

20 February 2007

SAKE DEVELOPMENTS
Suite 11
340 Darling Street
BALMAIN NSW 2041

Attention: Sarah Kelly

Dear Sarah,

RE: Methodology for Earthworks for Remediation of On-Site Excavations
1 Survey Street, Lennox Head

Further to our meeting on 15 February 2007 with Department of Planning and their geotechnical expert (Mr Greg Kotze of GHD Geotechnics), presented herein is a methodology for carrying out earthworks to remediate the section of the above site where access tracks were made to facilitate investigation activities in the past. The need for the work was discussed during the meeting with Mr Kotze, in terms of reducing the potential for instability to develop on the site as a result of the works previously carried out. The methodology is presented in Attachment A.

We trust that this is sufficient for your current needs. Should you have any questions in relation to this correspondence, please contact the undersigned.

For and on behalf of Coffey Geotechnics Pty Ltd



Greg Hackney

Associate Geotechnical Engineer

Attachment A: Methodology for Remediation of Previous Site Earthworks

Attachment A

METHODOLOGY FOR REMEDIATION OF PREVIOUS SITE EARTHWORKS

1 SURVEY STREET – LENNOX HEAD (DOSSER SUBDIVISION)

Purpose:

This document set out the methodology and specification for earthworks to be carried out on the site of 1 Survey Street at Lennox Head to reshape the ground surface to achieve a uniform slope profile in the area of the access tracks created to form access for geotechnical investigations. This methodology is specifically limited to the works relating to the above site.

Scope of Works:

Works to be carried out under this methodology include:

- Clearing of vegetation, and removal and stockpiling of topsoil and other unsuitable materials from within the area of work for later re-use;
- Removal of the existing fill materials that have been 'side cast' to the lower side of the access track;
- Limited excavation to form horizontal benches within the undisturbed in situ natural soil and/or weathered basalt materials;
- Placement of fill materials into the excavations to the nominated dry density ratio;
- Profiling of the slope to achieve the required slope profile, and placement of topsoil and revegetation of the slope.

Set Out:

- The extent of the works shall be identified on site by a qualified and experienced geotechnical practitioner, prior to the earthworks being undertaken. The area shall take account of any disturbance and/or localised instability that may be evident upslope and downslope of the access tracks.
- The area is to be pegged to delineate its extent, and the extent of the area surveyed by a registered surveyor. Plans of the areas are to be developed prior to the works being undertaken.

Excavation Methodology:

- Following delineation of the works area, all topsoil and other unsuitable materials should be excavated from within the works area and stockpiled for later re-use.
- Following removal of topsoil and other unsuitable materials, disturbed materials comprising 'side cast' fill and any areas that have been identified by the geotechnical practitioner as being potentially unstable due to the construction of the access tracks should be excavated and stockpiled. Excavation of the exposed in situ natural materials should be carried out to form horizontal benches with near vertical steps onto which fill will be placed. This arrangement is indicated diagrammatically below.

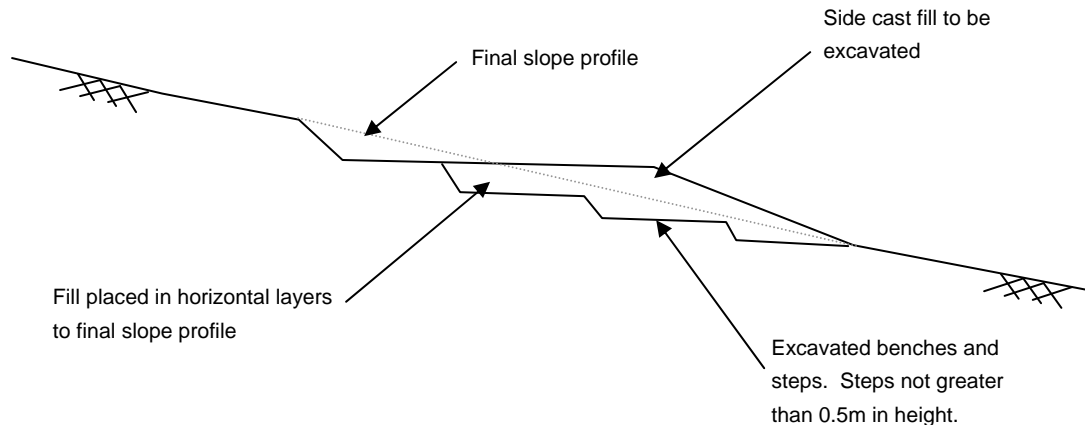


Diagram 1 – Excavation and Final Slope Profile

- Excavation shall be carried out in lengths of not greater than 30m, or as otherwise indicated by the geotechnical practitioner on site during construction.
- Where isolated areas of seepage are identified on the slope during excavation, the contractor shall advise the geotechnical practitioner, who will develop methods of treating the seepage. The contractor shall be responsible for implementing the treatment methods.
- No fill shall be placed onto the excavated foundation surface until approval has been given by the geotechnical practitioner, (HOLD POINT 1). Hold Point 1 for each section must be released by the geotechnical practitioner prior to any placement of fill being carried out.
- Fill shall be placed onto the excavated surface in horizontal layers not exceeding 200mm loose thickness. Fill shall be placed and compacted at $\pm 95\%$ of Optimum Moisture Content (OMC) based on Standard compaction.
- Fill materials shall be over-placed and compacted past the final slope profile and trimmed back to the final slope profile. Trimmed material may be re-used as controlled fill.
- All filling shall be carried out under Level 1 monitoring and testing as defined by AS3798-1996, Guidelines on construction for residential and commercial developments, which requires full time presence of a Geotechnical Testing Authority (GTA). Testing of the fill materials after placement and compaction should be carried out at the rate of one (1) test per 200m^3 of fill placed, or on average one (1) test every second layer per 30m length of works, whichever gives the most tests. The GTA is responsible for nominating test frequency and locations, and will carry out the testing. The contractor shall allow sufficient time for test results to be available prior to placement of the next layer (HOLD POINT 2). Hold Point 2 for each section must be released by the geotechnical practitioner prior to any further placement of fill being carried out.
- Following placement of fill and trimming to the final slope profile, stockpiled topsoil materials shall be spread over the disturbed surface, and tamped into place. The disturbed area shall be revegetated by hydromulching or seeding with appropriate local native grasses as approved by the Superintendent. Revegetation shall be carried out within 3 working days after placement of topsoil. Should erosion of the topsoil and/or placed fill occur prior to or after revegetation, the contractor shall be responsible for reinstating the slope profile and revegetating the slope.