

Technical Note

Project title Bromelton Energy and Resource Centre
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Subject RFI 8 - Earthworks

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No. 8	Issue: Earthworks
Information Requested The Civil Engineering Drawing Set submitted as part of the application material (dated 19 December, document reference BERC-ARU-BNE-ENG-RPT-0001, revision C) provides a difficult to execute earthworks proposal. In particular, this will contain the development on a raised earthworks pad to a finished level of about 88.5m AHD in proximity to the railway corridor. The embankment structure will feature 1:3 batters down to a batter toe at 75m AHD, setback a minimum of around 5m from the railway corridor. Whilst the Engineering (Infrastructure) Report states that the Department of Transport and Main Roads technical specifications will be complied with, it is unclear as to whether this can be achieved. The proponent is requested to obtain a RPEQ geotechnical investigation and undertake preliminary RPEQ certified structural engineering design to ensure that an earthworks proposal with adequate stability and compaction can be achieved. Otherwise, it is likely that the development may have to be redesigned, including the interface with the railway corridor. The current design proposal may have limited flexibility if the earthworks design needs to change at detailed design. In addition to geotechnical and structural considerations, cost may also dictate whether the earthworks design needs to alter.	

Response

The matters raised are acknowledged and the following geotechnical response is provided.

The following documents have been reviewed:

- Concept Civil Design Drawings (Arup, 2026)
- Geotechnical Site Investigation (Douglas Partners, 219361.00.R.001, August 2023)

The concept civil engineering drawings represent a preliminary design based on currently available site information and are intended to demonstrate the feasibility of the proposed development footprint and earthworks strategy.

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The Geotechnical Investigation carried out at the location of the fill embankment adjacent to the railway corridor (BH3 & BH16) indicates the existing ground conditions comprise of shallow firm topsoil overlying stiff to hard residual soils typically described as medium to high plasticity silty Clay. These ground conditions are considered good/suitable for supporting the proposed ~9 m high fill embankment.

The proposed 1 in 3 gradient batter slope is less than the maximum 1 in 2 slope specified under TMR standards. Considering the stiff ground conditions of the site and providing the proposed fill is compliant with earth fill (MRTS04 - Section 14.2.2), a 1 in 3 slope gradient would achieve sufficient factor of safety without the need for detailed geotechnical slope stability analysis. It is likely a 1 in 2 gradient would also achieve the required factor of safety if desired, however slope stability analysis would be required to prove this. It should also be considered that steeper slopes are more difficult to maintain by conventional means.

Due to the sloping existing ground, all fill earthworks should be suitably keyed into the existing slope through benching to prevent preferential failure planes between existing and proposed earthworks. Typical benching should be as defined in TMR earthworks specification - MRTS04 section 14.3.3.

The 5 m offset from the railway line is suitable to enable earthworks operations/trafficking at the base of the slope subject to implementation of 'working near rail' risk assessment. 5 m exceeds the typical 3 m allowance from the edge of earthworks for clearing and grubbing.

If steeper slopes are desired, options available at the detailed design stage include soil reinforcement by geogrid reinforcement or soil nails, all of which can be accommodated within the existing earthworks footprint.

In conclusion, the proposed earthworks design is considered achievable, with sufficient flexibility at the detailed design stage to refine slope gradients and geotechnical design as needed, while maintaining the development footprint (and offset to the rail corridor) as presented.