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Attention: Cape EAPrac represented by Mr. Dale Holder

Proposed ammendment of Environmental Authorisation for Bloemsmond 3 to include a Battery Energy Storage System (BESS)

Aquatic Specialist Statement

Confluent Environmental were requested by Cape EAPrac to review the proposed layout of the Bloemsmond Solar 3 PV facility for inclusion of a Battery Energy Storage System (BESS). This assessment was informed by the description and layout document for Bloemsmond Solar 3: Battery Energy Storage (Peinke, 2020). The proposed location of the BESS is shown in Figure 1 which provides a comparison to the previously assessed site layout.

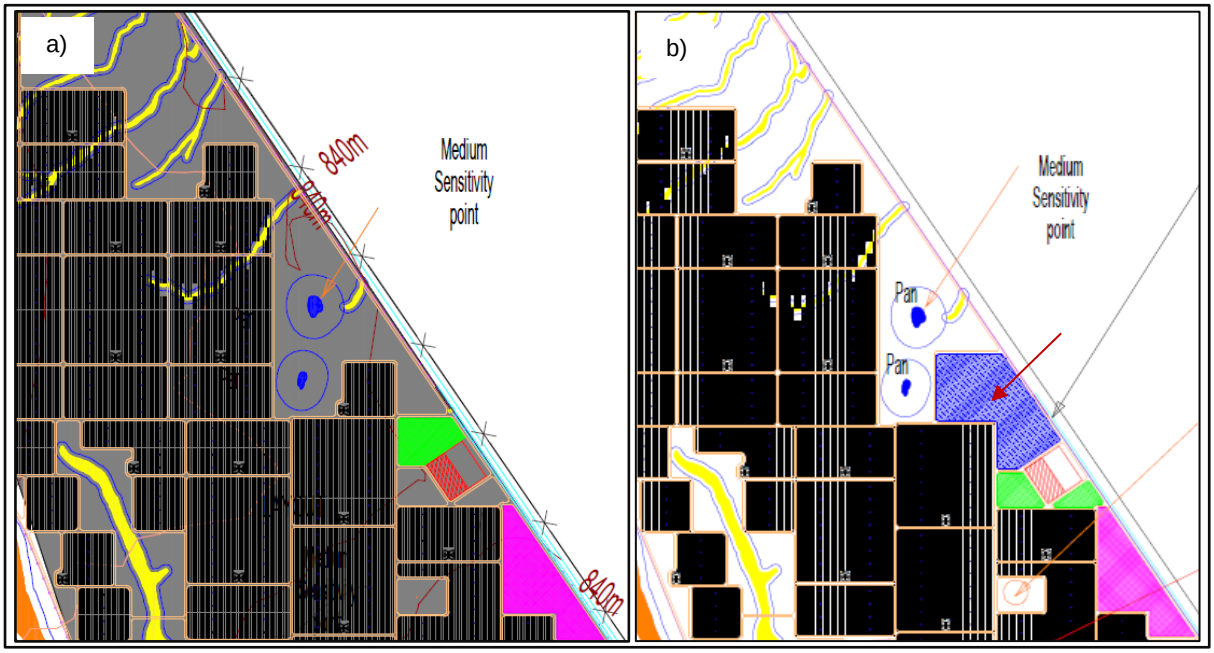

Figure 1. Comparison of the Bloemsmond 3 layout without (a) and with (b) the proposed BESS indicated as the shaded blue area with red arrow.

The footprint occupied by the proposed BESS would mostly replace a section of PV panels (black) and infrastructure associated with operations and maintenance

buildings (bright green). Two small pans and an associated drainage line are the only aquatic features located in proximity to the proposed BESS. While the BESS would be marginally closer to these aquatic features, the actual footprint and location is not considered to be much greater than what was previously proposed. Furthermore, the BESS does not encroach on any of the buffers stipulated for the pans and drainage line (indicated in Figure 1).

The main environmental impacts associated with Battery Energy Storage systems in general are listed as the use of raw materials and generation of waste during their production, greenhouse gas production during mining, manufacturing, use and transportation, and issues with disposal and recycling of batteries. These impacts may be significant over the life cycle of the energy storage system (Dehghani-Sanij *et al.,* 2019), but are not anticipated to affect sensitivie habitats or aquatic systems at the site locality. International insurance companies have identified the most significant risk in underwriting BESS as thermal runaway events resulting in fire or explosion (IMIA, 2019). If such an event were to occur adjacent to a watercourse the impact would likely cause a significant amount of localised solid and chemical waste from entering the watercourse which would need to be cleaned up. It is therefore essential that the developers of BESS would have all the necessary safety protocols in place to prevent such an event from occurring. Based on the possibility of a thermal runaway event occurring, the following mitigation measures are proposed:

- Ensure thermal management safety protocols are in place to reduce the risk of such an event;
- In the unlikely event of a thermal runaway, any contamination of land (including any nearby watercourse) that occurs as a result of this event needs to be contained and cleaned up by a specialist contractor and the area rehabilitated to its former state.

Localised impacts at the site could be a slight nett increase in the amount of hardened surfaces compared to the previous layout as disturbance to soil and vegetation around the PV array was to be minimised. This recommendation still applies to the BESS where as much of the natural surface (vegetation and soil) should be retained within the facility (already recommended in the initial study). Apart from these minor impacts, there are no novel site-specific or cumulative impacts to aquatic ecosystems anticipated from inclusion of the BESS. Therefore, inclusion of the BESS will not change the nature or significance of any of the impacts assessed in this study. The risk to aquatic habitat, flow, geomorphology and biota is considered to be low.

Best Regards,

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REFERENCES

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