

Our Ref: 09-374 GC:BL
Your Ref: DA09/0701.03 LN 35979

26 July 2018

The Manager
Newland Developers Pty Ltd
PO Box 417
ROBINA TC QLD 4230
Attn: Shaun Nicholson

Dear Sir,

Altitude Aspire Estate
MP09/0166 MOD 3
(Council Ref DA09/0701.3)
RFI Response to letter 11 May 2018

We refer to Council letter to NSW Department of EPlanning & Environment dated 11 May 2018.

Based on various meetings, telephone discussions and emails with Mr. Shaun Nicolson, FORM Landscape and BIOME Consulting regarding amendments to relevant MOD 3 drawings and Central Drainage Reserve, we provide the following responses to Council's RFI letter noted above.

Please be advised that our responses only refer to the "Conclusion" items in Council's letter.

Central Drainage Corridor Redesign

- a) All batters within the Central Drainage Corridor have been revised so that no batter is steeper than 1 on 2. To protect against scour, all batters have been protected with rock rip-rap to the height of the expected 100-year ARI plus 300mm freeboard. Please refer to BIOME report also attached.
- b) Batter slopes are not inconsistent with batters associated with "Phase 1" bulk earthworks. The batter along the section of the NE section of the drainage corridor has been amended to reflect "as constructed" batter slopes (1 on 2.5) associated with "Phase 1" bulk earthworks. No batter is steeper than 1 on 2.
- c) Batter slope variability has been amended to reflect more closely Council concerns – refer long section drawing SK3619 Rev D and cross section drawings SK3620 Rev E to SK3625 Rev E inclusive.
- d) Treatment of all batter slopes steeper than 1 on 4 have been detailed in FORM landscape drawings. To protect against scour, all batters at 1 on 2 within the drainage conveyance channel are to be treated, with rock rip-rap up to a height of the expected 100-year ARI plus 300mm freeboard.

- e) Maintenance accessibility is provided with 3m wide access tracks as shown on drawing SK3618 sheets 1, 2 and 3. The access tracks enter off Broadwater Parkway and provide direct access for maintenance to each of the bio basins.

The Maintenance Access tracks also provide access to the central drainage channel at strategic locations for maintenance, with the provision of "turn-a-round" areas for small maintenance vehicles, at which point it is envisaged maintenance will be carried out "on foot".

Typically, cross sections between chainage 30 and chainage 190 (approx.) are about 6m wide with flat "berm" sections either side for foot traffic to carry out maintenance. We would anticipate one maintenance worker each side of the channel in this section, each with typically "knapsacks" strapped to their back and spraying weed killer, if necessary, as they go. The maximum distance for each of the maintenance workers on foot is approximately 70m between chainage 30 and chainage 100. Elsewhere the distance for "foot traffic" maintenance is approximately 30m and cross sections have flatter slopes either side and the channel corridor section widens to approximately 10m between the Boardwalk and Broadwater Parkway.

The Maintenance Access tracks also "double" as pedestrian access throughout the Central Drainage Reserve from Broadwater Parkway to Market Parade and Ossa Boulevard.

However, we note that whilst pedestrian traffic is provided for along Maintenance Tracks and concrete footpaths, it is not intended that general public pedestrian access particularly general public access is provided along the central drainage channel.

The proposed design of the central drainage channel relies on poorly graded (d50/d90 = 0.5m) rock rip-rap within areas of concentrated flows in an effort to reduce flow velocities and therefore reduce safety risks associated with high depth/velocity product. If reno mattress were to be included within the design, flow velocities would increase as a consequence of smoother rock surface and associated reduction in Mannings N co-efficient. This would impact on higher depth/velocity product within these areas.

Making these areas more accessible for maintenance will also make them more accessible to the general public. Access into these areas of the central drainage channel, with higher velocity as a consequence of higher depth/velocity product is not considered advisable. The current hydraulic design proposal, together with landscape designs, actually seeks to restrict/deter pedestrian access into such drainage areas through the use of dense vegetation.

- f) Water bodies have been deleted. So too, grass swales on the northern side of Broadwater Parkway.
- g) As noted in paragraph (f) above, grass swales on the northern side of Broadwater Parkway have been deleted. However, Bio Basin D has been included on the southern side of Broadwater Parkway, located immediately west of the existing pump station. Refer BIOME Consulting report. Revised

- l) Refer Darryl Anderson Consulting response.
- m) Refer Darryl Anderson Consulting response.
- n) Refer Darryl Anderson Consulting response.
- o) Refer Darryl Anderson Consulting response.
- p) Refer Darryl Anderson Consulting response.

We trust you find the above satisfactory.

Yours faithfully

MEINHARDT

A handwritten signature in blue ink, appearing to read 'B. Lees'.

Brian Lees

Project Director

Encl.

Appendix A – Matters for Discussions – Council/comments tabled 8 June 2018 regarding “Amended Central Open Drain Plans” submitted 25 May 2018, Plan SK3618 Rev F. Responses provided.

26.	The revised report now includes a complete drainage assessment of the proposed central drainage design for 1, 2, 5, 10, 20, 50 and 100 year ARI events. Plots of velocity, depth and d.V for each event are include within the report Appendix.
27.	The revised report rectifies the Music Catchment Plan as requested.

