



PEMBROKE

Olive Downs Coking Coal Project

Additional Information to the
Environmental Impact Statement

Section 18

Land Use Impacts

18 LAND USE IMPACTS

- 1. Provide an additional assessment of the potential impacts of project on current and potential land uses on adjacent properties. In preparing the assessment, consider material issues raised in submissions prepared by Whitehaven Coal, Peabody Energy including sterilisation of coal resources, flooding impacts and fragmentation of land uses.***

A detailed response to all issues raised by Whitehaven Coal Limited (Whitehaven) and Peabody Energy (Peabody) is provided in Appendix A. Responses to key issues raised by Whitehaven and Peabody are below.

Pembroke is continuing consultation with Peabody and Whitehaven regarding the issues raised in their submissions and the approach to addressing key concerns, such as direct impacts to lands from Project components, indirect impacts such as flooding, and design of infrastructure such as road upgrades. Pembroke requested detailed information from Peabody about the Moorvale South Project design (including levee alignments and road upgrade information) to more accurately predict potential cumulative impacts. Peabody has provided some additional information which Pembroke has used to update the Project flood modelling and road upgrade designs (described below).

Flooding and Flood Levees

Peabody comments on the adequacy of the assessment of, and proposed mitigation measures for, cumulative flooding impacts from the Project, Moorvale South Project and surrounding land uses.

In particular, Peabody comments on the potential flood impacts on the Moorvale South flood levees approved to be developed within ML 70354 as part of the Moorvale South Project.

Pembroke has signed a Confidentiality Agreement with Peabody to allow for sharing of information and modelling. Peabody has supplied their levee alignment which Pembroke has used to conduct more detailed flood modelling. The modelling is being conducted by Peabody's flood consultant and using Peabody's flood model. The modelling has identified where adjustments to the design of the Moorvale South levee are required. Pembroke and Peabody have maintained regular communication regarding the modelling and both parties are working towards resolution of the concerns raised in Peabody's submission.

Groundwater Impacts

Peabody comments on the potential cumulative impacts to "Bore 8" (a private bore, located on the Isaac River between the Project and Moorvale South). Bore 8 intersects the Isaac River alluvium, is equipped with a submersible pump and is used for stock water supply. The predicted decline in groundwater level of 3.6 m at Bore 8 has the potential to impact on groundwater supply from the bore. Based on the mine schedule, alluvial groundwater at Bore 8 is expected to recover to approximately 50% pre-mining levels during the life of the Project (Section 4.3.3 of the draft EIS).

Although not provided in the draft EIS, Pembroke's hydrogeologist (HydroSimulations) has confirmed that the predicted drawdown of 3.6 m at Bore 8 is largely attributable to the Project, and that Moorvale South is predicted to result in a negligible impact to this bore. As such, Pembroke would enter into a make-good agreement through consultation with the owner of this bore (e.g. resetting the pump set at an appropriate depth for water supply, accounting for the predicted groundwater drawdown), which would be detailed in the Water Management Plan being prepared for the Project. In addition, Pembroke proposes to establish an appropriate monitoring network to assess the potential impacts from Moorvale South and the Project. Pembroke has engaged with the owner of Bore 8 to discuss the proposed development of the monitoring program and make-good agreement.

In addition to the above, Pembroke will consult with Peabody during the development of the Water Management Plan for the Project regarding the proposed groundwater monitoring program.

Noise, Dust and Vibration Impacts

Peabody indicates that the draft EIS does not adequately consider the content of the Olive Downs North Environmental Management Plan (herein referred to as the Moorvale South EMP) or other approvals for Moorvale South in relation to noise, vibration, and dust impacts.

The cumulative assessments provided in the draft EIS considered the Moorvale South Project to the extent that project information was available. The level of information within the Moorvale South EMP was insufficient to accurately model the potential air, noise and vibration impacts of the Moorvale South Project (e.g. details such as disturbance areas, coal/waste extraction rates, likely mobile equipment locations in each year and blast designs was unavailable).

Despite this, the sensitive receivers in the wider locality are not expected to experience elevated noise/dust levels from the both projects simultaneously. This is because, when winds are blowing from the south-west, a receiver to the north-east of the Project would experience elevated noise/dust levels associated with the Project, however under these conditions the same receiver would experience decreased noise/dust levels from the Moorvale South Project. It is anticipated that through a mine site cooperation agreement (currently being discussed between Pembroke and Peabody) the blast scheduling at the Project and the Moorvale South Project would be conducted to manage cumulative blasting impacts on sensitive receivers.

Notwithstanding, as described in Sections 4.5.4 and 4.9.4 of the EIS, the proposed proactive and reactive mitigation and management strategies for air quality and noise are considered robust, and would allow Pembroke to maintain compliance with relevant criteria even with additional dust and noise generating activities in the region. In addition, Pembroke will continue to consult with Peabody during the development of the air quality, and noise management plans for the Project.

Transport Impacts

Peabody comments on the proposed upgrades to Daunia Road and Annandale Road, and whether they have sufficient regard to the approved Moorvale South traffic flow, including Peabody's use of ML 70355 as a haul road.

As indicated above, the draft EIS was prepared on the information publicly available within the Moorvale South EMP and the Environmental Authority. It is noted that this level of information was insufficient to accurately assess the potential traffic impacts of the Moorvale South Project (e.g. the Moorvale South EMP did not include anticipated traffic movements, the number and frequency of haul trucks utilising the haul road or any management measures for the proposed intersection between the haul road and Annandale Road), and no additional information, to allow the assessment of the Moorvale South Project traffic flow, was provided in Peabody's response on 18 December 2018.

Notwithstanding the above, additional information regarding the proposed design of the road upgrades is provided in Section 16.

In addition to the above, Pembroke and Peabody have requested a meeting with the IRC to review the Moorvale South haul road crossing agreement formed between Peabody and the IRC. Pembroke and the IRC are currently developing a detailed upgrade design for the Annandale Road for the Project. As part of these upgrade works, Pembroke, Peabody and the IRC will agree on a design for the Moorvale South haul road intersection such that it can be constructed as part of the Annandale Road upgrade works.

Proposed Biodiversity Offsets

Peabody comments on the proposed Stage 1 Offset Area and its overlap with Peabody's EPCs 649, 676 and 721.

Section 2.2.1 of the draft EIS acknowledges that parts of the Project are located within EPC 649, however, Pembroke confirms that the proposed Stage 1 offset area does not overlap EPC 676 or EPC 721. In addition, the Stage 1 Offset Area has been specifically designed to avoid MDL 3023. Notwithstanding, the potential overlap of exploration permits does not restrict Pembroke's rights to secure the area for biodiversity offsets under a legally binding mechanism.

Location of Proposed 66kV Electricity Transmission

Peabody comments on the interaction between its mining operations in ML 70354 and the location of the Project ETL adjacent to ML 70354. In particular, Peabody is concerned that Pembroke has not adequately considered the potential impacts of the following:

- blasting activities on ML 70354;
- the interaction between the approved haul road within ML 70355 and Pembroke's proposed ETL; and
- the interaction between the ETL, EPC 649 and MDL 3034.

Yurika (a company associated with Energy Queensland) is managing the development of the proposed ETL. Operations at Moorvale South would be considered by Yurika during the detailed design stages of the ETL and should not be impeded such that there are any constraints on activities associated with mining proposed by Peabody. The ETL was specifically located to the west, and outside of the Moorvale South ML 70354 so as not to impact on the approved operation. The route then continues to follow the western boundary of ML 70354 to the north along the approved Moorvale South haul road. As the ETL is outside the ML 70354, and would be designed in consideration of the Moorvale South approved operations, impacts to the ETL from blasting are not predicted.

At the time of the design of the ETL alignment and submission of the draft EIS, no information on mining reserves within Peabody's EPC 649 had been published, nor did MDL 3034 exist. The Project ETL alignment runs along the southern and eastern boundaries of MDL 3034. Pembroke and Peabody are discussing the potential development of the resource within MDL 3034 in consideration of the Project ETL. Given the Project ETL would run along the southern and eastern boundaries, the ETL is not expected to prevent Peabody developing the resource within MDL 3034.

Potential Resource Sterilisation

Whitehaven comments on potential sterilisation of coal due to the Project, in particular:

- *impact of the proposed rail corridor and pipeline on the recovery of resources within MDL 183;*
- *there is no assessment of the potential implications of flood protection works which otherwise will need to be constructed in the floodplain within MDL 183;*
- *there is no consideration of the potential impact of train movements on Whitehaven's operations and there is no consideration of whether or not a setback distance may result in coal resource sterilisation; and*
- *changes to the height of floodwaters and potential need to elevate Pembroke's rail infrastructure has not been considered.*

The proposed rail corridor for the Project is located outside the MDL 183 boundary on the eastern side of the Norwich Park Branch Railway and as such would not impact on the recovery of resources in this area. Where the Project water pipeline traverses MDL 183, it is located wholly within a public road reserve, on the western side of the Norwich Park Branch Railway. Pembroke does not require Whitehaven's consent to locate the proposed water pipeline within the road reserve as a Mining Lease is not being sought and Whitehaven is not the owner of the land.

Further to this, at the time of lodging the draft EIS, there was no publicly available information as to the location and extent of a resource within MDL 183, nor was there any publicly available information regarding any Whitehaven application for a Mining Lease and/or Environmental Authority for any area within MDL 183. As such, there is no information regarding any proposed levee structures or proposed locations of blasting activities which Pembroke is able to consider within its EIS.

Notwithstanding, Section 9.2.4 of the draft EIS Flood Assessment (Appendix F of the draft EIS) states that, where the Project rail spur is located near the Isaac River and where it crosses drainage lines, culverts and spans between piers would be used to minimise impacts to the flooding regime. As part of the detailed design of the Project rail spur, a detailed flood study along the rail corridor has been commissioned by Pembroke. In particular, the detailed design and flood study were prepared to integrate the Project rail spur with Aurizon's flood design criteria, and to confirm the sizing for culverts and bridge structures along the length of the rail spur.

A number of culverts and a bridge structure have been incorporated into the design to allow Isaac River flood waters to pass under the rail spur and then drain back to the Isaac River as a flood event recedes. The culverts and bridge structure would also allow the existing local catchments to the south of the rail spur to drain to the Isaac River via the existing drainage paths.

The detailed flood study has also modelled a levee structure along the southern side of the rail spur, along the inside of the MDL 183 northern boundary (indicatively where a flood levee for any project within MDL 183 would be located). The flood modelling showed that although the levee would slightly increase flood heights and velocities along parts of the Project rail spur, no changes to the design of the rail spur would be required (i.e. the changes to flood characteristics due to the levee would not require an increase in height of the rail spur, or a change in the embankment design to withstand localised increases in flood velocities).

Further, the flood modelling predicts that the Project rail spur would provide a 'shielding' effect to the levee, minimising flood velocities and levels that would otherwise occur if the rail spur was not constructed.

Pembroke will continue to engage with Whitehaven regarding infrastructure design and rail movements.

Risk of Failure of Levee Structures

Whitehaven has expressed concern regarding the risk of failure of levee structures. In particular, Whitehaven suggests in its submission that the draft EIS:

- *outline the methodology used to assess the various failure events;*
- *does not consider a 'failure to contain – seepage' scenario as required by the MACCHPS; and*
- *fails to properly consider circumstances in which the temporary levees leak, or fail to withstand flooding impacts to any degree.*

The Project includes an out-of-pit waste rock emplacement on the north-eastern corner of Whitehaven's Wynette Station (within MLA 700035). A temporary levee is proposed to be constructed around the waste rock emplacement to protect it from floodwaters until such time as the waste emplacement has been constructed and rehabilitated. After this time, this temporary levee would be decommissioned.

As stated in Section 13.4.2 of the draft EIS Flood Assessment (Appendix F of the draft EIS), the temporary levees have been assessed in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 5.0)*. As the temporary levees are designed to prevent the ingress of non-mine affected flood water into an operational area or catchment of a containment system, and the temporary levees would be constructed within the extent of a 1:1,000 year flood event, the temporary levees are considered to be regulated structures.

Section 13.4.2 of the draft EIS Flood Assessment (Appendix F of the draft EIS) describes that a suitably qualified and experienced person assessed the consequence category of the temporary levees for a "failure to contain – overtopping" and "dam break" scenarios as "low consequence". Section 2.3.1 of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (Version 5.0)* states that there is no requirement for a consequence assessment for a "failure to contain – seepage" scenario to be conducted for levees.

Pembroke is seeking the Model EA Conditions for regulated structures, as stated in the *DES Guideline – Structures Which are Dams or Levees Constructed as part of Environmentally Relevant Activities (2017)*. These EA conditions regulate the design, construction and monitoring of regulated structures. Consistent with the proposed EA Conditions for regulated structures, a 'design plan' for the Project's regulated structures will be prepared in accordance with the *Guideline – Structures Which are Dams or Levees Constructed as part of Environmentally Relevant Activities (2017)*.

Impacts Associated with Out of Pit Waste Emplacement

Whitehaven comments on the proposed out of pit waste emplacement located in MLA 700035 and associated potential impacts to Wynette Station. In particular, Whitehaven suggests in its submission that:

- the draft EIS fails to properly address the impacts of the proposed waste emplacement on Wynette Station, including:
 - potential instability during and following flooding events; and
 - visual amenity impacts for future residents of Wynette Station.

The draft EIS Flood Assessment (Appendix F of the draft EIS) considered potential flooding impacts associated with all Project landforms and temporary levees. As described above, the temporary levees would be designed and operated as regulated structures to prevent flood waters up to a 1:1,000 year event reaching operational areas, including the waste emplacement partly constructed on the Wynette Station. In particular, the Flood Assessment modelled the 'final landform' which shows that, after the temporary levees are removed, the stream velocity along the toe of the proposed waste emplacement located within MLA 700035 is predicted to be very low (<0.5 m/s) even during very large flood events (i.e. a 1:1,000 year flood event, as shown in Appendix C of the Flood Assessment).

Section 2.7 of the draft EIS provides a detailed description of the Project water management strategy, including a description of the site drainage, erosion and stormwater management, flood protection and waste water management.

With respect to potential visual impacts, it is noted that Wynette Station does not currently have a dwelling constructed on it, and Pembroke understands Whitehaven has purchased the property with the intent of developing an open cut coal mine within MDL 183.

Accordingly, Pembroke does not consider it likely that the Project would result in visual amenity impacts.

Seepage Impacts

Whitehaven has expressed concern regarding potential seepage impacts from the Project's waste emplacements on Wynette Station. In particular, Whitehaven suggests in its submission that:

- *the EIS must identify the quantity, quality and location of all potential discharges of water, including diffuse sources such as seepage from waste rock dumps.*

The Project water management system includes erosion and sediment control measures to manage runoff from waste rock emplacements. Until rehabilitation of waste rock emplacements is complete, runoff from the landforms would be captured within drains and directed to sediment dams prior to reuse or release in accordance with the proposed EA conditions.

The Geochemistry Assessment (Appendix L of the draft EIS) concluded, based on the geochemical test work, that waste rock is expected to:

- be overwhelmingly non-acid forming (NAF) with excess acid neutralising capacity (ANC) and have a negligible risk of developing acid conditions; and
- generate relatively low-salinity surface run-off and seepage with low soluble metals concentrations.

As outlined in Section 4.2.4 of the draft EIS, seepage from waste emplacement, including any rehabilitated areas, would be monitored for 'standard' water quality parameters including, but not limited to, pH, EC, major anions (sulfate, chloride and alkalinity), major cations (sodium, calcium, magnesium and potassium), TDS and a broad suite of soluble metals/ metalloids.

Impacts to Wynette Station

Whitehaven has expressed concern regarding potential impacts to Wynette Station. In particular, Whitehaven suggests in its submission that the draft EIS:

- *failed to adequately address the scheduling and duration of loading activities, and has failed to adequately ensure that these activities allow for the efficient and effective use of Wynette Station;*
- *failed to consider alternative locations for the out of pit dumps or for the proposed infrastructure corridor.*

Whitehaven also indicates the Project would impact the value of Wynette Station due to:

- the proposed infrastructure corridor traversing the northern part of the property; and
- restricted access to the Isaac River as an agricultural resource.

Whitehaven has also indicated the Project would reduce the successful establishment of a homestead on Wynette Station.

The proposed rail corridor for the Project is located outside the MDL 183 boundary on the eastern side of the Norwich Park Branch Railway and as such would not impact on the recovery of resources in this area. Where the Project water pipeline traverses MDL 183, it is located wholly within a public road reserve, on the western side of the Norwich Park Branch Railway.

The rail spur and pipeline have been designed to incorporate cattle underpasses and level crossings at various locations to enable cattle and vehicles to move below/across the infrastructure corridor and access the Isaac River. These underpass points would also accommodate water distribution infrastructure to allow the landholder to move water from pumping locations on the Isaac River to other parts of the property.

A 4-strand stock fence would be installed along the rail spur to control cattle access. Cattle grids and stock gates would be constructed at all existing access tracks to allow for continued access.

Section 2.10.2 of the draft EIS presents a justification for the design and location of the out-of-pit waste rock emplacements, in consideration of best practice landform design, requires the construction of out-of-pit waste rock emplacements on a small part of the north-east corner of Wynette Station. As this emplacement would only impact a small portion of the property, and it would not prevent access to the other undisturbed parts of the property, it is not considered to have a significant impact on the viability of the agricultural enterprise.

It is noted that Wynette Station does not currently have a dwelling constructed on it, and Pembroke understands Whitehaven has purchased the property with the intent of developing an open cut coal mine within MDL 183. Pembroke does not consider an assessment of the potential impacts to the future establishment of a dwelling on Wynette Station is warranted.

As a landholder directly impacted by the proposed Project Mining Leases (i.e. MLA 700035 and MLA 700033), Pembroke proposes to compensate Whitehaven for the direct impacts to Wynette Station in accordance with the *Mineral Resources Act 1989*.

Noise, Dust and Vibration Impacts on Cattle

Whitehaven comments on the likely dust, noise and vibration impacts on Wynette Station, that may arise as a result of the proposed infrastructure associated with the Project. Whitehaven indicates that impacts on cattle are not adequately addressed.

Section 4.9.2 of the draft EIS describes how the Noise and Vibration Assessment was prepared in accordance with relevant legislation, policies and guidelines:

Renzo Tonin (2018) has identified a range of legislation, policy, guidelines and standards relevant to identifying values and managing potential noise and vibration impacts of the Project. These include:

- *the EP Act;*
- *the EP Regulation;*
- *the Environmental Protection (Noise) Policy 2008 (EPP [Noise]);*
- *DES' Model Mining Conditions guideline (DEHP, 2017d);*
- *DES' Application requirements for activities with noise impacts guideline (DEHP, 2017e); and*
- *EcoAccess Guidelines.*

The Terrestrial Fauna Assessment prepared for the Project assesses the potential impacts of noise and vibration on native fauna within the surrounding locality. It was concluded that any potential noise-related impact on fauna residing in surrounding habitat would likely be localised and minor, given fauna often readily habituate to continuous noise, and sudden noises from blasting would only occur in intervals. This conclusion is considered to extend to potential impacts on cattle.

In addition, the Terrestrial Flora Assessment (DPM Envirosiences, 2018a) prepared for the Project states the following in relation to potential dust impacts on surrounding vegetation:

The landscape surrounding the Project is already heavily cleared. Dust from the Project is unlikely to significantly degrade surrounding native vegetation given vegetation in the locality is already subjected to dust from exposed soils which have not led to any observed impacts on vegetation. It is also likely that seasonal rainfall in the locality would help wash dust from the vegetation and/or encourage new growth.

As described in Section 4.9.1 of the draft EIS, and in consideration of the suite of management measures proposed in Section 4.9.4 of the draft EIS:

The Project would achieve the following performance outcome as identified in Part 3, Schedule 5, Table 1 of the EP Regulation:

...

The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and sensitive ecosystems are prevented or minimised.

Given the above, it is unlikely that potential impacts from noise, dust and vibration would affect cattle grazing on Wynette Station.

2. Provide a response to the issues raised in the submission prepared by Colin Biggers & Paisley Pty Ltd.

A detailed response to the submission prepared by Colin Biggers & Paisley Pty Ltd is provided in the responses to submissions table provided in Appendix A.