excavated in the carrying out of a mining activity.

‘water’ is defined under Schedule 4 of the *Water Act 2000*.

‘watercourse’ has the same meaning given in the *Water Act 2000*.

‘water quality’ means the chemical, physical and biological condition of water.

‘water year’ means the 12-month period from 1 July to 30 June.

‘waters’ includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), storm water channel, storm water drain, and groundwater and any part thereof.

‘WaTERS’ means Water Tracking and Electronic Reporting System or subsequent updated system, used to submit monitoring data and notify the Queensland Government.[<https://waters.ehp.qld.gov.au/>] or psd.help@qld.gov.au.

‘wet season’ means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.

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Attachment 1:

**DES assessment of proposed disturbance footprint on
matters of state environmental significance**

Prescribed environmental matter	Proposed disturbance footprint (hectares; ha) derived from data provided in draft EIS
Regulated vegetation*	
s.73 - Irrelevant	
Connectivity areas	
s.73 - Irrelevant	
Wetlands and watercourses*	
s.73 - Irrelevant	
Protected wildlife habitat*	

Prescribed environmental matter	Proposed disturbance footprint (hectares; ha) derived from data provided in draft EIS
s.73 - Irrelevant	
Waterway providing for fish passage	
s.73 - Irrelevant	

SECURITY CLASSIFICATION: UNCLASSIFIED

MEETING BRIEF – DIRECTOR-GENERAL

SUBJECT Olive Downs Project EIS

Date: 8 May 2019

Time: 4:30pm

Attendees: Barry Broe, Coordinator-General
Sonya Booth, A/Assistant Coordinator-General, Coordinated Project Delivery
Steven Tarte, A/Executive Director, Coordinated Project Delivery

Purpose of meeting: To discuss the departments' recent submission to the Olive Downs EIS

Summary of the issues:

- Pembroke Resources (Pembroke) submitted an application, including initial advice statement (IAS), to the Coordinator-General in January 2017 proposing to develop the Olive Downs Project (the project), located about 40km southeast of Moranbah and about 25km south of Moorvale Mine within the Isaac Regional Council LGA.
- The project features include a large scale open-cut metallurgical coal mine, coal handling and preparation plant, 18 km rail spur and on site rail loop, raw water pipeline connecting to the Eungella pipeline network, private access roads, electricity transmission line, and wastewater and sewage treatment plants.
- The department has provided advice to the Coordinator-General throughout the Environmental Impact Statement (EIS) for the project, including final advice on the acceptability and conditions for approval of the project on Friday 3 May 2019.
- Pembroke Resources has not adequately addressed the department's submissions on the EIS and has not made appropriate amendments to the EIS, particularly in relation to mining landforms and rehabilitation.
- The departments' most recent advice made recommendations to the Coordinator-General on what the proponent would need to provide to enable the department to recommend conditions for rehabilitation.

Points of relevance:

- The proposal by Pembroke Resources to modify the Isaac River floodplain by constructing permanent waste rock emplacements and leaving final voids does not provide sufficient information or justification to demonstrate that the proposed landform and associated rehabilitation strategy meets the government's expectations and best practice environmental management.
- The departments' assessment of the project indicates that approximately 52km of levees (waste rock emplacements) will be constructed along the Isaac River and approximately 3773ha of floodplain area impacted by construction activities.
- The rehabilitation strategy proposed by the project will involve retaining a large waste rock emplacement on the eastern side of the Isaac River, construction of permanent waste rock emplacements (levee structures) on the western side of the Isaac River, and four residual (final) voids - 3 of which are located in the current floodplain.
- The scale and nature of these activities pose a high risk of impact to the receiving environment and its environmental values.
- The department has a number of specific concerns including:
 - discharge of contaminants (such as saline seepage and metals) to groundwater and surface water;

- erosional stability and potential movement of sediment from final landforms;
 - impacts to the areas located on the existing floodplain (including landholders up and downstream);
 - changed hydrological impacts;
 - impacts to flora and fauna through removal of habitat; and
 - Final water quality of residual voids (long term).
- Through the EIS, Pembroke failed to adequately justify the location and necessity of the proposed final landforms, and did not provide an assessment of alternative solutions for the following features:
 - The location of the eastern waste rock emplacement, which, along with the permanent waste rock emplacements and final landform on the western side of the Isaac River will most likely change the existing nature and characteristics of the floodplain. Pembroke made no clear arguments as to why this material cannot be placed in-pit and result in one less permanent landform post mining.
 - The need for final voids in the Isaac River floodplain (as it currently exists), and a justification of their final locations and volumes. The proponent has not provided a clear argument as to why these voids are required, other than ease/efficiency of mining activities. Long term impacts are expected especially with regard to water quality and the sustainable use of the resultant water bodies
 - The construction of permanent waste rock emplacements, which are only necessary to redefine the Isaac River floodplain and provide protection against floods to residual final voids. The proposed structures represent a significant long-term, residual risk to the State, and will likely require management following the cessation of mining activities. In addition, the structures (as proposed) will never allow the Isaac River floodplain to achieve ecological or hydrological processes the same or similar to those that occur pre-mining (now).

File Note

File Reference: 101/0022144

Date: 14 May 2019

File Name: Olive Downs Project

Subject (Detail): Release of CG evaluation report – allowing final voids in floodplain

Author: Monika Rhodes

Position: Principal Environmental Officer (Assessment)

Unit/Office: Environmental Impact Assessment; Operational Support I Regulatory Support

HISTORY

- On 3 May DES recommended conditions for inclusion into the CG's evaluation report. In its advice, DES stated that the conditions, as proposed by the proponent relating to mine landform and rehabilitation, were unacceptable. DES did not provide conditions on Schedule H - Land and rehabilitation.
- On 8 May 2019 a meeting was held between the CG and the DG.
- On 8 May 2019 the OCG provided DES with the proponent's comments and track-changes on DES's recommended conditions.
- On 9 May 2019 DES met with the OCG, the proponent, and DEE to discuss the assessment of the revised draft EIS and recommended conditions.
 - Final voids and rehabilitation criteria were not discussed.

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- On 13 May 2019 the Coordinator-General (CG) released the evaluation report (CGER) stating rehabilitation conditions and allowing for final voids in the Isaac River floodplain.
 - The CGER includes stated conditions for an EA on Schedule H - Land and rehabilitation. An analysis of where the conditions were derived from is found below.

Analysis of origin of CG stated condition for Schedule H: Land and rehabilitation

Land and rehabilitation

- H1 – as proposed by the proponent (condition is a variation to Model Mining Condition H1)
- H2 – as proposed by the proponent
- Table H2 - as proposed by the proponent.
- H3 – a mix of the DES response and CG office. Please note that our response defined stable as being – ‘for the purposes of this plan, stable means safe, stable, non-polluting and self-sustaining’. This definition has not been incorporated into the CG’s conditions.
- H4 – new? Not proponent or us. It appears that the CG office has taken our requirement (‘Describe how achievement of the rehabilitation milestones will be monitored, audited and reported, and how corrective actions would be managed’) out of H3 and built a new condition around it.
- H5 - as proposed by the proponent (condition is a variation to Model Mining Condition H2)
- H6 – new? Taken from old model mining conditions plus made up?
- Table H3 – new and adapted from EIS Table 5-4 Section 5 Rehabilitation Strategy (info re the maximum surface area for void is new)
- H7 - as proposed by the proponent (condition is Model Mining Condition H3)
- H8 - as proposed by the proponent (condition is Model Mining Condition H4)
- H9 - as proposed by the proponent (condition is Model Mining Condition H5).

MSES

- Table H2: CG included the information we provided as attachment in our advice on recommended conditions (“DES assessment of proposed disturbance footprint on matters of state environmental significance”)

Offsets:

- H11-17: From proponent's proposed conditions based on model mining conditions (H7-H13).

BACKGROUND

- The proponent is Pembroke Resources Pty Ltd, an Australian Proprietary Company.
- The proposed open-cut coal mine comprises of the Olive Downs South and Willunga domains; the two domains separated by the Isaac River.
- The scale of the mine – up to 20Mt/year of coking coal, 14 open-cut pits, 16,114ha of disturbance, 79 year mine life (excluding decommissioning) – would make it one of the larger mines in Queensland.
- The proposed project was assessed by environmental impact statement (EIS) as a ‘coordinated project’ the under the *State Development and Public Works Organisation Act 1971* administered by the Office of the Coordinator General (OCG).
- On 13 May 2019 the Coordinator-General (CG) released the evaluation report stating rehabilitation conditions and allowing for final voids in the Isaac River floodplain.

- On 9 May 2019 DES met with the OCG, the proponent and DEE to discuss the assessment of the revised draft EIS and recommended conditions. Final voids and rehabilitation criteria were not discussed. See above for full details.
- On 3 May DES recommended conditions for inclusion into the CG's evaluation report. In its advice, DES stated that the conditions, as proposed by the proponent relating to mine landform and rehabilitation, were unacceptable.
 - o The merit-based assessment of the draft EIS and supporting material, undertaken by DES, indicated that the proposal to modify the Isaac River floodplain using waste rock emplacements as landforms is high risk, and does not represent best practice environmental management for floodplain areas.
- On 10 October 2018 DES provided a written submission to the OCG during the public notification period, raising a number of concerns about the adequacy of the EIS and impacts of the proposed project.
- Prior to this, DES had undertaken a detailed assessment of the preliminary draft EIS at the request of OCG, but few of the DES recommended changes were made to the EIS subject to notification.
- DES is concerned about the proposed mine land form in the floodplain of the Isaac River which would consist of:
 - o three final voids
 - o permanent highwall levees (emplacements) made up of waste rock (25m high, 300-400m wide, 17km long in total)
 - o a permanent waste rock dump on MLA 700036 (475ha in size), located on the eastern banks of the Isaac River and opposite the permanent highwall levee, creating a choke in the Isaac River
 - o a series of temporary levees made of waste rock (approximately 36km in length in total)
 - o up to 52 km of the Isaac River floodplain being affected.
- The mine plan is inconsistent with the Government's Mined Land Rehabilitation Policy which states that *'for all new site-specific mines, the administering authority will not approve a Progressive Rehabilitation and Closure Plan (PRC Plan) that includes a void situated wholly or partially in a floodplain unless the void will be rehabilitated to a safe and stable landform that is able to sustain an approved post-mining land use that does not cause environmental harm'*.
- The *Mineral and Energy Resources (Financial Provisioning) Bill 2018* (MERFP Bill) seeks to legislate the intent of the Mined Land Rehabilitation Policy.
- Pembroke Resources have suggested that the highwall emplacement removes the voids from the floodplain by separating the final voids from the Isaac River.
- Pembroke Resources are planning to start commissioning the mine in mid-2019, to be operating by late-2019 and to have ramped up to full operation by 2020.

POTENTIAL IMPACTS / RISKS:

- Key concerns identified in DES' submission on the EIS were:
 - o due to proximity to the Isaac River, the proposed site will inevitably be wholly or partially within a floodplain irrespective of the definition used
 - o an assessment of the impact of the proposed permanent highwall emplacements, the temporary levees and the waste rock dumps on the broader floodplain has not yet been provided
 - o it has not been demonstrated that the proposed final landform will meet the Government's Mined Land Rehabilitation Policy, including a PRC Plan
 - o there has not been sufficient detail provided to demonstrate that the proposed temporary and permanent levees, and the waste rock dump will be safe and stable landforms that are self-maintaining in perpetuity
 - o the proponent has not provided evidence to demonstrate why the proposed voids are required (economically or logistically)
 - o significant impacts to the floodplain are predicted, including on groundwater, surface water, water quality, wetlands, matters of state environmental significance, and flows in Isaacs River and Ripstone Creek

- o The EIS has not demonstrated that DES's management hierarchy a) to avoid; (b) to minimise or mitigate; once (a) and (b) have been applied, and (c) if necessary and possible, to offset has been incorporated into the impact assessment of most environmental values.
- The project is a controlled action requiring approval by the Commonwealth Minister for the Environment.

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s.73 - Irrelevant

From: s.73 - Irrelevant @environment.gov.au>
Sent: Thursday, 2 May 2019 5:33 PM
To: RHODES Monika
Cc: s.73 - Irrelevant
Subject: RE: Olive Downs [SEC=OFFICIAL]

Hi Moni

s.73 - Irrelevant

Also, please find attached the Department's comments on the adequacy of the AEIS which was provided to OCG today for your information.

Kind regards

s.73 - Irrelevant

Assessments and Governance Branch
Department of the Environment and Energy
P: 02 6274 2743
E: s.73 - Irrelevant@environment.gov.au



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Review of amended Environmental Impact Statement (AEIS) – prepared by the Department of the Environment and Energy, May 2019

Olive Downs Project (EPBC 2017/7867, 2017/7868, 2017/7869 and 2017/7870)

The Department considers the Olive Downs Project provides the potential for serious impacts on matters of national environmental significance (MNES) due to the nature and scale of the potential impacts. In particular, the Department considers the estimates of available MNES habitat, and the resultant potential impacts to this habitat, are likely an underestimate of the extent of impact on MNES.

Based on the information available in the AEIS, the Department considers the proponent has not adequately addressed the Department's comments on the draft EIS in October 2018 and the MNES requirements of the request for additional information provided by the Queensland Office of the Coordinator-General (OCG) in January 2019. The Department notes there is minimal new or additional information provided in the AEIS, which generally reiterates the information in the MNES chapter or references other sections of the draft EIS. The Department is therefore of the view that the AEIS is inadequate to allow the Minister to determine the acceptability of the impacts of the proposed action on relevant MNES under the *Environment Protection and Biodiversity Act 1999* (EPBC Act).

Further detail is provided in the tables below.

Table 1: Comments on proponent's response to OCG's request for additional information – MNES Listed threatened species

Item	Key Issue (Section 7)	Issue no. (Attachment A)	Department's comments
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Table 2: Comments on proponent's response to OCG's request for additional information – Biodiversity Offsets

Item	Key Issue (Sections 9, 10, 11)	Issue no. (Attachment A)	Department's comments
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Table 3: Comments on proponent's response to the Department's comments on the draft EIS (October 2018)

Item	Key Issue	Issue no. (Attachment A)	Department's comments
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s.73 - Irrelevant

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			s.73 - Irrelevant
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From: Barry Broe <Barry.Broe@coordinatorgeneral.qld.gov.au>
Sent: Monday, 13 May 2019 3:00 PM
To: MERRICK Jamie
Subject: Olive Downs

Jamie

Thank you for all the advice and discussions with DES on the Olive Downs project. I wanted to give you an update on my evaluation on the EIS and forthcoming decision.

I have taken into account the transitional provisions that allow the project to leave final voids on floodplains if they achieve rehabilitation objectives established by the regulatory framework including the current rehabilitation guidelines. Final voids must be rehabilitated to a safe and stable landform that does not cause environmental harm and can sustain a post-mining land use.

My office has conducted a comprehensive assessment of the EIS and draft EIS and examined fully the impacts of what is proposed on their merits through an objective assessment of the predicted impacts of the proposal against the policy based on environmental values. Our conclusion is that the impacts are manageable and stringent conditions have been formulated to ensure this outcome occurs.

This assessment indicates that the proposal by Pembroke Resources to modify the Isaac River floodplain by constructing permanent waste rock emplacements and leaving final voids does provide sufficient information and justification to demonstrate that the proposed landform and associated rehabilitation strategy achieves acceptable outcomes and best practice environmental management.

The EIS (supported by proposed EA conditions from DES) demonstrates that a mine schedule has been developed that maximises the opportunity for progressive backfilling of open cut pits and minimises the area of land disturbed by mining. For example, mining deep coal seams first would require substantially larger out of pit waste rock dumps and disturb larger areas of land.

Disturbed areas would be rehabilitated to be safe, stable, non-polluting and able to sustain identified land uses. There would be no unplanned release from final voids and they would be isolated from the Isaac River floodplain.

In relation to final voids, the EIS demonstrates consistency with current rehabilitation guidelines in the following key ways:

- voids would be structurally sound, with design parameters refined over time to ensure that they are safe
- void high walls in the alluvium and other areas will be laid back to 20 degrees ensure that they are safe and can be revegetated
- final voids have a low risk of groundwater contamination
- final voids are isolated from flood waters and would not release to the Isaac River floodplain
- void low wall slopes would be revegetated and provide fauna habitat

For the permanent high wall emplacements the EIS demonstrates consistency with current rehabilitation guidelines by:

- ensuring that they are structurally safe and contain no hazardous materials
- reinforcing the outer batters to minimise erosion risk
- demonstrating that runoff and any seepage would be free of contaminants and not impact environmental values
- placing the waste rock with moderate slopes of 7 degrees which would enhance stability and improve rehabilitation outcomes

- demonstrating that these areas would be returned to previous land uses

Thank you for all the input from DES on the project and the recommended draft EA conditions provided to us.

Regards



Barry Broe

Coordinator-General

Department of State Development, Manufacturing, Infrastructure and Planning

P: 07 3452 7024 | M: s.73 - Irrelevant

E: barry.broe@coordinatorgeneral.qld.gov.au

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