6 March 2024

3 Water Street Red Hill 4059
T: +61 7 3368 1033
E: information@ardent-group.com.au
W: ardent-group.com.au
ABN: 38 609 696 764

Kajal Chand
Environmental Officer (Assessments)
Minerals and Northern Compliance
Environmental Services and Regulation
Department of Environment Science and Innovation
By Email: ESCairns@des.qld.gov.au
CC: kajal.chand@des.qld.gov.au

Dear Kajal,

RE: Jackal Renewables EA EA0001386
PRC Plan and Schedule Application
Response to Information Request

Thank you for your letter dated 3 April 2023, requesting additional information to assess the PRC Plan for Jackal Renewables Pty Ltd, lodged on 6 February 2023.

On behalf of our client, I enclose;

1. Table 1 – Response to Information Request – included with this letter
2. PRC Plan Part A (text and figures)
3. PRC Plan Part B – PRCP schedule
4. PRC Plan Part B Appendix 2
5. PRC Plan Part B Appendix 3
6. PRC Plan Part B Appendix 4.
7. PRC Plan Part B Appendix 5
8. PRC Plan Part B Appendix 6

Due to file size, Items 2 to 8 have been sent across 3 emails.

Please let me know if you have any problems receiving or accessing this information.

The Rehabilitation Area plan figure and the PMLU Plan Figure have not been updated as a result of this information request response.

There was no update to the digital data (shapefiles), and so no files have been lodged to spatialsubmit@des.qld.gov.au.

Should the Department have any questions or require any further information, please do not hesitate to contact me.

Yours faithfully,



Richard Davis
Director / Group Manager (Environmental Science and Assessment)
Ardent Group Pty Ltd

Table 1 – Response to Information Request

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Table 1 – Information Request Response Table

Item	Relevant section (proposed PRC plan and/or PRCP Guideline)	Matter	Information Request	Jackal Response
1	Soil capping and material assessment	A full materials balance for the site has not been provided. **Item 1.1** *Available suitable soil and capping material* Kerwick Pit #1 Table 4 in section 2.7 of the PRC plan provides details on the mining stages and estimated volumes for Kerwick pit #1. Section 8.4.3 states '*As outlined in section 2.7 there will be 408,537m³ available topsoil, sub-soil and competent rock on the site to address the rehabilitation requirements. It is expected that no material will be imported on to site to complete the rehabilitation of pits to the east of the power line.'* However, the total material available provided in Table 4 is 389,908m³ waste rock, and 13,557 m³ topsoil which is a total of 403,537 m³. Furthermore the pit design total volume in Table 4 is 924,199 m³, which including the topsoil stockpile currently on site (4,500 m³) would leave a shortfall of material by 530,709 m³. Western side of lease Section 8.4.3 of the PRC plan states '*Achievement of the final landform design in Kerwick #2 pit may require the import of suitable subsoils and topsoils.*' It further states materials are locally available and will be tested for suitability. Table 5 in Appendix 4 – The Mine Plan, provides a rehabilitation material balance for the rehabilitation	Please provide an updated Rehabilitation Planning Part that includes information on the total quality and quantity of available resources to complete the target rehabilitation methodology for the site, including (but not limited to): • topsoil and fill material suitability criteria for proposed PLMU; • quantity and quality of topsoil and backfilling materials required to complete rehabilitation; • quantity and quality of topsoil and backfilling materials available to complete rehabilitation; • accessibility of materials throughout the site; • physical and geochemical properties of the topsoil and subsoils to be used in rehabilitation and how this influences revegetation milestones throughout the project; • the ameliorants and fertilisers that will be used,	Clarification of landform design and fill quantities has been included in section 8.4.3 (Table 17). Clarification of the suitability criteria has been included in section 8.4.3. Detailed topsoil survey had been conducted and is included as Appendix 5. This information had informed the ameliorant requirements, topsoil quality and quantity, refer to section 3.1.7 and section 8.4.3.

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		requirements for the site. It states rehabilitation fill will be sourced from a number of locations including: • overburden/waste rock excavated from the pit; • cut from the western pad; • other sources of material as required. The *Progressive Rehabilitation Design* section states material excavated from site has been assumed with a swell factor of 15%, resulting in a shortfall of approximately 171,913 m^3. No information has been provided on the rehabilitation cut on the western side of the lease providing an addition 36,070 m^3. Other sources of material have not been clearly defined. It is unclear from the information provided in sections 8.4.3 and 2.7 of the PRC plan, and The Mine Plan, what the rehabilitation material requirements are for the whole site and if sufficient suitable backfill material is available.	application rates and method of incorporation; and • the relationships between the proposed topsoil material, revegetation ecosystems for the PMLU and the proposed rehabilitation methodology. Noting that abovementioned information on fill material is specifically required for Kerwick pit #1 and pit #2, as the estimated waste rock from mining activities appears to be insufficient to backfill and rehabilitate these structures.	
		Item 1.2 *Proposed topsoil layer* The topsoil layer proposed in the PRC plan and schedule is a minimum of 150mm. No justification has been provided on the selection of this topsoil layer depth. The planning part is indicative of waste material being managed under waste management prescribed ERAs (33, 54 and 62). It is noted that the western section of ML50070 (west of the powerline) is subject to a development approval (DA) for carrying out the above waste ERAs. However, the planning part does not	The topsoil layer proposed in the PRC plan and schedule is a minimum of 150mm. Justification needs to be provided on the selection of this topsoil layer depth	Detailed topsoil survey had been conducted and is included as Appendix 5. This information had informed the ameliorant requirements, topsoil quality and quantity, refer to section 3.1.7 and section 8.4.3.

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		include justification to why/if the proposed minimum topsoil layer depth is sufficient.		
2	Land contamination	A land contamination assessment has not been included in the PRC plan or PRCP Schedule. It is a requirement for rehabilitated land to be structurally safe with no hazardous materials or contamination.	Update the PRC Planning Part and PRCP Schedule to include a contaminated land assessment to be completed by a suitably qualified person. This is required to determine if contamination has occurred at the site which will impact on the suitability for the proposed PMLU.	PRC Plan and schedule has been revised to include this assessment. New section 8.5 inserted in plan. Schedule amended to include new RM2.
3	Revegetation	Section 8.9 of the PRC plan provides limited information on proposed activities that will establish self-sustaining vegetation communities that are appropriate for the intended PMLU. Revegetation should not only establish ground cover, but in some cases establish associated fauna habitat and other ecological services. The revegetation plan must include information outlined in section 3.6.1 of the PRCP guideline including (but not limited to): • revegetation objectives for the site that are consistent with the PMLUs and rehabilitation milestones identified in the PRCP schedule (including vegetation success considerations e.g. tree densities, ground cover, species densities and diversity), • key flora species representative of the proposed PMLU, • any fauna habitat and use requirements, • evidence and justification for any analogue sites of the monitoring plan,	Provide an updated Rehabilitation Planning Part that includes the information requirements as outlined in section 3.6.1 of the PRCP guideline, including a species list and information on the seeding/planting methodology (timing, density, key species, seed application rate). In addition, update the PRCP Schedule to include appropriate milestone criteria for: • completed seeding of target species; • planting success (%); • number of stems per/(ha) of identified key species; • number of stems with minimum height (m) specified for identified key species; • target groundcover biomass	Ecology report prepared by BAAM, include at Appendix 3. Revegetation plan details included in (now) section 8.10, PRCP schedule updated, including timeframes to achieve revegetation outcomes.

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		• what plant/seed mixes are appropriate for the PMLU and where the mixes will be sourced, and • seed density application rate and timing of seeding.	(%); • revegetation comparable to analogue sites or target regional ecosystem (%); • presence of native fauna (comparable to reference sites); and • weeds and invasive pest species.	
4	Water quality	Table 8 in section 3.1.4 of the PRC plan provides water quality monitoring results of the water storage/ sediment dams. However, information on the individual water storages has not been provided and it is unclear if the *result* value is an average or median of all water storages.	Provide water quality data on each water storage/sediment dam.	Water is representative of Kerwick #2 Pit only. Wording in Section 3.1.4 updated
5	Water management	The management of surface and groundwater is a key consideration in achieving long-term rehabilitation success. **Item 5.1** *Water quality criteria* It is noted that section 8.8.7 of the plan refers to water quality meeting the required standard, and water monitoring will be compared with the Water Quality Objectives for Six Mile Creek. Water quality criteria for surface water and groundwater have not been provided.	Provide a revised Rehabilitation Planning Part and PRCP Schedule including receiving environment surface water and groundwater quality criteria. The water quality criteria must reference to Water Quality Objectives of Six Mile Creek and other relevant guidelines.	Refer to (now) section 8.9.7 for surface water quality criteria.

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		Item 5.2 *Water quality monitoring* Section 8.8.7 of the plan provides details on the water quality monitoring on site. No details were provided regarding receiving environment surface water and groundwater monitoring. Please note, the monitoring of sediment control structures is inadequate as the only form of water quality monitoring. In accordance with section 3.6.1 of the PRCP guideline, a description of the contaminants that post a risk to the environmental values of the receiving environment must be provided in addition to management measures.	Revise the Rehabilitation Planning Part and PRCP Schedule to include receiving environment water monitoring details including: • Sampling methodology (monitoring locations, frequency, number of samples); • surface water and groundwater quality criteria; • include a minimum of one groundwater monitoring point down gradient of Kerwick pit #2 to determine any influence on groundwater; • identity surface water quality monitoring points and reference points.	Refer to (now) section 8.9.7 for surface water monitoring requirements. The Groundwater assessment (Appendix 6) concluded that the proposed pit is not going to intersect the shallowest aquifer. Therefore no groundwater quality monitoring has been included in the PRC Plan.
6	Landform design	A final landform design is a key component of rehabilitation and closure planning. It is noted Kerwick pit #2 will be used for water storage until the end of mine life. In accordance with condition F3-1 of EA0001386, Kerwick pit #2 must be backfilled with the rehabilitation outcome of native ecosystem. Section 8.11 of the PRC plan states it is planned that Kerwick pit #2 will be backfilled, however evidence that the final landform will be safe and structurally stable has not been provided in section 8.6 *Landform Design* or Appendix 4 – *Mine Planning Report.*	Provide evidence on how Kerwick pit #2 will be rehabilitated to native ecosystem PMLU and that the final landform design is safe, stable and non- polluting. Include information required under section 3.6.1 of the PRCP Guideline, including: • proposed management strategy for water stored in Kerwick pit #2 (include water quality results); • proposed fill material; • hydrogeological assessment;	Groundwater assessment (Appendix 6) concluded that the proposed pit is not going to intersect the shallowest aquifer. The (now) section 8.7 has been updated to include additional detail to justify the landform design criteria. The mine design appendix (Appendix 4) contains additional details.

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		In addition, Appendix 4 the Mine Plan Report refers to a rehabilitation cut on the western side of the lease. The reference is included in Table 5 the rehabilitation material balance, however no further information is provided including evidence that the land will be a stable landform.	• specific landform requirements; and • performance control measures. Provide information on the rehabilitation cut on the western side of the lease. Provide evidence that the land will be a stable landform.	Water quality results are included as section 3.1.4
7	Monitoring and Maintenance	Table 22 of the PRC plan provides monitoring and maintenance information for rehabilitation activities. To ensure the monitoring plan collects sufficient information to demonstrate a stable condition has been achieved, information stated in section 3.8 of the PRCP guideline is required, including: • Method and standard of data collection, • Location of analogue sites, • Parameters/characteristics being measured.	<u>Revegetation</u> Provide an updated Rehabilitation Planning Part that includes additional information about the sampling and analysis that will be undertaken (including frequency/lot size of samples, and location of analogous sites).	Ecological information has been revised in (now) section 8.10 to provide more details on rehabilitation criteria and status, possible analogue sites etc. This is included at Appendix 3.
8	In general	**Item 8.1** *SMART criteria* All rehabilitation milestone criteria need to be written in a manner that delivers on SMART principles. Some milestone criteria presented in the PRCP schedule do not meet SMART principles. Criteria are not specific enough to measure or demonstrate successful achievement of a milestone.	Update the Milestone Criteria as per the SMART principles; specific, measurable, achievable, relevant, and time bound.	Milestone criteria have been revised and updated where required.
		Item 8.2 *Weed management* Appendix 3 *Ecological Studies* of the PRC plan included details on weed species present on the project site.	Provide rehabilitation milestone criteria for weeds and invasive pest species in accordance with the	Weed management criteria updated.

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		Section 5.3 states field surveys recorded 26 exotic weed species, with 15 species listed as invasive plants under the *Biosecurity Act 2014,* and three listed as Weeds of National Significance (WoNs). There have been several references to weed management strategies proposed in the PRC plan (section 8.4.2, 8.9, and 9.2) including treatment of soils and eradication of weeds in the event of revegetation failure. However an acceptable weed criteria has not been provided for the final native ecosystem PMLU outcome.	*Biosecurity Act 2014* and comparable to reference sites.	
		Item 8.3 *Revegetation* The milestone criteria for RM4, RM6 and RM7 include criteria for revegetation of the land for a PMLU of native ecosystem. The RMs reference key species, % of planted specimens and reference to analogue sites, however reference information for these criteria have not been provided in the PRC plan.	This must be actioned in conjunction with item 3. Ensure the information outlined in item 3 and section 3.6.1 of the PRCP guideline is included in the PRC plan and the PRCP schedule is revised accordingly.	Ecology report prepared by BAAM, include at Appendix 3. Revegetation plan details included in (now) section 8.10, PRCP schedule updated, including timeframes to achieve revegetation outcomes
		Item 8.4 *Contaminated Land* It is a requirement for rehabilitated land to be structurally safe with no hazardous materials or contamination. A Contaminated Land rehabilitation milestone and criteria are required to demonstrate this.	Include Contaminated Land rehabilitation milestone and criteria in the PRCP schedule. Refer to above Item 2.	PRC Plan and schedule has been revised to include this assessment. New section 8.5 inserted in plan. Schedule amended to include new RM2.
9	RM3	It is noted milestone reference RM3 'Land Surface Preparation' in the proposed schedule states '*adequate topsoil material spread over shaped surfaces'*. Section 8.7 of the PRC plan relating to cover design, states a minimum thickness of 150mm is to be applied	Refer to above Item 1.2.	Detailed topsoil survey had been conducted and is included as Appendix 5. This information had informed the ameliorant requirements, topsoil quality and quantity.

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		to slopes and batters. However, no justification has been provided for the selected minimum 150mm thickness criteria.		
10	RM4	The milestone criteria in RM4 requires monitoring of rehabilitation in line with rehabilitation targets however reference information for the criteria has not been provided in the PRC plan. In addition, the milestone criteria requires demonstrated record keeping of seeding, planting, species and densities, '*in accordance with design'*. However, no design or details have been provided as part of the PRC plan. Furthermore, achievements for 'demonstrated record keeping' have not been clearly defined in the PRC plan.	Provide a revegetation plan or equivalent with the information as outlined in the above Item 3. In addition, ensure a monitoring plan for revegetation has been provided including survey methodology and frequencies as outlined in above Item 7. Include clear definitions so milestone criteria are measurable and achievable. Revise the PRCP schedule rehabilitation milestone criteria as required.	Milestone criteria updated.
11	RM5	It is a requirement that the final landform is safe and structurally stable. A milestone criteria that demonstrates the final landform will be safe and structurally stable needs to be included in the PRCP Schedule.	Include milestone criteria that demonstrate the final landform will be safe and structurally stable in RM5. Suggested criteria: AQP certifies that as constructed landform achieves design criteria for geotechnical stability with a Factor of Safety (FOS) ≥ 1.5.	PRC planning part updated at section 8.7. Milestone criteria RM6 updated.
12	RM7	The milestone criteria for RM7 schedule states '*Erosion classification comparable to similar landforms in near vicinity with equivalent land uses'*.	Update the PRC planning part to include details on the reference sites and corresponding erosion classification.	The (now) RM8 criteria has been updated with reference to erosion classification.

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13	RM7 and RM8	Provide receiving environment surface and groundwater milestone criteria within RM7 and RM8 to demonstrate that the site is non-polluting. Surface water runoff from the site and groundwater should meet the relevant WQOs and guidelines to protect environmental values.	Receiving environment surface water and groundwater quality criteria must be included in RM7 and RM8. Refer to above Items 5.1 and 5.2 and section 3.8 of the PRCP guideline.	PRC planning part updated at section 8.9.7. Milestone criteria updated for surface water. Groundwater monitoring is not specified as there is no predicted impact.