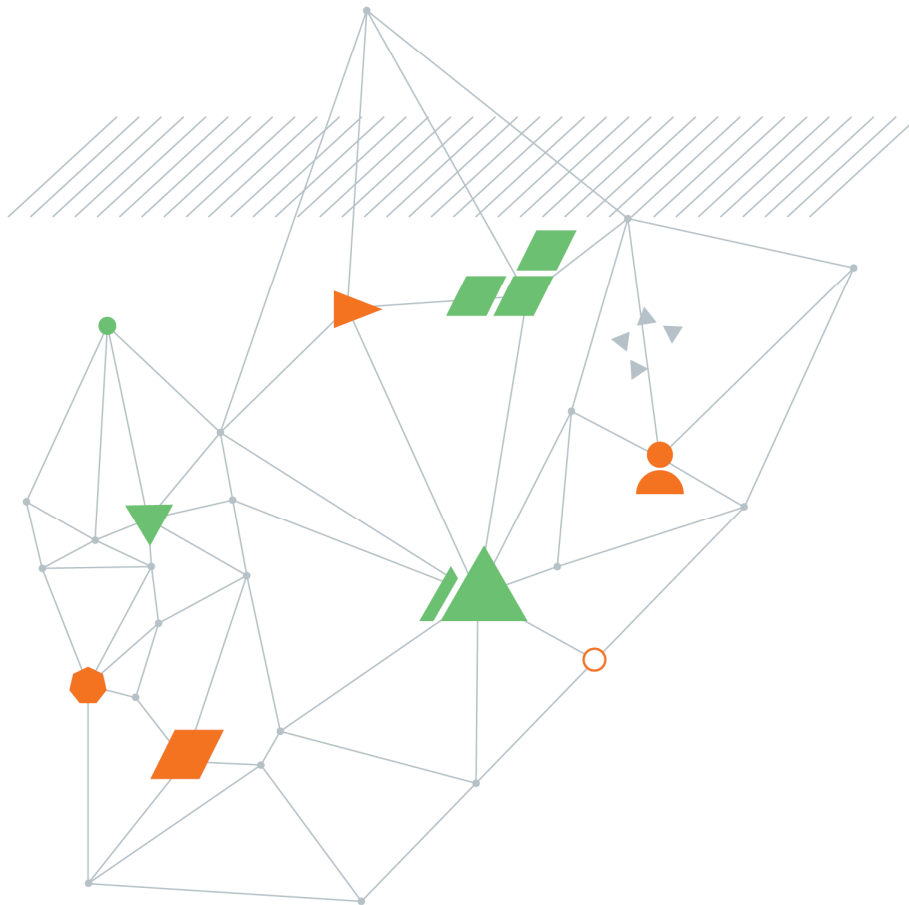


Real
potential
is uncovered
only when
you scratch
beneath
the surface



Progeni Ltd

**Comments on Updated Plans and Drawings for
Resource Consent Application**

68 Exploration Way, Whitby

GENZWELL16067AA-AB

11 February 2014

11 February 2014

Progeni Limited
68 Exploration Way
Whitby
Wellington

Attention: David Harpham

Dear David,

**RE: Comments on Updated Plans and Drawings for Resource Consent Application – 68
Exploration Way, Whitby**

This letter report addresses questions raised by Porirua City Council (PCC) following receipt of the Application for Resource Consent for the above site. It has been prepared for Progeni Limited in accordance with their instructions.

If you have any queries or you require any further clarification on any aspects of this report, please do not hesitate to contact the undersigned.

For and on behalf of Coffey Geotechnics (NZ) Ltd

Yours sincerely



Nathan Schumacher

Senior Geotechnical Engineer

Distribution: Electronic Copy for Progeni Ltd
 Original held by Coffey Geotechnics (NZ) Limited

1 BACKGROUND

In November 2013 Coffey Geotechnics (NZ) Limited was commissioned by David Harpham on behalf of Progeni Limited to undertake a geotechnical assessment at 68 Exploration Way, Whitby for the purposes of assessing the suitability of the site for proposed subdivision to support a resource consent application.

Following assessment of the resource consent application, PCC raised concerns about the development due to amendments to the drawings which superseded drawings used in the compilation of the original Geotechnical Report for Subdivision Suitability (GENZWELL16067AA-AA, dated 3 December 2013).

This letter report is intended to address the questions raised by PCC, as received in email correspondence between David Harpham of Progeni Limited and Nathan Schumacher of Coffey Geotechnics dated 30 January 2014, and confirm the validity of the original report to the amended drawings to assist in resource consent application.

Furthermore, additional information has been provided with respect to earthworks specification and construction supervision requirements at the request of David Harpham of Progeni Ltd.

2 AMENDMENTS TO DRAWINGS

The following is a brief summary of the key differences between the drawings used in compilation of our original report and those submitted in the application for resource consent:

- There are now 9 lots with new building sites instead of 8 lots. An extra lot has been fitted into the same area of land as previously addressed. Lots 1, 2 and 3 have become Lots 1, 2, 3 and 4 and other lots have had minor boundary adjustments with the lot numbers adjusted accordingly to 9 lots.
- The western branch of the right of way now passes to the east of Lot 6 (previously noted as Lot 5) and not along the boundary.
- The two separate right of ways approach over the first 30m have become a single carriageway (two-way), thereby not requiring a retaining wall.
- The eastern branch of the right of way will now climb steadily with an even gradient from close to the entrance and no longer make use of the existing steep concrete carriageway.
- The point at which the western right of way crosses the gully (at the approximate location of the boundary between Lot 7 and 8) has moved to a shallower point further up the gully, thereby not requiring a retaining wall.
- More detail and specifics have been added relating to cut and fill volumes and area for building platforms.
- The cut and fill plan for the building platform for Lot 5 (previously noted as Lot 4) proposes to remove the unstable fill material previously identified in Coffey's report GENZWELL16067AA-AA dated 3 December 2013.
- Two options are presented for stormwater mitigation in the approximate location of the old low lying pump house (to be removed). These options are:

- A dry ponding area of approximately 100m² in plan area is proposed; or
- Stormwater attenuation system could be buried under the right of way.

The two options are to be discussed with council to determine the preferred method of stormwater mitigation.

3 EFFECT OF AMENDMENTS ON PREVIOUS RECOMMENDATIONS

3.1 Retaining Structures

3.1.1 Entrance Ramp Retaining Structure

As a result of the right of way entries being changed to a single carriageway (two-way) at the entrance, as shown on Drawing No. 2013-P1-R Rev E (indicated by Area A1), the retaining structure previously proposed between the two separate right of ways is no longer required. Constructing a single dual carriageway at the entrance will require more fill to be placed and compacted appropriately.

3.1.2 Gully Crossing Retaining Structure

The location of the gully crossing south of Lot 6 (previously Lot 5) has been moved to a shallower point further up the gully, as presented on Drawing No. 2013-P1-R Rev E (indicated by Area G2). As such, a retaining structure will not be required. It is anticipated that the gully crossing can be constructed using engineered fill, placed and compacted appropriately.

3.2 Cut and Fill

3.2.1 Existing Fill

The amended drawings show that the fill identified at Lot 5 (previously Lot 4) is to be removed prior to construction of the building platform, as shown on Drawing 201311-P1-E Rev B. This is assessed as appropriate.

3.2.2 GWRC Pipeline Easement

The amended drawings show fill to be placed over the GWRC pipeline easement, as presented on Drawing No. 2013-P1-R Rev E (indicated by Area C1), at approximate chainage 190m to 205m along the eastern right of way, near the entrance to Lot 10 (previously Lot 9). It is understood that the fill will be approximately 0.5m deep. Pipes within the easement are understood to be 600mm diameter steel lined with concrete and are at a depth of approximately 900mm. It is anticipated that the addition of this fill material will not affect the performance of the pipes, however, this is to be confirmed by GWRC.

3.3 Eastern Right of Way

It is proposed to construct a new road surface along the eastern right of way, instead of using the existing paved road surface, as presented on Drawing No. 2013-P1-R Rev E. It is anticipated that the new right of way will greatly reduce the current stormwater run-off into the adjacent neighbours property (i.e. 59 Exploration Way), as the current road surface does not have an adequate camber to meet good practice, which allows stormwater run-off into the neighbours property.

3.4 Mitigation of Stormwater Run-off

The new stormwater management plans (Drawing No. 2013-P1-SW Rev C) indicate a proposed dry ponding area for mitigating stormwater run-off, in the approximate location of the old low lying pump house flat (near the entrance to Lots 1 and 2, to the east of the right of way at the entrance). The proposed dry ponding area is to be appropriately designed, including items such as the shape of the pond, slope stability, scouring potential, storage volumes and attenuation system. Coffey can provide detailed design advice once a preferred option of stormwater mitigation is decided upon.

However, it is anticipated that the proposed dry ponding area, if appropriately designed, will be able to mitigate unplanned infiltration (i.e. from peak storm conditions) by allowing water to gradually drain straight to the Exploration Way channel by appropriate piping.

It is recommended that appropriate drainage filter material and geotextiles are used to aid in adequate drainage of the ponding area. A filter material consistent with a sandy gravel, and a Bidim A14 geotextile (or similar) could be used. It is envisaged that an appropriately designed dry ponding area will work well at the proposed location.

4 EARTHWORKS

4.1 Recommendations

All earthworks shall be carried out using reworked residually weathered to completely weathered greywacke material from across the site. Recommendations previously presented in Section 3.4 of Coffey's report GENZWELL16067AA-AA dated 3 December 2013 still remain valid. Further recommendations are presented below.

All filling shall be placed in 200mm maximum loose thickness layers then well compacted by approved mechanical compaction equipment appropriate to the type of materials being compacted and any space limitations prevailing.

It is recommended that the Contractors collect fill samples and carry out standard compaction testing. Fill material is recommended to be placed at 95% MDD (maximum dry density) and with moisture content within approximately +/-2% of the OMC (optimum moisture content). This specification is dependent on the compaction test results received, and once reviewed, an updated assessment on subgrade compaction testing and placement will be provided.

4.2 Earthworks Supervision and Sign Off

It is anticipated that three site visits will be required to be undertaken to verify the earthworks and fill placement across site. The three visits would aim to satisfy the following:

- Visit 1 – Verification of clearing of organic material and vegetation, including topsoil.
- Visit 2 – Verification of placement and compaction of fill material during the earthworks.
- Visit 3 – Verification of placement and compaction of fill material at the completion of the earthworks.

Verification of fill placement is to be completed at the times within the earthworks programme as noted above. It is anticipated that a single observation of the Contractors nominated soil testing specialist whilst they undertake sample collection and Nuclear Density Tests during each visit would be sufficient enough to ensure their methodology is sound, thus allowing sign off to be undertaken of the fill material.

It is also anticipated that a fourth visit would be required during construction of the dry ponding area as discussed in Section 3.4, if this option is preferred.

5 CONCLUSION

It is considered that the previous Geotechnical Report for Subdivision Suitability (GENZWELL16067AA-AA) remains valid despite the amendments shown in the drawings submitted in the resource consent application. The following conclusions have been made:

- No unusual, steep or high batter slopes are proposed as part of the subdivision works.
- The updated drawings and proposals presented to Coffey appear to be in fact a better solution and design for the proposed subdivision works, particularly with respect to the removal of the proposed retaining walls.
- The construction of a new eastern right of way is considered to provide positive stormwater run-off control, and to potentially reduce the impacts of stormwater run-off to the neighbours located at 59 Exploration Way.
- The proposed dry ponding area is anticipated to assist in mitigating unplanned infiltration during peak storm conditions.

6 LIMITATIONS

This report has been prepared solely for the use of our client, Progeni Limited their professional advisers and the relevant Territorial Authorities in relation to the specific project described herein. No liability is accepted in respect of its use for any other purpose or by any other person or entity. All future owners of this property should seek professional geotechnical advice to satisfy themselves as to its on-going suitability for their intended use.

For and on behalf of Coffey Geotechnics (NZ) Limited

Prepared By:



Nathan Schumacher

Project Geotechnical Engineer

Reviewed / Authorised By:



Kah-Weng Ho

Principal Geotechnical Engineer