Council Reference: **DA10/0228 LN18879**
Your Reference: **MP06/0153**

28 July 2010

NSW Department of Planning
Major Project Assessment
GPO Box 39
SYDNEY NSW 2001

Dear Sir/Madam

Development Application DA10/0228 - 41 lot residential and tourist subdivision (Department of Planning Application MP06_0153) at Lot 156 DP 628026 Creek Street Hastings Point

I refer to your letter dated 2 June 2010 in which you seek Council's comments in relation to the Environmental Assessment for the proposed plans at Lot 156, Creek Street, Hastings Point.

The application has been reviewed by various Council Officer's and based on this review and the endorsement of Council at the Council Meeting of 20 July 2010 the following comments are made:

Planning

The application relies on that part of the subject site zoned 2(e) Residential Tourist to facilitate the majority of this development. The application fails to adequately demonstrate how and why 41 residential lots incorporating 2 larger allotments that are for tourist use satisfy the 2(e) zone objectives which state:

Primary Objective

- *to encourage the provision of family-oriented tourist accommodation and related facilities and services rn association with residential development including a variety of forms of low and medium density housing and associated tourist facilities such as hotels, motels, refreshment rooms, holiday cabins, camping grounds, caravan parks and compatible commercial services which will provide short-term accommodation and day tourist facilities.*

Secondary Objective

- *to permit other development which has an association with a residential/tourist environment and is unlikely to adversely affect the residential amenity or place demands on services beyond the level reasonably required for residential use.*

In addition the application fails to adequately determine the permissibility of the proposed road (emergency access road) within that part of the site zoned 7(a) which has the following zone objectives:

Primary Objectives

- *to identify, protect and conserve significant wetlands and littoral rainforests.*
- *to prohibit development which could destroy or damage a wetland or littoral rainforest ecosystem.*

Secondary Objectives

- *to protect the scenic values of wetlands and littoral rainforests.*
- *to allow other development that is compatible with the primary function of the zone.*

The proposed road within the 7(a) zone needs assessment against Clause 8(2) of the Tweed LEP 2000. The applicant has provided limited justification in this regard which is weak and only establishes that if this subdivision pattern were to be approved then the emergency road needs to be in that locality. The Clause 8(2) assessment does not consider alternative allotment configurations that would avoid the need for any road within the 7(a) zone.

Furthermore, the application fails to adequately demonstrate that the proposed road is within the applicant's land. Local testimony indicates that the water level from the adjoining Creek comes within 7-10m from the rear of properties in Creek Street (particularly Number 8 Creek Street). This may affect the applicant's land parcel as the applicants boundary is dictated by mean high water mark not a hard survey line. The Department of Planning should investigate this matter further.

Importantly the current application has failed to:

- Adequately address Draft Tweed LEP 2010 which has just come off public exhibition;
- Address Draft Hastings Point Locality Plan which specifically contains development provisions for this site. Given the extent of fill proposed this may cause an issue with the ultimate height of the built form.

  The concern being, that with a potential fill up to 3.1 meters AHD, and dwellings of up to 8 metres, there may be a breach outside of the view field guidelines suggested (See page 140 of Draft DCP B 23).

  In addition the extended areas of public open space shown as Point 9 on the Masterplan, should be part of a revegetated nature strip.
- Be accompanied by Tweed Shire Council's Owners Consent for works within Creek Street.
- Adequately demonstrate the visual implications of fill/road works etc for the existing residents within Creek Street. It is noted that the high road exiting the site abuts those properties in Creek Street which may result in poor visual amenity for those existing properties. A visual analysis is needed.
- Adequately address the history of unauthorised works on this site.

Flooding & Stormwater Issues

In previous communication to the Department of Planning it was concluded that the subject application did not adequately address the flooding and stormwater issues affecting the site. Despite these comments, the Department of Planning (DoP) have publicly exhibited the Environmental Assessment (EA) for the Major Project Application.

The following comments reiterate the potential flooding and stormwater impacts of the development on the locality, for the consideration of the Department.

Flooding - Council's consultants have recently completed a new calibrated 2-dimensional flood model (TUFLOW) for the Coastal Creek floodplains (including Cudgera and Christies Creeks). This should be used as the basis for the applicant's flood impact assessment. By doing so the applicant can properly investigate impacts of the full range of design flood events, including the probable maximum flood (PMF) and climate change scenarios in accordance with the Department of Environment and Climate Change "Practical Consideration of Climate Change" Guideline (Oct 2007).

The applicant has provided a flooding assessment in the EA (Engineering Impact Assessment, Opus International Consultants). This does not appear to have utilised Council's flood model, but by various means has attempted to replicate Council's results in their own model. While the results appear to be comparable, without additional details such as model files and comparative mapping to verify the adequacy of the applicant's model, this approach cannot be properly assessed. The applicant has also failed to provide climate change assessments as required.

As such, the current flood modelling approach is unsatisfactory, and it is requested that the applicant obtains Council's Coastal Creeks flood model and undertakes the required post-development scenario assessment accordingly. This approach will provide the most consistent, rigorous and defensible means for assessing the potential impacts of the development, and limit the potential for third party appeals.

In previous memos, additional flood modelling scenarios were also requested to explore options to rectify changes in flood behaviour due to the previous history of site alterations, in conjunction with the rehabilitation plans for foreshore environmental land and open space. The applicant has failed to address these considerations in the EA flood assessment.

The EA adopts a design flood level (DFL) for the site of RL 2.4m AHD, and intends to fill the site to this level as a minimum, with an average of RL 2.8m AHD. Minimum habitable floor level for subsequent residential development is specified as RL 3.1m AHD. Since the project was initiated with DoP, Council has revised DCP Section A3 - Development of Flood Liable Land (Version 1.3), in consideration of the results of the Coastal Creeks Flood Study. Under DCP-A3 Version 1.3, greenfield residential subdivision of this kind must adopt a climate change DFL, in accordance with maps in Appendix D of the plan. As such, the subdivision requires a minimum fill level of RL 2.8m AHD, and a 0.5m freeboard to habitable floor levels, to RL 3.3m AHD. Due to proximity of the site to the creek mouth, this increase in peak flood levels is primarily due to sea level rise predictions in accordance with the adopted benchmarks from the NSW Government. As

a result of the DCP-A3 amendments, additional fill will be required across the site, and this must be incorporated into the post-development scenarios for the proponent's flood impact assessment. The "Summary Of Commitments and Mitigation Measures" (7.1.4) also needs to be updated with regard to the DFL.

As raised previously, there are inaccurate comments regarding the extent of flood liable land and the impact of the development in the EA. Section 2.7 of the EA states that:

> *"Areas of the site are currently below the Q100 flood level, including areas proposed to be contained within the developable area of the proposal … Preliminary hydraulic modelling shows that the site can be filled to the design flood level … with no detrimental impacts or cumulative effects on surrounding properties … It has been shown that an area toward the eastern end of Creek Street, equating to that area opposite Lot 10 Creek Street has the potential to be flood prone as it is located slightly below the 1 in 100 year flood level. This constraint has been taken into consideration and an emergency road is provided for vehicular access in such a flood event."*

This statement significantly understates the current extent of flood liable land in the locality. Considering the DFLs adopted in DCP-A3, the entire site and all existing residential properties fronting Creek St are liable to some degree of flooding in the 100 year ARI event. Further, the impact modelling shows that the filling will have impacts on the local area. Flooding is a significant constraint, as the DCP requirement to fill the site results in some degree of obstruction and constriction of existing flood flow paths from the west and the north to Christies Creek. Further, to satisfy the requirement for the development to provide flood free evacuation access to high land (as defined by DCP-A3), an evacuation route is proposed along the southern boundary of existing low-lying dwellings in Creek St, which has the potential to provide a barrier to existing stormwater and flood flows, to the detriment of these landholders.

These same issues also arise in Sections 2.18, 3.7, 4.5.10, and 5.1.3 of the EA.

Stormwater Management - The stormwater assessment and water cycle management plan (WCMP) in the Engineering Impact Assessment are unsatisfactory for the following reasons:

(i) The stormwater catchments relied upon in the drainage design are not representative of the local area. Only one external catchment, "catchment C" consisting of the dwellings along the southern side of Creek St adjoining the development has been considered in the impact assessment. In reality the provision of fill on Lot 156, including the new high level evacuation route, will potentially block flows from these dwellings, as well as dwellings on the northern side of the street, the street itself (which is poorly formed and without longitudinal drainage along much of its alignment), and the adjacent caravan park, from entering the subject land in major storm events (if not minor events as well). If this flow path to the creek is blocked, this stormwater will potentially flood low lying dwellings along Creek St.

(ii) The external catchments E3, E4 and E5 to the north have been considered in calculations, but are assumed to discharge solely to the existing open drains at the western end of Creek St. It is likely that in the pre-development case these flows arrive at the site as channel and sheet flow and disperse across the site towards Christies Creek. These flows will be restricted by the filled development unless some mitigation works are put in place, but these have not been addressed.

(iii) Given the lack of existing drainage infrastructure in the locality, the predicted increases in stormwater runoff from the site (up to 49%) are not properly addressed. While on site detention may be provided under the WCMP, the impacts of changes to stormwater flow volumes and times of concentration may be significant on adjoining land, and the receiving water bodies (including bank stability, scour/erosion, ecological impacts etc).

(iv) There is no design provided for the culverts under the filled formation of the emergency evacuation route. The design of an effective transverse drainage system that will remain free from blockage in major storm events is essential in protecting existing low-set dwellings in Creek St from increased damage and nuisance. If the evacuation route cannot be feasibly installed without significant impact, the development fails to satisfy the emergency response criteria in the DCP, and therefore cannot be supported by Council.

(v) The flooding/stormwater assessment describes the division of the Christies Creek catchment between Cudgera and Cudgen Creeks. While such interaction is known to occur in large flood events, it is controlled by drainage structures under Kanes Road, so the full diversion of such a large catchment to Cudgen Creek cannot be so simply assumed. Council's 2-dimensional flood model should be utilised by the applicant to determine a more realistic interaction of flood discharge during flood and runoff events.

(vi) Alternate stormwater quality control measures should be considered to the proposed proprietary devices, to adopt Water Sensitive Urban Design (WSUD) measures given the sensitivity of the surrounding ecology, and the apparent suitability of site conditions (extent of open space dedication, flat grades, soil type etc), in accordance with Development Design Specification D7 - Stormwater Quality.

Summary of Commitments - Section 7.1 Summary of Commitments and Mitigation Measures fails to commit the developer to protecting adjoining properties from adverse flooding and stormwater impacts, and to providing the necessary mitigation measures to ensure that this is achievable.

Flooding and Stormwater Conclusion - The subject Major Project Application is not supported as it fails to adequately address flooding and stormwater issues in the locality.

Traffic

There is inadequate assessment of pedestrian movement at the intersection of Creek Street and Tweed Coast Road especially since the provision of a right turn lane for vehicles on Tweed Coast Road will necessitate the removal of an existing pedestrian refuge. There is no mention in the report of replacing this pedestrian refuge. Many pedestrians will want to cross busy Tweed Coast Road from the development side to get to the beach, most likely down Peninsula Street. The traffic report has not identified how pedestrians can be safely catered for; e.g. where can a pedestrian refuge be safely and practically installed on Tweed Coast Road including provision of adequate sight distances.

This to an extremely important and serious pedestrian safety issue. Council, and the community, will possibly lose an important safety infrastructure item (a pedestrian refuge) without replacement. This requires resolution prior to consent as there appears to be no suitable replacement location for this refuge.

If this application were not amended the only opportunity to rectify this matter would be for Council to refuse any future Section 138 application for the works required by this development.

Creek Street Upgrade

The application advises that Creek Street will be upgraded to a local access street, based on predicted traffic generation rates for the development. The minimum standard for a local access street is a 6m wide sealed carriageway within a 13m wide road reserve.

Council's Development Design Specifications – Road Design Specification D1 provides an indicative maximum volume of 1000 vehicles per day for a local access street constructed to absolute minimum standards as stated above.

Council's development design specifications also limit the length of a 6m wide local access street to a length of 200m, before the road carriageway would be required to be increased to a wider access street. The length of Creek Street (including the extension of Creek Street to service the subdivision) is appropriately 540m in length within a 20m wide road reserve. Creek Street would be required to have a pavement width of 7.5m from the proposed intersection on Creek Street providing access to the subdivision to the intersection of Creek Street and Tweed Coast Road.

Wider access streets are designed to cater for higher traffic volumes over longer distances and to provide for more intensive land uses such as integrated development or tourist development (such as this application) creating a higher density land use or where flexibility is required for future land uses.

Existing Intersection Upgrade

The intersection operates as a right-left staggered treatment type intersection (figure 2.12 of Ausroads part 5) with Tweed Coast Road as the main arterial road intersected with Creek Street and Peninsula Street located 10m to the south.

The proposed subdivision will require a protected right turning lane on Tweed Coast Road to cater for the additional traffic turning into the subdivision.

The application states:

> *Ausroads Guide to Traffic Engineering Practice Part 2 – Roadway capacity (1988) provides intersection volumes below which a capacity analysis is unnecessary. The post development design traffic volume on Creek Street is below the threshold values and does not require a detailed intersection analysis.*
>
> *A Sidra analysis has been carried out on the intersection, in summary the proposal will produce a queue not exceeding one vehicle with 95% probability for both right and left turns.*

Figure No. 12 titled "Conceptual Intersection Layout" prepared by Opus dated February 2010 provides details of the intersection upgrade, by moving the existing pedestrian refuge and providing a 3m wide sheltered right turn lane on Tweed Coast Road turning south into Creek Street. Road widening will be required to provide a 3m wide turning lane and 4.5m wide through lane. The existing channelization line markings on Tweed Coast Road are a length of 38m, and the drawing supplied by Opus provides only 21m of channelization line markings.

Intersection Sight Distance (Tweed Coast Road & Creek Street)

Ausroads Guide to Traffic Engineering Practice – Part 5 intersections at grade (2005) specifies minimum safe intersection sight distance as 113m for 60km/h and 140m for 70km/h. The application has used a design speed of 65 km/h with an interpolated distance of 130m. It is concluded the intersection provides adequate sight distance in accordance with Ausroads.

Observed intersection sight distance – Coast Road / Creek Street

Location	**Safe Intersection Sight Distance (SISD) Left (m)**	**Safe Intersection Sight Distance (SISD) Right (m)**
3m from Creek Street	149	200+
5m from Creek Street	131	200+

Proposed Road Network – Horizontal alignment

The horizontal alignment of the proposed road network has a number of corners which appear to have a tight horizontal radius.

The engineering report provides service vehicle circulation plans for a 12.5m long service vehicle such as a garbage truck for each of the corners within the proposed road network. The circulation plan shows a 12.5m service vehicle mounting the kerb in a number of locations.

No detail is provided on the curve radius for any of the proposed roads. Council's development design specifications recommend the following requirements for safe passing and the occasional heavy vehicle. Minimum curve radius on carriageway centreline is for an access street is 10m and a neighbourhood connector is 15m. The carriageway widening (apply to inside kerb line by using a larger radius for inner kerb) is radius less than 20m is 1.0m and for a radius between 20m to 30m a carriageway width of 0.5m is required.

Proposed Intersections

Intersection No. 1 – Three way intersection with Creek Street and the proposed main access road into the subdivision (Road No. 1). No traffic detail for the intersection has been provided i.e. priority road, signage, traffic calming devices etc. The intersection of the proposed entrance road into the subdivision and Creek Street would be required to be designed in accordance with Ausroads – Guide to Engineering Practice - Part 5: Intersections at Grade. Signage, priority road, traffic calming devices, line markings etc have not been shown on the application.

Intersection No. 2 – Four way intersection with proposed main access road (Road No.1) and proposed Road No. 2. No traffic detail for this intersection has been provided either i.e. priority road, signage, traffic calming devices etc. The 4 way internal intersection would be required to be designed in accordance with Ausroads Guide to Engineering Practice – Part 5: Intersections at Grade.

Intersection No. 3 and 4 – Both very minor 3 way intersections with proposed Road No. 2 and No. 3. No intersection treatment is required for these minor intersections. All cul-de-sacs will require a 9m radius to be provided.

Emergency Access Driveway

An emergency access driveway has been provided to offer a high level evacuation route for flooding. The driveway is proposed to be above the 100 year ARI design flood level of RL 2.4m AHD and the application states the emergency driveway will provide emergency access for residents to the west of the low point of Creek Street.

The emergency access road is proposed to link from Council's existing sewer pump station located to the east into the most southern cul-de-sac within the subdivision.

The sewer pump station is currently located in road reserve off Creek Street, approximately 10m from the intersection with Tweed Coast Road.

The application also proposes to re-construct the existing access to the pump station into a short cul-de-sac to provide access to the pump station and proposed emergency access road.

The emergency access road is proposed to be a 6m wide carriageway with a 4m wide clear trail which also doubles as a 2.5m wide cycleway. The access road also shows one passing bay has also been provided.

Construction Traffic

The exported fill material will be required to be transported from Tweed Coast Road, then down Creek Street to fill the site. Construction traffic to the site will be approximately 50 trucks per day for a period of 7-8 weeks. This is based on 37,000 m^3 of exported fill material with a truck and trailer capacity of 20m^3 and a 20% bulking factor on the material. 100 truck movements (accounting for two way traffic movements, including the empty truck returning to the fill source) will occur every day throughout the estate to fill the site as per the development application. This equates to one truck every 12.5 minutes. This will create amenity and noise issues for the existing residents in Creek Street.

This will create an amenity issue for the existing residents in Creek Street. – issue / conditions to reflect amenity issues

No detail has been provided for where the fill is to be sourced from. Heavy haulage would be applicable.

Pedestrians / Footpaths / Cycleway

A 1.2m wide concrete footpath will be required on all proposed roads within the subdivision and along the full width of Creek Street as per Council's Development Design Specifications.

A 2.5m cycleway is proposed that follows the perimeter of the subdivision, linking with the existing cycleway on Tweed Coast Road. The cycleway is also included as part of the 4m wide sealed fire trail / flooding emergency access driveway located to the east of the subdivision connecting with Creek Street. Vehicle loadings are proposed on the cycleway, therefore the construction of the cycleway would require steel reinforcement.

Parking / Manoeuvring

Off street parking is proposed along the perimeter road of the subdivision. The application has provided 35 off street car parks in various locations along the road. Tourist development is proposed on future lots18 & 39 and the car parking has been calculated on a tourist facility with 20 units.

No further detail is given in relation to the number of bedrooms proposed for each unit. Council's DCP No. 2 – car parking and site access calculates the required amount of car parking on the number of bedrooms per unit. The car parking proposed for the tourist

development is based on one car park per unit. No engineering issues are raised with the public car parking.

PLEASE NOTE: If some of the above engineering standards were enforced this could conflict with Draft DCP B23 – Hastings Point Locality Plan in terms of maintaining the character of existing streets like Creek Street.

Water & Sewer Infrastructure

There are three main issues in regards to water and sewer servicing:

1. Water cycle management only refers to Basix requirement for rain water tanks whereas Council would like demand management addressed more fully – i.e. our minimum 5000 L tank for single lot dwellings, etc.
2. The issue of sewer connection is still ambiguous with a suggestion of parts of the site filled to 3 – 3.6 m with the suggestion of a lift station if that doesn't happen, whereas other parts of the document only show above 2.4m.
3. The acknowledgement that the 100mm water main is inadequate but it doesn't state that a larger main will be needed to connect to the trunk mains.

Should the Department of Planning approve this application it would need normal conditions of consent that required water supply reticulation, outfall sewerage and s64 contributions.

Additionally the development shall mandate that Council's adopted water demand management strategy be followed on all sites as follows:

> *The provision of rain water tanks for all residential buildings shall be mandated. Individual detached dwellings to provide a 5000L rainwater tank connected to a minimum of 160 square metres of roof area and plumbed to supply toilet flushing, laundry cold water and external uses, in addition to Basix compliance and incorporating water saving fixtures.*
>
> *Other types of developments should use adequately sized rainwater tanks connected to 80 to 90 per cent of the roof area and plumbed to supply toilet flushing, laundry cold water, external and any other appropriate uses that may be available.*

The development shall connect to water supply by connecting to the existing 250mm diameter main at the intersection of Tweed Coast Road and Creek Street and shall demonstrate the size main required but shall provide a main of at least 150mm diameter along Creek Street from Tweed Coast Road to the development.

The developer shall demonstrate that the development can be wholly serviced by conventional gravity sewers in accordance with Council's design standards or if a sewer pump station or lift station is required to serve a portion of the development, the sewer reticulation for the whole development shall be designed to gravitate to that pump or lift

station which should serve a minimum of 50 ET. Individual single property pump stations will not be permitted to service any of this development.

Open Space – Recreational Services

There are five major issues with regards to the applicants proposed open space areas:

1. Small turf and modified 'park' areas are too small for efficient maintenance

   As described in Figure 9: Masterplan, there are 2 small turfed areas which represent a high cost to Council to maintain for minimal benefit.

   Item 7: This tiny area of turf appears to provide no recreation value and is very inefficient in maintenance terms. It cannot be accepted.

   Item 14: This area of around 1,000m2 is variously called the 'Community Park' or Park Area 1. It is a small park area and Recreational Services Unit would strongly prefer a larger area for efficiency of maintenance.

   Please note: Strong concern is expressed regarding the proposed play equipment close to the water and the road. All new playgrounds must comply with guidelines established in the 'Playground Audit for Tweed Shire Council' (July 2009). Appendix 3 of this audit establishes a procedure for assessing risks and mitigation. No playground facility may have a Facility Risk Rating that exceeds 13 as defined in Table 3A7 of this document. Information on this can be provided on request to the developer and or Department of Planning.

2. Informal Open Space

   Figure 9: Masterplan indicates areas described as 'extended area of open space to be maintained with cleared understory and vegetation cover to remain'. It is not clear why Recreation Services would do ongoing maintenance on such areas. Accordingly it cannot be supported.

3. Retaining walls in public open space or streetscape

   It is very undesirable to have retaining walls in public open space. The cost to maintain, and possible requirement for fencing means Recreation Services cannot support the proposal.

4. Access to Lagoon in Figure 10, Public Open Space

   Access to the lagoon is likely to occur as a result of the development, so it is desirable this access be controlled. Council will require more information on how the interface with the lagoon at the indicated access point will be managed.

5. Minor clarifications or corrections required

Figure 10 (Public Open Space) references a 'section elevation 3'. Figure 9 (Masterplan) also references a 'section elevation 3'. There is only one section 3 provided in the application, so both cannot both be correct. Clarification is sought.

Figure 10 (Public Open Space) indicates an 'existing lagoon'. This appears to be incorrect.

It is very unfortunate that the developer has not discussed the parks and open space design with relevant Council staff as some of these difficulties could have been resolved earlier.

Ecology

a. Endangered Ecological Communities

- Saltmarsh is inadequately represented in the Tweed and whereas mangroves are now increasing, saltmarsh is not (Public Works study – comparison of aerial photographs 1940 to 2000). Saltmarsh is vital habitat for fish (particularly crab larvae release at king tides which form an important part of the food chain for commercial fish species) and for shorebird roosts. Again, Dave Rohweder's (Sandpiper Ecological Surveys 2009) research has shown that roost sites are the limiting factor for shorebird recovery in the Tweed. Saltmarsh on the site is presently mown in part and may have been underestimated, as well as succumbing to fill. With the density of development proposed, proximity to the creek and the fill levels stated, there is no potential at all for landward movement of this important Endangered Ecological Community with rising sea levels as a result of climate change, therefore it will be lost from this and many other developed sites.

- The flora and fauna assessment states that 0.1341ha of Coastal Saltmarsh would be modified (cleared) as a result of the proposal. Only 0.0640ha will be 'created' through the transplanting of Saltwater Couch to a donor area outside the development footprint. It is possible transplanting may not be successful if the donor site does not provide suitable habitat for this community. This equates to a net loss of Coastal Saltmarsh EEC at the site and is inadequate compensation for the loss of this EEC. The flora and fauna assessment has not taken into consideration degradation of Coastal Saltmarsh EEC which is likely to result from increased nutrient and altered salinity (from increased and concentrated stormwater discharge), possible sedimentation during filling works, climate change, and nil or inadequate buffer width. Removal and degradation of Coastal Saltmarsh EEC without adequate compensation/offsetting is not supported.

- The Flora and Fauna Assessment acknowledge that EECs may be potentially impacted by uncontrolled changes to the hydraulic regime as a result of modifications to surface and groundwater hydrology. However Section 8.0 of the Flora and Fauna Assessment – *Measures to Avoid and Minimise*

Ecological Impacts, does not acknowledge this perceived impact and fails to provide measures to mitigate this impact. Significance Assessments (7 part tests) also acknowledge that altered hydrology may impact on the four floodplain EECs found on site, but again no measures are provided to mitigate the anticipated impacts of modified hydrology.

- The occurrence of floodplain EECs is highly dependant on small changes in topography, soils and hydrology. However no analysis has been undertaken to determine if offset areas offer the suitable suite of conditions for EEC revegetation areas. Alternatively, revegetation of a community may be proposed in an area at the detriment of another floodplain EEC community, which may readily regenerate. The Plan provides a simplistic depiction of EEC and other vegetation offset areas to be created via revegetation with little consideration to the natural processes of regeneration, dynamics of the estuarine system and potential changes to site hydrology following construction.

- The Restoration Plan proposes re-creation through revegetation of four EECs but provides limited and inadequate species lists, with the recreation of Swamp Oak Floodplain Forest EEC reliant on planting eleven plant species and proposed species list for recreation of Swamp Sclerophyll Open Forest and Subtropical Floodplain Forest exactly the same.

b. Threatened species

Nesting and foraging habitat for the Bush-stone Curlew and Beach-stone Curlew occurs on the site and both species are known from the immediate area. The Bush-stone Curlew is likely to utilise cleared areas within the development footprint and the Beach-stone Curlew may potentially forage and/or nest in the estuarine fringe. The applicant has not provided a Significance Assessment for either of these species. The applicant should amend the Significance Assessment to include the Beach-stone Curlew and Bush-stone Curlew and appropriate measures should be provided to address any perceived or actual impacts to these species.

<u>Fauna compensation</u>

The Statement of Commitments in the EA (Section 7.1.7) states that nest boxes will be installed within the retained environmental zones to provide potential breeding sites (and compensatory habitat) for threatened fauna. Council maintains that the applicant must monitor and maintain nest boxes over the five year maintenance period of the rehabilitation area. The applicant must also provide information on how nest boxes will be monitored and maintained beyond the five year maintenance period. Council does not have the financial resources to allocate to monitoring nest boxes, removing feral fauna (Indian Mynas, bees) and repairing nest boxes at this site. Therefore unless the applicant can demonstrate how these nest boxes will be managed post the 5 year maintenance period, this mitigation measure should not be considered as satisfactory compensation for the removal of hollow bearing trees and loss of nesting/roosting habitat for fauna.

The Statement of Commitments in the EA (Section 7.1.7) states that an additional raptor pole will be installed within the environmental protection zone to offset the loss of a large Forest Red Gum from the site. Council's NRM Unit supports the installation of a raptor nesting pole. However this proposal is not supported if it involves clearing vegetation within the riparian zone and filling of the floodplain to create an access track to construct the pole. The location of the pole should be sited where construction impacts within the riparian zone are minimised.

Ecological buffers

Section 3.14 '*Riparian Corridor and Foreshore Access*' of the EA assumes a 30m buffer to Christies and Cudgera Creek according to interpretation of Tweed Shire Council's DCP – Section A5 – Subdivision Manual. This interpretation is incorrect. According to TSC DCP Section A5, a 50m riparian buffer is required along major streams inclusive of Cudgera Creek and its major tributaries. Christies Creek is considered a major tributary of Cudgera Creek. A minimum 50m estuarine riparian buffer is also specified in the Tweed Coast Estuaries Management Plan 2004 – 2008 for Cudgen, Cudgera and Mooball Creeks. Section 3.14 of the EA states the 30m buffer has been marked on the Constraints Plan. However there is no reference on this Plan of a riparian buffer, 30m or otherwise, to Cudgera and Christies Creek.

The proposal is not supported if the vegetated riparian buffer zone to Cudgera and Christies Creek is less than minimum 50m wide. Formal public open space areas (i.e. parkland) and informal public open space are not supported in vegetated riparian buffer zones.

A Constraints Plan is included within Appendix C of the EA. The Constraints Plan shows a 50m buffer to mapped Endangered Ecological Communities occurring on the site. There is considerable overlap of the development and the 50m EEC buffer.

The proposal is not supported if the development footprint extends into the 50m buffer zone of an EEC. Furthermore buffer zones are only considered adequate if they are planted or rehabilitated native vegetation of a sufficient density and structure to minimise edge effects (i.e. weeds, altered microclimatic conditions, pest animals, human intrusion) to a high conservation value ecological community. The Flora and Fauna Assessment notes that areas of Swamp Oak Floodplain Forest EEC have as little as a 10m vegetated buffer, and areas of Coastal Saltmarsh EEC adjoin the proposed fill retaining wall directly, with no buffer provided. Council's NRM Unit agrees with previous comments made by Council's Development Assessment Unit and Department of Planning with regard to buffers, i.e., a vegetated ecological buffer of a minimum 50m should be provided around each ecological community and with buffers retained within environmental protection areas and not within private residential lots. As the below mentioned policy and guideline documents call for 100m buffers to sensitive habitats, a 50m buffer to EECs on the development site is considered a reasonable compromise:

- NSW Coastal Design Guidelines – specifies that setbacks should be increased to 100m adjacent ecologically sensitive areas;
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- DPIs Policy and Guidelines Aquatic Habitat Management and Fish Conservation – specifies a buffer of 100m or more adjacent ecologically sensitive areas; and
- North Coast Handbook for avoiding and reducing rural land use conflict and interface issues – sets a minimum distance of 100m between residential areas and wetlands.

Ecological restoration

The Statement of Commitments in the EA states that Tweed Shire Council will be dedicated the rehabilitation area following issue of the subdivision certificate, with the applicant maintaining rehabilitation areas for a five year period (Section 7.1.1). The Statement of Commitments also states that a Weed Management Plan and Rehabilitation/Restoration Plan will be prepared and approved prior to the issue of any project approval (Section 7.1.7).

Council will not accept dedication of rehabilitation areas unless agreed performance criteria have been reached after the five year maintenance period. Council also reserves the right to ensure compliance with an approved Weed Management or Rehabilitation/Restoration Plan. If at the end of any Plan duration, performance criteria are not achieved or the applicant does not comply with any component of the Plan, Council may require:

- An independent auditor undertake an audit of the project against the management actions and performance criteria;
- An extension of the duration of the Plan(s) until management actions are implemented and the performance criteria are met; or
- Any bond paid by the proponent be retained by Council and used to implement management actions in order to achieve performance criteria.

The Rehabilitation Plan provided with the EA (Figures 18 to 22) is inadequate. It requires considerable modification prior to its acceptance by Council as an approved Plan with which Council can feel confident that the aims, objectives and performance criteria of the Plan will be successfully achieved over a 5 year period, and the rehabilitation area does not become a financial burden to Council's NRM Unit. The Rehabilitation Plan is discussed further on page 6 and 7 of this memo.

The Rehabilitation Plan provided with the EA and Flora and Fauna Assessment is considered inadequate for the following reasons:

- There are no measurable and time based performance criteria in order to establish if the objectives of the rehabilitation plan are being met. Performance criteria must be approved by Council.
- There is no information on the location and degree of infestation of noxious and environmental weeds – necessary information to guide weed control.
- The Plan fails to identify all threats to biodiversity on or adjacent to the site that are likely to influence ongoing management during construction and operation phases of the development i.e.; fire protection/maintenance of asset protection zones; stormwater; sedimentation; environmental and noxious weeds; pest animals and domestic pets; climatic hazards –drought, flood, fire; unauthorised human access –

construction traffic, motorbike use, walking tracks; illegal clearing; rubbish dumping –garden waste, household and building waste; pollution incidents; site fragmentation; altered hydrology; and erosion.

- The Plan fails to recommend action(s) to address each management issue/site threat.
- The Plan does not identify appropriate restoration strategies to be applied across the site. The restoration strategy should determine the goal community or communities across the site. Reference communities should be located (where possible) in close proximity to the site, have similar abiotic features and be in good condition with low levels of disturbance. The use of management zones is necessary where there are spatial or temporal variations in restoration strategies and required management actions across the site. Specific implementation strategies should be listed for each management zone, detailing the step by step approach, methods and techniques to be used for each restoration strategy.
- Where planting (i.e. reconstruction) is proposed in a management zone, detailed methods and techniques for planting should be specified, including; sourcing planting stock; site preparation; timing; a list of suitable local native species to be used in the planting; relative proportions of species to be planted; planting density; use of mulch and fertiliser; and ongoing maintenance requirements. Where planting is proposed, species selection and abundance should be consistent with the vegetation community being restored. Seed collection and propagation should be consistent with the principles of genetic integrity.
- The Plan does not provide an adequate implementation schedule detailing actions to be undertaken across the whole of site and within each management zone to achieve the aims and objectives of the plan. The implementation schedule should prioritise management actions and specify timing for the implementation of each management action for the duration of the plan. The Schedule should also include resource requirements for each management action.
- The Plan does not provide an adequate monitoring strategy which should set out the intended monitoring methodology and performance criteria which must specifically address the management aims and objectives of the plan. The monitoring strategy should set out timing of monitoring (baseline and ongoing), monitoring frequency and specify the qualifications of the personnel undertaking the monitoring.
- The Plan does not provide clear information on reporting. Council require monitoring and reporting be undertaken by a suitably qualified ecologist. The required frequency of monitoring and reporting is quarterly (every three months) for the first two years and annually to the fifth year.
- The Plan provides some information on contingency requirements. However the plan should provide for adjusting the proposed management strategies in response to unanticipated circumstances (e.g. fire, drought, floods, planting failure and insect pests), technical advances and/or regular monitoring.
- The Plan provides inadequate information on the qualifications of personnel involved in the implementation of the plan. It is expected that on-ground restoration works are undertaken by persons with qualifications in the field of bush regeneration. Minimum qualifications and experience to undertake on-ground restoration works should comprise Certificate 3 in Conservation Land Management (Natural Area Restoration) or equivalent and 2 years experience working in the vegetation type(s) at the site. The Plan should also provide information on any

permits or licences required to implement the Plan (i.e. section 132C licence under the *National Parks and Wildlife Act 1974* when undertaking weed control in threatened species habitat).

- The Plan proposes re-creation through revegetation of four EECs but provides limited and inadequate species lists, with the recreation of Swamp Oak Floodplain Forest EEC reliant on planting eleven plant species and proposed species list for recreation of Swamp Sclerophyll Open Forest and Subtropical Floodplain Forest exactly the same.
- The occurrence of floodplain EECs is highly dependant on small changes in topography, soils and hydrology. However no analysis has been undertaken to determine if offset areas offer the suitable suite of conditions for EEC revegetation areas. Alternatively, revegetation of a community may be proposed in an area at the detriment of another floodplain EEC community, which may readily regenerate. The Plan provides a simplistic depiction of EEC and other vegetation offset areas to be created via revegetation with little consideration to the natural processes of regeneration, dynamics of the estuarine system and potential changes to site hydrology following construction.

Creek access

Section 3.14 of the EA states that '*foreshore access should be controlled and minimised to further protect the riparian vegetation*'. However no mitigation measures are provided (apart from providing a single access point to the lagoon) to prevent access to the creek.

Supported recommended mitigation measures to prevent uncontrolled access to the creek and damage to riparian vegetation include; erection of fauna friendly fencing on the interface between the rehabilitation area and development; signage denoting the extent of the rehabilitation area and stating that all riparian vegetation is protected; periodic inspections of the rehabilitation area during the applicants five year maintenance period to identify any damage to vegetation and track creation; and remediation of any vegetation damage and closure/remediation of informal tracks by the applicant during the five year maintenance period.

Stormwater

The EIA notes the following:

- Stormwater discharge from the site is predicted to increase between 46% and 49% in Q5 and Q100 flood events.
- Four stormwater outlets are proposed within the vegetated riparian buffer to Christies Creek (which is also the Rehabilitation Area).
- Development of the site is expected to increase the concentrations of suspended solids, nitrogen and phosphorus in stormwater runoff compared to the existing undeveloped catchment if untreated.
- Stormwater collected from new roads and driveways would be treated via swale drains on internal roads and Gross Pollutant Traps; stormwater collected from existing dwellings and roads within the development catchment would be treated via Gross Pollutant traps, prior to discharge into Christies Creek.

- Significant earthworks (site filling) is proposed during construction, with approximately 37,000m^3 of fill required to bring the site above predicted flood level.

The proposed method of stormwater discharge from the development site into the rehabilitation area/riparian zone of Christies Creek is not supported. Concentrated and increased flows of stormwater would be discharged at four new stormwater outlets within the vegetated riparian buffer to Christies Creek. Discharge of concentrated stormwater flow is likely to result in scouring, erosion, sedimentation, increased nutrient input and altered salinity into the estuarine riparian buffer. Alteration of salinity and increasing nutrient levels resulting from the discharge of stormwater into saltmarsh is recognised by Department of Environment, Climate Change and Water as a threatening process to Coastal Saltmarsh EEC. Discharge of concentrated stormwater flow is also likely to affect the success of revegetation/rehabilitation works within the rehabilitation area. Furthermore, any EEC or vegetation clearing offset area should not have as a dual function, the treatment and management of stormwater flows from the development.

It is likely stormwater outlets will be subject to sedimentation over time and yet no consideration has been given to how these will be maintained to ensure there stormwater drainage function. Maintenance of this stormwater system over time to prevent sedimentation (and catchment flooding) within an environmental protection and rehabilitation area with no established maintenance tracks, etc would be difficult and in conflict with the conservation objectives of EEC or vegetation clearing offset areas.

The proposed method of stormwater treatment on site prior to discharge into Christies Creek is also considered inadequate. Alternate stormwater quality control measures consistent with Water Sensitive Urban Design should be considered to the proposed proprietary devices, given the sensitivity and high conservation value of the estuarine environment, existing stressors on Cudgera and Christies Creek, and very high level of recreational usage of the creek environment in the immediate vicinity of the proposed development.

Altered hydrology

Council's Planning and Infrastructure Engineer supports claims of altered hydrology, noting that filling of the site will have impacts on the local area, with flooding a significant constraint. Danny Rose notes that requirements to fill the site would result in some degree of obstruction and constriction of existing flood flow paths from the west and the north to Christies Creek. Cudgen Nature Reserve adjoins the development site to the west. The EA and Flora and Fauna Assessment fail to consider what impacts altered local hydrology will have on the significant conservation attributes of Cudgen Nature Reserve. In the absence of sound evidence demonstrated there will be negligible impact to the four floodplain EECs occurring on site and conservation attributes of Cudgen Nature Reserve, the precautionary principle should apply and site filling to the extent proposed in the project application should not be approved.

Erosion and sediment control

The proposed erosion and sediment control measures during construction are considered inadequate. The proposal involves significant earthworks (filling of up to 2m)

on the floodplain of Cudgera and Christies Creek, just above mean high water mark. Significant earthworks are proposed in the immediate vicinity of SEPP 14 Coastal Wetlands, significant ecological communities and fauna habitat, fisheries habitat and an area of very high recreational value. Proposed erosion and sediment control measures include sediment fencing beyond a perimeter bund within which filling will progressively take place. However it is unclear how stormwater will be treated and discharged during construction, with possible large volumes of clean stormwater captured within the large bunded area during rainfall events and mixing with fill material. The Soil and Water Management Plan accepts non-compliance with water quality criteria for suspended solids (50mg/L) with the occurrence of a storm event greater than the design of storm control devices. This Plan states that non-compliance may occur by design, in >3 month (deemed to be 40% of the ARI one year event). This would assume that the capacity to collect and treat sediment laden stormwater on site during construction prior to discharge to the stormwater system or Christies Creek in a high rainfall event is low. Hence the risk of a pollution event to Christies and Cudgen Creek is high. This level of risk is unacceptable. The proposed Soil and Water Management Plan should be revised to take into account the high ecological and recreational values of the receiving environment.

Roads and driveways

The Tree Clearing Plan shows vegetation along the northern property boundary and within the Creek Street road reserve. Commonly occurring tree species are noted as Swamp Box, Broad-leaved Paperbark, Forest Red Gum and Pink Bloodwood. Swamp Box and Broad-leaved Paperbark are dominant species occurring in Swamp Sclerophyll Forest EEC and Forest Red Gum and Pink Bloodwood are dominant species occurring in Subtropical Floodplain Forest EEC. This vegetation has not been mapped and yet tree clearing is proposed here. The applicant has failed to consider whether this vegetation is characteristic of either of these two floodplain EECs. Vegetation along the northern property boundary may still be considered consistent with either or both EEC determination, even if disturbance has resulted in a reduction in the suite of species known from these two communities.

Section 7.1.1(f) of the Statement of Commitments states "*driveways to lots with frontage to Creek Street are to be located and constructed such that they avoid, where possible, the removal of trees adjacent to the property boundary, both within the property boundary and within the Creek Street road reserve. Trees within the road reserve may only be removed to accommodate and approved driveway location and to allow approved service location*." Due to the location of numerous trees on the property boundary or within the Creek Street road reserve, it would appear difficult for additional trees to be avoided, or if they are avoided, their root health compromised, for proposed water main construction, subsequent connection of services from allotments to mains, and driveway construction for individual allotments. This cumulative impact should be considered in the flora and fauna assessment. The applicant must also demonstrate that vegetation along the northern property boundary with the Creek Street road reserve is not Swamp Sclerophyll EEC or Coastal Subtropical Floodplain Forest EEC.

Ecology Conclusion

The proposal as presented in the Major Project Application is not supported due to the real and potential negative impacts it will have on significant conservation and recreational values of Cudgera and Christies Creek. Council's NRM will not accept future land dedication for conservation purposes until the issues outlined in this memo are addressed.

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

Yours faithfully

Lindsay McGavin
Manager Development Assessment