

Council Reference: DA09/0701.03 LN35979
Your Reference:



11 May 2018

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Dear Sir/Madam

**TSC Submission Altitude Aspire Residential Subdivision
MP09/0166 MOD 3 (Council Reference DA09/0701.03)**

I refer to your e-mail of 11 April 2018 in which you notify Tweed Shire Council of the subject Modification. The application has been reviewed by Council Officers and the following comments are for your consideration during the assessment of the application.

It should be noted that the proposed redesign of the central drainage channel was previously raised with Council in June 2017 as part of proposed amendments to the Stage 3 Construction Certificate CC16/0073. However as the proposed amendments exceeded the flexibility of design amendments afforded to CC assessments the proponent was encouraged to lodge the subject modification. Council's last correspondence associated with this matter was a letter dated 31 August 2017, identifying concerns with the proposed design (copy attached to this letter, at Attachment 1). Similar concerns with the steep batter and landscaping treatment were also raised with the Stage 4 landscaping assessment per TSC further information to the applicant dated 22.2.2018.

The modifications now sought to the development consent are generally supported in principle, however they have not resolved all prior conflicts and actually create further issues of concern due to increased steepness of batters within the future Drainage Reserve.

Council were also expecting an amended bushfire report as part of the current Modification. However it has not been submitted to date. This is crucial to the Modification and should be requested as part of the Departments request for additional information.

These issues are discussed in further detail below with the 'Conclusion' at the end providing a summary of pertinent issues and making recommendations on what matters need to be further addressed before the application is determined by the Department.

Council will be happy to meet and discuss any of these issues with The Department and / or the applicant.

Revised Acoustic Report reflecting current lot numbering

Section 4.1 of Applicants Modification Report

- a. This is considered acceptable as it is the same revised version that has been used for the subdivision releases of Stages 2 and 3, and referenced in the associated 88B Instruments as Registered Memorandums.

However this report has not been amended to reflect the revised lot numbering generated by this modification application. This is not considered essential as the main concerns were with noise from Fraser Dr, and the sites with altered lot numbers (from this modification) are well away from Fraser Dr and are unaffected.

Amended Structural Systems Plan

Section 4.2 of Applicants Modification Report

- a. No concerns. This is the same version of the amended plan that was utilised for the Stage 3 Subdivision Certificate application. This plan has been individually lodged with LPI and is now a Registered Memorandum.

Increase in the extent of bulk earthworks in Lot 1 DP 175234 No. 93 Parkes Lane

Section 4.3 of Applicants Modification Report

- a. Generally, no major concerns with these extra earthworks, but the steepness of the batter (southern end) where it needs to merge with existing ground levels along the common boundary with Lot 36 DP 737064 (No.91 Parkes Lane) warrants review, but could be addressed at CC stage.
- b. Should adjoining Lot 1 DP 175234 be included in the property description for the consent (due to significantly more bulk earthworks on an adjoining property)?

The matter of whether or not actual adjoining owner's consent is required (although the same owner), is left with the Department to consider.

- c. Relocation of rough-shelled bush nut *Macadamia tetraphylla*

One individual of a threatened flora species, *Macadamia tetraphylla* rough-shelled bush nut is located within the footprint of the proposed expanded bulk earthworks area at the western edge of the development (see Annexure L, Ecological Assessment, Burchills August 2017). No map has been provided of the location of this individual, however the Modification Report states that removal of the rough shelled bush nut is required to enable bulk earthworks to be carried out and therefore it is proposed that it will be either translocated or offset onsite.

The Ecological Assessment prepared for the land to the west (Altitude Central) recommends that the rough-shelled bush nut be translocated to a nearby protected area. No indication has been provided in the current application of how this matter is to be dealt with, and none of the plans submitted with the current application indicate the location of the plant. The existing approved *Revised Vegetation Management and Rehabilitation Plan* for Altitude Aspire contains a translocation protocol that is likely to provide appropriate direction.

In order to address the above impact, it is recommended that the proponent is requested to submit additional information addressing the above. It is suggested that relevant revised plans (eg West Boundary Earthworks Extent, Revised Engineering Plans Precinct 1) are submitted that:

- i. identify the location of the rough-shelled bush nut, and
- ii. are annotated to indicate the required management of the rough-shelled bush nut.

Suggested management is as follows:

- i. Prior to the commencement of any works approved under Mod 3 at the western boundary, the rough-shelled bush nut is to be clearly identified and relocated in accordance with Sections 6.5, 6.6 and 6.7 of the Revised Vegetation Management and Rehabilitation Plan prepared by JWA Pty Ltd Ecological Consultants dated April 2013.
- ii. Relocation and subsequent maintenance is the responsibility of the proponent and is to be carried out by a suitably qualified restoration professional under the supervision of the site Environmental Officer.
- iii. The Revised Vegetation Management and Rehabilitation Plan April 2013 will require revision in order to incorporate the ongoing management requirement.

It may be appropriate to insert an additional condition to the consent to ensure the above are addressed prior to commencement of works under any modified consent.

Amended design of the central drainage corridor, including Amended Landscaping Plans

Section 4.4 of Applicants Modification Report

- a. The steepness of proposed batters nominated in the 'Biome' redesign are unacceptable. They are too steep to safely maintain and will also be vulnerable to scour, particularly in the establishment phase. Particular concern is raised with the design of the lower section of the conveyance channel where batters as steep as 1.1:1 are nominated.
- b. The batter slopes are inconsistent with the already approved and constructed batter associated with 'Phase 1' bulk earthworks.
- c. Batter slope variability is a general concern for the conveyance channel – both in cross-section and longitudinally.

For example, the lower batter slopes change seven times in the first 100m of the channel.

Such highly variable batter slopes are difficult to construct and more difficult to enforce rectification if Works-as-Executed plans reveal inconsistencies with the final formation and design requirements. If these variable batters are a design necessity, then the design should be reviewed.

- d. Treatment of all batters steeper than 4(H): 1(V) is reliant on landscaping treatment – which must be compliant with the Bushfire Report requirement that the site is to be treated as an Inner Protection Area. Currently these factors are incompatible.
- e. Maintenance accessibility throughout the central drainage corridor needs to be addressed, particularly for batter maintenance.

- f. The 'water bodies' shown on Bradlees plan SK3618 Rev.E and SK 3626 Rev.D, being adjacent to the SPS as well as small ponds mid-site, are not supported and are to be deleted.
- g. The proposed 'swales' on the northern side of Broadwater Parkway are not supported. These are intended to be biofiltration swales to treat the runoff from Broadwater Parkway, in lieu of an originally approved 4th biofiltration basin within the main central drainage corridor.

Implications on Ecology: there is no discussion in the application about the impact of swale construction on existing restoration work (which is already well underway) within the conservation area, or whether the swales are compatible with the long-term restoration intent in this area. The inclusion of the swales is not mentioned in the Modification Report, nor does the report request amendment of the project to allow further earthworks within the Conservation Area.

The construction of the grass swales is inconsistent with the intent of the conservation area, and with the approved *Revised Vegetation Management and Rehabilitation Plan*, and is not supported without further supporting information. It is recommended that the applicant be requested to submit a revised design that does not require works within the Conservation Area.

Should there be no other alternative, it is recommended that the applicant be requested to submit additional information justifying and supporting the location of the swales, and demonstrating their compatibility with the Conservation Area. Detail is to be provided to demonstrate how their construction is to be achieved without impacting on the existing wetland community immediately adjacent to the north, and the restoration works that are currently underway. A revised *Vegetation Management and Rehabilitation Plan* is to be submitted that details the timely and effective rehabilitation of any disturbed areas, along with ongoing management requirements.

- h. The area north of Basin B appears to be a trapped low point with no drainage outlet.
- i. The design and hydraulic modelling of the main conveyance channel is likely to be very sensitive to the roughness coefficient being used. The vegetation in the channel is likely to be highly variable, and scenarios covering such variations – both 'overgrown' and 'sparse' are to be addressed.
- j. What are the conveyance channel water levels relative to the bioretention basin underdrainage?
- k. The applicant has not provided a design check and summary for the proposed bioretention basins, as required by Water by Design Bioretention Technical Design Guidelines section 5.10.
- l. The stormwater flow distribution in Basin A is likely to be problematic. This is a large, long basin (1300m²) with only a single inflow point.
- m. All proposed rock-lined channels are to have a shallow 'V' instead of a flat base.
- n. A Maintenance Management Plan is to be provided for the Drainage Reserve, with a specific section on the Biofiltration Basins.
- o. The deletion of the 'Bebo Arch' and replacement with 2 x box culverts is noted, but is an aesthetically poor result.

- p. The rear boundaries of Lots 702 and 703 warrants review, as they back on to existing dams and minimising the interface length would be desirable. Although the design contours for Lots 702 and 703 are directed to the E/NE, in the unlikely event of dam failure it would be worth checking the landform upstream of these lots to determine what liability they would be exposed to in an extreme dam failure event.

Amended Landscaping Plans:

Several minor amendments are required, as well as the concerns raised in the following commentary:

- a. As part of Mod 3, a document titled 'Altitude Aspire Terranora Permissible Change', prepared by Form Landscape Architects and dated 10 November 2017 is submitted. The drawings cover all of Altitude Aspire stages 1 to 10. There is reference to this plan being called 'Central Drainage Landscape Plan'. A meaningful title such as "Altitude Aspire Landscape Masterplan Stages 1 to 10" or similar is needed. For all further comments below, it is presumed this document is the Landscape Masterplan for Altitude Aspire Development Stages 1 to 10.
- b. Council has provided the applicant with prior advice on detailed landscape proposals for different parts of this subdivision, including for construction certificates for stage 4, 5 and part of stage 6. The modified Landscape Masterplan does not reflect the requested changes. Changes will be required during the detailed design process for:
- i. The batter on the eastern side of the drainage reserve (issues regarding pedestrian access and planting requirements were previously raised but are not addressed in this concept plan.)
 - ii. Specific comments were also provided to the applicant for the parks in stage 4 and stage 7.
- c. Regarding the central drainage reserve, the concept of linking the park with managed open space is supported. The system of paths, elevated boardwalk, park shelters and related park furniture is supported noting:
- i. Such infrastructure must be of minimal maintenance and above anticipated flood level
 - ii. The elevated boardwalk and similar must be of low maintenance composite material.
 - iii. Other park furniture in the drainage reserve must be off-the-shelf products consistent with Tweed Shire's Development Design Specification D14 Landscaping Public Open Space.
 - iv. Ensure maximum permeability for people movement via the path system, including entry and exit to the reserve. Bicycle access should be considered.
 - v. Ensure there is adequate access for maintenance, particularly for maintenance vehicles.
 - vi. There will be vegetation and weed management requirements in the drainage reserve. An extended maintenance period by the developer may be needed to ensure satisfactory establishment, before Council will accept this responsibility.

- d. Drainage Reserve batters: as referenced in other comments, the steepness of the batters and their treatment is a key issue that must be resolved, particularly regarding planting and maintenance. Steep batters cannot be mown and are difficult to maintain. Generally dense planting with trees and understory is the way to minimise maintenance.

However, visibility from the road and boundaries of the reserve is desirable, both from an amenity and passive surveillance perspective. Dense planting of trees and understory would prevent this.

Bushfire APZ requirements as described by Council's NRM Unit appear to specify minimal scattered trees which will not form a canopy. Dense planting of trees to achieve a canopy would conflict with this.

- e. Access to the drainage reserve from roads to the east and south is shown as steps. The previous version of the Landscape Masterplan (Mod 1) showed a path leading down the eastern batter. It is highly preferable that all stairs are avoided where possible while providing access. We seek advice regarding if, and how this can be achieved.
- f. Cycle paths. There is no apparent cycleway or shared-use path plan for the development.
- g. The introduction and description provided at the front of the modified Landscape Masterplan is now out of date, containing references to things such as location of parks that have changed during the modifications.

Bushfire Implications having regard to the Landscape Plans

The original Bushfire Assessment Report - Altitude Aspire, Terranora Urban Release Area E Fraser Drive, Terranora (BushfireSafe [Aust] Pty Ltd in March 2012) has the following inclusions:

- a. The Bushfire Assessment Report notes that while *"the drainage reserve shall be managed to the standard of an APZ"*, the initial proposal that *"a rock-lined watercourse" (will be installed) "down the middle with a concrete bicycle path down one side and low vegetation within the remainder of the reserves"* would preclude the need for any formalised APZ management requirements along these areas under the provisions of *Planning for Bushfire Protection 2006 (PBP 2006)*.
- b. While the central drainage reserve is to be managed as an Asset Protection Zone (APZ) no specific Inner Protection Area (IPA) or Outer Protection Area (OPA) distances were specified.
- c. APZ management requirements include the maintenance of *"minimal fine fuels...at ground level"*, that *"any tree present have a minimum canopy separation of 2 metres"* i.e. at mature size and that *"any trees present are not species that retain dead material or deposit excessive amounts of ground fuel on a short time"*.

A review of the current Annexure I – Central Drainage Landscape Plan – (Form Landscape Architects Nov 2017) having regard to the bushfire requirements revealed that:

- a. The amended Landscape Master Plan proposes the creation of a *"regenerated closed rainforest"* along the creek/low flow channel and dense groundcover and canopy plantings, particularly on the vegetated batters slopes greater than 1:4,

elsewhere within the central drainage reserve. This planting regime is likely to contravene the requirement to maintain this area as an APZ by introducing large volumes of fine, near ground and ladder fuels.

- b. Any development consent requires establishment of a mechanism for the maintenance of APZs over the life of the development, access provision for maintenance by Council of the steep batters, creek/low flow channel and other areas on this site are not provided in the amended Landscape Master Plan.
- c. Landscaping design adjacent to Broadwater Parkway (providing a 21m wide APZ) appears incompatible with the need to maintain this area as an IPA.
- d. Tree species should be spaced much further apart than is indicated on the amended Landscape Master Plan to ensure that *“any tree present have a minimum canopy separation of 2 metres”*; i.e. the mature canopy size of the trees would need to be considered. It is likely that tree planting centres would need to be 7-9m apart for this to be achieved.
- e. As a result of the amendments to the Landscape Master Plan it is recommended that the Bushfire Assessment Report be updated to address issues of compliance with PBP 2006.

Plant species selection

- a. The use of sclerophyll tree species is at odds with APZ management requirements that *“any trees present are not species that retain dead material or deposit excessive amounts of ground fuel on a short time”*; the use of Spotted Gum (*Corymbia citriodora* a sclerophyll species) is further unsupported as it is a non-locally occurring native species.
- b. The use of Bangalow Palms (*Archontophoenix cunninghamiana*) along the central drainage reserve is not supported due to their potential to block drainage lines with large volumes of dropped fronds and due to the maintenance burden this will generate for Council.

Amended Subdivision Layout

Section 4.5 of Applicants Modification Report

Construction of a roundabout at the intersection of Parkes Lane (Road 10), Townsend Crescent (Road 12) and the future Road 15 to the west into Lot 1 DP 175234

- a. No concerns with the proposed new roundabout, however its geometry has not been assessed for design compliance with Austroads.
- b. Road naming query: consider a name change for the east-west section of the Parkes Lane extension. As a consequence of this new roundabout, it is likely that the continuation of the road heading west will cater for buses and have a 9m wide carriageway, for continuation through 'Area E' as a main access road. Accordingly it may be desirable to have this road given one name, commencing from Market Parade (new roundabout) instead of carrying the 'Parkes Lane' name for this section.

Amendments to the subdivision lot layout to incorporate the proposed roundabout and to accommodate the approved roundabout at the intersection of Parkes Lane (Road 10) and Market Pde (Road 2)

- a. Lots 710, 711, 1201 and 1202 have had their corner geometry altered where they abut a roundabout. No major concerns are raised as lot areas are still

satisfactory, however the resultant shape of Lot 710 is awkward due to impact on the building envelope. An amendment should be considered.

- b. Geometry of the roundabouts has not been checked for compliance with Austroads Part 4B, however the onus is on the applicant to demonstrate such compliance with the Construction Certificate application. I recommend a condition to be imposed accordingly – which could be inserted as (new) part (3) of Condition B39.

Revision of the proposed staging

Section 4.6 of Applicants Modification Report

- a. No major concerns with Staging alterations, except for the deferral of the Parkes Lane connection until the final Stage (12). This connection is to be retained as part of Stage 8, as per the existing approval.
- b. The applicant has made Council aware of the large costs involved with contribution requirements and accordingly the Stage releases have been reduced in terms of lot numbers. Total lots being created over the development site has however remained unchanged.
- c. The only other minor suggestion is to allocate 'Lot 145' to the Sewer Pump Station Lot shown on B & P Surveys subdivision plan dwg. no. 18779 B sheet 5 Rev.M.
- d. Developer Contributions will need to be re-calculated to reflect the new number of lots in the respective stages. Tweed Shire Council will provide the revised figures upon request when the layout is confirmed as final in regards to Mod 3.

Plan Annexure 'K' – Revised Engineering Plans

- a. This Annexure is confusing as it includes three plans that have been superseded by the plans in Annexure 'G' (SK 6524, 6525 and 6526). Consistency is requested.

ALSO – this Annexure includes plan **SK 3617 Rev.F**, being an amended version of prior 'Rev.E' that now deletes the retaining walls on the eastern half of the site. This reflects some of the requirements of Condition A10. This plan was not originally formally approved (excluded from the table in A3) – but is it intended to be now?

CONCLUSION

The following matters should be addressed by the applicant:

Central Drainage Corridor redesign:

- a. The steepness of proposed batters nominated in the 'Biome' redesign are unacceptable. They are too steep to safely maintain and will also be vulnerable to scour, particularly in the establishment phase. Particular concern is raised with the design of the lower section of the conveyance channel where batters as steep as 1.1:1 are nominated. Council's preference is for maximum batter slopes of 4(H): 1(V) but in acknowledgement of the steep nature of the site, batters of 2(H): 1(V) have been accepted if appropriately landscaped. Batter slopes should be no steeper than this.
- b. The batter slopes are inconsistent with the already approved and constructed batters associated with 'Phase 1' bulk earthworks, being the NE section of the

drainage corridor. The existing batters are all 2:1, whereas the 'Biome' redesign nominates a 'top section' batter slope of 2.5:1.

- c. Batter slope variability is a general concern for the conveyance channel – both in cross-section and longitudinally.

In cross-section, batters should have a consistent grade and not change mid-slope (eg: see cross-sections ch.39 to ch.188 for lower sections of the conveyance channel).

Longitudinally, some consistency in batter slopes is requested. For example, the lower batter slopes change seven times in the first 100m of the channel.

Such highly variable batter slopes are difficult to construct and more difficult to enforce rectification if Works-as-Executed plans reveal inconsistencies with the final formation and design requirements. If these variable batters are a design necessity, then the design should be reviewed.

- d. Treatment of all batters steeper than 4(H): 1(V) is reliant on landscaping treatment – which must be compliant with the Bushfire Report requirement that the site is to be treated as an IPA. Currently these factors are incompatible.
- e. Maintenance accessibility throughout the central drainage corridor needs to be addressed, particularly for batter maintenance as well as main channel accessibility.
- f. The 'water bodies' shown on Bradlees plan SK3618 Rev.E and SK 3626 Rev.D, being adjacent to the SPS as well as small ponds mid-site, are not supported and are to be deleted. Similar concerns are raised with the 'grassed swales' depicted on the northern side of Broadwater Parkway, as per further commentary hereunder.
- g. The proposed 'swales' on the northern side of Broadwater Parkway, within the Conservation Area, are not supported as they are inconsistent with the intent of the Conservation Area, and with the approved *Revised Vegetation Management and Rehabilitation Plan*.

It appears these swales are intended to be biofiltration swales to treat the runoff from Broadwater Parkway, in lieu of an originally approved 4th biofiltration basin within the main central drainage corridor.

A revised design that does not require works within the Conservation Area is requested. Should there be no other alternative, it is recommended that the applicant be requested to submit additional information justifying and supporting the location of the swales, and demonstrating their compatibility with the Conservation Area.

- h. The area north of Basin B appears to be a trapped low point with no drainage outlet. A maintenance access track and sewer pump station separate this area from the main drainage channel. It is not clear how this area will drain.
- i. The hydraulic modelling for the revised central drain design is likely to be very sensitive to the roughness coefficient used for the 'vegetation high flow channel'. In the operational phase, it is possible that the vegetation in the channel will be highly variable depending on site conditions and maintenance program, and could be either highly overgrown or fail and be quite sparse. It is requested that sensitivity testing be undertaken for the following scenarios to demonstrate that

flow velocities will remain within acceptable parameters that will not result in scour damage to the drainage reserve and associated infrastructure:

- i. Where the vegetation has partly failed (die-off) and is sparser than design; and
- ii. Where the vegetation is not maintained (weed proliferation) and is denser than design.
- j. The flood levels in the conveyance channel relative to the bioretention basins are not defined. What are the conveyance channel water levels relative to the bioretention basin underdrainage? Stormwater in the conveyance channel could potentially regularly back up into the underdrainage and filter media of the basins. If this occurs regularly it can affect the stormwater treatment function of the basins and cause maintenance issues. What AEP storm event would damage the asset?
- k. All proposed rock-lined channels are to have a shallow 'V' instead of a flat base.
- l. The applicant has not provided a design check and summary for the proposed bioretention basins, as required by Water by Design Bioretention Technical Design Guidelines section 5.10
- m. The stormwater flow distribution in Basin A is likely to be problematic. This is a large, long basin (1300m²) with only a single inflow point. This could potentially result in unbalanced wet/dry conditions in the bioretention basin affecting its capacity to treat stormwater and creating maintenance problems.
- n. A Maintenance Management Plan is to be provided for the Drainage Reserve, with a specific section on the Biofiltration Basins.
- o. The deletion of the 'Bebo Arch' and replacement with 2 x box culverts is noted, but is an aesthetically poor result.
- p. The rear boundaries of Lots 702 and 703 warrants review, as they back on to existing dams and minimising the interface length would be desirable. Although the design contours for Lots 702 and 703 are directed to the E/NE, in the unlikely event of dam failure it would be worth checking the landform upstream of these lots to determine what liability they would be exposed to in an extreme event.

Amended Landscaping Plans

- a. The title of the landscaping document should better reflect its purpose and coverage. It is suggested that 'Permissible Change' be altered to 'Landscape Master Plan – Stages 1 to 10'.
- b. Generally, the plan should reflect prior advices provided by Council in conjunction with construction certificate applications for Stages 3 and 4 – which address the parks in Stages 4, 6 and 7.
- c. Sheet 2: commentary under 'Introduction', 'Entry Precinct' and 'Drainage Corridor' requires updating, as they reference obsolete or rejected features – being the former Community Recreation Centre, a split road entrance, and the water bodies.
- d. Regarding the central drainage reserve, the system of paths, elevated boardwalk, park shelters and related park furniture is supported, with the following matters to be specifically addressed:

- i. Such infrastructure must be of minimal maintenance and above the anticipated 1% AEP flood level.
 - ii. The elevated boardwalk and similar must be of low maintenance composite material.
 - iii. Other park furniture in the drainage reserve must be off-the-shelf products consistent with Tweed Shire's Development Design Specification D14 Landscaping Public Open Space.
 - iv. Ensure maximum permeability for people movement via the path system, including entry and exit to the reserve. Bicycle access should be considered.
 - v. Ensure there is adequate access for maintenance, particularly for maintenance vehicles.
- e. There will be vegetation and weed management requirements in the drainage reserve. An extended maintenance period by the developer may be needed to ensure satisfactory establishment, before Council will accept this responsibility.
- f. Sheet 3: the frontages of the following lots have been overlooked for street frontage treatment (tree planting): Lot 1112 fronting Market Parade; Lots 501 and 502 fronting Parkes Lane.
- g. Sheet 4: delete the 'Water Body / Frog Ponds' as they are not supported by TSC.
- h. Sheet 5: the eastern side of the Drainage Reserve now depicts a 'straight' access path up the batter slope to Ossa Blvd, whereas the existing approved plans show an angled path. This appears to have created a scenario for stairs up this batter slope – as depicted on plan SK 3618 Rev.E (Annexure 'H'). The preferred option would be for a ramped access to avoid stairs. The applicant is requested to demonstrate why stairs are proposed in lieu of a ramp.
- i. Similarly, access to the Drainage Reserve from the south end appears to incorporate stairs and scattered steps, as depicted on Bradlees plan SK 3618 Rev.E. Stairs are to be avoided wherever possible and the applicant is requested to demonstrate an access option without stairs, if at all feasible.
- j. If stairs are unavoidable, they are to be compliant with AS 1428 and all plans are to be annotated accordingly.
- k. Sheet 12: the 'water body' is not supported and is to be deleted. Also delete the other minor 'water bodies' shown mid-site that are barely distinguishable.
- l. Sheet 15: the 'Bebo Arch' photo should be deleted as it is no longer proposed.
- m. Sheet 16: 'Pocket Park 1' has been altered as a consequence of the Stage 4 CC submission to Council. This sheet should be amended to accord with the latest amendments.
- n. Sheets 21 and 22: the current Planting Palettes as nominated on these sheets do not appear to comply with the current requirement for the area to be treated as an 'Inner Protection Area', and are likely to require amendment to accord with the intended amendments to the Bushfire Assessment Report.
- o. Proposed landscaping in sewer corridors / easements in public reserves and drainage reserves shall be amended to remove rock walls and large tree plantings from those areas.

- p. Bushfire implications:
- i. While the central drainage reserve is to be managed as an Asset Protection Zone (APZ) no specific Inner Protection Area (IPA) or Outer Protection Area (OPA) distances were specified.

 APZ management requirements include the maintenance of *“minimal fine fuels...at ground level”*, that *“any tree present have a minimum canopy separation of 2 metres”* i.e. at mature size and that *“any trees present are not species that retain dead material or deposit excessive amounts of ground fuel on a short time”*.

 The proposed planting regime is likely to contravene the requirement to maintain this area as an APZ by introducing large volumes of fine, near ground and ladder fuels, and should be reviewed.
 - ii. Any development consent requires establishment of a mechanism for the maintenance of APZs over the life of the development, including access provision for maintenance by Council of the steep batters, creek/low flow channel and other areas on this site. The Landscape Plan does not address these.
 - iii. Landscaping design adjacent to Broadwater Parkway (providing a 21m wide APZ) appears incompatible with the need to maintain this area as an IPA.
 - iv. Tree species should be spaced much further apart than is indicated on the amended Landscape Plan to ensure that *“any tree present have a minimum canopy separation of 2 metres”*; i.e. the mature canopy size of the trees would need to be considered. It is likely that tree planting centres would need to be 7-9m apart for this to be achieved.
 - v. As a result of the amendments to the Landscape Master Plan it is recommended that the Bushfire Assessment Report be updated to address issues of compliance with PBP 2006.
 - vi. Plant species selection:
 - The use of sclerophyll tree species is at odds with APZ management requirements that *“any trees present are not species that retain dead material or deposit excessive amounts of ground fuel on a short time”*; the use of Spotted Gum (*Corymbia citriodora* a sclerophyll species) is further unsupported as it is a non-locally occurring native species.
 - The use of Bangalow Palms (*Archontophoenix cunninghamiana*) along the central drainage reserve is not supported due to their potential to block drainage lines with large volumes of dropped fronds and due to the maintenance burden this will generate for Council

Extra earthworks:

- a. Should adjoining Lot 1 DP 175234 be included in the property description for the consent (due to significantly more bulk earthworks on an adjoining property)?
- b. No major concerns with the extra earthworks beyond the western boundary of the site, but the steepness of the batter (southern end) where it needs to merge with existing ground levels along the common boundary with Lot 36 DP 737064

(No.91 Parkes Lane) warrants review. This can however be addressed at CC stage.

c. Relocation of rough-shelled bush nut *Macadamia tetraphylla*:

One individual of a threatened flora species, *Macadamia tetraphylla* rough-shelled bush nut is located within the footprint of the proposed expanded bulk earthworks area at the western edge of the development (see Annexure L, Ecological Assessment, Burchills August 2017). No map has been provided of the location of this individual, however the Modification Report states that removal of the rough shelled bush nut is required to enable bulk earthworks to be carried out and therefore it is proposed that it will be either translocated or offset onsite.

The Ecological Assessment prepared for the land to the west (Altitude Central) recommends that the rough-shelled bush nut be translocated to a nearby protected area. No indication has been provided in the current application of how this matter is to be dealt with, and none of the plans submitted with the current application indicate the location of the plant. The existing approved Revised Vegetation Management and Rehabilitation Plan for Altitude Aspire contains a translocation protocol that is likely to provide appropriate direction.

In order to address the above impact, it is recommended that the proponent is requested to submit additional information addressing the above. It is suggested that relevant revised plans (eg West Boundary Earthworks Extent, Revised Engineering Plans Precinct 1) are submitted that:

- i. identify the location of the rough-shelled bush nut, and
- ii. are annotated to indicate the required management of the rough-shelled bush nut.

Suggested management is as follows:

- i. Prior to the commencement of any works approved under Mod 3 at the western boundary, the rough-shelled bush nut is to be clearly identified and relocated in accordance with Sections 6.5, 6.6 and 6.7 of Revised Vegetation Management and Rehabilitation Plan prepared by JWA Pty Ltd Ecological Consultants dated April 2013.
- ii. Relocation and subsequent maintenance is the responsibility of the proponent and is to be carried out by a suitably qualified restoration professional under the supervision of the site Environmental Officer.
- iii. The Revised Vegetation Management and Rehabilitation Plan April 2013 will require revision in order to incorporate the ongoing management requirement.

It may be appropriate to insert an additional condition to the consent to ensure the above are addressed prior to commencement of works under any modified consent.

- d. A revised Bushfire Assessment Report is required to address issues of compliance with PBP 2006. This plan and any amended landscaping plans need to be consistent with one another.
- e. The connection to Parkes Lane is to be retained as part of Stage 8.

- f. As the geometry of the proposed new roundabout (at the intersection of the Parkes Lane extension and Road 12) has not been checked for compliance with Austroads, it is suggested that an addition to Condition B39 be inserted as follows:
 - (3) All roundabouts are to comply with the requirements of Austroads Part 4B, which will need to be demonstrated with the relevant construction certificate application.
- g. The shape of Lot 710 has become awkward and may impact on the suitability of the available building envelope. This is brought to the Department's attention for review if considered appropriate.
- h. Allocate 'Lot 145' to the Sewer Pump Station lot shown on B & P Surveys subdivision plan dwg. no. 18779 B sheet 5 Rev.M.
- i. Where retaining walls are proposed to be parallel to the sewer and stormwater infrastructure, easements will be required to increase by a metre in width.
- j. Changes to the staging will require an application for a S305 Certificate of Compliance to amend the S306 Requirements of the project (per Water Management Act).
- k. Plan Annexure 'K' – Revised Engineering Plans:
 - i. This Annexure is confusing as it includes three plans that have been superseded by the plans in Annexure 'G' (SK 6524, 6525 and 6526). Consistency is requested.
 - ii. Also – this Annexure includes amended plan SK 3617 Rev.F, which now deletes the retaining walls on the eastern half of the site. This reflects some of the requirements of Condition A10. This plan was not originally formally approved (excluded from the table in A3) – but is it intended to be now?
- l. Road naming query: consider a name change for the east-west section of the Parkes Lane extension. Note that as a consequence of the new roundabout at the western boundary, it is likely that the continuation of the road heading west will cater for buses and have a 9m wide carriageway, for continuation through 'Area E' as a main access road. Accordingly it may be desirable to have this road given one name, commencing from Market Parade (new roundabout) instead of carrying the 'Parkes Lane' name for this section.
- m. All Conditions of Consent, including Advisory Notes and Statement of Commitments, should be reviewed for amendment of Lot numbers wherever referenced, for compatibility with the proposed modification. For example, Condition E13 requires several amendments to address different lot numbering, a revised Landscaping Plan, a revised Structural Systems Plan, as well as a revised Acoustic Report.
- n. This amendment proposal provides an opportunity to rectify some oversights in the wording of several Consent Conditions that should have been amended in prior 'MOD's, such as:
 - i. Condition A3 – include in the second part of the 'table' after SK0008: **SK0009** / Rev. A / Lot 712 – Medium Density / February 2015 (from MOD 1)
 - ii. Condition E34 – should refer to 'Stage 6' and delete the blank sub-section.

- iii. Condition E35 – delete 'Community Title' referencing.
- iv. AN1 – no 'occupation' relevant
- o. Similarly, this opportunity should be taken to rectify the apparent conflicting requirements of Conditions E30 and E32, as they nominate differing time periods for maintenance of landscaping – being 24 months and 12 months respectively. Condition E32 is therefore recommended for amendment to nominate a 24 month time period.
- p. The developer contributions have to be re-worked based on the new staging regime. Council will provide this on request when the layout of Mod 3 is final.

For further information regarding this matter please contact Denise Galle on (02) 6670 2459.

Yours faithfully

Lindsay McGavin

Manager Development Assessment and Compliance

ATTACHMENT 1 – COPY OF PREVIOUS LETTER

Council Reference: CC16/0073.01 LN35979
Your Reference: 14-790 GC:DM

31 August 2017

Newland Developers Pty Ltd
c/- Bradlees
PO Box 2293
SOUTHPORT QLD 4215

Dear Sir,

**Construction Certificate amendment application of CC16/0073
for 'Altitude Aspire' Stage 3 Civil Works - at Lot 1 DP 169490,
Lot 1 DP 175235, Lot 1 DP 304649, Lot 1 DP 781687, Lot 1 DP
781697, Lots 40 & 43 DP 254416: No. 37 Fraser Drive
TERRANORA; Lot 2 DP 778727: Parkes Lane TERRANORA**

REQUEST FOR FURTHER INFORMATION

I refer to the above application for an amendment to CC16/0073 for Stage 3 Civil Works, primarily for a major redesign of the central Drainage Reserve within the 'Altitude Aspire' development site.

The assessment of your application has involved several different Works Units within Council covering various disciplines, which is reflected in the range of response comments provided hereunder. Prior to issuing this CC amendment, a satisfactory response is required in relation to the following matters:

1. The application fee has now been determined and the invoice is an attachment to this letter.
2. As raised in prior email correspondence of 20.6.2017, please consult with NSW Department of Planning and Environment whether or not your proposal will necessitate a formal modification of the Development Consent, MP 09_0166. It is noted that your proposal will supersede several nominated plans and at least two referenced documents (per Condition A4: Items 5 and 13) from this consent.
3. Bioretention Basin and Drainage Design Report by Biome

In general, the revised concept for the Drainage Reserve is an improvement on the original (approved) design and is supported, however the following matters require attention:

General:

- a) Resubmission of amended drawings incorporating the comments as shown in red on the attached drawings, with most of the significant issues reiterated in the following commentary.

I note that Reports of this nature are not usually intended to include plans with enough detail to be construction-ready (CC equivalent), but you nevertheless have that option. This would be the preferred course of action

in consideration of how subdivision works are progressing – but please advise your preference.

If the plans are just to inform the subsequent preparation of CC plans, then some of the further detail and amendments requested may not necessarily be required until final design plans are prepared, but would nevertheless aid the preparation of such plans.

- b) Need to include the small section of Lot 610 (Drainage Reserve) on the south side of the Market Parade extension in the design.

Please note the final design for the Drainage Reserve will need to address interface details as follows, however these matters could have consequential effects so should be pursued as soon as possible:

- i. The proposed 'Bebo' arch culvert that will carry Market Parade over the main channel (per DA approved Bradlees plan SK 3487 Rev.C).
 - ii. The existing adjoining properties on the south side, being Council Public Reserves that incorporate a merged spillway outlet from two upstream dams. Actual existing levels along the boundary and extending into the adjoining properties will be required.
 - iii. Connectivity with adjoining Public Reserve Lot 451 @ south-eastern corner?
 - iv. Check for any contributing pipe outlets in the immediate upstream vicinity for appropriate discharge provision to the new Drainage Reserve. There is currently an existing Council stormwater pipe openly discharging out of the north-eastern corner of Lot 58 DP 792238 (No.1-5 Market Parade) that is likely to require attention as it will potentially impact on future Lots 702 and 703.
 - v. ALSO – it would be prudent at this time to review how this Drainage Reserve and particularly Lots 702 and 703 interface with Council's existing Public Reserves and the dams located thereon. Although the design contours for Lots 702 and 703 are directed to the E/NE, in the unlikely event of dam failure it would be worth checking the landform upstream of these lots to determine what liability they would be exposed to in an extreme event. Reducing the rear lot widths may be a consideration.
Further discussion regarding this matter would be welcome.
- c) There are major safety concerns regarding any pedestrian access through this Drainage Reserve, if constructed 'at grade'. This includes any intention to utilise the mid-Reserve weir for pedestrian access, since it is only at Q2 year level.

It is however noted that there has always been a conceptualised desire for pedestrian access through this area, as well as utilising some of this space for passive recreation. This is evidenced with the DA approved Landscape Master Plan by Form Landscape Architects (multiple meandering paths depicted) and the various stormwater-related reports and documents by Gilbert & Sutherland. Connectivity with the Public Reserve Lot 713 adjacent to the north-western corner of the Drainage Reserve is also a desirable outcome.

With this current amendment proposal it is unlikely there would be any 'open' areas suitable for passive recreation within the Drainage Reserve –

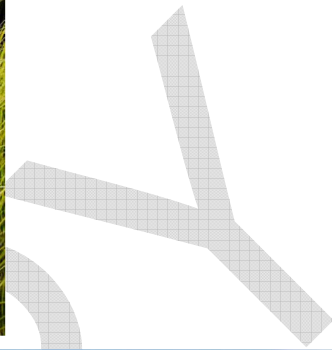
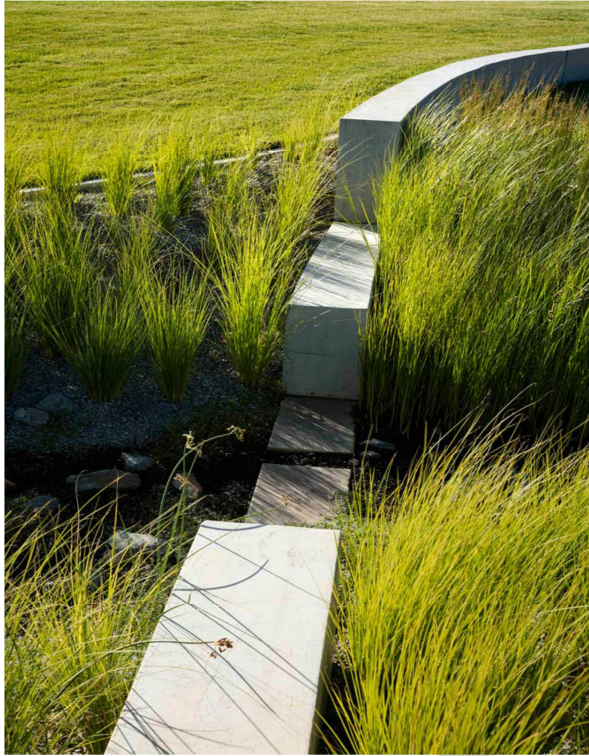
but this would also be dependent on the type of vegetation proposed. Therefore potential is still there but in that scenario appropriate signposting (for informative and warning purposes) would be required.

To facilitate any pedestrian access through this Drainage Reserve, all pathways should be elevated (with handrails) above Q100 year level, using non-timber structures (eg: recycled plastic). The extent of such a pathway network should however be minimised. This should be the desired outcome, which also opens up possibilities for visually appealing treatments of drainage features.

To this end the following photos are example treatments of other major waterway conveyance areas with associated pedestrian accessways. These are provided to encourage alternative design treatments that could create a visual centrepiece for this Estate. It is however reiterated that public safety issues and ease-of-maintenance need to be major design considerations.









- d) Need to verify correlation with future stormwater design for Market Parade, regarding location of stormwater discharge point(s) into the Drainage Reserve.
- e) No details of proposed swales in Broadwater Parkway road reserve. SWMP and MUSIC model note 10% slope, which is too steep for swale and not acceptable.
If swale options are pursued (at flatter grades):
 - i. Would need to specify how a vegetation height of 0.25m could be attained and maintained with minimal maintenance attention.
 - ii. Would need to be demonstrated how this concept would be catered for via associated design inclusion with current Broadway Parkway plans.

These swales are intended to substitute for a 4th basin and therefore have a significant consequential influence on what happens in the north-eastern corner of the Drainage Reserve. Major reconsideration is required.
- f) Maintenance access for the basins needs to be better addressed:
 - i. Clarify if the depicted berms around Basins A and C are also intended for use as access tracks. If so, these tracks and the forebay entries, all have tight arcs that need to be demonstrated as being sufficient for manoeuvring by maintenance machinery / vehicles (eg – overlaid turning arcs).
 - ii. Obvious access for Basin C would need to come from Broadwater Parkway, but gradient could be excessive. Need to correlate with future design of Broadwater Parkway to ensure appropriate capability.

- iii. Access to Basin A would appear to be able to come from Basin C, but again the gradient needs to be demonstrated as feasible.
- iv. Clarify if access is intended around entire Basin A.
- v. Access tracks are recommended to be constructed in concrete (150mm thick reinforced) to enable use by machinery such as a 50t excavator, which is necessary for reach. Grass cells are not a viable option (too easily destroyed by such machinery), but will consider alternative options.
- g) Provide a longitudinal section through the central long axis of the Drainage Reserve (see dwg. 301 notation in red).
- h) North of Basin B is a high flow bypass outlet and one of the Broadwater Parkway swales (not supported). Where will these drain to?
If intending to drain to the main conveyance channel, probably best to extend pipe work under the maintenance access and past the sewerage pumping station. Could also consider option of going across Broadwater Parkway?
- i) Treatment of all batters steeper than 1:4 needs to be addressed as they cannot be mown. Consider stabilisation, accessibility – although zero maintenance would be the ideal scenario, weed inhibition etc.
- j) Behind adjacent medium density Lot 701 (western side of Drainage Reserve), need to provide a setback buffer to any trees that are part of the Landscaping Plan, to avoid overhanging branches creating problems in the future. Treatment of this buffer area will need to be specifically addressed.
- k) An extended establishment / maintenance period (Developer's responsibility) will need to be nominated as part of the specification documentation for landscaping works, sufficient to ensure the design intent will be achieved as well as reasonable maturity of plants.

For batter slope plantings where a canopy coverage would be the design intent, the establishment period could be several years (depending on species being planted), OR linked to intent achievement.

Note that for Biofiltration Basin planting, this will not be implemented until sufficient development activity (dwelling construction) has been completed in the catchment, and the Establishment / Maintenance Period for such planting will only commence at that time.

- l) A Maintenance Management Plan is to be provided for the Drainage Reserve, with a specific section on the Biofiltration Basins.
- m) Please also note that Consent Condition B49 requires the entire site (including the central Drainage Reserve), to be managed in accordance with the 'Bushfire Assessment Report' by Bushfire Safe, and that the entire site must be managed as an Inner Protection Area. This will need to be addressed as part of any landscaping submission.

Bio-retention Basins:

- n) Submission of design check and summary, as per Water by Design Bioretention Technical Design Guidelines section 5.10, is required.

- o) Flow distribution in Basin A is questionable. Large basin (1300m²) with only a single (central) inflow point across the narrow axis.

Also forebay maintenance access is opposite the inlet pipe, and this should be avoided.

- p) What are the conveyance channel water levels relative to the bioretention basin underdrainage? Are through-flows likely to back up into the underdrainage and basin media? If so, at what AEP and would this damage the asset?
- q) Basin C filter area is nominated in the Report as 798m² but the plans show 765m². Any reason for this discrepancy?
- r) Are the overflow inlet pits for basins A and C located close to the overflow weirs for any particular reason? Suggest they be relocated to aid with overflow relief.
- s) Basin B high-flow weir probably shouldn't be opposite an inlet pipe.

Coarse Sediment Forebays

- t) The pipe outlet invert levels should be raised above the FSL of the forebay by 200mm (see Figure 39 of WbD BTDG) unless site levels constrain.

Conveyance Channel

- u) Main channel to have a slight 'v' in lieu of a flat base.
- v) The extensive areas of channel bases and batters nominated for 'rock rip-rap' are to be 'Reno' mattresses, as this will be easier to maintain and access (primarily for weed control), and retain shape definition. This is Council's current preference however alternatives will be considered if a more 'natural' look will be achieved.
- w) Provide inlet protection for the 3-cell culvert @ weir across middle of site (due to scouring potential). 'Reno' mattress recommended.
- x) No details of the proposed plantings in the "vegetation high flow channel" are provided. The design appears to rely heavily on the velocity attenuation function of this dense vegetation.

Relevant detail is to be provided, which will also need to consider matters such as: potential for overgrowth; leaf-drop; debris collection; ability for self-cleansing flow would be ideal; weed inhibition; maintenance requirements to be as minimal as possible; life cycle of selected species etc.

- y) The design and hydraulic modelling is likely to be very sensitive to the roughness coefficient used for the 'vegetation high flow channel'. In the operational phase, it is possible that the vegetation in the channel will be either highly overgrown or fail and be quite sparse.

It is requested you provide sensitivity testing for scenarios where:

- i. the vegetation has partly failed and is sparser than design; and
- ii. the vegetation is not maintained and is denser than design.

Individual drawings:

- Dwg. 200: need to show full catchment; enhance adjoining information to show features such as Market Parade & Public Reserves.

- Dwg. 301: cross-sections are to extend across the full width of the Drainage Reserve, so that all batter slopes can be nominated and RL relationships between basins and channels can be clearly depicted.
Also most of the plan amendments are also to be applied to dwg. 300 as applicable.
- Dwg. 302: comments / amendments on this plan are also to be applied to dwgs. 304 and 306.
- Dwg. 303: comments / amendments on this plan are also to be applied to dwgs. 305 and 307.
- Dwg. 310: the 'Inlet Scour Protection Plan' doesn't make allowance for wingwalls.

Appendices B, C and D:

A perceived conflict was initially noted due to the multiple 'Figures' in these appendices all depicting a different main channel route and outlet under Broadway Parkway to what is actually proposed. However subsequent discussion with Brad Comley confirmed this modelling was simply to demonstrate due diligence and establish that the existing design is less than ideal. Noted and accepted.

4. Amended plan drawings for approval

It is acknowledged that the 'Stage 3' civil works are likely to be completed prior to finalising the matters associated with this central Drainage Reserve redesign. The general footprint of Bioretention Basin B is currently occupied by a sediment basin, assumed to be of generally equivalent dimensions as the currently nominated Bio Basin.

Although the Bio Basin may change in size as a consequence of final design amendments, its current size and function is considered satisfactory for temporary use as a sediment basin. Modification to a Bio Basin was always to be a deferred matter with respect to the Stage 3 (and prior Stages) subdivision releases.

Therefore the current unresolved matters associated with Basin B as part of this CC amendment application are not deemed an impediment to facilitate the Stage 3 release. A current CC approval exists.

Note that most of the submitted (amended) plan drawings warrant an approval (interim at least), even though final design details will not be approved until CC16/0073.01 is actually issued. It is also noted that several sheets are just implementing minor amendments previously annotated by TSC.

The exception is the sewer-related sheets 21C, 22C and 23C which are covered by SWSW16/0007. After consultation with Council's Water & Wastewater Unit, it is advised that formal approval of the minor amendments shown on these sewer-related sheets are not considered necessary, and the amended detail only needs to be shown on the WAX plans once submitted.

Accordingly you are advised that **the following plans have been approved**, subject to the 'Notes' as applicable, with a stamped copy of the referenced plans being attached to this letter:

- Bradlees drawing series 14-790, plans:

- 01-1 Rev. C
- 06 Rev. C EXCLUDED (Rev. D already approved with CC16/0073.02)
- 16 Rev. C
- 17 Rev. C
- 18 Rev. C
- 19 Rev. C
- 30 Rev. B – subject to TSC notation thereon
- 31 Rev. B – subject to TSC notation thereon
- 32 Rev. A – subject to TSC notation thereon
- 33 Rev. A - subject to TSC notation thereon
- Brisbane City Council std dwg BSD-2222 Rev.A - subject to TSC notation thereon.

In the meantime if you have any queries in respect to this matter please contact John Muzyczka of Council's Development Assessment Unit on (02) 6670 2458 who will be processing the application.

Yours faithfully

Ray Musgrave
Unit Co-ordinator Development Engineering