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18 December 2006

Ms Heather Warton
Director, Urban Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Ms Warton

Coastal Grove, 1 Survey Street Lennox Head (MP06_0002)
Response to Submissions

I refer to your letter of 4 December 2006 regarding submissions to the public exhibition of the Environmental Assessment for the proposed residential subdivision and associated works at 1 Survey Street Lennox Head.

Following receipt of your letter, the project team has reviewed the issues and the following is a response to the submissions received. In addition, we propose to delete Lot 1 and enhance the draft Statement of Commitments (SoC) to reflect requests from the various agencies, notably Ballina Shire Council and the Department of Environment and Conservation (DEC). The amended draft SoC is attached with the modifications and enhancements highlighted. We have also provided some additional information and amended plans to reflect these changes as follows:

- PA02 Subdivision Plan by HASSELL Pty Ltd dated 14 December 2006
- PA03 Landscape Plan by HASSELL Pty Ltd dated 14 December 2006
- Figure 1, Drainage System Schematic by Patterson Britton and Partners
- Figure 2, Coastal Grove Conceptual Stormwater Management Strategy by Patterson Britton and Partners
- Figure 3, Coastal Grove Drainage Schematic – Section 1
- Updated draft Statement of Commitments prepared by MG Planning

A SEPP 1 objection is provided under separate cover.

Many of the issues revolve around the proposed stormwater management strategy and natural seepage water. A number of misunderstandings need to be clarified at the outset as these will address many of the issues. Patterson Britton has prepared Figures 1 to 3 to assist clarify the proposed stormwater system. A schematic is provided in Figure 1 to clarify the connections between elements and different systems. The various stormwater elements are presented in plan view in Figure 2 to show the physical layout and connections between these elements. The cross section of the stormwater system clarifies the vertical relationship of various elements (refer Figure 3).

The key clarifications relate to:

- pipe drainage from houses/lots will connect either to interallotment pipe drainage or directly to street pipe drainage;
- the infiltration trenches across the rear of some lots were included to capture surface runoff not collected in the lot pipe drainage system. The trenches drain to the interallotment pipe drainage system and are not to encourage infiltration into the subsoils. They have been renamed trench drains. Coffey reviewed their function and indicated that they will not adversely impact on slope stability;
- the seepage will be collected in trench drains and will be separate and independent of the street drainage system. The drainage pipes from these trenches will direct seepage to the seepage distribution trench gravel drain (refer Figure 2). This trench will permit gradual and distributed seepage of this water along the creekline to replicate the boggy nature experienced in the existing conditions. In this way, the boggy nature of this area adjacent the creekline will be maintained. This is the dominate hydrological process affecting the Hairy Joint Grass and the hydrology experienced by the grass will not be changed;
- the seepage water in the trench drain will not flow into the raingardens but under them to the seepage distribution trench gravel drain;
- the base of the raingarden would be located above the groundwater level. The raingardens do not rely on infiltration to the subsoils so the presence of the groundwater will not adversely impact on the operation of the raingardens.

Government Agency Submissions

Ballina Shire Council
Ballina Shire Council raise concern about the adequacy of stormwater management, geotechnical and ecological matters. In our response below, we have numbered each paragraph under the relevant sub-headings with respect to the Council comments.

Stormwater Management

1. The infiltration trenches would not promote infiltration into subsoils. They will direct collected surface runoff into the interallotment pipe drainage system. Runoff from houses and paved areas will be discharged directly to the interallotment pipe drainage system not to the infiltration trench. Coffeys have confirmed that this drainage system would not adversely impact on slope stability.

2. Potential scouring of the swale would be addressed at the detailed design phase with appropriate inclusion of rock scour protection where velocities are excessive. This has been included in the draft SoC.

3. The trench drain capacity to accommodate seepage would not be reduced by the infiltration trenches. The flow in the infiltration trenches would discharge to the interallotment pipe drainage not the seepage trench drain. The two systems would be separate elements.

4. The base of the raingardens would be located above the groundwater level and their performance would not be adversely affected due to groundwater. The raingardens provide their own drainage media for filtering runoff and do not rely on infiltration into the surrounding subsoils (refer to Figure 3 Drainage Section).

5. Penetration of tree roots through the geotextile layer would not present a significant problem for operation of the raingarden. The impermeable liner is not required for this site and could be deleted.

6. All drainage connections have been clarified in the attached Figures 1 to 3. The low flow from the raingardens would be discharged to the seepage distribution trench gravel drain. This would permit a slow and evenly distributed discharge to the creek which would not cause scour.

7. The high flow discharge from the raingardens has been clarified in Figure 2. Each pond would be independent with flow over a long discharge weir to distribute the flow over a wide area and provide scour protection.

8. Further detail is provided in this submission to clarify that stormwater would be discharged from the development in a controlled manner.

9. We note Council is seeking to extend the water quality monitoring period from two to five years. We believe that two years is adequate and have amended our SoC of commitments that if there are ongoing problematic results, we will extend the monitoring period in negotiation with Council. However, we believe two years is an adequate and standard period for monitoring purposes.

10. The assertion by Council of the hydrologic modelling assuming 99% of the site is impervious area for the existing site conditions is incorrect. The existing site is included partly in subcatchments S1, S2 and S3 as shown in Appendix B in the Patterson Britton's Water Cycle Management report dated September 2006. The percentage impervious area adopted for these subcatchments is presented in Table 4.1 as between 0% and 10%. Appendix D presents the RAFTS modelling data in which for example the subcatchment S1 *(0.51ha)* is allocated a 99% impervious area over 0.03ha and 1% impervious area over 0.48ha giving an effective percentage impervious area over the whole subcatchment of around 6.8%.

11. As described above, the groundwater level will not impact on the performance of the stormwater system as it will not affect the pervious nature of the raingardens or swales. The seepage and drainage systems will be separate with the seepage system not connected to the drainage system. As such, the seepage would not increase the volume of water moving through the drainage system.

12. The seepage water would not be diverted into the raingardens as shown on the attached plans.

<u>Geotechnical</u>

1. There is no excessive cut and fill proposed for the residences. The house designs depicted step down the slope and are split level design to alleviate the need for excessive cut and fill (refer to housing design figures in the Design Guidelines prepared

by HASSELL submitted with the EA). This issue is also covered in the proposed DCP.

2. The applicant has agreed to an experienced geotechnical engineer supervising the location and installation of the subsoil drainage system for the seepage during construction works (see Section 5.4 in the Slope Stability Assessment – Appendix 10 of the EA) and currently included in the draft SoC.

3. The roof waters from houses would be discharged to interallotment or street pipe drainage. Coffeys has confirmed that the infiltration trenches connected to the interallotment pipe drainage would not adversely impact on slope stability.

4. The applicant has agreed to include the requirement in the DCP for a geotechnical engineering report to support excavation for house foundations beyond that recommended in the DCP.

5. Council has recommended further assessment along the toe of lots 19 to 33 "where past uncontrolled land clearing, extensive trench excavation and burial of debris has occurred". Coffey prepared comprehensive Phase 1 and Phase 2 Environmental and Slope Stability Assessments which included extensive bore hole testing and at these locations, plus recommendations regarding any uncontrolled fill (Refer to Figure 1 in the Environmental Site Assessment for bore hole testing sites). No fill or debris was identified in the investigations. As is the case for all construction works, this matter can be addressed as latent conditions in any civil contract in the event that uncontrolled fill is found during construction. Coffey has advised that the recommendations of its reports remain unchanged (Refer to Appendix 10 and 15 of the EA).

Future Driveway Access and Garage Construction

Driveway construction has been reviewed by Patterson Britton and Hassell. It is proposed that for Lots 37, 39 – 44 and one duplex for Lot 12 that driveways and garages would be constructed on suspended structures as per the proposed house designs to achieve the driveway grade of 1:5. These lots generally have a 6m setback (and not 11m). This form of construction for steep lots is typical. House construction would be piered and not slab on ground which would involve extensive cut and fill.

There are many precedents for this approach to residential development on steep sites especially in Sydney's coastal areas (northern beaches, Central Coast) and other areas - with attractive and high quality results. The proponent has committed to further refinement of the Road 1 design at the construction certificate stage to explore the potential to lower the pavement levels to minimise the height of these suspended structures. This has been included in the draft SoC.

Deep setbacks (11 m) are recommended for the lots along the spur falling south from the hilltop (Lots 33-39). This approach will minimise the view of new buildings above the spur from the scenic Coast Road. Even with this deep setback part of these buildings will be visible above the spur, but they will be viewed against the backdrop of existing urban development in Survey Street and beyond. Lots 40-44 will not be visible at all above the hilltop.

The slopes are suitable for housing of this type. Significant tree removal is not anticipated because there are very few mature trees on the site in this area. The proposal does recommend considerable new tree planting on the lower side of these lots to re-establish

tree canopy vegetation on the site for screening and shading. Driveway turning circles have not been proposed in a bid to minimise driveway area and slab construction requirements.

Ecological Issues

1. We have now deleted Lot 1 and illustrated an increased landscaped buffer to Amber Drive reserve. We have plotted the location of the Coastal Fontainea based on Council's survey position (see amended Landscape Plan dated 14 December 2006). We believe an adequate buffer is now provided which balances Council's request to limit the areas of additional open space and Council/DEC's request for additional buffer areas. Refer to further discussion under DEC.

2. We have also limited the area of large/dense rainforest trees directly adjacent Lot 1 and noted this areas as open trees and grasses.

3. Hairy Joint Grass - Council refers to additional records of this threatened species which were recorded along the drainage line in Lot 2, but does not plot the location(s) where it was recorded. It appears from Council's comment *"the species is moisture dependant and restricted in its distribution to creeks and wetland habitats"* that it is likely to occur in the area identified and surveyed in the Flora and Fauna Report (FFR) as "potential habitat". The seepage area east of the main drainage way was examined for the presence of hairy-joint grass and not found during the surveys.

   Council's view that the Draft Guidelines for Threatened Species Assessment were not followed is incorrect. The FFR provides detailed discussion with respect to the Draft Guidelines as follows:

   - Section 2.1 of the Draft Guidelines for Threatened Species Assessment deals with the Threatened Species Conservation Act 1995. This was discussed at length in the statutory considerations section (Section 6.0) of the FFR;
   - Section 2.2 deals with assessment of significance and provides information with respect to the approval process. Much of this is background information to inform an applicant of the statutory requirements with respect to flora and fauna. The relevant matters were dealt with in under statutory considerations in the FFR;
   - Section 3.1.21-3.1.26 relates to surveying the site and the impact on threatened species as well as ameliorative measures. The site was extensively surveyed and locations of hairy-joint grass, including potential habitat were plotted by survey. Council refers to possible additional locations of hairy-joint grass and it is highly probable that these are located within the polygon identified as potential habitat in the FFR;
   - With respect to ameliorative measures, the hairy-joint grass is currently grazed by stock and reported locations are heavily infested with exotic grasses. The measures identified in the FFR are substantive and likely to contribute to the long-term viability of the local population (See Section 8.2 of the EA for further discussion on key threats and ameliorative works).
   - The subdivision layout has provided an extensive riparian corridor and 1,774m^2 ecological polygon where no works are proposed to ensure protection of the grass and its habitat.

It should be noted that DEC supports the proposed development subject to conditions. Refer to further discussion under DEC.

4. *Change to the hydrological characteristics of the ecological polygon containing the hairy jointed grass*

   The hairy joint grass is located on the creek banks which experience rainfall induced runoff from the site. These are the full hydrological conditions. The hairy jointed grass will continue to experience the same hydrological conditions because:

   - the same seepage water would reach the area immediately upstream of the ecological polygon and would be distributed over the same area. This means that the amount of water and the manner in which that water is distributed through the ecological polygon **will not change**;
   - similarly, the rainfall runoff from the site would pass the grass at the same peak flow rate and with an improved water quality.

   As stated earlier, the hydrological modelling undertaken for existing conditions did allow for infiltration of rainwater into the subsurface soils.

   The impact of the development on groundwater has been assessed in the documentation. The regional groundwater levels are at significant depths on the higher portions on the site *(> 10m)* to less than 1m adjacent to the creekline. The more important feature to the significant vegetation on the site is the seepage which is a more localised feature. The regional groundwater is not significantly affected by local rainwater infiltration because of the considerable depths of highly impermeable sediments and rock. This is influenced by more regional factors such as topography, sediments and water levels in large regional water bodies. On the other hand, the seepage is a local feature which is being managed such that the same volume of water reaches the creekline and importantly, the areas of the hairy joint grass.

   The raingardens would be located above the groundwater and would have there own drainage media. They do not rely on infiltration into the subsoils. They will not intercept groundwater or seepage water.

5. An adequate riparian buffer has been provided. A distance of more than 50m is provided from the centerline of the creek to the nearest residential lots. The 20m offset from the drainage corridor is also illustrated on the landscape plan which is fully contained in the riparian / open space corridor. DNR, DPI and other agencies are satisfied with the riparian corridor.

<u>Environment Protection and Biodiversity Act 1999 and Restoration Works</u>

The FFR addressed the requirements of the EPBC Act (see Section 6.2 of the report – Appendix 8 of the EA). Bitou bush was addressed in the FFR but its management along the coastal escarpment of the site was not included as no works are proposed in this area. Refer to further discussion under DEC.

<u>Open Space and Children's Play Ground</u>

Council acknowledges that it will ultimately be responsible for the maintenance of open space areas and has requested increased maintenance periods (five years prior to dedication) and that the team consider measures to reduce the financial burden to Council.

The open space corridor through the development comprises land zoned 6(a) Open Space together with additional land provided in response to Council and government agency requirements for riparian corridors and ecological buffers to the Coastal Fontainea.

The team has worked in collaboration with Council to ensure a low maintenance park and landscape design, including the proposed raingardens (as opposed to artificial wetlands), the location and features of the children's play equipment and other matters.

However, in light of Council's concerns regarding maintenance, we have updated our draft SoC to increase the maintenance period from the two years referred to in the EA, to five years. This will ensure that the financial burden for Council into the future will be maintenance work only, and not regeneration or establishment work. The approach taken for embellishment of the open space area is to return it to a natural state to minimise the ongoing maintenance burden.

It is noted that Council has acknowledged that the ongoing maintenance costs of the open space can be met through the imposition of an environmental levy. The imposition of the levy is at the discretion of Council and can be imposed on residents for environmental management purposes under the Local Government Act (Section 495 and 496A of the Local Government Act 1993) as part of their rates.

Patterson Britton has estimated the stormwater maintenance costs at $5,000 per annum which is approximately $104.00 per dwelling/annum. We do not consider this costly or an onerous burden on Council, however as noted above, Council can pass this cost on through the environmental levy.

Patterson Britton has also advised that the proposed stormwater system has been formulated based on the requirements and recommendations of Council's guidelines, DCP No. 13 – Stormwater Management. Any other residential development would need to provide the same level of runoff control measures as proposed for the subject site. There are no special storm measures proposed which would be the responsibility of Council. At Council's request, the previously included wetlands were replaced with the raingardens in order to minimise the maintenance costs for Council and reduce the mosquito risk. The runoff control measures suit Council's existing personnel skills and equipment for management of gross pollutant traps, landscape areas *(swales and raingardens)* and drainage corridors *(creeklines)*.

In terms of the location of the child's play equipment and sewer pumping station, we are proposing to decommission the pumping station in close vicinity of this equipment and relocate to Seamist Place (refer to Figure 6 and Appendix 1 in the Infrastructure Strategy Report - Appendix 5 of the EA). This appears to have been misunderstood by Council.

Draft DCP and BASIX

The Council supports the preparation of the DCP and has suggested some amendments including Vertical Building Lines (VBL) for lots along the eastern boundary (Lots 34-45 and 13-14), changes to terminology for dual occupancy (to be duplex) and the like. We can make these amendments in consultation with Council and have updated the draft SoC to include these matters. We believe it is premature to make the amendments now, but can complete these in collaboration with Council. We note that Council is currently preparing a Lennox Head DCP and Survey Street will form an appendix / precinct area.

Council is also seeking the inclusion of VBLs in certificates of title. We do not believe this is necessary and that the DCP has adequate statutory weight to implement these height and other controls. The Department would be aware that under Section 28 of the EP&A Act 1979 and consistent with Clause 29 of the Ballina LEP there are provisions that nullify any covenant or other restrictions on title to enable development. It is appropriate that development controls be included in the DCP as opposed to title restrictions.

In terms of additional geotechnical assessments, the DCP already requires the input of a geotechnical engineer for lots within Zone 3, particularly with respect to any development that is proposing alternative measures than those outlined in the DCP.

Mosquito Management

A Mosquito Impact Assessment has been prepared for the site by Mosquito Consulting Services Pty Ltd, qualified entomologists, for the previous development scheme that included wetlands. The report identified potential habitat both on and off site and identified four main areas of known and potential breeding habitat. A full field inspection was undertaken including a walk over of the site and adjacent areas. Larvae sampling, typical breeding habitat identified and opportunistic collection of biting adult mosquitos was undertaken. We believe the report and its recommendations remain relevant and we have attached this for the Department's information.

The report concluded that:

- No specific buffer zones or other controls are recommended to minimize exposure relative to adult populations of Oc. Vigilax of Cx. Annulirostris (recognised pests) from off site sources.
- It is the consultant's view that this site is a low risk location for a residential development relative to mosquito impacts.

Further, the Department should note that in consultation with Ballina Shire Council, the project team removed the previously mooted artificial wetlands on the site which are a known risk for mosquito breeding (unless appropriate design measures are adopted) and that the rain garden solution was developed directly in response to this concern.

We also note in the report that Council considers the rain gardens may intersect with the ground water at various points that could result in the areas remaining wet longer than anticipated and that this could encourage mosquito breeding. This is not the case as noted in the above discussion on stormwater and evident in the cross sections (Figure 3) prepared by Patterson Britton for ground water movements.

Bushfire and Lot 11

See discussion under Rural Fire Service regarding Lot 11.

Site Contamination

We note that Council does not raise issue with two remediation options outlined in our contamination report but would prefer that contaminated soil is not to be placed under housing lots and that the contaminated fill is only placed under roads or sent offsite to landfill. We have strengthened our draft SoC to reflect this matter.

Roads and Traffic

A full assessment of traffic and parking has been undertaken for the proposal including the relevant intersections and local roads. The operational performance of North Creek Road and Blues Seas Parade intersection was undertaken considering the proposed development (including potential for dual occupancy dwellings) and resulted in Level A service, the highest category of service. The existing road capacity is therefore completely adequate to support the proposed residential development (see Section 5.2 of the Traffic Report – Appendix 6 of the EA).

In terms of the Crown Road reserve, our lawyers Deacons and SAKE Development both consulted with the Grafton Department of Lands office, and also with Council at meeting No.4. Refer to further discussion under *Department of Lands* on this matter.

Water and Sewer

Council is generally satisfied with the infrastructure proposal and we note the points raised, which we have included in our draft SoC:

- Prior to construction of dwellings on Lots 12 – 15 and 37 – 45 (now lots 11-13 and 36-44), a hydraulic design of internal service lines and plumbing be undertaken by a suitably qualified person.
- Prior to construction of dwellings on Lots 12 – 15 and 37 – 45 (now lots 11-13 and 36-44), 25mm water service and 20mm water meter will be provided in lieu of the standard 20mm water meter usually provided for residential lots.
- In terms of the sewer reticulation layout, further details of the diversion flows from SP3106 to SP3108 and the upgrading of SP3107 and the possible upgrading of the rising main from the pump station will need to be submitted with the Construction Certificate application.
- Detailed plans will need to be submitted with an application for Construction Certificate and development contributions paid in accordance with Councils Development Servicing Plan.

In terms of Lot 11, this land is currently zoned 1(d) Urban. We will explore the service issues more closely at a later stage once the zoning anomaly is corrected.

SEPP 1

Our EA notes that the residue lots to create the environmental protection zones and Lot 11 currently zoned 1(d) Future Urban do not comply with the minimum lot size in the Ballina LEP 1997 (refer to discussion in Section 7.1.6 in the EA regarding permissibility and minimum lot sizes). Notwithstanding, a SEPP 1 objection has been prepared and is provided under separate cover.

Construction and Environmental Waste Management

We note Councils request for six additional matters to be adopted in our Construction and Environmental and Waste Management Plan. We have included these in our amended draft SoC attached.

NSW Department of Lands

SAKE Development and Deacons Lawyers consulted extensively with the Grafton office of the Department of Lands (Lands) in the preparation of the EA regarding the use of the adjoining Crown road reserve. Lands confirmed that the road separating Lot 2 in DP 622475

from Lot 2 in DP 587685 and part Lot 7029 in DP 1064319 is a Crown public road administered by the Department. A Crown road is a public road for the purposes of the Roads Act 1993 and a member of the public is entitled, as a right, to pass along a public road (whether on foot, in a vehicle or otherwise) and to drive stock.

Lands stated that the consent of the Department was not required to utilise or open the road reserve as a public road. The road will be transferred to the care, control and management of the Council if the application is determined and is to be designed to Council standards.

We note the Department of Planning sent the application to the Coffs Harbour office for comment and that contrary advice was subsequently received. We therefore sought clarification from Lands regarding their position. Stephen Chattels indicated that a plan was not forwarded to the office and they were not aware that the development was proposing to utlilise the Crown Road Reserve. The Department has therefore amended its advice consistent with the above comments (see letter attached).

We have discussed the road design issues in some detail with Council, including the transfer of the Crown Road Reserve from the Department of Lands. This was discussed with Council during meeting No.4 (see meeting notes located in Appendix 11 of the EA). We have also committed in our draft SoC to look at lowering the height of Road 1 in consultation with Council and the detailed design stage.

NSW Department of Natural Resources

A number of the issues raised by DNR have been addressed in the discussion under Ballina Shire Council. We have agreed in our draft SoC and relevant reports (Slope Stability Assessment – Appendix 10 of the EA) to incorporate the requirement for an experienced geotechnical engineer to supervise the location and installation of the trench drains to intercept the seepage water during construction works.

Much of the vegetation to the south is not remnant but recent plantings (2001 following the LEC proceedings). Adequate asset protection zones and buffers are provided and there is no reason to extend the vegetation buffer. This matter has been addressed in the Bushfire Report and the proponent has committed to regeneration works in this area, with an increased maintenance period of five years.

NSW Department of Environment and Conservation

We note the Department supports the application subject to amendments to the draft SoC. In response to the matters raised by DEC and Council, we have agreed to:

- Provide an increased buffer to the Coastal Fontainea with a 50metre landscaped buffer from the tree; and
- Increase the bushland maintenance and weed control period from two to five years.

The Department should be aware that the LEC found that only a 15m buffer to the Coastal Fontainea would be needed to protect the Coastal Fontainea:

The court would be content to allow the appeal, on appropriate conditions, if the ecological matters were the only issues in serious dispute. I accept the adequacy of the proposed 15m buffer to protect the Fontainea in the adjoining reserve,

In response to the court hearing, the landowners planted the 15m buffer, part of the new vegetation on site. In balancing the requests from DEC and Ballina Council (which is seeking to minimize additional areas of open space) we have proposed a landscaped buffer and setback of 50m from the tree itself (as identified by Council). DEC is requesting that the open space areas be dedicated to Council to ensure their long term protection. We believe the amended landscape plan provides an appropriate ecological buffer and responds to the issues raised by both DEC and Council.

The bushland maintenance plan will cover the development areas as noted in our draft SoC (the creek line and open space corridor etc), and does not include the northern escarpment which is not subject to any development. We believe it is unreasonable for the owners to carry out restoration works, for a five year period, to land that is not being dedicated to Council. We have clarified this in our draft SoC.

In terms of the Hairy Joint Grass, this matter has been discussed in some detail under Ballina Shire Council including potential changes in hydrology and further survey work. As part of the regeneration process for the creek line and bushland areas, further monitoring and survey work for the hairy joint grass will be undertaken, an undertaking which is noted in the draft SoC.

NSW Rural Fire Service

The draft SoC has been updated to reflect the requirement for a Bushfire Management Plan to manage vegetation and the asset protection zones. In terms of Lot 11 (now Lot 10), Barry Eadie Consulting has reviewed this allotment in more detail and has advised as follows.

The site is located in a low bushfire hazard area and there is approximately three hectares of vegetation along the northern boundary of the site (the escarpment). Based upon these the bushfire requirements for Lot 11 would be:

Aspect	*Hazard Vegetation within 140m*	*Vegetation Class*	*Slope*	*APZ Required*	*APZ Available*
N	Littoral Rainforest	Group 3	Flat to escarpment	20m	20m
S	Blue Seas Parade Lots 11 and 12	None	N/A	Nil	Nil
E	Managed grassland	None	Upslope 5-0°	Nil	Nil
W	Existing residential dwellings	None	N/A	Nil	Nil

In relation to construction there would be no construction requirements. The 20m APZ to the North would represent managed grassland or equivalent. As noted on Figure 3 of the Vegetation map in the FFR (Appendix 10 of the EA), the area to the north of the escarpment

is bitou bush and does not contain littoral rainforest in this immediate area. Barry Eadie has also advised that the APZ is measured from the dwelling towards the hazard and not the edge of the allotment, therefore an appropriate buffer is available.

NSW Department of Primary Industries

DPI was consulted extensively in preparing the EA and has raised no further issues with the proposal. DPI did not object to the development and endorsed the measures proposed with respect to fisheries and stormwater management measures at an on-site meeting.

NSW Roads and Traffic Authority

The RTA note the report addresses the relevant matters and does not raise any issues or objections.

Public Submissions

1. *The proposal is an overdevelopment of the site. There are too many lots proposed for the constraints of the site.*

   With the deletion of Lot 1, the proposal now contains 44 residential lots. The site area is 14.71ha which equates to an overall gross density of less than 3 dwellings per hectare. Excluding all open space and environmental protection areas, the overall density is still only 8 dwellings per hectare. The State Government sets an overall density for of 15 dwellings per hectare (gross) and the development is well below this standard.

   Lot sizes range from 519 to 1,987sqm with the average lot size being **992sqm.** This is not a dense or overdevelopment of the site. It is consistent with the local, regional and state planning controls including the Draft North Coast Regional Strategy. The proposal is consistent with objectives of urban containment and compact urban villages, located in close proximity to the Lennox Head township (less than 1km). It provides an appropriate form of low density residential development.

   Further, the subdivision layout has been designed considering the environmental constraints and opportunities presented by the site and its carrying capacity. This includes the provision of an extensive riparian corridor, the stormwater treatment train and buffers to ecologically sensitive areas including the Coastal Fontainea located in the adjoining Amber Drive Reserve and the Hairy Joint Grass.

2. *The proposal does not consider the previous Land and Environment Court outcomes and recommendations.*

   The Land and Environment Court refused a 54 lot subdivision in 2000 due to insufficient information on key issues such as the riparian corridor, geotechnical matters and stormwater management. The current proposal reduces the number of lots to 44, or a **19% reduction** in total number of lots. All the key matters have now been comprehensively addressed. In particular, a 20m plus riparian corridor has been provided with the original scheme providing 0m setback in some areas and a water sensitive urban design approach has been adopted and integrated with the geotechnical constraints of the land.

Refer to Sections 8.1 and 8.3 of the Environmental Assessment (EA) for a more detailed discussion on the water management system and geotechnical matters plus further advice provided in this letter and the additional drawings attached.

3. *The development will cause significant impact on downstream areas, in terms of scour from additional stormwater run off.*
   At present the site receives untreated stormwater run off from external residential areas. Significant improvements to water quality will be achieved through an integrated water cycle management approach – up to 70% improvement through rain gardens, bioretention swales and gross pollutant traps.
   The stormwater management system will reduce peak flows below existing rates and substantially reduce pollutant loads compared with existing conditions. It will alleviate erosion and deposition of sediment in downstream waterways caused by uncontrolled run off from external areas. Refer to Section 8.1 of the EA, the Water Cycle Management Report submitted with the application and the additional information provided by Patterson Britton attached for a more detailed discussion.

4. *The proposed drainage is inadequate and will impact downstream wetlands.*
   Refer to above comments. An integrated water cycle management approach has been adopted to ensure water quality improvements and ensure no net increase in flow rates, particularly peak flow conditions.

5. *The site is subject to flooding during times of high rainfall, the proposed drainage system is inadequate to cater for potential volumes of water.*
   The probable maximum flood levels were estimated to ensure that residents, particularly on the western side, would have safe egress during extreme storm events. The proposed development will incorporate detention storage to ensure that peak flows are maintained at or below existing conditions. Peak flows will therefore remain unchanged.

6. *The proposal is unsuitable in terms of the steepness of the site and potential geotechnical details.*
   The project team has considered site constraints in developing the subdivision layout including slope, views and the like. Coffey has conducted extensive site investigations and assessment work since the Land and Environment Court proceeding and specific to the current proposal. In terms of slope stability and hazard, Coffey has divided the site into three zones, with zone 1 being very low to low risk, zone 2 low risk and zone 3 moderate risk. Each zone has relevant construction details particularly for future housing which are embodied in the draft DCP. There are no restrictions for Zone 1 and Zones 2. Zone 3 has controls such as flexible structures (eg timber or steel framed brick veneer), foundations in accordance with AS 2870 and limitations on cut and fill.

   The geotechnical constraints, slope assessment and integration with the stormwater system have all been fully explored in detail with a site specific response developed. Section 8.1 and 8.3 plus the relevant supporting documents have addressed this matter in detail.

7. *Driveways will be steep and inappropriate. It is also unsafe for children who may play in the area.*
   Driveways will comply with the Council requirements for 1:5 grade. For Lots 37, 39 – 44 and the one duplex for Lot 12, driveways and garages would be constructed on suspended structures as per the proposed house designs to achieve the driveway grade

of 1:5. These lots generally have a 6m setback (and not 11m). This form of construction for steep lots is typical. House construction would be piered and not slab on ground which would involve extensive cut and fill.

8. *The existing road network does not have adequate capacity for the proposal without potential causing traffic safety concerns.*
   A full assessment of traffic and parking has been undertaken for the proposal including the relevant intersections and local roads. The development is well below the environmental goal for local roads (Blue Seas Parade and Survey Street) required by the RTA Guide to Traffic Generating Development (see table 16 in the EA). The operational performance of North Creek Road and Blues Seas Parade intersection with the proposed development is Level A, the highest category of service. The existing road capacity is therefore completely adequate to support the proposed residential development.

9. *The roads are very steep and will require extensive cut and fill which is inappropriate on the site due to the location of natural springs on the hill slopes.*
   The roads have been designed in accordance with the Council guidelines and there is not significant cut and fill in the areas of the natural springs. Roads in the area of the springs have been designed to minimise the cut and fill. The roads would incorporate sub soil drainage to collect seepage water and drain it to the seepage distribution trench gravel drain above the creekline (refer to the stormwater drainage details). Coffey has undertaken a detailed geotechnical investigation of the site and provided detailed recommendations for the construction of the subdivision including stable roads.

10. *The raingardens have potential to cause safety concerns for children, particularly when inundated there is a risk of children drowning in ponds.*
    In consultation with Ballina Council, the proposal for previously mooted artificial wetlands was removed and replaced with raingardens, basically a dry solution (ephemeral). This was to overcome concerns regarding safety and wetlands containing permanent water. Refer to Section 3.2 in the Stormwater Management Strategy for a detailed discussion about the design of raingardens, perimeter mounding and planting.

11. *The child's play area is unsafe and inappropriately located.*
    The children's playground is located on land zoned open space, on the flattest land within the site and within a 500m catchment of existing and proposed residences (300m catchment for proposed residences) and consistent with Council's open space strategy. It is not located on wet or boggy land (see Figure 1 in the Coffey Slope Assessment which illustrates area of boggy land).

12. *Open space is located in wet boggy areas which is unsuitable.*
    The open space is located in areas zoned for open space purposes and accommodates the riparian corridor (20m) and ecological buffers as required by the relevant government agencies (including Department of Primary Industries, Department of Natural Resources, DEC and Ballina Shire Council).

13. *The proposal will destroy existing vegetation on site and impact on threatened species.*
    No remnant vegetation is proposed to be removed and in fact significant additional tree planting, bush regeneration and rehabilitation is proposed by the development to enhance the ecological attributes. Notably, a significant buffer is provided to the Coastal Fontainea with further plantings to protect this species. A small strip of recent reafforestation planting adjacent to the Crown Road reserve is proposed to be removed, which was planted in 2001 and is not remnant vegetation.

14. *The proposal has an inadequate buffer to the Coastal Fontainea.*
    It is proposed to delete Lot 1 to provide an additional ecological buffer to the Coastal Fontainea (50m from the tree) and provide further landscaping and vegetation buffer (refer to amended landscape plan).

15. *The proposal will impact on SEPP 26 Littoral Rainforest.*
    The main area of SEPP 26 is located in the adjoining Amber Drive Reserve. As noted, further setback is proposed to the Coastal Fontainea which is part of the SEPP 26 area. The impact of the development against SEPP 26 provisions has been addressed in the EA and in response to representations made by DEC regarding the buffer to the Coastal Fontainea.

16. *The proposal will cause loss of visual amenity for existing residents.*
    A visual assessment and design guidelines have been prepared to ensure the visual impacts of the proposal are minimized particularly from sensitive and public areas including Iron Peg and Boulders Beach and from local vantage points including Survey Street and Amber Drive. Significantly, houses will sit below the top of the ridge and in areas of greatest visual impact, dwellings are limited to single storey (or split level designs with single storey elements). These are detailed in the draft DCP with further controls for site coverage and building design / materials. Visual amenity will also be enhanced by the significant vegetation and plantings proposed particularly along the riparian corridor, adjacent Amber Drive Reserve and within residential lots.

17. *The proposal will have predominately western orientated housing blocks which is inconsistent with BASIX requirements.*
    The majority of lots are east west with living areas orientated north (refer to lot layouts in Design Guidelines). East west lots are highly solar efficient and can maximize solar access to habitable living areas. All future housing must comply with BASIX and the use of sun shading devices will be adopted along western facades such as screens, eaves, deciduous trees and the like. Further, houses along the steeper slopes will be pier construction, elevated to enable natural ventilation. Additional controls regarding sustainability can be included in the draft DCP such as the use of sun shading devices along the western boundaries which has been included in the amended draft SOC.

18. *Significant glare is likely to be caused by the number of dwellings that will be west facing.*
    Glazing to western facades is likely to be minimised to meet BASIX requirements and tree planting provided along western façades. The development is providing significant landscaping works to enhance the environmental amenity of the proposal.

19. *Residents to the west of the development will experience noise impacts as the valley acts as an amphitheatre.*
    The EA has addressed potential noise impacts (refer to Section 8.9). Acoustic Consultants Wilkinson Murray advised there will be no impacts from the development in terms of noise, even in relation to additional traffic.

20. *The proposal does not meet the provisions of the Lennox Head Strategic Plan.*
    The proposal is entirely consistent with the Lennox Head Community Aspirations Strategic Plan and the site is even identified as undeveloped urban zoned land (refer to Map 3 and 11 of the Plan). Sections 7.2.4 and 7.2.5 in the EA provide a detailed discussion regarding the consistency of the proposal with the relevant local strategic planning documents.

It is considered that all issues raised in submissions have been adequately addressed both in the Environmental Assessment and relevant supporting documents and in the proposed changes discussed above. It would therefore be appreciated if the Department would now proceed to finalise its assessment in order that the matter may be determined by the Minister.

Should you require anything further, please do not hesitate to contact me.

Yours faithfully

Sarah Kelly
Director