



**QCOAL
GROUP**

**BOWEN RIVER
COAL**

Level 15
40 Creek Street
Brisbane Qld 4000

PO Box 10630
Adelaide Street
Brisbane Qld 4000

T +61 7 3002 2900
F +61 7 3002 2999

Memo information

Date	17 September 2021
To	Department of Environment and Science
Prepared by	Bowen River Coal Pty Ltd
Subject	Cows Coal Mine PRCP – Information Request Notice Response

On 29 January 2020, Bowen River Coal (BRC) submitted a PRC Plan (encompassing the PRC Plan – Rehabilitation Planning Part and PRC Plan – Schedule) for the Cows Coal Mine (CCM) to the Department of Environment and Science (DES). DES subsequently issued an Information Request Notice to BRC on 21 April 2021, requiring BRC to provide additional information to address identified potential issues with the submitted PRC Plan.

This memo documents BRC's responses to the DES Information Request Notice, as well as detailing other updates that have been made to the CCM PRC Plan – Rehabilitation Planning Part and PRC Plan – Schedule.

The memo is structured as follows:

- **Additional BRC Update** – discusses an update made to the PRC Plan – Rehabilitation Planning Part and PRC Plan – Schedule made by BRC to better reflect the way in which the CCM will be progressively rehabilitated and closed. This update does not relate to specific actions/recommendations in the Information Request Notice, but was identified during consideration of the issues raised in the Information Request Notice as a worthwhile change to improve the functionality of the CCM PRC Plan – Schedule.
- **PRC Plan – Rehabilitation Planning Part**– addresses Items 1-18 of the DES Information Request Notice
- **PRC Plan - Schedule**– addresses Items 18-36 of the DES Information Request Notice

The memo is submitted together with a revised CCM PRC Plan – Rehabilitation Planning Part (V2) and PRC Plan – Schedule (V2), which are intended to replace the originally submitted documents. Updated shapefiles will also be emailed to the DES Spatial Submissions address at the time of submission.

ADDITIONAL BRC UPDATE

AMENDMENT 1 – RECONFIGURATION OF REHABILITATION AREAS

The V1 PRC Plan – Rehabilitation Planning Part and PRC Plan – Schedule separated the CCM Q-Pit and B-Pit areas into separate Rehabilitation Areas (RA1 and RA2) for the sole reason that the areas were not directly adjoining.

During consideration of the stated “Items” within the DES Information Request Notice, BRC has identified that combining those areas into a single RA (revised RA1) will improve and streamline the PRC Plan - Schedule while still meeting the requirements of the *Environmental Protection Act 1994 (EP Act)*.

A review of the *Guideline – Progressive Rehabilitation and Closure Plans* indicates that there is no specific requirement for the component areas of a RA to be adjoining, but rather they must share a common PMLU and rehabilitation methodology.

The Q-Pit and B-Pit areas consist of the waste rock dumps within and adjoining the footprint of the backfilled Q-Pit and B-Pit voids. Both areas share a common rehabilitation methodology and a common grazing pasture PMLU, and as such, BRC has combined these areas into a single RA. This change is also undertaken in consideration of the ‘scalability’ of the adopted approach for identifying RAs in PRC Plans for other larger/more complex QCoal sites (both at the Northern Hub and elsewhere).

This change has also resulted in the previous RA3 (the Western Diversion Drain) changing to RA2.

PRC PLAN - REHABILITATION PLANNING **PART**

DES ITEM 1: GENERAL

DES ISSUE

While the EA holder has the right to transition pre-approved land outcomes and criteria into the PRCP schedule, the content requirements of section 3.6 of the PRCP guideline still apply.

DES Recommendation I

The information and conclusions drawn from management plans or other technical reports must be transferred into the planning part and discussed in sufficient detail to provide the context necessary to understand the proposed milestones and milestone criteria proposed in the PRCP schedule.

QCoal Response

BRC considers this a broad observation, as without any specific examples of where the detail, discussions or context are not considered sufficient by DES, BRC can only rely on V1 of the PRC Plan as submitted on 29 January 2021. Where the PRC Plan – Rehabilitation Planning Part contains information and conclusions drawn from management plans and other technical reports (which are referenced), BRC considers that sufficient detail and discussion has been provided within the PRC Plan – Rehabilitation Planning Part itself to provide context, background and justifications.

BRC notes that where DES has identified specific issues within this Information Request Notice regarding detail or documents referenced in the PRC Plan – Rehabilitation Planning Part, they have been addressed specifically.

DES Recommendation II

There is an expectation that all supporting documents referred to in the PRC plan are attached.

QCoal Response

BRC understands that:

- *transitional PRC Plans cannot reasonably be expected to attach every report and document referenced therein,*

- *the content and outcomes of an LOD are assumed as pre-approved and not requiring relitigating or justification; and*
- *where a PRC Plan relies on content from an LOD, the LOD should be attached to the PRC Plan and sufficient detail, discussion and context should be provided in the PRC Plan; however, it is not required to provide technical justification (such as technical studies which informed the LOD) of the LOD content as it is pre-approved.*

BRC asserts that the above understanding will need to be the case for transitional sites in Queensland where the content in LODs may have been approved without any notable technical justifications (such as historical EAs for legacy sites).

However, BRC clearly understands DES's position and preference to have visibility as to the technical background and justifications which underpin the PRC Plan and, where possible, the LODs. This issue was discussed during several meeting between QCoal and DES, and it was agreed that a reasonable balance could be found. Accordingly, the following documents, which are considered the key supporting documents relied upon, have been provided as Appendices to V2 of the PRC Plan – Rehabilitation Planning Part:

- **Appendix A:** PRCP Schedule
- **Appendix B:** PRCP Consultation Register
- **Appendix C:** Cows Environmental Authority (EPML00334613)
- **Appendix D:** QNH Rehabilitation Management Plan (QCoal 2020), which includes the following as Appendices:
 - *Residual Voids on the QCoal Northern Hub Mining Complex (QCoal 2020)*
 - *Residual Void Hydrology Study – QCoal Northern Hub Mines (Engeny 2020)*
- **Appendix E:** Report on QCoal Northern Hub Groundwater Model Update (AGE, 2020)
- **Appendix F:** Cows Coal Project Groundwater Impact Assessment. (Geoaxiom, 2011)
- **Appendix G:** Sonoma Coal Mine Flood Study (Engeny 2013)
- **Appendix H:** QNH Mine Waste Management Plan (QCoal 2021)
- **Appendix I:** Cows Coal Project Waste Rock Report. (TECSOL, 2011)
- **Appendix J:** Drake Coal Project Waste Rock Characterisation Report (GHD, 2012)
- **Appendix K:** Cows Coal Project Soils Report (TECSOL, 2011)
- **Appendix L:** Drake Project Soils and Land Suitability Assessment (GHD, 2011)
- **Appendix M:** 2021 QNH Rehabilitation Monitoring Report (Kleinfelder, 2021)

DES ITEM 2: PROJECT PLANNING – REHABILITATION/ IMPROVEMENT PLANNING

DES ISSUE

The mining activities carried out at the other QNH sites contribute to the disturbance at CCM and impacts on when areas will become available for rehabilitation. The relationship between CCM and the other QNH mines is not discussed in sufficient detail to justify the scheduled rehabilitation.

DES Recommendation

It is recommended that a figure is included in the PRCP showing the relationship between CCM, SCM and DCM with respect to current mining activities and the proposed final landform.

QCoal Response

A new figure (Figure 8) and further discussion detailing the integration between the QNH sites, as well as the shared infrastructure utilised by the QNH Mines, has been inserted into s1.5.3 of the V2 PRC Plan – Rehabilitation Planning Part as provided.

DES ITEM 3: PROJECT PLANNING – REHABILITATION/IMPROVEMENT PLANNING

DES ISSUE

The end of a clean water drain has been identified as RA3. A 'clean water drain' has not been specifically referenced in the PRCP. Section 5.2.1 of the rehabilitation planning part states that the clean water drain is the outlet of the clean water drain originating in DCM. Section 5.3.5.2 mentions that the drainage line is a 70m section of the western drainage feature which has been permanently realigned within the DCM and extends into CCM.

DES Recommendation I

Clarification is required about whether the 'clean water drain' is the 70m reach of the western drainage feature.

QCoal Response

The 'clean water drain' is the 70m reach of the realigned western drainage feature within the CCM. The nomenclature in the V2 PRC Plan – Rehabilitation Planning Part and V2 PRC Plan - Schedule have been better aligned - for clarity the drain and

therefore RA2, (previously RA3) is now consistently referred to as the 'Western Diversion Drain'.

DES Recommendation II

It is also recommended that Figure 7 includes clear labels for the drainage features and the adjacent mines and properties.

QCoal Response

Figure 7 has been updated in the V2 PRC Plan – Rehabilitation Planning Part to include the mapped stream orders within the CCM, the diverted reach of the Western Drainage Feature, ML boundaries/labels for the adjacent mines, and the cadastral boundaries for the adjoining properties. As the ML boundaries commonly follow the cadastral boundaries, Figure 3 provides a better overview of the cadastral boundaries

DES ITEM 4: PROJECT PLANNING – BASELINE INFORMATION – GEOTECHNICAL STABILITY

DES ISSUE

The PRCP states that the slopes of the rehabilitated waste rock dumps require consideration of geotechnical stability and that 'upon completion of the final landform at CCM, a geotechnical assessment will be undertaken to certify that the landform is geotechnically stable and meets the required factor of safety'.

Based on the information provided throughout the PRCP, geotechnical stability will be determined for the batters of the waste rock dumps that are formed on top of the backfilled void areas and the timing of such an assessment is relevant at RM1 (completion of the landform shaping) and RM4 (to demonstrate final geotechnical stability of the area).

DES Recommendation

It is recommended that an additional milestone criterion is added to each relevant RM that demonstrates the landform is geotechnically stable. This will ensure that the PRCP schedule reflects the statement made in section 5.1.1 of the rehabilitation planning part - 'a geotechnical assessment and certification will be undertaken upon completion of the final landform...', and the timing of geotechnical studies given in Table 32 Assessments and Certifications.

QCoal Response

As noted in 5.3.1 of the V1 PRC Plan – Rehabilitation Planning Part, during mining operations waste rock dumps at the CCM are dumped at the angle of repose (approximately 37°/75%), a slope which is considered geotechnically stable for

operations (including mobile plant and personnel accessing the crest and base of the slope). The rehabilitated waste rock dumps are then battered to the maximum design slope (11.5°/20%) which is significantly less than the angle of repose, so the landforms are therefore inherently more geotechnically stable than during operation where people and plant are in operational proximity. As such, BRC does not consider the geotechnical stability of the CCM final landforms slopes (11.5°/20%), to represent a material risk.

Criteria relating to confirmation/verification of the conformance of the final landform to the design criteria have been added to RM1 and RM4 respectively, to align with the PRC Plan Table 32 (Assessments and Certifications). Inclusion of criteria relating to confirmation of geotechnical stability in other Rehabilitation Milestones is not considered necessary.

The language used around geotechnical assessments has also been made more consistent in the V2 PRC Plan – Rehabilitation Planning Part and V2 PRC Plan - Schedule.

DES ITEM 5: PROJECT PLANNING – BASELINE INFORMATION – TOPOGRAPHY

DES ISSUE

Figures 27 – 31 of the PRCP indicate the scale of the post mining landforms against the natural surface. Figure 31 seeks to demonstrate the changes to topography associated with the final landform design. Figure 27 shows the contours where shaping and battering of the WRDS has already occurred. The scale presented in Figure 27 makes it difficult to interpret.

DES Recommendation I

Include a figure of the topography of the post mining landscape for comparison.

QCoal Response

Two additional figures (Figures 31 and 32) have been inserted into the V2 PRC Plan – Rehabilitation Planning Part with the final landform design contours displayed and at a smaller scale, focused on the CCM B-Pit and Q-Pit areas respectively for greater clarity. Directions of surface water flows are also displayed.

DES Recommendation II

Label the drainage features in Figure 8.

QCoal Response

Figure 9 (previously Figure 8) in the V2 PRC Plan – Rehabilitation Planning Part has been updated with the requested information (which is also shown in Figure 15).

DES ITEM 6: PROJECT PLANNING – BASELINE INFORMATION – SOILS AND LAND SUITABILITY

DES ISSUE

The information in Table 13 of the PRC plan regarding constraints associated with soil salinity are consistent with a recognised framework for assigning a soil salinity rating. The framework requires information about texture, clay content and EC which is also provided in Table 13. Provision of the Tecsol Soil Assessment (2011) will enable the department to confirm that the soil salinity rating has been appropriately assigned.

With regards to topsoil constraints and blending of topsoil, it is appropriate that topsoil is assessed for fertility and other constraints prior to commencement of rehabilitation or following any failed rehabilitation. Such a strategy is outlined in Section 7.3 of the attached RMP.

DES Recommendation I

Section 1.14.1 of the PRC plan relies on the results and conclusions drawn from a number of surveys and soil assessments. The main reports relied upon in the planning part are required to be attached.

QCoal Response

The following are the main reports relied upon in Section 1.14 of the PRC Plan – Rehabilitation Planning Part and are appended to V2:

- *Cows Project Soils Report (Tecsol, 2011) – **Appendix K***
- *Drake Project Soils and Land Suitability Assessment (GHD, 2011) – **Appendix L***

It should be noted the information presented in Section 1.14 has been summarised from these reports rather than being directly extracted.

DES Recommendation II

It is recommended that a milestone criterion is added to RM2 to require an assessment of soil health and suitability.

QCoal Response

Revegetation at the QNH to date has relied on natural seedbank within the stripped topsoil. This strategy has been successful in producing thriving vegetation cover with a mix of preferred and intermediate species suitable for the PMLU of cattle grazing, as evidenced in rehabilitation monitoring reports over a number of years and as observed by DES during the PRC Plan site inspection visit in May 2021. To date over 200Ha of rehabilitation has been carried out on the QNH and there have been no rehabilitation failures related to topsoil health or suitability.

As such, the documented success of revegetation (survival rates, variety and abundance) with suitable species is itself the most compelling evidence of the reliability of the seedbank and the inherent suitability of the topsoil to support that seedbank. Further, given that topsoil was stripped from land formerly used for grazing activities, the seedbank was therefore built up from preferred pasture species present at that time and subsequently retained in the stockpiled topsoil, the topsoil is inherently suitable for sustaining the nominated PMLU.

It is noted that stockpiled topsoil can decline in quality depending on various factors including soil type and quality, duration of stockpiling, stockpile height and level of compaction. Any decline in quality is stemmed when topsoil is re-spread enabling natural physical and biological processes within the soil to re-establish and commence natural amelioration. The growth of vegetation and resultant addition of biomass/organic matter to the upper horizon of the soil profile further ameliorates topsoil naturally.

In consideration of the above, BRC considers the appropriate milestone/timing for soil assessment is RM3/RM4 as initially proposed in the V1 PRC Plan - Schedule (i.e. following topsoil resspreading and establishment of ground-cover, and upon commencement of rehabilitation monitoring).

This allows an in-situ assessment of resspread topsoil following a period of vegetation establishment, rather than an assessment of topsoil in stockpiles. This is consistent with the approach that has been undertaken at the QNH for rehabilitation work to date and the methodology outlined in the QNH Rehabilitation Management Plan.

For completeness, BRC acknowledges that undertaking the soil assessment during RM3/RM4 rather than during an earlier RM could be perceived as carrying some potential risk. The most likely example of such a perceived risk is if a particular type of stockpiled topsoil is unsuitable for the establishment of grazing pasture (due to physical/chemical/biological limitations) without being identified, and the topsoil is subsequently spread in the rehabilitation process. In such circumstances, a likely outcome would be poor establishment of grazing pasture during RM3, and the non-achievement of the RM3 criteria. This would then trigger further evaluation of the resspread topsoil and/or rework to enable the RM3 criteria to be met within the scheduled timeframe. BRC considers that the likelihood of this occurring is low (based on the topsoil LMUs encountered at the CCM, the stockpiling practices, and rehabilitation success to date across the QNH), and is prepared to accept this risk

*and the potential consequences (i.e. rework of rehabilitation at BRC's cost to enable the Rehabilitation Milestones to be achieved). This risk has been identified and discussed in **Section 6.1, Table 29.***

DES ITEM 7: PROJECT PLANNING – BASELINE INFORMATION – SITE HYDROLOGY AND FLUVIAL NETWORKS

DES ISSUE

It is noted that the western diversion drain is not defined as a watercourse under the Water Act 2000 and as such does not require specific approval for its construction. It is proposed that once revegetated, the drain will become part of the broader pasture landscape. However, as it will concentrate and convey water, it is assumed to be at a greater risk of erosion or scouring when compared to the surrounding grazing pastures.

DES Recommendation I

Provide more information about what improvements have been made to the western diversion drain and how will it be rehabilitated to be safe and stable, and not require ongoing maintenance post mining.

QCoal Response

Additional information relating to the western diversion drain has been added to s5.3.5 of the V2 PRC Plan – Rehabilitation Planning Part. This includes the following:

- *The bed and banks of the Western Diversion Drain have been excavated into natural (i.e. competent) ground within the quaternary strata, to flow into Two Mile Creek approximately 200m west (downstream) of where the original western drainage feature channel flowed into Two Mile Creek.*
- *This means that the materials which form the bed and banks of the Western Diversion Drain are the same as those which naturally occurred in the original western drainage feature channel and the existing Two Mile Creek channel.*
- *The Western Diversion Drain has been excavated to have a greater width, depth and wetted perimeter than the original western drainage feature, and is therefore able to convey greater flows than the original.*
- *The ephemeral nature of the background flows within the local catchment means that the drainage features in the area are dry at all times except during periods of actual runoff-induced flow. As such, the drainage features are managed as part of as the surrounding grazing pasture.*
- *The Western Diversion Drain is located away from and downstream of the CCM mining areas and is surrounded by undisturbed grazing pasture. For that reason, it has not been necessary to exclude cattle from the area, unlike the*

typical approach to exclude cattle from operational mining areas by fencing, etc. The RA2 area in the CCM is within an area that has been, and continues to be, actively grazed as part of an agreement with a neighbouring landholder. The Western Diversion Drain reports to a reach of Two Mile Creek which is similarly located within the grazing area with cattle having unrestricted access for crossing and watering.

- The majority of the catchment (>95% of the 396Ha pre-mining catchment) for RA2 is progressively being permanently removed with the progression of mining activities within the adjoining DCM. This will mean the frequency and quantity of runoff-related flow reporting through the Western Diversion Drain will be dramatically reduced (the final reporting catchment will be ~12Ha which is <5% of the original catchment area). Figure 36 in the V2 PRC Plan – Rehabilitation Planning Part shows the original catchment and the final landform catchment (following completion of rehabilitation at the CCM and adjoining DCM) as well as the original and diverted alignments for the western drainage feature.*
- The run-off from the reduced final catchment reporting to the Western Diversion Drain will be akin to other flows within constructed drainage structures for waste rock dumps at the CCM, but at a much shallower slope (<1%) and within competent material. As such, no additional stabilisation works beyond revegetation are deemed necessary. Regardless of the above, the bed and banks of RA2 have already achieved a significant proportion of naturally regenerated groundcover. Figure 37 shows a typical cross-section of the Western Diversion Drain, looking upstream from the base of the channel near the confluence of the with Two Mile Creek, and clearly shows the extent of pasture grass and native tree/shrub establishment within the diversion drain.*

To address the stabilisation/rehabilitation of RA2, RM5 has been added to the V2 PRC Plan - Schedule. This is the sole RM which will apply to RA2 and reflects the minor nature of the disturbance and rehabilitation required to achieve the PMLU.

DES Recommendation II

Include a clearer figure showing all the drainage features with names, flow direction, stream order, release points and monitoring points for all of the QNH as well as CCM. This figure should also depict the realignment of the western drainage feature.

QCoal Response

An additional figure (Figure 16) has been added to the V2 PRC Plan – Rehabilitation Planning Part with the requested detail for the QNH (note: not all watercourses/drainage features have names). Figure 17 (previously Figure 15) has also been updated to improve clarity for the requested information within the CCM.

DES Recommendation III

Detail how the rehabilitation at CCM may impact on the eastern drainage feature (apart from the haul road crossing) given its close proximity to the waste rock dumps.

QCoal Response

The flood impacts on the final landform are addressed in Section 5.2.3, which has been updated in the V2 PRC Plan with further detail as follows (also refer to the response for Item 15):

- *The Eastern Drainage Feature in this area consists of several braided channels, with the most significant channel being located to the east of the mapped stream order as shown in Figure 17 and described in Section 1.12.2 of the PRC Plan – Rehabilitation Planning Part. Rehabilitation at the CCM will not impact the Eastern Drainage Feature beyond the extent it has already been impacted. The CCM B-Pit waste rock dump maximum disturbance footprint has already been reached and is located ~150m to the west of the most significant channel of the Eastern Drainage Feature.*

DES ITEM 8: PROJECT PLANNING – BASELINE INFORMATION – UNDERLYING LANDHOLDERS, POST-MINING LAND USE, COMMUNITY CONSULTATION

DES ISSUE

Section 2.2 of the PRC plan states that a Community Consultation Register has been developed and is a stand-alone document that will be updated as required independent of the PRC plan. To comply with section 126C(1)(c)(iii) of the EP Act, the Community Consultation Register **must be** provided with the PRCP.

This will assist the department to understand how the proposed PMLU was originally determined, any alternatives considered and any changes to the rehabilitation strategies that may have occurred over time in response to community feedback.

The PRC plan states that the land underlying CCM is a dedicated road reserve. Since 1981, the land has been used for grazing under successive permits to occupy, which are granted under the Land Act. There are no details about any consultation that has occurred with the relevant state government agency that administers that act about the PMLU and associated infrastructure (i.e. drainage structure).

DES Recommendation I

Attach the Community Consultation Register to the PRC plan. It should document all previous consultation that has been undertaken with the community in relation to the land outcomes proposed in the QNH RMP. Include the specific details outlined in section 3.5 of the PRCP guideline such as consultation dates, consultation type, information provided, issues discussed, and any decisions/commitments made by QCoal.

QCoal Response

The Cows PRCP Community Consultation Register has been attached to the V2 PRC - Rehabilitation Planning Part (Appendix B) detailing previous engagement with community members identified to have a genuine interest in the rehabilitation and closure of the CCM (as listed in Table 19 within the PRC Plan – Rehabilitation Planning Part).

DES Recommendation II

More information is also required to be included in the Community Consultation Plan for CCM as presented in Table 20 of the PRC plan about the objectives for community consultation going forward. Detail the specific areas that QCoal will be seeking to consult on, and how responses from the community will be used to inform rehabilitation and closure planning.

QCoal Response

Table 20 has been updated in the V2 PRC Plan to more clearly state the objectives for consultation with community members identified to have a genuine interest in the rehabilitation and closure of the CCM. It is noted that due to the advanced nature of the mining activities, rehabilitation and closure planning at the CCM, there are limited opportunities for further community input.

DES Recommendation III

It is recommended that the applicant provide more information about how it was determined that members of the community do not have an interest in the rehabilitation and closure of the QNH. This could be demonstrable through a description of the submissions or objections received for EA applications, the nature of any complaints received or outcomes from community meetings.

QCoal Response

Section 2 of the V1 PRC Plan – Rehabilitation Planning Part detailed the process followed to identify the parties who have a demonstrable and legitimate interest in, and have a direct potential to be influenced by, the rehabilitation of the CCM. As is stated in that section, the process followed the guidance and direction provided to industry by DES in information sheet “Community Consultation for Progressive Rehabilitation and Closure Plan – ESR/20196/5101”. As part of this response to the Information Request Notice, the process was reviewed and an additional stakeholder (Whitsunday Regional Council – see response to Recommendation IV below) was identified.

As such, additional detail has been included in Section 2 of the V2 PRC Plan – Rehabilitation Planning Part to clarify the process and include the additional stakeholder.

DES Recommendation IV

More detail should be included about any consultation undertaken to date with the state government about the proposed use of state land and if there is potential for the authorised use of the land to change in the future.

QCoal Response

Lot A on AP2839 is a road reserve which was previously utilised as stock route. While the lot was never actually used as a road (and a road formation was never constructed), the 'road' was temporarily closed by gazettal in 1962, but never permanently closed. As such, it continues to be designated as a 'road'. As a non-state controlled road, the Whitsunday Regional Council is responsible for management of the land, including issues related to use, access, construction and maintenance. For the purposes of the Mineral Resources Act, WRC is deemed to be the owner of the road. During the approvals process for the CCM, engagement occurred with the WRC (as the named owner of the road) and a compensation deed between BRC and WRC for MLA10345 was signed in 2009, enabling the road to be included in the ML application area. Further wording has been added to Section 1.3 of the V2 PRC Plan – Rehabilitation Planning Part in this regard.

As owner of the land underlying the CCM, WRC is therefore considered to have a direct, demonstrable legitimate, and genuine interest in the land where the CCM activities are occurring (as per the approach outlined in the DES information sheet "Community Consultation for Progressive Rehabilitation and Closure Plan – ESR/20196/5101").

BRC has undertaken further consultation with WRC regarding the land outcomes and potential for the authorised use of Lot A on AP2839 to be changed in the future. This consultation has been recorded in the Cows PRC Plan Consultation Register.

WRC have indicated that there is no intention to 'reopen' the road, permanently close the road, or otherwise change the authorised use of Lot A on AP2839. On that basis, the designated land-use will continue to be 'Grazing - Reserve, Road or Stock Route', as authorised by the Permit to Occupy. This is consistent with the nominated PMLU for the CCM.

It is understood that should WRC elect to permanently close the road at some point in time, it would become unallocated state land which would either be disposed of by the State as a stand-alone land parcel (this is unlikely due to the size and arrangement of the lot relative to surrounding properties) or disposed of by inclusion into one of the adjoining lots. The rural zoning of the adjoining properties would be likely to be applied to the former road, and the land use would likely continue to be used as grazing pasture. Any proposed alternative land-use (other than rural) would need to be approved by WRC and take into consideration the prior activities undertaken within the site and the associated final landform.

Further discussion has been added to Section 1.3 and Section 2 of the V2 PRC Plan – Rehabilitation Planning Part in this regard.

DES Recommendation V

The nearest sensitive and commercial places include the privately owned homesteads of Belmore and Sonoma (3km), and the townships of Collinsville and Scottsville (10km). Indicate whether the landholders neighbouring the QNH mines and the wider community have been involved in consultation activities with respect to rehabilitation outcomes for the QNH as a whole.

QCoal Response

As previously noted, Section 2 of the V1 PRC Plan – Rehabilitation Planning Part detailed the process followed to identify the parties who have a demonstrable and legitimate interest in, and have a direct potential to be influenced by, the rehabilitation of the CCM. As is stated in that section, the process followed the guidance and direction provided to industry by DES in information sheet “Community Consultation for Progressive Rehabilitation and Closure Plan – ESR/20196/5101”. As part of this response to the Information Request Notice, the process was reviewed and an additional stakeholder was identified.

The designation of a property/township as a nearby Sensitive or Commercial place for the purposes of the CCM Environmental Authority does not necessarily mean the owners/residents of those places are directly influenced by the rehabilitation of the CCM or have a demonstrable, legitimate, and genuine interest in the rehabilitation outcomes. In particular, the significant distance to the Collinsville and Scottsville townships means the populations within those towns would not be considered to have a demonstrable and legitimate interest in the rehabilitation of the CCM.

Section 2.1 of the V2 PRC Plan – Rehabilitation Planning Part and the appended Cows PRC Plan Consultation Register has been updated to clarify the process of determining interested parties and to include the previously unidentified party with whom consultation has now been undertaken.

DES ITEM 9: GENERAL REHABILITATION PRACTICES - REVEGETATION

DES ISSUE

Section 3.8 of the PRCP guideline requires that transitional PRC plans include details of previous monitoring/maintenance of areas already rehabilitated. This includes a description of the rehabilitation works previously carried out, when the works commenced and were completed, and whether the rehabilitation has been applied for or been progressively certified.

Some of the required information is provided in later sections of the proposed PRCP. Section 7.1 of the PRCP states that monitoring of previously rehabilitated areas has been ongoing since 2012 on QNH sites and 2017 on CCM. Section 5.2.1 explains what type of

rehabilitation activities have been undertaken and in which RA. However, there is no data from previous monitoring events to demonstrate that the existing rehabilitation is successfully achieving the completion criteria and/or trending towards achievement of the PMLU.

The risks associated with relying on the natural seedbank have been identified in the Risk Assessment section of the PRC plan and control measures recommended. However, evidence has not been provided to support the statements that previous rehabilitation using this strategy has been successful. To adequately demonstrate that the risks associated with this revegetation strategy are captured, the actions described in section 5.2.9.3 of the PRC plan must be reflected in the PRCP schedule.

DES Recommendation I

Include the rehabilitation monitoring reports for CCM and the other QNH mines where relevant as appendices to the PRCP and discuss the results/recommendations in more detail within the planning part to demonstrate the reliability of this approach. Greater discussion to link the success of previous rehabilitation strategies to milestones and milestone criteria in the schedule is required and will serve to provide a more complete description of the works previously carried out.

QCoal Response

The latest QNH Rehabilitation Monitoring Report (Kleinfelder, 2021) is attached to the V2 PRC Plan – Rehabilitation Planning Part as Appendix M. Kleinfelder 2021 also summarises relevant outcomes and results from previous rehabilitation monitoring so the previous reports have not been appended. Additional information relating to the monitoring outcomes in relation to the reliance on the natural seedbank to establish grazing pasture has been provided in Section 7.1.1.6 of the V2 PRC Plan – Rehabilitation Planning Part.

DES Recommendation II

It is recommended to include an additional milestone criterion for RM3 to ensure monitoring to assess germination occurs within a specific timeframe (e.g. one month) following topsoil application in order to identify whether additional seeding is required.

QCoal Response

Additional milestone criteria have been added to RM3 for assessment of germination of the natural seedbank within 1 year of topsoil placement. 1 year is considered a suitable period as sufficient time (including a wet season) will have passed to enable an assessment of whether germination has been, or is likely to be, successful. A 1-year timeframe for assessment of germination will also align with the optimal timeframe for undertaking additional seeding (i.e. prior to the next wet season).

DES ITEM 10: GENERAL REHABILITATION PRACTICES - LANDFORM DESIGN

DES ISSUE

The PRCP states that the slopes, dump heights and physical properties of the waste rock will result in a geotechnically stable final landform. The 20% slope is a pre-approved criteria in the QNH RMP (a LOD), so no justification of this slope has been included in the PRC plan.

While the EA holder has the right to transition pre-approved criteria, the PRCP guideline requires transitional sites to meet the information requirements outlined in section 3.6.1. This includes information to demonstrate that the landform design will achieve geotechnical and erosional stability.

The PRC plan currently lacks sufficient information to meet all the requirements for the final landform design. In particular, there is no description of the method used to determine the landform design (in particular the slopes, slope length, bench heights etc.), no prediction regarding the long-term stability of the final landform design, a lack of clear explanation of QA/QC requirements and no information regarding the limitations and assumptions of landform design. This information is necessary to demonstrate that the proposed milestone criteria are adequate to achieve the final outcome of land in a stable condition.

There is discussion in section 3.1 of the PRC planning part regarding the definition of stable. The department's expectations regarding the achievement of land in a stable condition as per s111A of the EP Act, is that in order to demonstrate landforms are safe, structurally stable and no environmental harm is being caused by anything on or in the land, erosional stability of the final landform will be achieved. This also applies to infrastructure being retained by the landholder (section 3.6.5 Built Infrastructure PRCP Guideline).

Section 5.2.6 of the planning part states an intention to be consistent with the surrounding topography (approx. 3%) to the extent possible. The soil classification information provided in section 1.14.1 notes that the Land Unit 5 (Dermosols and Vertosols) naturally occurs on level to gently inclined slopes less than 3%. Land Unit 5 comprises the majority of topsoil material which will be used in rehabilitation. Salinity levels in this soil type likely promote flocculation (which masks or prevents dispersion) and have been assigned a low erodibility rating (Table 14). However there is little discussion or justification to demonstrate that LU5 will continue to achieve erosional stability at much steeper gradients such as the <20% slope proposed in the milestone criteria.

Section 5.3.1 of the planning part describes final landforms associated with WRD as being developed to achieve geotechnical stability but do not account for erosional stability. Figure 28 CCM Final Landform indicates that slopes greater than 3% are limited to the dump batters. Currently, the PRCP schedule does not appear to reflect the actual intention with regards to final landform slopes that is expressed in the planning part.

DES Recommendation I

Erosion rates specific to the site and how they have informed landform design are not evident and the PRCP schedule contains a single qualitative criterion which does not meet the SMART principles.

QCoal Response

It is well established that the key factor in ensuring the erosional stability of final landforms is the establishment of ground cover. Specifically, groundcover has a significantly larger impact on reducing rates of erosion than other relevant factors such as the physical characteristics of soil (e.g. sodicity, etc) or slope angles. The presence of ground cover reduces impacts from rain and wind erosion, as well as reducing the velocity and volume (and thus erosion potential) of run-off as overland flow. Studies such as Carroll et al (2000)¹ included field trials on mining landforms of varying slopes (10%, 20%, 30%) and concluded that there is no material difference in waste rock dump soil erosion rates between slope gradients once a significant level of groundcover in the form of pasture grasses is established. Carroll et al (2000) is considered directly relevant given the trials were carried out on waste rock dump batters formed from waste rock from the equivalent Moranbah Coal Measure sequences as encountered at the QNH. The study found that erosion rates on all trial areas were significant prior to the establishment of groundcover (between 70 and 500t/Ha/yr), but groundcover as low as 30% was sufficient to reduce sediment loss significantly (to below 20t/Ha/yr), regardless of the slope.

The groundcover criteria for the CCM is nominated in the acceptance/completion criteria in the QNH Rehabilitation Management Plan, which have been adopted in RM3 and require a mean minimum groundcover of 50% or greater than the grazed reference site, minus one standard deviation. The most recent QNH rehabilitation monitoring report (Kleinfelder, 2021) is provided as Appendix M of the V2 PRC Plan and indicates that this groundcover figure is being achieved at all monitored sites (including at sites <2 years post-establishment). All sites recorded a minimum of 80% groundcover, indicating that erosional stability is being achieved despite the monitoring occurring at a sub-optimal time of year and significantly lower than average rainfall having been recorded in the year to date. BRC is therefore confident that low erosion rates are currently being achieved on rehabilitated landforms with established grazing pasture at the CCM, based on the findings of published studies and observations from rehabilitation monitoring.

Kleinfelder, (2021) notes that where instances of localised rill erosion have been identified, they have been observed as being relatively stable due to the cover of pasture grass. That observation of stability of rills is consistent with the rills forming prior to establishment of groundcover (i.e. during establishment), and then stabilising once the groundcover establishes. Gully erosion within the rehabilitation areas is limited to a number of locations which receive external concentrated flows from unrehabilitated areas outside the immediate rehabilitation area, and is related

¹ Carroll C. and Tucker A., 2000. Effects of pasture cover on soil erosion and water quality on central Queensland coal mine rehabilitation. Tropical Grasslands 34, 254-262.

to hydraulic considerations requiring the installation of drainage structures as part of permanent stabilisation.

The adoption of the groundcover milestone criteria for RM3 and RM4 is a readily measurable metric (i.e. which meets the SMART principles), which can be used as an indicator of erosional stability. Groundcover establishment is already measured and tracked during rehabilitation monitoring at the CCM, as it is part of the existing acceptance/ completion criteria. As previously stated, groundcover establishment is the biggest factor in the achievement of erosional stability of the final landform (with the influence of soil type and landform slope on the erosion potential diminishing rapidly with the establishment of groundcover). As such, BRC considers that the measurement of groundcover proportion is an appropriate measurement of erosional stability, particularly when the completion criteria also require identification and remediation of significant erosion features.

The alternative of monitoring erosion rates directly to determine the success of rehabilitation in maintaining erosional stability presents several issues:

- monitoring of erosion would be required within every single sub-area (as the milestones apply to, and must be progressively satisfied for, each individual sub-area within an overall Rehabilitation Area). As such, this approach does not scale to large sites without becoming onerous and impractical.*
- requires that landforms are shaped and topsoiled first (i.e. meaningful monitoring would only begin once landforms are constructed and rehabilitation is completed). As such, the meaningful value that erosion monitoring results would provide in terms of informing any required actions to improve rehabilitation, would be limited to identifying the need for increased groundcover or improvements to drainage management; and*
- the above can be achieved by directly monitoring groundcover and applying a conservative minimum acceptable rate (as has been implemented at the CCM).*

Additional detail as per above has been added to Section 1.14.2 of the V2 PRC Plan – Rehabilitation Planning Part to outline why monitoring of groundcover is an appropriate measure to inform erosional stability and why BRC considers the 20% maximum slope contained in the QNH RMP completion criteria/adopted Rehabilitation Milestone criteria to be appropriate.

With regard to the statement above that “salinity levels in LU5 topsoil likely promote flocculation (which masks or prevents dispersion) which may have led to LU5 being incorrectly assigned a low erodibility rating”, the electrical conductivity levels within LU5 topsoil are typically low (40-50µS/cm, as stated in Table 13), as are the ESP and Ca:Mg ratios (as stated in Table 14), all of which contribute to the low erodibility rating that has been assigned.

DES Recommendation II

It is recommended that the milestone criteria '20% (11.5 degree) slope achieved unless an alternate slope is recommended by an RPEQ' is amended to reflect the intent expressed in the planning part (i.e. '20% (11.5 degrees) slope on dump batters'.

QCoal Response

Rehabilitation Milestone 1 has been amended in line with this recommendation.

DES Recommendation III

It is recommended that a milestone criterion be added to each relevant RM that demonstrates that the landform is geotechnically stable. This will ensure the PRCP schedule reflects the statement made in section 5.1.1 of the Planning part i.e. 'a geotechnical assessment and certification will be undertaken upon completion of the final landform...', and the timing of geotechnical studies given in Table 32 Assessments and Certifications.

QCoal Response

Refer to response for Item 4 DES Recommendation I

DES ITEM 11: GENERAL REHABILITATION PRACTICES - LANDFORM DESIGN

DES ISSUE

The PRCP states that the final landform is designed to be consistent with the requirements for Class 4 land suitability and the surrounding topography to the extent possible. The final landform for the waste rock dumps at CCM is constrained mainly by the drainage features and the floodplain. Stability is achieved through the selection of slope length and angle, material selection and the establishment of ground cover to minimise erosion. The figures are only comparing the designed final landform with the existing mined landform.

DES Recommendation

It is recommended that a comparison is made between the pre-mining landscape and the proposed final landform given that the goal is to return the site to its pre-existing condition and use.

QCoal Response

The goal of the proposed final landform is not to return the site to its pre-existing condition, only to a final landform that meets the completion criteria and achieves

the agreed upon post mining land-use (in this case grazing pasture). The final landform represents a significantly changed condition to the pre-mining landscape in terms of elevation and slope.

The pre-mining topography for the CCM area is shown in Figure 9 of the V2 PRC Plan – Rehabilitation Planning Part (previously Figure 8). Figures 33 and 34 provide a cross-sectional view (along the section line displayed in Figure 30) of the B-Pit and Q-Pit areas respectively, which includes the natural ground level (i.e. pre-mining topography), as well as the current topography, and the final landform topography. Displaying this information on cross-sections of the relevant areas is considered to be the most appropriate means of comparing the pre- and post-mining landforms.

DES ITEM 12: GENERAL REHABILITATION PRACTICES - SOIL AND CAPPING MATERIAL ASSESSMENT

DES ISSUE

There are risks associated with the proposed rehabilitation strategy involving the application of 100mm of topsoil to waste rock dumps and until the rehabilitation monitoring and any other trial results are provided to support this approach, the department will be unable to assess whether it is likely to achieve successful outcomes.

DES Recommendation I

The waste rock characterisation and rehabilitation monitoring results for the QNH mines that are relied upon to support the 100mm topsoil/surface of waste rock dump strategy must be attached to the PRCP.

QCoal Response

The application of 100mm of topsoil to Rehabilitation Areas has been previously accepted in the QNH Rehabilitation Management Plan (a LOD).

The QNH Mine Waste Management Plan (2021) has been attached to the V2 PRC Plan – Rehabilitation Planning Part as Appendix H. The specific QNH waste rock assessment reports relied upon in the PRC Plan – Rehabilitation Planning Part are also appended as Appendix I and Appendix J.

The most recent QNH rehabilitation monitoring report (Kleinfelder, 2021) is provided as Appendix M of V2 PRC Plan – Rehabilitation Planning Part and indicates that >80% groundcover and stock carrying capacity significantly above the completion criteria is being achieved at all monitored sites across the QNH (including at sites <2 years post-establishment), exceeding the acceptance criteria by a significant margin. As such, the adopted topsoil strategy is demonstrably suitable for achieving the grazing pasture PMLU.

Additional information relating to the outcomes of the QNH Rehabilitation Monitoring Program has been provided in Section 7.1.1.6 of the V2 PRC Plan – Rehabilitation Planning Part.

DES Recommendation II

It is recommend that an additional milestone criteria for soil health assessment and one month monitoring to assess germination are included in the PRCP schedule.

QCoal Response

For Soil Health Assessment: Refer to response for Item 6 DES Recommendation 2

For Germination Assessment: Refer to response for Item 9 DES Recommendation 2

DES ITEM 13: GENERAL REHABILITATION PRACTICES – WASTE CHARACTERISATION

DES ISSUE

The particulars required by this section of the PRCP guideline are likely to be detailed in the QNH Mine Waste Management Plan (and currently summarised in the QNH RMP). The QNH Mine Waste Management Plan (2020) is not attached to the PRCP or RMP.

All studies and reports relied upon as part of the PRC plan must be attached. The QNH RMP is a summary of these studies and in order to properly assess the risks and conclusions drawn by the PRCP, the original studies are necessary to provide conclusive evidence that progressive rehabilitation strategies will be successful.

DES Recommendation I

It is recommended that the various reports relied upon in the PRC plan for sections 1.10 and 1.10.1 are provided as attachments.

QCoal Response

The QNH Mine Waste Management Plan (2021) has been attached to the V2 PRC Plan – Rehabilitation Planning Part as Appendix M. The specific QNH waste rock assessment reports relied upon in the PRC Plan – Rehabilitation Planning Part are also appended as Appendix I and Appendix J.

DES Recommendation II

If the relevant water quality/runoff data is discussed in the QNH Water Management Plan, this should also be included as an appendix to the PRCP.

QCoal Response

The WMP is referenced only to provide context as to how water-related issues are managed onsite during operations. No specific content from the WMP has been referenced within the PRC Plan. The WMP is a 'live' document that has been developed in accordance with Conditions F25-F27 of the CCM EA and is amended annually (as a minimum) to reflect the progression of mining activities and the associated water management requirements during operation. As such, BRC believes there is limited value in appending the WMP to the PRC Plan, as it does not contain information that is relied upon within the PRCP, does not contain information directly pertaining to closure, and is superseded every ~12 months.

DES ITEM 14: GENERAL REHABILITATION PRACTICES - HYDROGEOLOGY

DES ISSUE

The information requirements in section 3.6.1 of the PRCP guideline apply to transitional PRCPs. This includes situations where an EA holder has a pre-approved PMLU.

DES Recommendation I

Ensure that all studies and reports relied upon to inform the rehabilitation outcomes are attached to the PRCP in addition to the QNH RMP. The relevant conclusions and recommendations from these studies must be discussed in the PRC plan, and in sufficient detail that the actions proposed in the PRCP schedule are justified/supported.

QCoal Response

Refer to response for DES Item 1 Recommendation 2.

Hydrogeology documents of relevance which have been appended to V2 PRC Plan – Rehabilitation Planning Part (or are included as Appendices to the Appendices) include:

- *Residual Voids on the QCoal Northern Hub Mining Complex (QCoal, 2020) – Appended to the Rehabilitation Management Plan (Appendix D of the PRC Plan)*
- *Residual Void Hydrogeology Study QCoal Northern Hub Mines (Engeny, 2020) – Appended to QCoal, 2020*

- *Report on QCoal Northern Hub Groundwater Model Update (AGE, 2020) - Appendix E of the PRC Plan)*
- *Cows Coal Project Groundwater Impact Assessment. (Geoaxiom, 2011) - Appendix F of the PRC Plan)*

The relevant outcomes from these documents have been discussed in the PRC Plan – Rehabilitation Planning Part.

DES Recommendation II

It is recommended that the PRC plan includes figures demonstrating relative depths (by cross section and long section – similar to figures 29 and 30) and groundwater flow specifically for CCM.

QCoal Response

The conclusions outlined within Section 5.2.2 of the PRC Plan – Rehabilitation Planning Part detail that:

- *there are no groundwater environmental values present within the CCM and surrounds;*
- *that minimal groundwater was encountered in the CCM pits during mining (prior to backfilling); and*
- *that groundwater level monitoring undertaken during operation did not identify material changes in groundwater level associated with the CCM Q-Pit or the CCM B-Pit prior to backfilling (consistent with minimal observed pit inflows).*

The main driver behind the post-mining groundwater levels for any open cut coal mine is associated with presence of final voids. Where final voids are present, they generally act either as a groundwater sink (a permanent groundwater drawdown into the void) or as a groundwater source (a permanent flow of water from the void into the surrounding groundwater), depending on the equilibrated water level in the void and surrounding groundwater level. Where mining pits have been fully backfilled, the above regimes do not apply, and localised groundwater regimes become less influenced by the mine's final landforms.

Any potential influence that the CCM may have had on groundwater was at its highest likelihood while the pits where open (prior to backfilling); however, as previously stated, level monitoring did not identify material changes in groundwater level associated with the CCM Q-Pit or the CCM B-Pit prior to backfilling.

Subsequently, the CCM voids have been backfilled and the potential localised influence on the groundwater associated with the CCM final landforms is therefore negligible. Groundwater within the CCM is likely to be influenced by final voids on

adjoining QNH sites. Accordingly, to gain an adequate understanding of groundwater, the impacts need to be viewed at a QNH-wide level.

Presented in the PRC Plan – Rehabilitation Planning Part Section 5.2.2.1.1 is a discussion of QNH final void modelling, the results of which are illustrated in Figures 22-25, which clearly show the equilibrated extent of the post-mining drawdown and the direction of flow towards adjacent QNH residual voids.

As such, providing cross-sections/long sections specific to the CCM (similar to Figures 33 and 34 in the V2 PRC Plan – Rehabilitation Planning Part (previously Figures 29 and 30) provides no meaningful data and could be open to misinterpretation.

DES ITEM 15: GENERAL REHABILITATION PRACTICES - FLOODING

DES ISSUE

The intent of section 3.6.1 Flooding of the PRCP guideline is to require the EA holder to assess flood susceptibility and influence on the final rehabilitated landform. The Engeny (2013) flood study is stated as having considered the site in a pre-disturbed context and the major post-mining landform features (i.e. backfilled voids/WRD) have been sited outside of the 0.1% AEP floodplain which provides a conservative approach to identifying that flood influence is not a significant risk to the post-mining landscape.

DES Recommendation I

The Engeny (2013) study is required to be provided as it is relied upon by the PRCP. This will assist in supporting the flooding risk profile which is proposed as being of 'no significance' for CCM, and potentially provide further information regarding alterations of flow upstream and downstream.

QCoal Response

Engeny (2013) has been provided as Appendix G of the V2 PRC Plan – Rehabilitation Planning Part.

As stated in the PRC Plan – Rehabilitation Planning Part, this study reflects the pre-mining landform for the CCM following the construction of the permanent Two Mile Creek Diversion within the SCM. The identified proposed CCM features (i.e. B-Pit and Q-Pit) presented in the report were conceptual designs only at that time, which was prior to the CCM EA being granted. The CCM mining operations were subsequently planned to minimise impacts within the modelled flood extent to minimise requirements for regulated levees or other water management infrastructure.

DES Recommendation II

No specific flood protection measures have been readily identified in the PRCP. It is recommended that specific design requirements or flood management strategies (e.g. scour protection on susceptible portions of the post mining landforms) are included in the planning part and where appropriate, milestone criteria added to the PRCP schedule.

QCoal Response

Specific flood protection measures have not been identified as such measures are not required for the CCM final landforms. The primary elements of the final landform within the CCM which are located within the modelled flood plain are the toes of the eastern and western batters of the B-Pit waste rock dump. The modelled 0.1% AEP flood in this area is primarily the result of backflow effects from Two Mile Creek (the relevant watercourse) in the eastern and western drainage features (which are not relevant watercourses) and is primarily confined to the main channels of these features, with minor spill into the adjoining floodplains. As the dump extents are located along the edge of the modelled 0.1% flood plain and do not extend into the drainage feature channels, the depth and velocity of any flooding along the batter toe will be minimal. As such, the effects of flooding on the toe of the batter will be negligible and no specific design requirements or scour protection is required other than the establishment of groundcover for erosional stability.

Section 5.2.3 of the V2 PRC Plan – Rehabilitation Planning Part has been updated with this additional detail.

DES ITEM 16: GENERAL REHABILITATION PRACTICES – WATER MANAGEMENT

DES ISSUE

Section 5.2.8 of the PRCP is lacking a description of likely contaminants that pose a risk (post rehabilitation) of impact to environmental values, and their source, pathway and fate. Examples of such contaminants may be saline seepage/runoff and sediment. While management of surface water (from a water quality perspective) from the rehabilitated landform is only relevant where there are potential contaminants involved, sufficient information and data must be presented in the PRC plan to support the conclusion that there are no material impacts to the receiving environment. The PRCP references some studies including the QNH WMP and REMP which should be provided.

DES Recommendation I

The PRCP references plans/reports including the QNH Water Management Plan and the REMP, which need to be attached to the PRCP.

QCoal Response

As per response for Item 13 DES Recommendation II:

The WMP is referenced only to provide context as to how water-related issues are managed onsite during operations. No specific content from the WMP has been referenced within the PRC Plan. The WMP is a 'live' document that has been developed in accordance with Conditions F25-F27 of the CCM EA and is amended annually (as a minimum) to reflect the progression of mining activities and the associated water management requirements during operation. As such, BRC believes there is limited value in appending the WMP to the PRC Plan as it does not contain information that is relied upon within the PRCP for rehabilitation outcomes, does not contain information directly pertaining to closure, and is superseded approximately every 12 months.

The REMP Design Document is referenced only to provide context as to how monitoring of the aquatic ecology in the receiving environment is undertaken during operations at the CCM. Specifically, the REMP Design Document is in place primarily to outline the monitoring processes (locations, methods etc) relating to identification of any impacts potentially associated with the release of mine-affected water, as required by Conditions F18-F20 of the CCM EA, during operations. No controlled releases were undertaken from the CCM from commencement up to current, and none will occur in the future (as no water management infrastructure was built to facilitate such release).

Additionally, the CCM is in the process of rehabilitation, and rehabilitated areas, once established, are not considered to be mine-affected water. As such, BRC believes there is limited value in appending the REMP Design Document to the PRC Plan as it does not contain information that is relied upon within the PRCP for rehabilitation outcomes and does not contain information directly pertaining to closure.

DES Recommendation II

The addition of figures which show potential surface water movement across the final landform and interaction with adjacent SCM and DCM are recommended as they will further demonstrate how risks from surface water flows to the final rehabilitated landform will be managed/mitigated.

QCoal Response

Surface water movement across the CCM final landforms is limited to run-off from the Rehabilitation Areas.

Figures 31 and 32 have been included in Section 5.2.6 of the V2 PRC Plan – Rehabilitation Planning Part which shows the post-mining landform contours and the indicative direction of surface drainage across the final landforms.

DES Recommendation III

If an ESC management plan exists and is relevant to rehabilitation activities, it should be referenced in the PRCP and provided as an attachment.

QCoal Response

The QNH ESCP is incorporated into the QNH Water Management Plan. The ESCP has been developed in accordance with Conditions F28-F30 of the CCM EA and explicitly deals with the operational phase of the mining activities. It contains no material information pertaining to closure or the PRC Plan. As such, the operational ESCP is not relevant to rehabilitated landforms.

As previously noted, the WMP (which incorporates the ESCP), is a 'live' document which is amended annually to reflect the progression of mining activities, associated water management, and updates to ESCP requirements. It is applicable to operational activities only. As such, there is limited value in appending the WMP/ESCP to the PRC Plan as it does not contain information that is relied upon within the PRC Plan for rehabilitation outcomes, does not contain information directly pertaining to closure and will be superseded approximately every 12 months.

DES ITEM 17: GENERAL

DES ISSUE

The department acknowledges that the PRCP schedule is consistent with the template and the examples provided in the PRCP guideline. However, due to the depth of information provided in the PRCP, cross referencing is difficult when trying to put the milestones and milestone criteria into context during an assessment of the application.

DES Recommendation I

For ease of assessment, it is recommended that a table is included in the rehabilitation planning part to clearly link relevant sections of the rehabilitation planning part with the corresponding milestone criteria. This will provide a clear link between the rehabilitation strategies and the outcomes.

QCoal Response

An additional column mapping the Rehabilitation Milestone Criteria against the relevant PRC Plan section has been incorporated into Table 30 (Rehabilitation Milestone Tracking) in the V2 PRC Plan.

DES ITEM 18: PRCP SCHEDULE - GENERAL

DES ISSUE

Additional recommendation.

DES Recommendation

Remove references to non-existent rehabilitation milestones (i.e. RM5, RM6 and RM7) from the schedule.

QCoal Response

References to non-existent rehabilitation milestones have been removed from the Schedule.

PRC PLAN - SCHEDULE

DES ITEM 19: REHABILITATION AREAS

DES ISSUE

Section 5.3.6 of the planning part provides a significantly different series of rehabilitation activities for portions of haul road which intersect a drainage feature. The different rehabilitation strategies for these sections of haul roads have not been translated into the PRCP schedule. The PRCP Guideline (section 4.1 Step 2) states land that requires a specific type of rehabilitation strategy cannot be included into a broader area as there will be specific milestones only relating to a specific area of land within the larger area. The PRCP guideline continues on to state that where disturbed areas have different rehabilitation methods required, they cannot be in the same rehabilitation area.

DES Recommendation

At a minimum, include additional milestone criteria for RM1 to address the specific activities for haul roads that interact with drainage features. Alternatively, consider putting the portions of haul road which require the different rehab strategy into a distinct RA.

QCoal Response

The rehabilitation methodology required for the haul road crossings at the CCM are not materially different than the other RMs as the fundamental steps remain the same (i.e. earthworks and shaping, followed by application of growing media/other stabilisation, followed by vegetation establishment). All rehabilitation areas generally require some level of drainage/stabilisation works to be undertaken, so any stabilisation works required for drainage feature crossings are not necessarily unique to those areas.

The removal of drainage crossings involves the removal of material placed within the flow path (fill, pipes, etc) such that the reinstated bed and banks comprise the original in-situ material that also forms the bed and banks upstream and downstream of the crossing. The rehabilitated drainage feature crossings are therefore not expected to be any more prone to erosion, once vegetation is re-established, than the upstream and downstream areas.

It is noted that while RA2 singularly relates to rehabilitation of a diverted drainage feature, this is due to its physical location (i.e. not adjoining or proximate to any other RAs, and located within a currently grazed area) rather than the drainage feature requiring a materially different rehabilitation methodology.

Across the QNH there are currently more than 10 interactions between mining areas/infrastructure and mapped drainage features, and for the life of mine for the QNH, this is expected to increase. While some of these interactions are crossings which will likely be retained by agreement with the landholder, a number will require

reinstatement/rehabilitation when they become available for rehabilitation. The reinstatement/rehabilitation of these crossings will be undertaken at the same time as rehabilitation of the adjoining areas, as the methodology is not materially different.

To address this recommendation, RM1 has been reworded to include specific criteria addressing haul road crossings of drainage features.

DES ITEM 20: REHABILITATION AREAS

DES ISSUE

Section 126D(1)(d) of the EP Act requires that the PRCP schedule include maps showing the land mentioned in (a), (b) and (c). In addition to the reference map provided in the PRCP schedule for CCM, section 3.1 Spatial Information of the PRCP guideline requires that the PRC plan include spatial information outlining the rehabilitation areas that correspond to the proposed PRCP schedule to show the locations of the RAs for a 10 year period (minimum). This information is important to identify where progressively rehabilitation areas are located and assist to assess the Schedule.

DES Recommendation

It is recommended that additional maps are provided to show the sub-areas of each RA as they will relate to scheduled progressive rehabilitation in the schedule, for at least the first 10 year period.

QCoal Response

It is noted that Section 3.1 (Spatial Information) in the PRCP Guideline refers to showing the location of the rehabilitation/improvement areas for at least the first 10-year period. The spatial information and maps provided with the V1 PRC Plan show the locations of the rehabilitation areas for the LOM of the CCM. The identification of sub-areas within rehabilitation areas is not required or recommended by the PRCP Guideline.

Identification of sub-areas within RAs in the PRC Plan and PRCP Schedule is problematic due to the high likelihood of the specific locations of the sub-areas changing based on the dynamic nature of mining operations. This will lead to sub-areas potentially becoming available for rehabilitation earlier or later than would be stipulated in the Schedule. The requirements of the approved schedule for RAs will still be met; however, the specific location/layout of the sub-areas within that RA may change. Should sub-areas be detailed in the PRC Plan and PRCP Schedule, any time the sub-areas change to any material extent, an amendment to the PRCP Schedule would potentially be required (an increased administrative burden on BRC and DES), or potentially create a risk of non-compliance without any material change in overall rehabilitation outcome.

It is BRC's position that regardless of where the rehabilitation activities are undertaken within a RA, the nominated area and milestone dates for each rehabilitation area within the Schedule must be met, so a further breakdown of the RAs into sub-areas within the PRCP Schedule is unnecessary and restrictive.

BRC takes this opportunity to note a broader concern regarding this recommendation. The spatial identification of sub-areas was strongly opposed by industry during the consultation phase of the PRCP Guideline development (when domains were originally presented as the preferred method of identifying rehabilitation areas) as it reduces the operational flexibility for EA holders to complete mining activities and undertake rehabilitation work within an RA. The Guideline was finalised in recognition of that opposition and there was agreement that spatial identification of RAs only would be required. The above recommendation by DES appears to represent a departure from what has been previously agreed upon with industry, and a departure from the Guideline.

DES ITEM 21: REHABILITATION AREAS

DES ISSUE

Section 5.3.7 of the PRC plan states that there is no requirement for exploration activities to be included as rehabilitation areas in the PRCP schedule because the EA specifically legislates the rehabilitation timeframe relevant for each individual borehole.

The intent of the PRCP framework is to generate a holistic view of all rehabilitation activities carried out on the mining tenure and provides for rehabilitation requirements currently contained in the EA to be relocated to the PRCP schedule. The legislation requires that all areas disturbed within the ML are assigned a PMLU and where land is disturbed by a mining activity, be included in the PRCP schedule.

DES Recommendation

It is a requirement that areas disturbed by exploration activities which have not yet been rehabilitated or where exploration campaigns are planned in the future and will disturb land are provided for in the PRCP schedule.

QCoal Response

Refer to the following:

- *Separate memo "Cows Coal Mine PRCP Schedule – Inclusion of Exploration Activities" dated 3 June 2021, provided to DES on 7 June 2021.*
- *Subsequent additional information (map of a separate QCoal affiliated site showing extent of exploration boreholes) provided with an explanatory email to DES on 14 June 2021;*

- DES email to BRC dated 15 July 2021 stating the agreed approach for exploration boreholes (presented below).

Section 5.3.7 of the V2 PRC Plan – Rehabilitation Planning Part has been updated in consideration of this agreed approach.

From: NIELSEN Tenille <Tenille.Nielsen@des.qld.gov.au>
Sent: Thursday, 15 July 2021 3:02 PM
To: Brad O'Reilly <boreilly@qcoal.com.au>
Cc: MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>; BURGESS Emma <Emma.Burgess@des.qld.gov.au>; Julian Dobos <jdobos@qcoal.com.au>; Ryan Pane <rpane@qcoal.com.au>
Subject: RE: Cows PRCP Information Request - Exploration Activities

Good afternoon Brad, thank you for submitting the memo outlining a number of options regarding how exploration activities might be included in the Cows PRCP schedule.

The department has considered each of the options and concluded a position which will be relevant for Cows and also the remaining QCoal sites as they transition to the PRCP framework.

Option 1 – EA currently imposes conditions regarding rehabilitation of land disturbed by exploration activities
Where an environmental authority authorises exploration activities and imposes specific conditions regarding rehabilitation of areas disturbed by exploration, the department's preferred approach is based upon DES Option 1 in your memo.

That is –

- the EA conditions regarding rehabilitation of exploration areas will be imposed on the PRCP schedule and removed via an EA amendment from the EA after the PRCP schedule is approved;
- A specific 'exploration' Rehabilitation Area (and corresponding defined locations / spatial data to accompany the PRCP schedule) will not be required;
- The conditions imposed on the PRCP schedule will require that rehabilitation outcomes align to the relevant PMLU for the area disturbed by exploration activities.

Regarding the final dot point, it is noted that *Eligibility criteria and standard conditions for exploration and mineral development projects – Version 2 (EHP, 2016)* (the Code) requires land to be rehabilitated in line with the surrounding land use. However, the PRCP framework requires all areas on the resource tenure to have a nominated post mine land use. Consequently, the conditions imposed on the PRCP schedule will specifically require that rehabilitation outcomes align to the relevant PMLU on the disturbed land.

Option 2 – EA does not impose conditions regarding rehabilitation of land disturbed by exploration
Where an environmental authority authorises exploration activities but does not impose specific conditions regarding rehabilitation of areas disturbed by exploration, the department's preferred approach will be based upon DES Option 3 in your memo.

That is, the PRCP schedule will be required to propose a specific Rehabilitation Area, with supporting milestones and timeframes but is not spatially bound.

Based on a review of the QCoal Northern Hub and Byerwen EAs, it is apparent that the resultant PRCPs will include exploration activities based on the first option outlined above.

Cows	EPML00334613	Conditions H16 and H17
Drake	EPML00393013	Condition H18 and H19
Jax	EPML00337613	Condition H16 and H17
Sonoma	EPML00707713	Condition H16 and H17
Byerwen	EPML00595013	Condition H26 and H27

Please note, no additional areas or entitlement to disturb areas for exploration work will be authorised by the PRCP schedule. The EA will continue to be the instrument through which disturbance is approved.

If you have any questions, don't hesitate to give me a call.

Thanks.

 **Tenille Nielsen**
Principal Environmental Officer
Business Centre (Coal) | Coal and Central QLD Compliance
Department of Environment and Science
Mobile 0436 698 352
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

DES ITEM 22: REHABILITATION MILESTONES

DES ISSUE

The schedule provides a total of 3 years for the completion of all the rehabilitation milestones for RA1 and RA2. The PRC plan does not demonstrate how this will be achievable. The results from previous rehabilitation at CCM should be discussed in terms of how long it has taken for ground cover to establish, and for the completion criteria to be achieved.

The remaining areas are haul roads and the edges of some waste rock dumps so the rehabilitation work required may be less than that required for the backfilled pits and waste rock dumps. This may be the reason for why the rehabilitation can be completed within 3 years, however, there are no statements in the PRCP to this effect.

With regards to timing, one particular example is the final 29.35ha of RA1, which will move through all milestones within a 3 year period. Without further information, it will be very difficult to assess whether the PRCP schedule can achieve land in a stable condition within the timeframes set out by the PRCP schedule.

It is noted the rehabilitation monitoring plan outlined in section 7.1.1 of the planning part covers a number of pertinent parameters and Table 30 lists specific activities, records and review processes.

DES Recommendation I

Provide more detail in the rehabilitation planning part to justify the proposed milestone completion dates. This will address the department's concerns regarding the timing proposed in the PRCP schedule for RM3 and RM4 and whether sufficient time will elapse to collect the necessary data/evidence from the monitoring and maintenance activities.

QCoal Response

BRC acknowledges DES's concerns about the nominated timeframes in the V1 PRC Plan - Schedule for achieving the milestone criteria for the final areas within RA1.

Additional information has been added into the V2 PRC Plan – Rehabilitation Planning Part discussing the outcomes of rehabilitation monitoring to date (Section 7.1.1.6), and the nominated indicative Rehabilitation Milestone timeframes (Section 7.1.2). In consideration of DES's concerns regarding the completion of the final rehabilitation sub-areas within the previously nominated timeframes, and the outcomes of rehabilitation monitoring to date, BRC has reviewed and amended the milestone completion dates in the V2 PRC Plan - Schedule.

DES Recommendation II

It is recommended that milestone criteria and the milestone completion dates in the PRCP schedule are reviewed and where necessary revised to allow sufficient time elapses to demonstrate the milestones are achieved. To adequately demonstrate the risks associated with the revegetation from natural seedbank strategy have been captured, an additional milestone criterion should be added for RM3 to state that monitoring to assess germination occurs within a specified timeframe (e.g. one month) following topsoil application in order to identify whether additional seeding activities are required.

QCoal Response

As per the response to Item 22 DES Recommendation I (above), BRC has elected to revise the milestone completion dates for the rehabilitation areas in the V2 PRC Plan - Schedule.

As per the response to Item 9 DES Recommendation II, additional milestone criteria have been added to RM3 for assessment of germination of the natural seedbank within 1 year. 1 year (including a wet season) is considered a suitable period as sufficient time will have passed to enable an assessment of whether germination has been successful or will be likely without intervention. A 1-year timeframe for assessment of germination will also align with the optimal timeframe for undertaking additional seeding (i.e. prior to the next wet season).

DES ITEM 23: REHABILITATION MILESTONES

DES ISSUE

Section 7.1.1.1 Timing of the planning part proposes that soil assessments are undertaken every 5 years. However, all milestones are proposed to be completed within 4 years regardless of when they commence. There is a risk that the timeframes proposed in the PRCP schedule do not provide sufficient time to demonstrate land in a stable condition has been achieved.

DES Recommendation

It is recommended that the PRCP schedule reflect the recommendations in the planning part.

QCoal Response

As per the responses for Item 22 DES Recommendation I, BRC has elected to revise the milestone completion dates for the rehabilitation areas in the V2 PRC Plan - Schedule. This will better align with the timing for soil assessments to be completed.

Section 7.1.1.1 notes that soil assessments are undertaken five (5) yearly; however, an SQP may recommend an increase or decrease in the frequency of these assessments (or BRC may elect to undertake them more frequently as required). As soil assessments have already commenced at the CCM, it is expected that the 5-yearly timing will be suitable for the majority of the rehabilitation to be undertaken at the CCM as it will enable at least one round of monitoring to be undertaken during the progression of the sub-areas through the milestones. Where required (e.g. for the final rehabilitation period), more frequent monitoring will be undertaken and the wording in Section 7.1.1.1 has been amended to reflect this.

DES ITEM 24: REHABILITATION MILESTONES RM1 (LANDFORM DEVELOPMENT, SHAPING AND PROFILING)

DES ISSUE

The different tasks associated with the contaminated land investigation meet the definition of a rehabilitation milestone. The Reference Milestones provided in Appendix 3 of the PRCP guideline include a reference milestone specifically for remediation of contaminated land. Section 5.3.6 of the planning part states that contaminated land investigations and remediation work must be completed prior to commencing rehabilitation activities. However, Table 30 Rehabilitation Milestone Tracking lists remediation of contaminated land as occurring after landform shaping, earthworks and drainage systems have been constructed.

Section 7.3 of the PRC plan also states that land which has previously been on the EMR must be removed or have an appropriate Site Management Plan in place. Conditions H8 and H9 of the EA for CCM also require a site investigation report prior to surrender or application for progressive certification.

DES Recommendation I

It is recommended that a unique milestone for activities related to the remediation of contaminated land is established in the PRCP schedule.

Alternatively, further detail should be provided to explain why contaminated land activities should remain as part of RM1 and clarify the sequence for when contaminated land assessments and remediation needs to occur.

QCoal Response

BRC has elected to keep the assessment and remediation of contaminated land as part of the criteria for RM1 rather than as a separate milestone.

The only area at the CCM where contaminated material could potentially accumulate and the land therefore require contaminated land assessment, are the haul road drains for at-grade haul roads which are subject to extended usage (i.e. excluding waste rock dump ramps). Contamination of such drains could potentially occur from ongoing grading and maintenance of the active haul road surface. It is reiterated that the CCM does not include any hydrocarbon storage, workshops, MIA or any other infrastructure.

The presence of significant contamination within these drains is considered unlikely due to the incident reporting and management procedures onsite, which require that hydrocarbon spills are contained, reported and remediated.

Regarding the sequence for when contaminated land assessments and remediation need to occur, the order of the criteria for each milestone is not necessarily intended

to be sequential; however, for clarity the RM1 milestone criteria have been reordered to move the remediation of contaminated land to be the first criteria.

Table 30 in Section 7.1.2 of the V2 PRC Plan – Rehabilitation Planning Part has been revised to provide further clarity in relation to the process for contaminated land assessment and remediation.

DES Recommendation II

It is also recommended that milestone criteria include reference to the removal of land from the EMR.

QCoal Response

It is noted that Section 7.3 of the V1 PRC Plan – Rehabilitation Planning Part refers to the removal of any land listed on the Environmental Management Register (EMR) but there is no further reference to the EMR in the PRCP Schedule.

At the time of submission, Lot A on AP2839 (as the property underlying the CCM) is not listed on the EMR as no notifiable activities have been undertaken as part of the mining activities at the CCM. It is not anticipated that any notifiable activities will be undertaken at the CCM for the LOM, but for completeness and consistency with the PRC Plan – Rehabilitation Planning Part, additional criteria have been added to RM4 relating to removal of land from the EMR/implementation of a SMP.

DES ITEM 25: REHABILITATION MILESTONES RM2 (SURFACE PREPARATION)

DES ISSUE

The proposed PRCP schedule for CCM has included ripping of compacted surfaces and the placement of topsoil at a minimum depth of 100mm. RA1 and RA2 consist of waste rock dumps and haul roads.

DES Recommendation

It is recommended that milestone criteria regarding soil health and suitability assessment is added to this RM. This will mitigate against the risks associated with the minimal 100mm topsoil application depth and reliance upon the natural seedbank/topsoil health for revegetation works. An example of a relevant milestone criteria is provided in Appendix 2 of the PRCP guideline, which states that, 'An assessment of soil health and suitability has been completed by an appropriately qualified person to confirm soil is suitable for target vegetation establishment'.

QCoal Response

As per the previous response for Item 6 DES Recommendation II:

Revegetation at the QNH to date has relied on natural seedbank within the stripped topsoil. This strategy has been successful in producing thriving vegetation cover with a mix of preferred and intermediate species suitable for the PMLU of grazing pasture, as evidenced in rehabilitation monitoring reports over a number of years and as observed by DES during the PRC Plan site inspection visit in May 2021. To date over 200Ha of rehabilitation has been carried out on the QNH and there have been no rehabilitation failures related to topsoil health or suitability.

As such, the documented success of revegetation (survival rates, variety and abundance) with suitable species is itself the most compelling evidence of the reliability of the seedbank and the suitability of the topsoil to support that seedbank. Further, given that topsoil was stripped from land formerly used for grazing activities, the seedbank was therefore built up from preferred pasture species present at that time and subsequently retained in the stockpiled topsoil, the topsoil is inherently suitable for sustaining the nominated PMLU.

It is noted that stockpiled topsoil can decline in quality depending on various factors including soil type and quality, duration of stockpiling, stockpile height and level of compaction. Any decline in quality is stemmed when topsoil is re-spread enabling natural physical and biological processes within the soil to re-establish and commence natural amelioration. The growth of vegetation and resultant addition of biomass/organic matter to the upper horizon of the soil profile further ameliorates topsoil naturally.

In consideration of the above, BRC considers the appropriate milestone/timing for soil assessment is RM3/RM4 as initially proposed in the V1 PRC Plan - Schedule (i.e. following topsoil resspreading and establishment of ground-cover, and upon commencement of rehabilitation monitoring).

This allows an in-situ assessment of resspread topsoil following a period of vegetation establishment, rather than an assessment of topsoil in stockpiles. This is consistent with the approach that has been undertaken at the QNH for rehabilitation work to date and the methodology outlined in the QNH Rehabilitation Management Plan.

For completeness, BRC acknowledges that undertaking the soil assessment during RM3/RM4 rather than during an earlier RM could be perceived as carrying some potential risk. The most likely example of such a perceived risk is if a particular type of stockpiled topsoil is unsuitable for the establishment of grazing pasture (due to physical/chemical/biological limitations) without being identified, and the topsoil is subsequently spread in the rehabilitation process. In such circumstances, a likely outcome would be poor establishment of grazing pasture during RM3, and the non-achievement of the RM3 criteria. This would then trigger further evaluation of the resspread topsoil and/or rework to enable the RM3 criteria to be met within the scheduled timeframe. BRC considers that the likelihood of this occurring is low

(based on the topsoil LMUs encountered at the CCM, the stockpiling practices, and rehabilitation success to date across the QNH), and is prepared to accept this risk and the potential consequences (i.e. rework of rehabilitation at BRC's cost to enable the Rehabilitation Milestones to be achieved). This risk has been identified and discussed in the risk assessment in Section 6.1 (Table 29) of the PRC Plan – Rehabilitation Planning Part.

Section 7.1.1.1 of the V2 PRC Plan – Rehabilitation Planning Part has been updated to provide more detail regarding the rationale for the timing of soil assessments, while Section 5.2.7 has been updated with further detail about topsoil handling practices at the CCM, which includes:

- *During steady-state mining operations, topsoil is stripped only where required 1-2 strips in advance, and where possible is placed directly in future rehabilitation areas for respreading by dozer. This reduces the need for topsoil to be stockpiled for extended periods.*
- *Topsoil is generally stripped and hauled by mining truck and then “paddock dumped” rather than stripped, hauled and dumped by belly scraper, which has the following benefits:*
 - o *Minimises compaction of the topsoil;*
 - o *Avoids double-handling of topsoil in the majority of areas;*
 - o *Topsoil stockpiles are less prone to soil degradation than typical scraper topsoil stockpiles (due to limited height, an increase in exposed surface area, better retention of moisture, protection of the seedbank and less compaction);*
- *Ripping to ~500mm following respreading of topsoil to relieve compaction and create a furrowed surface to assist in the retention of moisture and promote vegetation growth.*

DES ITEM 26: REHABILITATION MILESTONES RM3 (ACHIEVEMENT OF SURFACE REQUIREMENTS)

DES ISSUE

The reference milestone for ‘achievement of surface requirements’ in Appendix 3 of the PRCP guideline is associated with the monitoring phase of rehabilitation. It represents an intermediate phase so the criteria should demonstrate trends and progression towards the final milestone. The PRCP guideline expects that criteria reflect specific site conditions and strategies and recommends evidence of an appropriate time series of monitoring data, tracking of rehabilitation and closure progress against a target trajectory and adaptive management intervention. The intent is that successful completion of RM3

facilitates achieving RM4. Currently RM3 for CCM only measures groundcover and erosion and does not capture other key characteristics of grazing pasture. The PRCP guideline (section 4.1, step 5) states that criteria may be replicated across more than one milestone to verify long-term success with an aspect of rehabilitation).

DES Recommendation

At a minimum, it would be expected that additional criteria from RM4 are also included in RM3 for those characteristics that demonstrate grazing requirements. For example, productivity, declared pest species, proportion of non-preferred species. Inclusion of the additional criteria at RM3 will ensure that monitoring of appropriate parameters commences early and will provide a series of time based monitoring events to demonstrate achievement of the milestone.

QCoal Response

Additional criteria from RM4 have been added to RM3 to demonstrate the progressive achievement of grazing requirements, as recommended.

DES ITEM 27: REHABILITATION MILESTONES RM3 (ACHIEVEMENT OF SURFACE REQUIREMENTS)

DES ISSUE

Section 5.3.5.2 and 5.2.1 of the PRC plan state that further revegetation will be completed to stabilise the bed and batters of the drain in order to meet PMLU grazing criteria. No specific milestone criteria are evident in RA3 to ensure these particular rehabilitation works are completed.

DES Recommendation

It is recommended to review the milestone criteria for RM3 and add criterion/criteria to demonstrate that the additional revegetation works necessary to stabilise the bed/banks of RA3 are achieved.

QCoal Response

Refer to response for Item 7 DES Recommendation I

DES ITEM 28: REHABILITATION MILESTONES RM4 (ACHIEVEMENT OF POST MINING LAND USE TO STABLE CONDITION)

DES ISSUE

The applicant has proposed a generic statement that ground and surface water monitoring results must not indicate contamination of waters from rehabilitated landforms. This criterion does not meet the SMART principles as there is no measure proposed for how it is to be achieved.

DES Recommendation

Clear and measurable targets for specific water quality parameters that are deemed appropriate for the key site specific contaminants of concern are required to be included as milestone criteria.

QCoal Response

Rehabilitation Milestone 4 (RM4) has been updated and revised in the V2 PRC Plan – Rehabilitation Schedule to include the following wording for the “preface” and for criteria “k” and “j”:

Each of the below listed criteria is certified as having been achieved (by a person who is appropriately qualified to assess that criteria), with the combined certifications confirming that the rehabilitation archives the PMLU and is stable (as defined in the EP Act):

j) groundwater monitoring undertaken through the operational life of the CCM and through the full period of rehabilitation establishment (as required by the CCM EA), has indicated no potential impacts to any groundwater values resulting from the rehabilitated landforms.

k) surface water and aquatic ecology monitoring undertaken through the operational life of the CCM and through the period of rehabilitation establishment (as required by the CCM EA), has indicated no potential impacts to any surface water values including aquatic ecology, resulting from the rehabilitated landforms.

The EA requires this monitoring be undertaken through the life-of-mine which includes the period of rehabilitation establishment and is required to continue up to the point of surrender of the EA.

With specific regard to surface water and aquatic ecology, the REMP monitoring currently required by the EA is undertaken by an aquatic ecologist (a relevant SQP). The REMP monitoring includes analysis of surface water, sediment and aquatic ecology in the receiving environment to determine potential impacts to the receiving environment and its values from site activities.

BRC clearly notes and agrees with DES comment regarding measurable data points which can demonstrate that the actual desired outcome of no potential for impact has been achieved. It is considered that the certification by the suitably qualified person that no potential for impacts to values exists is an appropriate metric of success, as the certification is underpinned by the life-of-mine monitoring through the period of rehabilitation assessment.

This approach requires that potential impacts are assessed in consideration of:

- *specific site-based factors,*
- *actual monitoring data from the life-of mine including the rehabilitated landform,*
- *trend analysis, and*
- *a broad-catchment overview with high local resolution.*

As such, this approach is considered the most appropriate methodology to provide a measurable metric demonstrating no potential impact from rehabilitated landforms.

DES ITEM 29: REHABILITATION MILESTONES RM4 (ACHIEVEMENT OF POST MINING LAND USE TO STABLE CONDITION)

DES ISSUE

There are specific acceptance criteria for water erosion (as a function of % slope and ESP %) when determining Class 4 land suitability that must be met. These have not been included in the milestone criteria in the PRCP schedule and have been replaced by a slope of <20%. The department acknowledges that these 'completion criteria' have been pre-approved in the QNH RMP (2020). However, the planning part has not demonstrated how these criteria will result in a stable final landform.

DES Recommendation

It is recommended to at least link the discussion about soil assessment for CCM in section 1.14.1 and 1.14.2 of the PRCP to the completion criteria relating to stability and explain why the acceptance criteria for the Class 4 land suitability are suitable to demonstrate a stable final landform.

QCoal Response

An incorrect reference for the Acceptance Criteria in Section 3.2 of the V1 PRC Plan – Rehabilitation Planning Part has been updated to the correct reference, being the Technical Guidelines for the Environment Management of Exploration and Mining in Queensland – Land Suitability Assessment Techniques (DME, 1995).

In relation to the statement in the DES Issue above regarding the criteria for water erosion when determining Class 4 land suitability for beef cattle grazing not being included in the milestone criteria:

- *The ESP range given in DME (1995) is 15-30% (0-10cm). BRC have adopted a nominal <30%, which in effect gives the same or better outcome than the Class 4 criteria (i.e. not limited to a specific range);*
- *The % Slope parameter given in DME (1995) is dependent on the soil type (sodic rigid soils/cracking clays/non-sodic rigid soils). As stated in Section 5.2.4 of the PRC Plan – Rehabilitation Planning Part, over 95% of the topsoil available for rehabilitation is LU5, which is a dermosol-dominated clay soil – i.e. a non-sodic rigid soil, for which DME (1995) allows a range of 20-45% for slopes. The selected <20% slope for batters is therefore equal to or better than the suitability criteria for Class 4 cattle grazing in DME (1995).*

Refer to the response for Item 10 DES Recommendation I in relation to the adoption of specific erosion rates at the CCM. Also refer to the response for Item 36 DES Recommendation II which further compares the RMP completion criteria against DME 1995 and further discusses the suitability of the completion criteria.

Section 3.2 and Section 5.2.7.3 have been updated in the V2 PRC Plan – Rehabilitation Planning Part, correcting the references and providing further linkage between the soil assessment results and the Class 4 land suitability acceptance criteria.

DES ITEM 30: REHABILITATION MILESTONES RM4 (ACHIEVEMENT OF POST MINING LAND USE TO STABLE CONDITION)

DES ISSUE

RM4 refers to results from grazing trials within the rehabilitated areas at QNH. Grazing trials are also a requirement for determining land suitability. Section 6.2 of the planning part states that rehabilitation across the QNH commenced in 2012 and that rehabilitation monitoring over that time negates the need for rehabilitation trials at CCM. There is also limited area within the mining lease to undertake trials. Grazing trials are not mentioned in the planning part so it is not clear how this criterion will be measured/achieved.

Section 7.1.1.3 discusses the use of reference sites to assess performance of the rehabilitated area with respect to groundcover, carrying capacity (productivity), weeds and species mix.

DES Recommendation

The PRCP schedule refers to consideration of the results of grazing trials in the milestone criteria for RM4. Therefore, further discussion about grazing trials and how this criterion will be measured to demonstrate the achievement of the PMLU to a stable condition is required to be included in the planning part.

QCoal Response

Grazing trials will not be undertaken at the CCM due to the relatively small overall areas of RA1 and RA2 and the fact that a large proportion of these areas will not become available until the end of mine life for the DCM and JCM. The areas of RA1 and RA2 which would be available earlier are relatively small and are not oriented such that they could be readily incorporated into a grazing trial. If grazing trials were to be undertaken for each individual rehabilitation area at the CCM this would not be physically possible until the end of mine life of the adjoining QNH mines, which would therefore further delay the CCM Rehabilitation Areas from progressively achieving RM4 as nominated in the PRCP Schedule.

The grazing trials nominated in RM4 in the Schedule have been previously referred to in the QNH RMP and are intended to be undertaken elsewhere within the QNH (likely at the SCM and/or DCM), where the size, orientation, access to water and contiguity with existing grazing land are better suited to the requirements for a trial area. Due to the contiguous nature of the QNH mines, results from these grazing trials will be equally applicable across all QNH sites.

Additional detail has been provided in Section 6.2.2 of the V2 PRC Plan – Rehabilitation Planning Part in relation to the grazing trials. The RM4 criteria in relation to grazing trials has been retained as it specifically refers to grazing trials at the QNH rather than the CCM.

DES ITEM 31: REHABILITATION MILESTONES RM4 (ACHIEVEMENT OF POST MINING LAND USE TO STABLE CONDITION)

DES ISSUE

The milestone criteria refer to proportions of non-preferred species, however, the planning part only discusses preferred pasture species and does not reference the non-preferred or weed species.

DES Recommendation

It is recommended to also include a measure of preferred species being achieved – as well as having specific preferred and non-preferred species being listed in the milestone criteria.

QCoal Response

The reliance on the natural seedbank within the topsoil will result in a grazing pasture that reflects the improved pasture and native species present prior to the topsoil being stripped. The species present within the seedbank will therefore naturally vary, and, as such, a flexible approach to determining preferred, intermediate and non-preferred species within rehabilitation at the QNH has been adopted.

Preferred, Intermediate and Non-Preferred vegetation species for rehabilitation at the QNH are determined as follows:

- *Preferred, Intermediate and Non-Preferred species listed in the following relevant Grazing Land Management (GLM) land type descriptions for the Burdekin region:*
 - o *Box Country (BD05)*
 - o *Brigalow/Gidgee Scrubs (BD06)*
- *Where a pasture species is present within the rehabilitation that is not specifically listed as preferred, intermediate or non-preferred within the above land type descriptions, the 'Intermediate Species' definition* in the State Rural Leasehold Land Strategy Guidelines for Determining Land Condition is applied:*
 - o *Intermediate species—all perennial grass species that are not weed species and are any of the following:*
 - a) *not recognised as preferred or non-preferred species;*

**Note the Guidelines include other criteria/species within the Intermediate Species definition but these are not relevant to the CCM and have been omitted.*
- *Native trees and shrubs are considered to be preferred/intermediate species for rehabilitation at the QNH. Native tree and shrub species will naturally establish within rehabilitation areas (or any cleared grazing land for that matter) and are useful as shade trees for grazing cattle, but they are considered to be incidental to (and not essential to) the grazing pasture PMLU.*

This approach has been detailed in s5.2.9.1 of the V2 PRC Plan – Rehabilitation Planning Part. In providing the required flexibility for species diversity for rehabilitation that relies on the natural seedbank, this approach does not include a specific 'list' of preferred/intermediate/ non-preferred species which can be incorporated into the PRC Plan - Schedule as Rehabilitation Milestone Criteria. The proposed Milestone Criteria are as per the Acceptance Criteria outlined in the QNH RMP and provide suitable detail when read in conjunction with the PRC Plan – Rehabilitation Planning Part.

The adopted approach avoids a potential situation where a robust grazing pasture utilising the natural seedbank is established within an RA, complying with all the RM criteria except for achieving a specified pasture species mix (due to natural variation

in the seedbank). In that situation, the RA would, by definition, not meet the relevant Rehabilitation Milestone and therefore would not be considered “stable” without rework.

Where supplementary direct seeding is considered necessary (e.g. where the natural seedbank has failed), a list of species is provided in the QNH RMP, which has been reproduced as Table 28 in s5.2.9.2 of the PRC Plan – Rehabilitation Planning Part. It is specifically noted in the RMP/PRC Plan that ‘other suitable improved pasture and native grass species may also be used in seeding mixes’. As such, adoption of the specific list of species as milestone criteria for areas where direct seeding is undertaken would limit the ability of BRC to add additional suitable species as required.

Further, adoption of a specific measure of preferred species being achieved is not considered necessary for the CCM Rehabilitation Milestone Criteria. If the existing criteria for non-preferred species, weeds and groundcover are all being achieved (i.e. not more than 1 class greater than the grazed reference sites), it is implicit that the rehabilitation primarily comprises preferred and intermediate species.

DES ITEM 32: REHABILITATION MILESTONES RM4 (ACHIEVEMENT OF POST MINING LAND USE TO STABLE CONDITION)

DES ISSUE

The reliance of the natural seedbank is likely to result in the establishment of trees and scrubs. This vegetation is proposed to be retained to provide shade for cattle. There is no mention in the planning part or the PRCP schedule about the trees and shrubs forming part of the milestone criteria. In the 2018 rehabilitation monitoring report for CCM it identifies that species composition and stem density are criteria that must be met for successful rehabilitation at CCM. This requirement is not currently being met and may require direct seeding in future.

DES Recommendation

It is recommended that criteria are added to the relevant rehabilitation milestones to specifically list the preferred pasture species and target species to provide a clear indication that the PMLU is being achieved. Table 27 provides a seed mix and could be brought forward into the PRCP schedule, and a list of other trees and shrubs could likely be developed from the reference monitoring sites.

QCoal Response

The 2018 rehabilitation monitoring report assessed the CCM rehabilitation against the criteria in place at that time.

The LODs for the CCM are the EA and the 2020 QNH RMP, both of which clearly state the PMLU for the CCM is grazing pasture, and the criteria therein supersedes any previous rehabilitation criteria.

The CCM acceptance/completion criteria (as stated in the QNH RMP and mirrored in the PRC Plan/PRCP Schedule), were previously updated to be consistent with the other QNH sites, which is a practical approach given the CCM final landforms are part of continuous landforms that extend into both the SCM and DCM. The adopted acceptance/completion criteria apply across the QNH, with rehabilitation monitoring demonstrating that they will produce a stable landform suitable for the grazing pasture PMLU.

Refer to Item 31 for a specific response regarding inclusion of preferred grazing species within the criteria.

Regrowth of native trees and shrubs will eventually occur within any RAs (or any previously cleared area for that matter) due to natural succession processes (such as seed retained in topsoil, windblown seed dispersal or seed spread via fauna movements/droppings). These natural processes will occur regardless of whether the natural seedbank is relied upon or additional seeding has been undertaken. While the adopted approach for determining preferred, intermediate and non-preferred species incorporates native trees and shrubs as preferred/intermediate species (refer to s5.2.9.1 of the V2 PRC Plan), a list of specific native tree and shrub species has not been included in the PRC Plan or Schedule as the presence of this vegetation is not within BRC's control and is incidental to (and not essential to) the achievement of the grazing pasture PMLU. Therefore, the exact native tree and shrub species present is not of relevance (apart from weed species, which are addressed elsewhere in the completion criteria).

DES ITEM 33: MILESTONE CRITERIA

DES ISSUE

The final landform for the waste rock dumps will include the installation of contour drains. The permanent retention of contour banks on landform batters are associated with risks of failure causing concentrated flows and erosion.

DES Recommendation

Confirm if contour banks will remain on landforms once groundcover has been established. It is recommended that additional detail is added to the relevant milestone criteria to demonstrate how 'Drainage works completed' will be measured and achieved.

QCoal Response

Where contour banks are constructed they will be retained as part of the final landform. The requirement for any ongoing maintenance or repair works will be addressed on a case by case basis, including rectification and/or improvement of the structure.

Contour banks are retained for the following reasons:

- The complete removal of contour banks (typically undertaken by dozer) from rehabilitated slopes would result in an unvegetated strip along the contour up to 8m wide consisting of mixed topsoil and waste rock at the surface. Additional topsoil would then need to be applied, creating additional disturbance for scrapers or trucks to access the area. The end result would be a significant area of the previously rehabilitated batter which is re-disturbed (reverting to RM2) and is therefore prone to erosion and other issues until groundcover is re-established.*
- The most important factor in the erosional stability of rehabilitated landforms is maintaining groundcover, be it pasture grass, incidental trees and shrubs, surface biomass or rock. The presence of groundcover significantly reduces erosion from raindrop impact, and run-off volume and velocity from rehabilitated areas. Any activity that removes the established groundcover within rehabilitation areas is considered to be counterproductive.*
- Re-disturbance of areas to remove contour banks would also potentially extend the timeframe required for the achievement of subsequent rehabilitation milestones for each Rehabilitation Area.*

Additional wording has been added to Section 5.2.8 of V2 PRC Plan, reflecting this approach.

With regard to the RM1 criteria to demonstrate completion of “drainage works completed”, the criteria has been amended to add reference to a survey to be undertaken confirming the works have been completed.

DES ITEM 34: MILESTONE CRITERIA

DES ISSUE

The planning part has stated that the final landform will be assessed by a RPEQ to certify that it meets the design criteria prior to topsoiling.

DES Recommendation

It is recommended that the applicant obtains sign off from RPEQ or other suitably qualified person that these activities have not only been 'completed', but have been verified as having met the design criteria as a means of 'measuring' whether the milestone criteria have been achieved. These commitments should be made in the PRCP schedule milestone criteria as there are slight inconsistencies throughout the planning part about what assessments and certifications will be carried out and when.

QCoal Response

Confirmation that the final landforms physically meet the design criteria will be done in two stages at the CCM:

- *Upon completion of the final landform earthworks in a given area (i.e. RM1), a survey will be undertaken to confirm that the area has been shaped in accordance with the completion criteria (i.e. the slope criteria is achieved). This will be undertaken using internal QCoal engineering/survey resources using either ground or aerial survey equipment and mine planning software; and*
- *As part of overall certification that a stable landform has been achieved (i.e. RM4), verification of the landform meeting the design criteria will be obtained from an RPEQ.*

The wording within the PRC Plan – Rehabilitation Planning Part (s1.11) and the PRC Plan - Schedule has been updated on this basis.

DES ITEM 35: MILESTONE CRITERIA

DES ISSUE

More information about the assessments and certification that will be undertaken for contaminated land, final landforms and soil has been included in Table 30 and Table 32 of the planning part.

DES Recommendation

It is recommended that this additional detail is included in the PRCP schedule as part of the milestone criteria.

QCoal Response

Additional detail has been added to the Milestone Criteria in the V2 PRC Plan - Schedule reflecting the relevant detail in Table 31 and 33 of the V2 PRC Plan – Rehabilitation Planning Part (previously Tables 30 and 32).

DES ITEM 36: MILESTONE CRITERIA

DES ISSUE

The 2018 RMP determined rehabilitation progress against the acceptance criteria from the 2014 Cows Coal Project RMP. These criteria are more detailed than those currently included in the 2020 QNH RMP. For example, the previous acceptance criteria for spoil dump landforms included a slope criteria of <16% or 9 degrees, which is more stringent than the <20% slope criteria applied to and approved for all of the QNH sites. As an existing EA holder, the department acknowledges that the pre-approved outcomes and criteria from the 2020 QNH RMP are able to be transitioned to the PRCP based on the LOD hierarchy.

However, the PRCP guideline requires that transitional sites meet the information requirements outlined in section 3.6.1. This includes information to demonstrate the landform design will achieve geotechnical and erosional stability. As previously mentioned, the PRC plan currently lacks sufficient information to meet all the requirements of the final landform design.

Section 3.2 states that land at site will be returned to a Class 4 land suitability or better. RM4 has proposed criteria which largely reflect the Class 4 land suitability requirements, but do not aim for 'better', even in instances where this can feasibly be achieved. For example, ESP is set in the criteria as being less than 30% (which represents an extremely sodic state), whereas, the erosional stability assessment in Table 14 identifies the majority of topsoil used for rehabilitation has typical ESP ratios of less than 6% which is considered to be non-sodic. While it is the right of the EA holder to transition pre-approved criteria, these criteria do not reflect the intention outlined in the planning part and may also not be sufficient to finally demonstrate that land has achieved stable condition.

QCoal Response

In addition to the responses to the "Recommendations" below, BRC offers the following responses to the specific points raised in this DES "Issue":

Regarding the point that the 2014 Cows Coal Project RMP contained criteria that were more detailed than the 2020 QNH RMP, BRC disagrees with this assertion. The 2020 criteria largely mirror the 2014 criteria. With specific regard to the slope criteria, the 2014 CCM criteria included a maximum 16% slope whereas the adjoining DCM criteria included an 11.5° (20%) maximum slope. Given the final landforms are continuous between the sites, adjusting the CCM slope (which represent a small proportion of the overall QNH waste rock dump footprint) to match the DCM slope (which represents a much larger proportion of the overall footprint) was a practical approach which was agreed to by DES. Notwithstanding this, BRC feels strongly that such a point is irrelevant given the 2020 QNH RMP is the approved LOD and the 2014 Cows RMP is not. BRC makes the following comments in this regard:

- *EAs and Management Plans are amended, updated, improved, re-issued, etc as required with content changing as a result of mine planning, updated or improved data sets, or changes in regulatory requirements. In doing so, the content is continuously improved and refined. Changes to those documents require justification and approval at the time they are assessed.*
 - o *The 2014 Cows Coal Project RMP was superseded by the QNH RMP 2018, which was superseded by the current approved QNH RMP 2020 (the current LOD).*
 - o *The Cows EA was originally issued in 2012, amended in February 2019, amended in Oct 2019, and again amended in March 2020 (the current LOD).*
- *The comments regarding the 2014 Cows RMP refer to specific content in a superseded and outdated document in an attempt to illustrate that the PRC Plan and/or the approved LOD has less detail or less conservative criteria than the identified superseded document:*
 - o *This is not a relevant consideration, as the 2020 QNH RMP is the approved LOD for this PRC Plan.*
 - o *This fails to consider that changes to management plans will occur, and, as point of fact, the 2014 Cows RMP includes statements that indicate it is a “living document” subject to changes because of mine plans, stakeholder priorities, and research results. As such, even that document recognised that its content is subject to improvement as has been realised in the 2020 QNH RMP.*
 - o *There are instances where the QNH 2020 RMP contains more detail and is more conservative than the 2014 Cows RMP. For example, specific criteria requiring the rectification of rill and gully erosion and slope failures are present in the QNH 2020 RMP, but not in the 2014 cows RMP.*
 - o *As a further illustration of the evolving nature of rehabilitation criteria, and associated documents over time, and why selectively quoting superseded management plans is not appropriate, the Tecsol 2011 Post Mine Land Use Plan is a valid example. In Tecsol 2011, the stated objective for regrading of waste rock stockpiles at the CCM was to achieve an overall final slope gradient of 1:4 (25%) which is a significantly steeper slope than that approved in the 2020 QNH RMP and nominated as RM1 milestone criteria. Tecsol 2011 also notes that it is a ‘moving’ document which will evolve with the life of the mine.*

DES Recommendation I

As previously mentioned at Item 8, it is recommended that the milestone criteria ‘20% (11.5 degree) slope achieved unless an alternate slope is recommended by an RPEQ’ is amended to reflect the intent expressed in the planning part (i.e. ‘20% (11.5 degrees) slope on dump batters’).

QCoal Response

Milestone 1 in the V2 PRC Plan - Schedule has been amended in line with this recommendation.

DES Recommendation II

The EA requires the holder to achieve the PMLU of grazing pasture. Whilst the proposed rehabilitation milestones and milestone criteria are designed to achieve land suitability class 4, they are unlikely to result in a final landform that can sustain a PMLU of grazing pasture.

QCoal Response

BRC strongly disagrees with DES's assertion that the milestones/milestone criteria are unlikely to result in a final landform that can sustain a PMLU of grazing pasture.

The rehabilitation completed to date at the CCM and wider QNH has been undertaken in accordance with the nominated methodology to meet the existing approved QNH 2020 RMP acceptance/completion criteria. As per Table 25 of the PRC Plan, over 33% (<30Ha) of the mining disturbance at the CCM has already been shaped in accordance with these completion criteria. The shaped areas include a significant proportion of the batter areas within the CCM. Topsoil spreading has also been carried out in a number of areas and subsequent revegetation from the natural seedbank has been observed and monitored.

The rehabilitation methodology outlined in the PRC Plan has already achieved rehabilitation capable of, or making meaningful progress towards, sustaining a grazing pasture PMLU at the QNH (based on the QNH 2020 RMP completion criteria), as confirmed by third-party rehabilitation monitoring. A discussion of results of rehabilitation monitoring to date are included in the updated Section 7.1.1.6 of the V2 PRC Plan (and the 2021 Rehabilitation Monitoring Report has been provided as Appendix K).

The acceptance criteria that are approved in the QNH RMP, which have been proposed for inclusion as milestone criteria in the PRCP Schedule, have been adapted from the Class 4 land suitability criteria for beef cattle grazing in Table 2.2 of the Land Suitability Assessment Techniques guideline contained within DME (1995). As noted in Item 29, the V1 PRCP contained an incorrect source reference for the acceptance criteria which has been rectified. The DME 1995 criteria specifically relate to land suitability for beef cattle grazing within the Qld semi-arid dry tropics (which includes the CCM area).

The purpose of land suitability evaluation is to take the key attributes of land and soils in a given area and apply a rating to reflect land use limitations in order to guide the use of that land. BRC considers that the application of the Class 4 land suitability criteria for beef cattle grazing in their entirety as part of the completion criteria / Rehabilitation Milestone criteria at the CCM provides appropriate and SMART indicators that the rehabilitation will be suited to the proposed grazing

pasture PMLU, while taking into account the land use limitations of the rehabilitated landforms.

For completeness a comparison of the full Class 4 Land Suitability Criteria from DME (1995) against the QNH RMP acceptance criteria, along with an explanation of any differences between the two, has been included as Table 23 in the PRC Plan and is reproduced below. The QNH RMP acceptance criteria which are in addition to the DME (1995) Criteria are also shown.

Parameter	Technical Guidelines (DME 1995) Land Suitability Class 4 Criteria for Beef Cattle Grazing	QNH RMP Acceptance Criteria	Comment
Water Availability	PAWC50-75	>50 mm	QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
Nutrient deficiency	Sands and loams at least 75 cm deep or overlying rock at shallow depth, with Bicarbonate P 5-10ppm, or Bicarbonate P ≤4 ppm	No criteria adopted in RMP* ≥4ppm adopted in RM3/4 criteria in V2 PRCP Schedule	*This parameter was not included the QNH RMP but has been included in the Acceptance Criteria for the PRC Plan and Rehabilitation Milestones in the PRCP Schedule. The DME criteria effectively includes a range of 0-4ppm for bicarbonate P for the relevant soil profile (in this case soils overlying rock at shallow depth). A criteria of 4ppm has been adopted. Therefore, the adopted Acceptance Criteria are equivalent to or better than the DME Criteria.
Soil physical factors	No criteria for Class 4 Suitability for Beef Cattle Grazing	No criteria adopted	QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
Salinity	Rootzone EC 0.9-1.2mS/cm or Rootzone Cl 900-1500ppm	EC _{1:5} <1.2 mS/cm or Cl _{1:5} <1,500 ppm in the root zone (60 cm depth)	QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
Rockiness	>90% surface cobble and rock outcrop Note: Class 5 criteria: Rock outcrop and surface coarse fragments cover total area)	<100% (% coarse fragments at soil surface)	The Class 5 DME Criteria is total rock coverage (i.e. 100%), which effectively means the Class 4 DME criteria is 90-99.9%. The QNH acceptance criteria has adopted <100% as this is equivalent to the DME criteria but removes the lower limit from the criteria in the expectation that the application of topsoil will result in a significantly lower rockiness percentage in most areas. QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
Microrelief	No criteria for Class 4 Suitability for Beef Cattle Grazing	No criteria adopted	QNH RMP Acceptance Criteria are equivalent to DME Criteria

Parameter	Technical Guidelines (DME 1995) Land Suitability Class 4 Criteria for Beef Cattle Grazing	QNH RMP Acceptance Criteria	Comment
pH (1:5)	9.0-10.0 4.0-4.5	<10 and >4 as measured at any part of the root zone.	QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
ESP (10cm)% Exchangeable Sodium Percentage	15-30	<30% (0-10 cm depth)	QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
Wetness	No criteria for Class 4 Suitability for Beef Cattle Grazing	No criteria adopted	QNH RMP Acceptance Criteria are equivalent to DME Criteria
Topography	Many deep gullies make cultivation for sowing pastures impractical, or Slopes >15% make cultivation along contours impractical	No criteria adopted	The DME criteria reflect limitations that are not relevant to rehabilitated mining final landforms – i.e. deep gullies are not present and slopes >15% do not prevent cultivation/sowing pastures which is effectively done via the placement of topsoil containing the natural seedbank.
Water Erosion	Slopes 6-12% on sodic rigid soils or Slopes 9-15% on cracking clays or Slopes 20-45% on non-sodic rigid soils	Mean Slope <15% on cracking clay soils Mean Slope <12% on sodic soils (ESP >15% within 500 mm of surface) rigid soils Mean Slope <45% on non- sodic (ESP <15% within 500 mm of surface) rigid soils	QNH RMP Acceptance Criteria are equivalent to or better than DME Criteria
Flooding	No criteria for Class 4 Suitability for Beef Cattle Grazing	No criteria adopted	QNH RMP Acceptance Criteria are equivalent to DME Criteria
Vegetation Regrowth (management limitation)	Eucalypt woodlands with wattle understorey or Broad-leaved teatree woodlands	No criteria adopted	Regrowth in this context as a management limitation is not relevant to rehabilitated mining final landforms Not Applicable
Grazing Criteria	No equivalent criteria	≥70% of the productivity (or carrying capacity) of non- mined land in the lease area, or Carrying capacity within the range of values reported for the region, taken as 15 ha/head	QNH RMP Acceptance Criteria in addition to DME Criteria
Groundcover	No equivalent criteria	Mean groundcover ≥50% or > than the reference site mean minus one standard deviation.	QNH RMP Acceptance Criteria in addition to DME Criteria

Parameter	Technical Guidelines (DME 1995) Land Suitability Class 4 Criteria for Beef Cattle Grazing	QNH RMP Acceptance Criteria	Comment
Grazing Trials	No equivalent criteria	Undertaken following groundcover establishment to confirm carrying capacity.	QNH RMP Acceptance Criteria in addition to DME Criteria
Species Mix and Composition	No equivalent criteria	Proportion of non-preferred species not increasing. Proportion class will not be more than one class greater than the grazed reference sites. Proportion of declared plant pest species not increasing, and proportion class will not be more than one class greater than the grazed reference sites.	QNH RMP Acceptance Criteria in addition to DME Criteria

BRC notes that the criteria for nutrient deficiency had been inadvertently overlooked in the 2020 RMP acceptance criteria, and this has now been added to the V2 PRCP Schedule RM4 criteria.

As is evident in the table above, the majority of the DME 1995 Class 4 criteria are nominated as a range rather than a single requirement to be met. The CCM acceptance criteria have been developed by adjusting the DME 1995 criteria to reflect a minimum requirement to be achieved rather than a range. While it is likely that individual parameters within the acceptance criteria will be significantly outperformed by some of the rehabilitation outcomes (e.g. for sodicity, rockiness etc, as specifically noted by DES), setting the minimum requirements in line with the DME 1995 Land Suitability Class 4 Criteria for beef cattle grazing is an appropriate approach for the achievement of a PMLU of grazing pasture at the CCM, while reflecting the inherent limitations of the rehabilitated landforms.

Further indication of the successful achievement of the grazing pasture PMLU will be provided from the outcomes of rehabilitation monitoring (refer to response to DES Item 9, Recommendation I), as well as future grazing trials to be conducted at representative sites within the wider QNH (refer to response to DES Item 30), which is also adopted as Rehabilitation Milestone criteria.

The PRC Plan has been updated with the additional detail above, and a summary of the outcomes of rehabilitation monitoring to date has been included.

It should also be noted that Glencore's adjoining Belmore Pipeline mine, which is geologically contiguous with the CCM, recently achieved progressive certification for grazing pasture for the entire mining disturbance area. The final landform at the Belmore Pipeline mine features slopes steeper than those proposed for the CCM, albeit for shorter slope lengths.

DES Recommendation III

The information provided in the planning part about landform design (slope) based on the soil assessments and erosional stability do not demonstrate that the site can be rehabilitated to achieve a stable condition using the proposed criteria alone, which is a requirement of the EP Act. Further information is needed to demonstrate how the slope criteria in the PRCP schedule will achieve a stable condition.

QCoal Response

Refer to response for Item 10 - DES Recommendation I

DES Recommendation IV

While the completion criteria can be transitioned from the LOD, this does not prevent additional or expanded milestones and milestone criteria from being proposed and included in the PRCP schedule to ensure that the EA conditions are met, that the schedule achieves the final outcome of land in a stable condition, and the EA can be surrendered.

QCoal Response

The Milestone Criteria in the V2 PRC Plan - Schedule have been amended as per previous responses. The Rehabilitation Milestones adequately address the EA conditions, provide for the land to be rehabilitated to a PMLU of grazing pasture (i.e. a stable condition), and ultimately enable the surrender of the EA. Therefore, no additional or expanded milestones or milestone criteria beyond these changes are proposed.