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To Scott Murison

From Clint Scott

Date 9 October 2023

RE **Geotechnical comments on Collins Cap Quarry mining sequence**

Hi Scott,

The following comments are presented in regard to the planned mining sequence of the Collins Cap Quarry, Tasmania.

1. Background

An initial mining plan was submitted to Minerals Resources Tasmania (MRT) in May 2023. Following a review by MRT some further clarification was requested on the sequence of mining and comments regarding the western end of the quarry with regard to the previous failure that had occurred. The initial mining plan is presented in Figure 1.

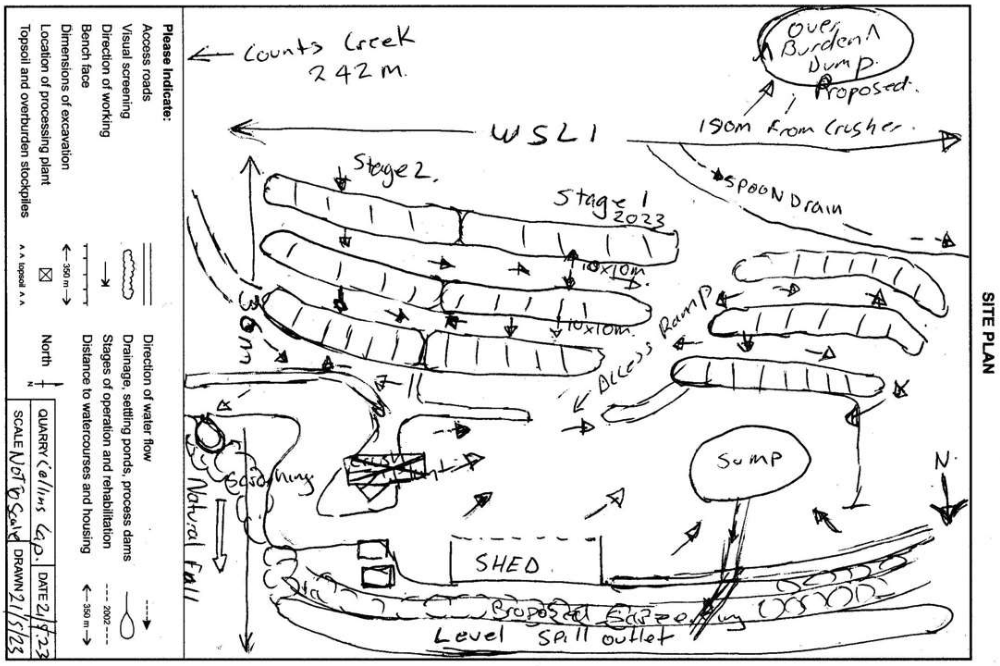

Figure 1: planned mining sequence – May 2023

The following detail on planned final bench design (Figure 2) was presented to pitt&sherry in August 2023.

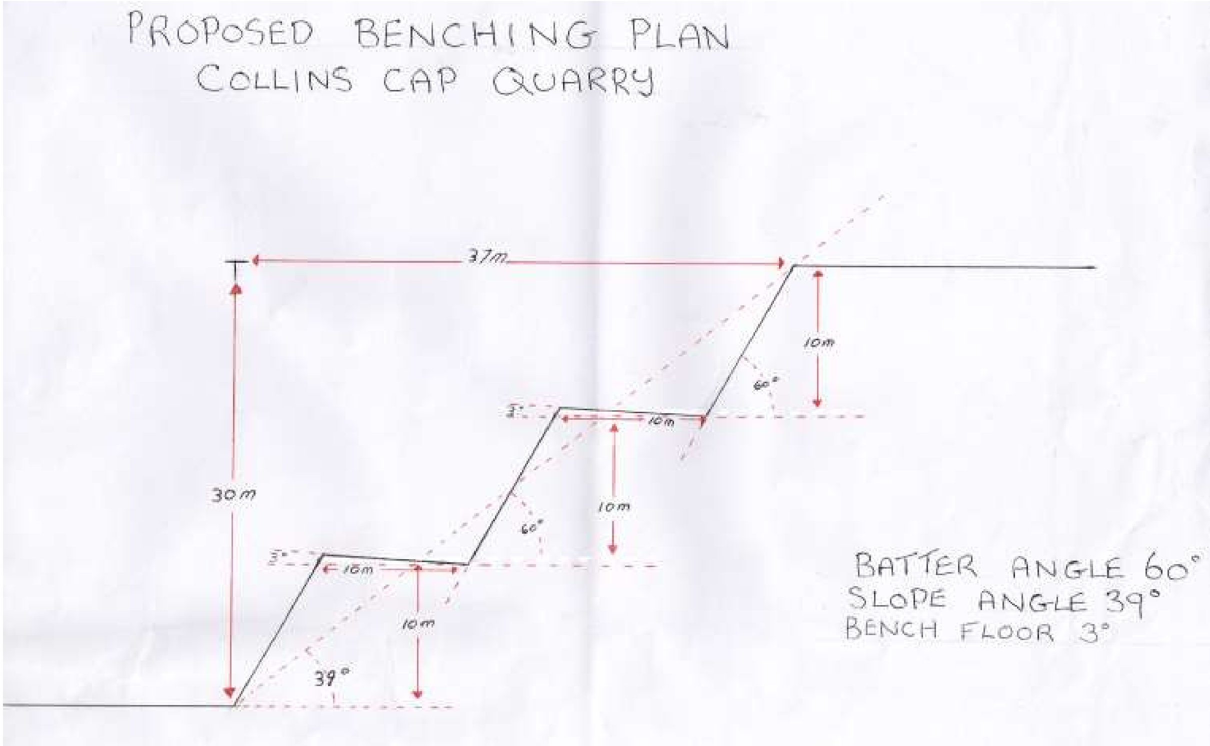

Figure 2: Updated bench design parameters

2. Planned mining sequence

Discussions held with yourself (23 August 2023) suggested that the planned mining sequence included the following steps:

- Cutting of the lower bench along the entire slope (leaving access ramp in the centre part of the slope)
- Cutting the entire top bench, with any waste being tipped over the slope crest below and into the area that was mined as part of mining the lower bench; and
- Mining of the middle bench along the entire slope, again disposing of any waste material over the crest below and into the area previously mined as the lower bench to produce the profile indicated in Figure 2 with the addition of waste material sitting at the toe of the slope.

The steps are presented in Figure 3 below.

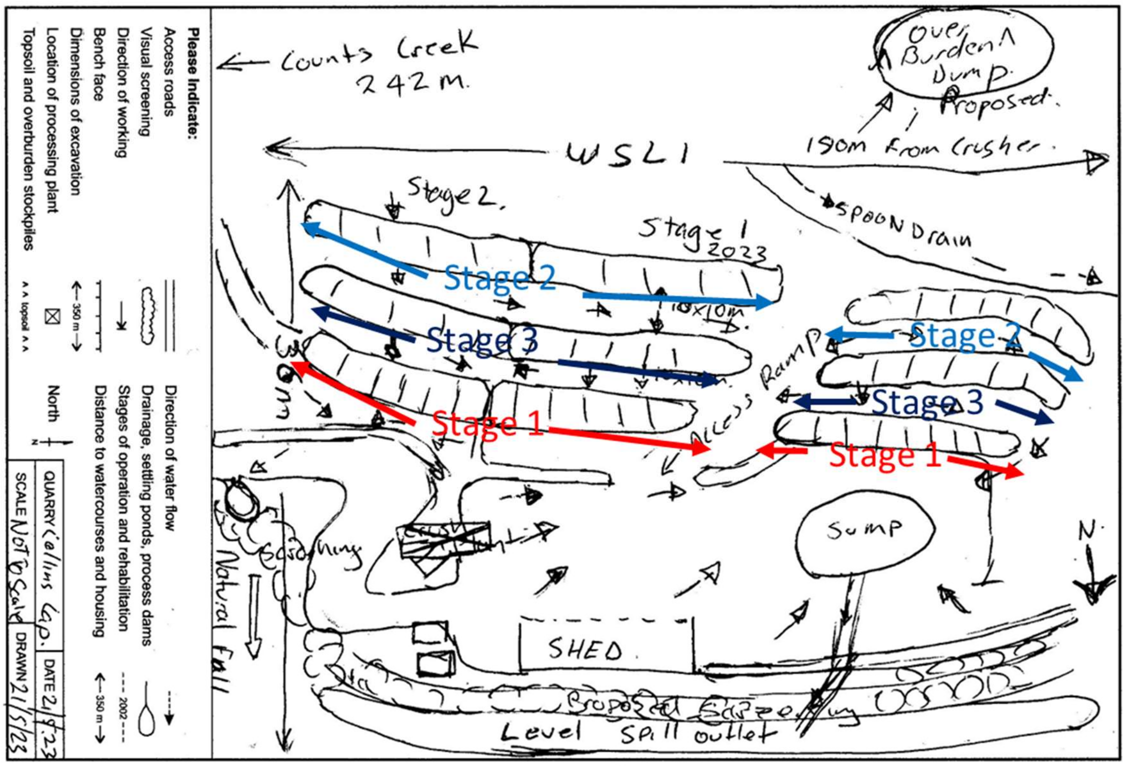

Figure 3: Planned mining sequence

3. Previous failure in western end of the quarry

The previous failure reported in the western end of the pit that occurred in October 2020 was of fill material only and was not failure of in situ material (pitt&sherry, 2020). Remediation measures were installed (rebuild/compaction of failed area) and drainage improvements an no subsequent failures have occurred from this area to date.

4. Comments on planned mining

The following comments on the planned mining sequence are presented by pitt&sherry:

- The previous landslip failure (in the western end of the quarry) was of fill material only. The area of failure is separate from and below the planned future working areas. It is considered that the performance of this fill material does not reflect the expected performance of the in situ material in the western end of the planned quarry area. While the depth of the weathered material was not been fully investigated in the western area, initial slopes cut indicate reasonable quality rock at shallow depths as indicated in Figure 4. It is emphasised that as the previous failure was in fill material the depth of weathering was not a contributing factor.

Figure 4: Photograph (August 2023) of cut slopes in western end of quarry (looking west)

- The cutting of the lowest bench first will create a temporary slope higher than 10m initially. This temporary slope would be a 60˚ batter (at least in the lowest 10m) and could be cut at any slope angle above the 10m mark (as this section would only be temporary) as shown in Figure 5. Current performance of higher, steep (steeper than 60˚) slopes in the eastern end of the quarry suggest that temporary slope performance is generally stable. Observations of potential instability issues would need to be made as this slope is cut in order to determine slope angles and any required cutbacks (to lower angle if issues are noted) above the 10m design heights.

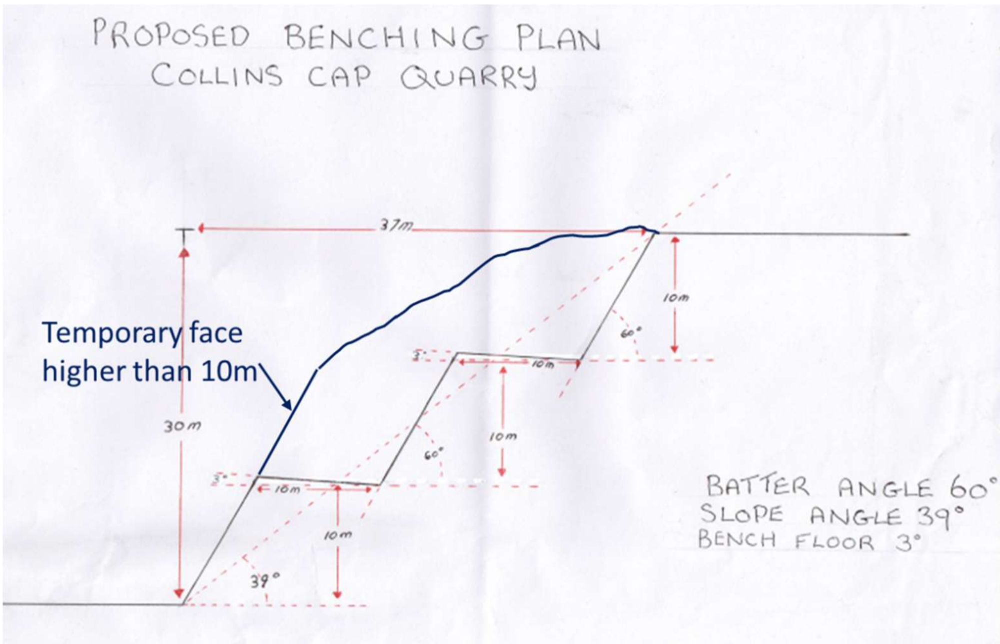

Figure 5: Example cross-section where temporary face of first bench cut will be higher than 10m

- The placement of waste material at the base of the slope as the top two benches are mined would generally increase stability of the overall slope (adding weight to the toe of a slope increases a slope's resistance to movement). However, ponding of any surface run-off water caused by waste material dumping would need to be avoided
- Tipping of waste material over the lower crest during mining of the upper two benches would need to consider potential issues with the following:
  - Crest stability for machinery access (flatter section may need to be cut near the crest of the slope)
  - Potential for run-out of material as it rolls down the slope. An exclusion for an extended area at the base of the slope would be required when dumping over the slope crest. Alternatively, formation of a suitably designed bund using quarried material could provide suitable protection; and
  - As material builds up at the base of the slope it may form a ramp that would increase the distance that dumped material may travel. Dumped material may occasionally hang-up on the slope and then potentially move at a later date (most likely in rain events) and rill down the slope. Maintaining a large exclusion zone at the base of the slopes may be required even at times when dumping of material from above is not taking place. Again, an alternative would be to create and maintain a bund at a suitable distance.

5. References

Pitt&sherry, 2020 P.20.1697 Landslip Inspection Mem OC 30, dated 28th October 2020, external consultant report presented to AllTas Engineering.

Yours sincerely

Clint Scott

Principal Geotechnical Engineer

Reviewed by:

Andrew Tyson

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