



NSW GOVERNMENT
Department of Planning

**MAJOR PROJECT ASSESSMENT:
RESIDENTIAL SUBDIVISION
LOT 9 DP 1039569 and Lot 2 DP 1000385
FRASER DRIVE, SOUTH TWEED
Proposed by MFS DIVERSIFIED GROUP
(now known as GEO PROPERTY GROUP)
& GREENVIEW DEVELOPMENTS PTY LTD**

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

October 2008



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1 EXECUTIVE SUMMARY

MFS Diversified (now known as GEO Property Group) and Greenview Developments Pty Ltd (the proponent) is seeking project approval from the Minister for a 151 lot residential subdivision at Fraser Drive, South Tweed in the Tweed local government area (Lot 9 DP 1039569) ("the proposal"). The site comprises Lot 9 in DP 1039569, Lot 2 in DP 1000385 and part of the Champagne Drive Road reserve off Fraser Drive.

The estimated cost of the development is \$16,000,000 and will create 75 full time equivalent construction jobs.

The proponent proposes the subdivision of land into 151 residential lots, the provision of roads, open space, recreational areas, associated infrastructure and civil works to address landslip hazard issues. The subdivision will create 137 lots for detached housing, 13 lots for duplex housing and an integrated housing superlot. The proponent seeks to first subdivide the site into two distinct parts (Master Lot Part A and Master lot Part B) and to then undertake the subdivision of these two parts in stages.

Master Lot Part A (11.07ha) includes the development of the north east flat portion of the site and comprises:

- 64 detached housing lots;
- 13 duplex housing lots;
- 1 integrated housing superlot;
- 0.25 hectares of park and recreation (casual) open space;
- 1.712 hectares of water quality open space; and,
- roads.

Master Lot Part B (21.8ha) includes the western and southern slopes of the site and comprises:

- 73 detached housing lots;
- 6.48 hectares of SEPP14 wetland open space conservation area;
- 0.375 hectares of water quality open space;
- 0.3650 hectares of park and recreation (casual) open space; and,
- roads.

The delivery of both Part A and Part B will be subject to an analysis of market characteristics and requirements.

During the exhibition period, the Department received a total of 73 submissions from the public and 8 submissions from public authorities. Key issues considered in the Department's assessment include:

- Geotechnical engineering;
- Earthworks and filling;
- Impacts on SEPP 14 wetland;
- Subdivision layout and design;
- Aboriginal cultural heritage;
- Stormwater management.
- Flora and fauna;
- Traffic and access;
- Acid Sulfate Soils;
- Groundwater;
- Bushfire;
- Flooding;
- Acoustic and visual amenity; and,
- Section 94 and other Contributions

The Department has assessed the merits of the project and is satisfied that the impacts of the proposed development have been addressed via the Proponent's Statement of Commitments and the Department's recommended conditions of approval, and can be suitably mitigated and/or managed to ensure a satisfactory level of environmental performance. All statutory requirements have been met.

On these grounds, the Department is satisfied that the site is suitable for the proposed development and that the project will provide the following benefits:

- Contribution toward housing targets for the Tweed Shire as identified by the Far North Coast Regional Strategy;
- Provision of a diverse housing choice on the fringe of an existing urban area;
- Protection of the SEPP14 wetland and associated vegetation communities;
- Stabilisation of landslip areas adjacent to existing urban development;
- Protection of Aboriginal cultural heritage; and,
- Improved stormwater control and management.

The Department recommends that the project be **approved**, subject to the effective implementation of the Proponent's Statement of Commitments and the Department's recommended Instrument of Approval.

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2 BACKGROUND

2.1 THE SITE

2.1.1 Site Context And Location

The site, at Fraser Drive, South Tweed, comprises Lot 9 in DP 1039569, Lot 2 in DP 1000385 and part of the Champagne Drive Road reserve off Fraser Drive, and is located within the local government area of Tweed Shire. South Tweed, an outer southern suburb of Tweed Heads in the far north coast of NSW, represents one of the central regions of the wider Tweed Heads area. The centre of Tweed Heads lies approximately 4km to the north of this area, giving South Tweed residents easy access to the major services on offer in the CBD.

Tweed Heads is identified as a major regional centre in the *Far North Coast Regional Strategy* and is experiencing significant population growth pressure. Housing types vary throughout the Region, with most multi unit dwellings found in coastal areas, particularly in the major regional centres of Tweed Heads and Ballina. Decreasing occupancy rates and changing demand from traditional single detached housing to multi-unit dwelling types means that the provision of a variety of housing forms is needed in appropriate locations.

In excess of 80,000 people live in Tweed, scattered through 17 villages, two towns, and the major urban areas of Tweed Heads and South Tweed. The last twenty years have seen enormous growth, with the population increasing, on average, approximately 1.9% per year between the 1996 census and the 2001 census, largely due to southern retirees drawn by the temperate climate and relaxed lifestyle (Tweed Shire Council, 2007).

The subject site is an irregular shaped parcel of land located on the western side of South Tweed, approximately 100m to the east of the Terranora Broadwater (refer Figure 1).



Figure 1: Site location

The site has an area of approximately 32.89 hectares and is located on the western side of Fraser Drive. It is one of the last remaining undeveloped land parcels in the area. An aerial photograph of the site is provided in **Figure 2**.



Figure 2: Aerial Photo
(red denotes boundary of subject site)

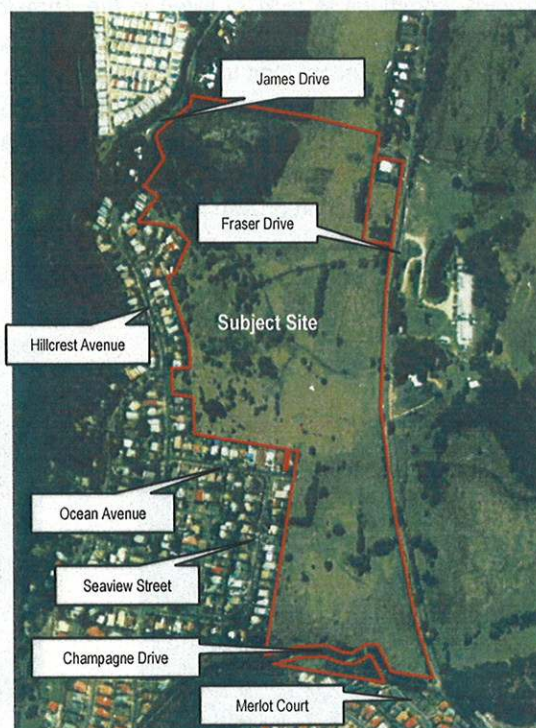


Figure 3: Road network surrounding site
(red denotes boundary of subject site)

Fraser drive is a local arterial road and a local bus route. It is currently a single lane in both directions, however, Council proposes to upgrade it in the future to dual lanes. The site is bound by Fraser Drive to the west, Champagne Drive (closed road) to the south, James Drive to the north and Hillcrest, Ocean and Seaview Avenues to the west (refer **Figure 3**).

Tweed Shire Council's sewerage treatment works are located approximately 800m east of the site. The Gold Coast Airport is approximately 4km to the north east, catering for both domestic and international flights. The airport has confirmed that the site is located outside the 20 Australian Noise Exposure Forecast (ANEF) contour, and is therefore not adversely affected by airplane noise. The site is, however, located within the area affected by the Lighting Zone Map for the airport.

2.1.2 Existing Site Features

Land Use

The site is currently undeveloped and primarily cleared of vegetation (refer **Figure 4**). The predominant land use has been for cattle grazing, however banana growing previously occurred on parts of the site near Ocean Avenue and near Ridgeway Crescent. The site comprises two distinct areas, a flat portion that comprises approximately 11.06 hectares and a steeper area of approximately 21.8 hectares, which lies on the eastern slope of a ridgeline and rises steeply in the south and west (refer **Figure 5**).



Figure 4: View toward the north-east of the site



Figure 5: View toward south western slopes
(photos courtesy of Everick Heritage Consultants)

Ecology

SEPP14 wetland (No.18b) is located at the north western corner of the site. The SEPP14 wetland contains a range of endangered ecological communities (EECs) listed in the *Threatened Species Conservation Act 1995*, including swamp sclerophyll forest, swamp oak floodplain forest and coastal saltmarsh. The wetland contributes to a functional ecological corridor that extends into the adjacent land to the north of the site and to the Terranora Broadwater to the west of the site. The Broadwater forms part of a significant, larger movement corridor that extends out to the Tweed River and the coast in the east and north to the Cobaki Broadwater. The wetland area and associated vegetation in the north of the site also provide potential habitat resources for a range of threatened fauna species. The remainder of the site consists largely of grasslands, scattered paperbark and regrowth rainforest species.

Figure 6 and Figure 7 illustrate some of the typical vegetation found in the SEPP14 wetland.



Figure 6: Typical vegetation within the SEPP14 wetland



Figure 7: Saltmarsh community in SEPP14 wetland

Stormwater from the site drains via the SEPP14 wetland through two culverts under James Drive to the Terranora Broadwater (refer Figure 8 and Figure 9). The tidal floodgates on the downstream end of the culverts are permanently closed to restrict tidal inundation to the wetland, apart from a small opening approximately 15cm in diameter in one of the doors. The Broadwater is a large and shallow tidal lake located south-west of Tweed Heads. It has been identified as being one of the few remaining rich and diverse habitats on the Tweed Estuary. Commercial activity is restricted mainly to oyster farming with some recreational facilities located in the north-western bays. The Terranora Broadwater has been the subject of a management plan developed by the Tweed Council, the primary objective of which is habitat protection.



Figure 8: Stormwater culverts under James Drive



Figure 9: Tidal creek connected to Terranora Broadwater

The following flora species, listed as 'vulnerable' under both the *Threatened Species Conservation Act 1995* (TSC Act) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), have been recorded on site:

- *Cryptocarya foerida* (commonly known as Stinking cryptocarya); and,
- *Macadamia tetraphylla* (commonly known as Rough Shelled Bush Nut).

The following significant species identified on the site are listed under the EPBC Act and/or the TSC Act:

- *Pteropus poliocephalus* (Grey headed flying fox) – 'vulnerable' under TSC Act and EPBC Act;
- *Todiramphus chloris* (Collard kingfisher) – 'vulnerable' under TSC Act;
- *Miniopterus australis* (Little bent wing bat) – 'vulnerable' under TSC Act;

- *Pandion haliaetus* (Osprey) - 'vulnerable' under TSC Act;
- *Nyctophilus bifax* (Eastern long eared bat) - 'vulnerable' under TSC Act; and,
- *Myotis adversus* (Southern myotis) - 'vulnerable' under TSC Act.

Habitat for these species occurs mainly within the SEPP 14 wetland at the north of the site.

Topography

The north-eastern flat area has been filled to a level of 2.65m AHD, which is the design 1 in 100 year flood level, as approved by a development consent (DA02/0837) issued by Tweed Shire Council in October 2002. While the site is no longer affected by the 1 in 100 year flood, the site remains at risk from the Probable Maximum Flood (PMF) event and the effects of climate change, such as sea level rise and increased catchment flooding. The southern and western slopes rise to approximately 55m AHD. The lower slopes are very steep and are on an angle of approximately 23-25 degrees, and upper slopes around 12-15 degrees. The site is subject to landslip hazards along the east facing slopes (refer **Figure 10**). The geotechnical instability is likely to be associated with seepage from a perched groundwater table that lies at approximately 20m AHD to 23m AHD.

Environmental Hazards

The site is mapped as bushfire prone on Council's mapping. Risk areas have been identified in the south eastern and northern ends of the site. Soil surveys have been conducted on the site and indicate that acid sulfate soils and potential acid sulfate soil material is present in the lower north eastern portion of the site, the area subject to filling. Contamination investigations have concluded that the site does not contain any residual contamination as a consequence of the banana farming or agricultural practices and therefore there are no contamination issues associated with the site.

Cultural Heritage

Champagne Drive, an unsealed closed road, runs along the southern boundary of the site. A recorded midden site (DEC # 04-2-0088) is located within Tweed Council land, adjacent to the boundary of the proposed subdivision at the intersection of Champagne Drive and Fraser Drive (Refer **Figure 11**). The midden is approximately 15 metres long (east-west) and 5 metres wide (north-south). The significance assessment concludes that the visible shell remains of the middens site have the potential to have archaeological significance. The Traditional Owners consider the location as a campsite occupied by their forebears and therefore of Aboriginal significance.

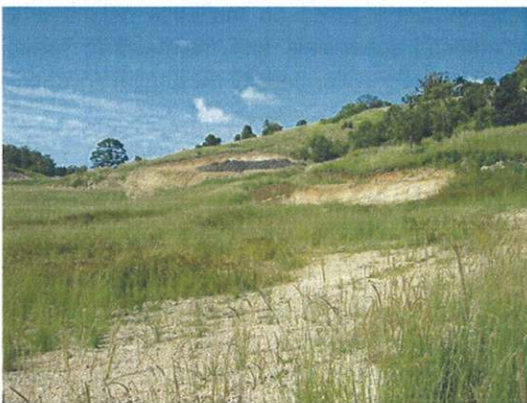


Figure 10: Landslips on lower north-western slopes



Figure 11: Dredged excavated sand and shell mounds

(photos courtesy of Everick Heritage Consultants)

The midden site comprises a relatively dense deposit of predominantly estuarine shell to a depth of approximately 30 centimetres. On the basis of its location, condition and its potential to be of some age, the midden also has regional archaeological significance. Furthermore, the visible midden remains have high significance in terms of their potential as an education tool for the Aboriginal community and the wider community as a whole.

A site visit was conducted by Department of Planning staff on 31 July and 25 October 2007.

2.1.3 Surrounding Development

The site is in close proximity to a number of established and existing residential development and community and social facilities, including education facilities, sporting facilities, aged care facilities and recreational boating access. Lakeside Christian High School is located immediately north of the site. Pioneer Country, a private beef cattle property that offers riding lessons, farm stays and functions is located immediately opposite the site on the eastern side of Fraser Drive. The

Colonial Tweed Caravan Park and River Retreat Caravan Park lie to the north of the site adjacent to the Terranora Broadwater. To the west of the site along the ridge top lies existing low density residential development and a significant area of residential development also lies to the south. Houses are mainly brick veneer, two storey detached dwelling houses (refer Figure 12).



Figure 12: View from the lower (filled) area of the site looking up to the existing houses on Ocean Avenue

The majority of development on Hillcrest Avenue, Ocean Avenue and Seaview Street is on steeper sites with many of the dwellings designed to address the topography of the site, with the original landform remaining dominant despite development of the area. Development in Merlot Court and Shiraz Place to the south of the subject site, is generally on flatter ground.

2.1.4 Zoning

The site is, in the majority, zoned 2(c) Urban Expansion under the *Tweed Local Environmental Plan (LEP) 2000*. A road reserve located in the southern portion of the site (Champagne Drive) is unzoned and a small pocket on the ridge top adjacent to Hillcrest Avenue is zoned 2(a) Low Density Residential. The primary objective of the 2(c) zone is to identify land for urban expansion (which will comprise mainly residential development focused on multi-use neighbourhood centres) and to ensure its optimum utilisation consistent with environmental constraints and the need to minimise residential land-take (see Figure 13). The objective of the 2(a) zone is to provide for a low density residential environment with predominantly detached housing character and amenity.

2.2 SITE HISTORY

2.2.1 Previous Applications

- On 2 October 2002 deferred commencement development consent (No. 02/0837) was granted by Tweed Shire Council for filling of the lower area of the subject site to RL2.65 AHD to allow for future development and address flooding concerns. The deferred commencement conditions required the provision of geotechnical advice, advice of the source of fill material and haulage routes and the submission of a stormwater management plan, all of which were required to be lodged within 12 months of the date of the consent.
- The consent was made operational and filling of the site is now complete. The filled area is located at the northern low lying party of the site between the SEPP 14 wetland and Fraser Drive.
- On 14 November 2002 a request to waive the requirement for a Master Plan (then required under SEPP71) was lodged with the Department
- On 13 January 2003 the request to waive the need for a Master Plan was refused by the Minister due to the significant nature of the proposed development.
- On 22 January 2003 a draft Master Plan was lodged with the Department for a 240 lot residential subdivision on the same land.
- On 25 March 2005 the Master Plan (MP1-11-2002) was not adopted and as such, the then Minister for Planning refused the application. The determination contained 18 detailed points of refusal, including:
 - Excessive cut and fill;
 - Inappropriate road layout;
 - Inadequate setbacks between the acoustic barrier and Fraser Drive;

- Inadequate buffer to the SEPP14 wetland in the north of the site;
- Removal of the Rough Shelled Bush Nut (a threatened species);
- Inadequate stormwater system and inappropriate location of a stormwater treatment pond;
- Inappropriate provision of open space;
- Inappropriate cycle paths; and,
- Inappropriate front and rear building platform setbacks.



Figure 13: Tweed Local Environmental Plan 2000 Zoning Plan (red denotes boundary of the subject site)

3 THE PROPOSED DEVELOPMENT

3.1 PROJECT DESCRIPTION

3.1.1 Proposed Development (Preferred Project Report)

This is an application for approval to carry out a project. The project is for a 151 lot residential subdivision at Fraser Drive in South Tweed comprising 137 lots for detached housing, 13 lots for duplex housing and an integrated housing superlot (refer **Figure 14**). The project includes the provision of roads, open space, recreational areas, associated infrastructure and ancillary works to address landslip hazard issues.

The project is described in detail below:

- 1) Boundary adjustment of Lot 2 in DP 1000385 and Lot 9 in DP 1039569;
- 2) Subdivision of Lot 9 in DP 1039569 into two master lots (Part A and Part B of the subdivision);
- 3) Subdivision of Master Lot Part A into 78 residential lots in 3 stages;
- 4) Subdivision of Master Lot Part B into 73 residential lots in 3 stages;
- 5) Creation of a 1.57ha super lot for a future integrated housing development;
- 6) Creation of an open space lot that contains an artificial wetland for the purposes of stormwater management;
- 7) Creation of an open space lot for the retention of the SEPP 14 Wetland and buffer area;
- 8) Dedication of a 10m wide buffer for the future upgrade of Fraser Drive;
- 9) Site rehabilitation works to stabilise current land slip hazards; and,
- 10) Construction of roads, revetment structures and drainage infrastructure.

The proponent seeks to firstly subdivide the site into two distinct parts - the north east flat portion identified as Master Lot Part A and the western and southern slopes identified as Master Lot Part B. These are described as follows:

Master Lot Part A comprises:

- 64 detached housing lots;
- 13 duplex housing lots;
- 1 integrated housing superlot;
- 0.25 hectares of park and recreation (casual) open space;
- 1.712 hectares of water quality open space;
- 1,109m of new roads.

Master Lot Part B comprises:

- 73 detached housing lots;
- 6.48 hectares of SEPP14 wetland open space conservation area;
- 0.375 hectares of water quality open space;
- 0.3650 hectares of park and recreation (casual) open space;
- 1,411m of new roads.

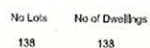
Master Lot Part A (8.715 ha) will be subdivided in three (3) stages as follows:

- 1) Stage 1A has an area of 3.17 ha comprising:
 - a) 9 low density residential allotments;
 - b) 3 duplex allotments;
 - c) 1 integrated housing superlot;
 - d) 1.712ha of water quality open space;
 - e) 290m of 18m wide road (Road No.1 & Road No.2);
 - f) 44m of 15m wide road (Road No.1 & Road No.2); and,

- g) A four-way signalised control intersection at the northern development access to the Fraser Drive, including a 20m left turn lane and right turn lane on Fraser Drive.
- 2) Stage 2A has an area of 2.58 ha comprising:
 - a) 31 low density residential allotments;
 - b) 1 duplex allotment; and,
 - c) 333m of 15m wide road (Road No.1).
- 3) Stage 3A has an area of 3.117 ha comprising:
 - a) 24 low density residential allotments;
 - b) 9 duplex allotments;
 - c) 0.25 hectares of park and recreation (functional) open space;
 - d) 0.0385 hectares of common property open space;
 - e) 92.4m of 13m wide road;
 - f) 349m of 15m wide road (Road No.2); and,

Master Lot Part B (21.712 ha) will be subdivided in three (3) stages as follows:

- 1) Stage 1B has an area of 5.70 ha comprising:
 - a) 20 low density residential allotments;
 - b) 334m of 13m wide road (Road No.3); and,
 - c) Right of carriageway access to Lots 159-160.
- 2) Stage 2B has an area of 10.5 ha comprising:
 - a) 26 low density residential allotments;
 - b) 6.48 hectares of SEPP14 wetland open space conservation area;
 - c) 0.3755 hectares of water quality open space;
 - d) 392m of 13m wide road (Road No.3);
 - e) Right of carriageway access to Lots 112-115; and,
 - f) Right of carriageway access to Lots 153-156.
- 3) Stage 3B has an area of 5.519 ha comprising:
 - a) 27 low density residential allotments;
 - b) 0.3630 hectares of park and recreation (functional) open space;
 - c) 616m of 13m wide road (extension of Merlot Court); and,
 - d) 69m of 18m wide road (Road No.4).



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The delivery of both Master Lot Part A and Master Lot Part B will be subject to an analysis of market characteristics and requirements. Essential infrastructure will be constructed as specified in the staging listed above.

The breakdown of standard residential lots in Part A of the subdivision is outlined in **Table 1** below.

Table 1: Provision of residential housing lots in Part A of the subdivision

Housing Type	Lot Size	Number of Lots	No. of Dwellings
Detached	450 - 479m ²	29	29
Detached	480 - 509m ²	6	6
Detached	510 - 539m ²	6	6
Detached	> 540m ²	23	23
Duplex	900m ²	13	26
Integrated	2.464ha	1	TBA
TOTAL		78	90

Part B of the subdivision occurs on the western and southern slopes with 73 low density detached residential housing lots ranging from 535sqm to 9,910sqm in the following breakdown (refer **Table 2**):

Table 2: Provision of residential housing lots in Part B of the subdivision

Housing Type	Lot Size	Number of Lots	No. of Dwellings
Detached	510 - 599m ²	1	1
Detached	600 - 999m ²	19	19
Detached	1,000 - 2,000m ²	38	38
Detached	2,001 - 4,000m ²	12	12
Detached	4,001 - 10,000m ²	3	3
TOTAL		73	73

Key development data for the exhibited and preferred project proposals are outlined in **Table 3** below.

Table 3 – Development Data

	Proposed (exhibited)	Preferred Project	Amended Preferred Project	Relevant Development Standard	SEPP, REP, LEP, DCP	Compliance
No. of Lots	136 detached 16 duplex 26 integrated (2.87ha)	136 detached 16 duplex 1 integrated superlot (2.46ha)	137 detached 13 duplex 1 integrated superlot (2.46ha)	NA	NA	NA
Minimum lot size (detached housing)	435sqm	435sqm	450sqm	450sqm	Tweed LEP 2000	Yes
Lot size (duplex)	600sqm	600sqm	900sqm	900sqm	Tweed DCP	Yes
Casual Open Space	2,500sqm	2,500sqm	7,701sqm	4,520sqm*	Tweed DCP	Yes
Road Widths	6m wide pavement in 13m road reserve	7.5m wide pavement in 14.5m road reserve		7.5m wide pavement in 14.5m road reserve	Tweed DCP	Yes
Laneway Widths	4.5m wide pavement in 6.5m road reserve	6m wide pavement in 6m road reserve	Laneways deleted	6m wide pavement in 6m road reserve	Tweed DCP	Yes

* based on a population of 400 people at 1.13ha per 1,000 people

3.1.2 Open Space

The proposal includes three types of open space areas:

1. park and recreation;
2. water quality / stormwater detention; and,
3. SEPP14 wetland conservation and buffer.

The breakdown of open space areas for Part A and Part B of the subdivision is set out in Table 3 below.

Table 4: Open Space Areas for Part A and Part B of the subdivision

Open Space Type	Part A	Part B
Park and Recreation	2,471m ²	5,230m ²
Water Quality / Stormwater Detention	17,120m ²	3,755m ²
SEPP14 wetland and buffer	Nil	64,845m ²

The SEPP14 wetland and buffer will be retained in a single discrete lot and will be dedicated to Tweed Shire Council to be managed as public open space.

Proposed open space park and recreation areas will be landscaped with an emphasis on rural character with tree alignments allowing for views through the park and streetscape. The open space areas in Stage 3A and Stage 3B will contain children play areas, barbecues and barbecue shelters. The open space area in Stage 2B, adjacent to Fraser Drive incorporates a 1,500sqm stormwater detention basin, open turf areas and a barbecue shelter. The open space area in Stage 3B also connects with the adjoining community land to the south of the subject site. These open space areas will also be dedicated to Council following completion of all embellishment works.

3.1.3 Traffic and Access

Access to the site is from five entry points, two to the east onto Fraser Drive, one to the south onto Merlot Court, and two to the west onto Seaview Street and Hillcrest Avenue. The proposed road layouts direct traffic to the two main arterial roads adjacent to the site, namely Fraser Drive and Hillcrest Avenue. The proposed internal circulation and inner perimeter road speeds will vary between 40 and 50 kilometres per hour. Rear lane access ways and access easements will be signposted for 25 kilometres per hour as these roads will not provide the main connection and flow through of traffic throughout the site.

The proposal seeks consent for two accesses to Fraser Drive. The northern access on Fraser Drive will provide the principle access and connection point between the development and the external road network. The access will be located directly opposite the existing Pioneer Homestead access driveway, as requested by Council. Provision has been made within the application to upgrade the current intersection from an unsignalised t-intersection to a four-way signalised control. To ensure that this intersection operates effectively, a left turn lane is required to separate the development traffic with the through traffic on Fraser Drive and the right turn (into the Pioneer development) manoeuvres. Also incorporated within the traffic signals will be a pedestrian crossing facility to provide a safe and managed pedestrian movement across Fraser Drive. A second left-in left-out only access to Fraser Drive is proposed approximately 300m to the south of this main intersection.

A plan of road closure will be submitted to Council over that part of Champagne Drive that is within the subdivision area, as part of the approved development. Following closure of the road by gazettal, the title of the closed road will be transferred to the landowner subject to dedication of the road widening along the Fraser Drive boundary. When Council is satisfied that this has occurred, the road closure parcel will be transferred to the landowner.

3.1.4 Landscaping

The proposed landscape character has an emphasis of retaining rural character with native and endemic species. The streetscape uses minimal hardstanding with native grasses and groundcovers along the road verge softening the hardscape of the bitumen. Shrubs and groundcovers provide a visual buffer to retaining walls, acoustic mound, boundary fence and the steep areas of the site. The main entry of Fraser Drive will incorporate a double avenue of Norfolk Island Pines (refer **Figure 15**).

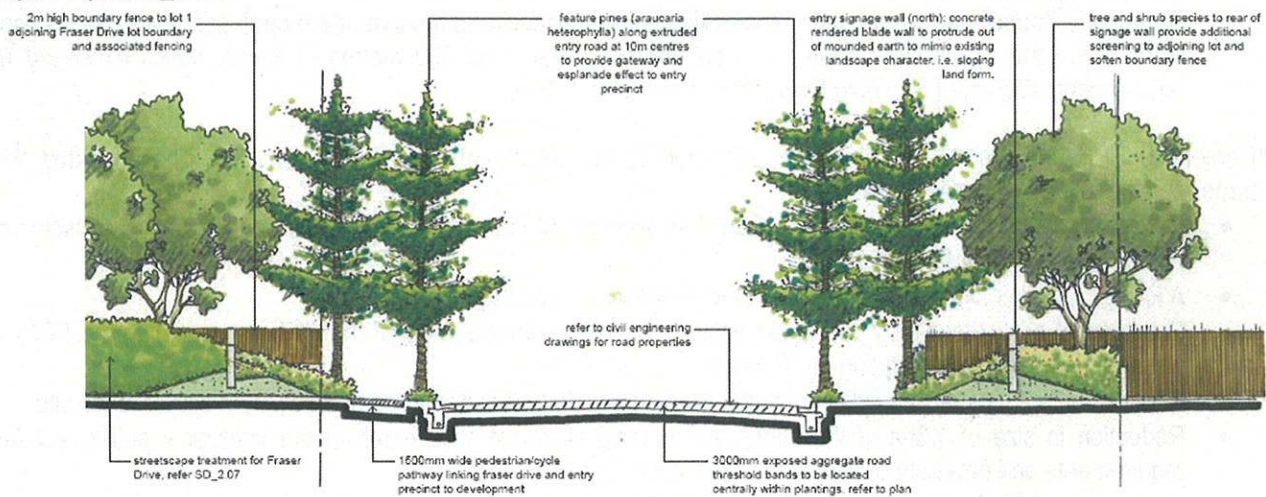


Figure 15: Section through proposed entry to site.

3.2 PROJECT CHRONOLOGY

- On 6 October 2006, the Director-General, as delegate for the Minister for Planning, declared the proposal is a Project to which Part 3A of the Act applies.
- On 5 November 2006, the DGRs were issued to the proponent.
- On 5 February 2007, the Environmental Assessment (EA) was lodged with the Department.
- On 22 February 2007 the EA was deemed to be inadequate and the proponent was requested to revise the EA;
- On 1 June 2007, a revised EA was lodged with the Department and on 12 June 2007, the EA was deemed to be adequate.
- On 14 June 2007 until 13 July 2007, the EA was placed on public exhibition.
- On 15 August 2007, a summary of submissions and issues from the Department was provided to the proponent.
- On 18 March 2008, the proponent lodged a Preferred Project Report (PPR) with the Department, but this did not satisfactorily address all issues raised in submissions.
- On 15 August 2008 an amended PPR was submitted.
- On 22 September 2008 the amended PPR was accepted.

3.3 PROJECT AMENDMENTS

A PPR was submitted on 18 March 2008 however, this did not address many of the concerns raised in submissions. The proponent was asked to revise the PPR to provide further information to address the following:

- **Housing density/type** – Non-compliances with minimum lot size requirements for detached houses and duplex lots were not adequately justified
- **Connectivity** – Reduced connectivity within the subdivision. The design of Road No.3 had been amended such that it no longer connected to Road No.4 and Merlot Court. This was contrary to the design principles in the *NSW Coastal Design Guidelines* in terms of permeability and inter-connected streets.
- **Subdivision Design** - Issues associated with the right of carriageways had not been adequately addressed, particularly in relation to on-street car parking, access to public roads or parks and manoeuvrability for garbage trucks. Sight distance issues associated with the intersection of Ocean Avenue and Road no. 3 had not been adequately addressed.
- **Open space** - Provision of functional open space was insufficient and discussions had not occurred with Council staff regarding the design and function of the open spaces.
- **Noise attenuation** – The impact of the noise attenuation structure on the widening of Fraser Drive had not been considered. The structure was encroaching on the road reserve reserved for future road widening.
- **Ecological buffer** - Adequate justification for a reduction in the standard 50m buffer from the edge of the EECs had not been provided.
- **Stormwater** - Detail required to address stormwater issues had not been provided and the response was inadequate.

- **Bushfire** – Council had not agreed to maintain the Fraser Drive road reserve or the open space area as an Asset Protection Zone. Road No.4 ended in a cul-de-sac greater than 300 metres in length, which exceeded the requirements (200m) of *Planning for Bushfire Protection* (2006).

An amended PPR and amended plans were submitted to the Department on 15 August 2008. The amended PPR incorporated the following amendments:

- Redesign of the subdivision layout in Part A to remove all low density residential lots less than 450sqm and duplex lots less than 900sqm.
- A loss of 3 duplex lots in Stage A to meet the minimum lot size requirement;
- Provision of a 40 metre fully vegetated ecological buffer from the edge of the EECs surrounding the SEPP14 wetland in the north western corner of the site;
- Provision of a 20 metre APZ adjacent to the 40 metre ecological buffer in the north western corner of the site;
- Reduction in size of 1.3ha of the integrated housing allotment as a result of the ecological buffer and APZ requirements and provision of a failsafe overland flow drain;
- Connection of Merlot Court with the internal roads to promote connectivity within the site and with surrounding residential development to the south;
- Provision of 3,630sqm of additional useable casual open space area in the south-western corner of the site (Stage B) that connects with the adjoining community land to the south of the subject site;
- Deletion of the acoustic mound;
- Additional stormwater information to address all outstanding stormwater issues;
- Deletion of all laneways and access easements;
- Reduction of the length of Road No.4 to 200m, satisfying PBP 2006; and,
- Agreement from Council to maintain part of the water quality open space area as an APZ.

4 STATUTORY CONTEXT

4.1 PART 3A DECLARATION

The project is one to which Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) applies as it meets the criteria listed in *State Environmental Planning Policy (Major Projects) 2005* (MP SEPP) being subdivision of land for residential purposes into more than 25 lots in the coastal zone (Schedule 2, 1(1)(j)(i) – Coastal Areas). The opinion was formed by the Director-General, as delegate for the Minister, on 6 October 2006.

4.2 PERMISSIBILITY

The *Tweed Local Environmental Plan 2000* (Tweed LEP) zones the majority of the site 2(c) Urban Expansion, permitting subdivision and dwelling houses (with a minimum lot size of 450sqm) with consent. A small pocket (approximately 1,700sqm) of the site on the western boundary on Hillcrest Avenue is zoned 2(a) Low Density Residential, permitting subdivision and dwelling houses (minimum lot size 450sqm). The proposal is consistent with the objectives of the 2(c) and 2(a) zones and is therefore permissible subject to the Minister's approval.

4.3 EXHIBITION AND NOTIFICATION

The Department has exhibited the EA in accordance with section 75H (3) of the Act. The EA was placed on public exhibition from 14 June to 13 July 2007 and submissions were invited in accordance with section 75(H) of the Act.

4.4 MINISTER'S POWER TO APPROVE

The purpose of this submission is for the Director-General to provide a report on the project to the Minister for the purposes of deciding whether or not to grant approval to the project pursuant to Section 75J of the Act. Section 75I(2) sets out the scope of the Director-General's report to the Minister. Each of the criteria set out therein have been addressed below, as follows:

(a) a copy of the proponent's environmental assessment and any preferred project report; and

The proponent's EA is included at Appendix F whilst the PPR is set out for the Minister's consideration at Appendix E.

(b) any advice provided by public authorities on the project; and

All advice provided by public authorities on the project for the Minister's consideration is set out at Appendix D.

(c) a copy of any report of a panel constituted under Section 75G in respect of the project; and

No independent hearing and assessment panel was undertaken in respect of this project.

(d) a copy of or reference to the provisions of any State Environmental Planning Policy (SEPP) that substantially govern the carrying out of the project; and

An assessment of each relevant State Environmental Planning Policies that substantially govern the carrying out of the project is set out in Appendix B and is discussed below.

(e) except in the case of a critical infrastructure project – a copy of or reference to the provisions of any environmental planning instrument that would (but for this Part) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project under this Division; and

An assessment of the project relative to the prevailing EPI's is provided in Appendix C, and is discussed below.

(f) any environmental assessment undertaken by the Director-General or other matter the Director-General considers appropriate.

The environmental assessment of the project is this report in its entirety.

(g) a statement relating to compliance with the environmental assessment requirements under this Division with respect to the project.

The environmental assessment requirements under this Division, issues on 5 November 2006 are in Appendix A. The Department is satisfied that the EA submitted in support of the project application complies with these requirements. A detailed assessment of how the proponent has addressed these issues is provided in **Section 6** of this report.

The Department has met its legal obligations and the Minister has the power to determine this project.

The EA lodged by the proponent on 5 February 2007 was reviewed against the DGRs and was deemed to be inadequate on 22 February 2007. The proponent lodged a revised EA on 1 June 2007, which was accepted as adequate on 12 June 2007.

4.5 ENVIRONMENTAL PLANNING INSTRUMENTS (EPIs)

4.5.1 Application of EPIs to Part 3A of the Act

To satisfy the requirements of section 75(2)(d) and (e) of the Act, this report includes references to the provisions of the environmental planning instruments that substantially govern the carrying out of the project and have been taken into consideration in the environmental assessment of the project. A detailed assessment of compliance with the relevant EPIs is in **Appendix B**. A summary of compliance is provided below.

The provisions, including development standards of local environmental plans, and development control plans are not required to be strictly applied in the assessment and determination of major projects under Part 3A of the Act. Notwithstanding, these standards and provisions are relevant considerations as the DGRs require the proponent to address such standards and provisions. Accordingly the objectives of a number of EPIs and the development standards therein and other plans and policies that substantially govern the carrying out of the project are appropriate for consideration in this assessment as follows:

4.5.2 State Environmental Planning Policy (Major Projects) 2005

The MP SEPP applies to the project as discussed in Section 4.1 above.

4.5.3 State Environmental Planning Policy No.11 – Traffic Generating Developments

Although SEPP No.11 has now been repealed and replaced with State Environmental Planning Policy (Infrastructure) 2007, SEPP 11 was in force at the time the EA was placed on exhibition. On the basis that the proposal includes subdivision of land into more than 50 allotments (SEPP No.11 Schedule 2), the proposed development was referred to the RTA on 12 June 2007 and considered by the Development Traffic Advisory Group on 19 July 2007.

The Development Traffic Advisory Group recommended the following key traffic and access arrangements:

- A further detailed traffic analysis be undertaken for the ultimate major internal road connection with Fraser Drive;

- Consideration be given to proposed Lot 1 having a longer frontage to enable a driveway to be constructed further away from the major intersection; and,
- The layout should be integrated with the Tweed Shire Bicycle Plan.

The RTA advised that they were satisfied with the traffic modelling and assessment undertaken by the proponent. Appropriate traffic and access upgrade works have been agreed to by the proponent and will be enforced via conditions of approval.

4.5.4 State Environmental Planning Policy (Infrastructure) 2007

The proposal includes subdivision of land into more than 50 allotments with access to a classified road, Fraser Drive. The proposal is therefore identified in Schedule 3 of the Infrastructure SEPP 2007 as traffic generating development to be referred to the Roads and Traffic Authority. As stated in Section 4.5.3, the proposal was considered by the Development Traffic Advisory Group on 19 July 2007. In accordance with Clause 101 of the SEPP, access to the site is available from Hillcrest and Ocean Avenue and Merlot Court. A detailed traffic assessment submitted by the proponent demonstrates that the safety, efficiency and ongoing operation of Fraser Drive will not be adversely affected by the development. An acoustic mound ameliorates potential traffic noise or vehicle emissions arising from Fraser Drive.

4.5.5 State Environmental Planning Policy No.14 – Coastal Wetlands

The site contains SEPP14 wetland No. 18(b). To ensure the long-term protection of the wetland and associated endangered ecological communities, a 40 metre vegetated buffer has been provided between the proposed subdivision and the edge of the wetland vegetation. The proponent proposes to dedicate the wetland and buffer area as public open space to Council. No works are proposed to be undertaken within the wetland.

A condition of approval requires a Vegetation Management Plan (VMP) to be prepared for the rehabilitation of the SEPP 14 wetland and the revegetation and management of the 40 metre wide ecological buffer and associated open space, prior to the issue of the Construction Certificate for the first stage of the project. The VMP must be prepared by a person qualified in ecological restoration and with knowledge and experience in local wetland management and rehabilitation.

4.5.6 State Environmental Planning Policy No.55 – Contaminated Land

The predominant land use has been for cattle grazing, however, banana growing previously occurred on parts of the site near Ocean Avenue and near Ridgeway Crescent. No cattle dip is evident from the site history. As banana growing was evident, sampling and analysis of soils was undertaken. The Stage 1 Preliminary Investigation confirmed that the site is not contaminated and is suitable for residential use.

4.5.7 State Environmental Planning Policy No.62 – Sustainable Aquaculture

Recent modifications to SEPP62 require consideration of impacts on priority oyster growing areas within the vicinity of the proposed development be considered in the assessment. The SEPP requires appropriate and effective measures to be undertaken to ameliorate impacts of the proposal on water quality and priority oyster growing areas. The proponent has submitted a detailed sediment and erosion control plan and construction management plan that addresses turbidity during construction. Furthermore, on-site stormwater management ensures that the quality of discharge leaving the site mimics or improves the existing stormwater quality and does not have a detrimental impact on the Terranora Broadwater and priority oyster growing areas.

4.5.8 State Environmental Planning Policy No.71 – Coastal Protection

SEPP 71 applies generally to land within the Coastal Zone. Clause 8 of the policy sets out matters for consideration by a consent authority when determining an application to which the policy applies. Those matters generally reflect the key elements of the Coastal Policy of which the proposal generally accords. The proposal provides for the following, in accordance with SEPP71:

- the development is suitable given its type, location and design;
- the development protects and retains important wildlife corridors and habitats through protection of the SEPP14 wetland;
- there are no significant impacts on any threatened species;
- the impacts of the development on flooding from the Terranora Broadwater have been assessed and mitigated;
- the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards, including the effects of climate change, has been assessed and is considered acceptable;
- protects the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals;

- protects the water quality of the Terranora Broadwater; and,
- the cumulative impact of the development has been assessed and is considered acceptable.

A complete assessment against SEPP71 is provided in **Appendix B** to this report.

4.5.9 North Coast Regional Environmental Plan

The North Coast Regional Environmental Plan (REP) provides a basis for policy development to protect the natural environment on a regional basis. Relevant clauses are as follows:

Clause 15 – wetlands or fishery habitats

The proposal complies with the intent of this clause, specifically in relation to the protection of fishery habitats, the need to maintain the quality of stormwater flowing through the SEPP14 wetland, no clearing of vegetation, the provision of a 40m buffer surrounding the wetland communities in the northern end of the site, and the protection of water quality in the Terranora Broadwater.

Clause 32B – coastal lands

The proposal complies with the intent of this clause, specifically in relation to the consideration of the *NSW Coastal Policy 1997*, the *Coastline Management Manual*, and the *North Coast: Design Guidelines*. The development is not located adjacent to any waterway and therefore does not impede public access to the foreshore and does not result in overshadowing of public foreshore open space prior to 3pm mid-winter.

Clause 43 – residential development

The proposal complies with the intent of this clause, specifically in relation to the density of dwellings, impacts on environmental features and the management of sediment and erosion on site.

Clause 66 – Adequacy of community and welfare services

The proposal complies with the intent of this clause, as the site is located in the Tweed Heads South urban area in close proximity to the wide range of community and welfare services including education, aged care, retirement and sporting facilities. The site is located within 4 kilometres of the Tweed CBD to the north and commercial centres, such as the Tweed Homemaker centre, are within 1.5 kilometres west of the site.

4.5.10 Tweed Local Environmental Plan 2000

The majority of the site is zoned 2(c) Urban Expansion in the *Tweed Local Environmental Plan (LEP) 2000* (Tweed LEP). The primary aim of the 2(c) zone is to identify land for urban expansion (which will comprise mainly residential development focused on multi-use neighbourhood centres) and to ensure its optimum utilisation consistent with environmental constraints and the need to minimise residential land-take. Subdivision and dwelling houses, including integrated housing, are permissible with consent. A small pocket (approximately 1,700sqm) of the site on the western boundary on Hillcrest Avenue is zoned 2(a) Low Density Residential, permitting subdivision and dwelling houses (minimum lot size 450sqm). The proposal is consistent with the 2(a) zone objectives for that part of the site.

The development generally meets the objectives and provisions of the Tweed LEP 2000. A detailed assessment against the provisions of the Tweed LEP has been provided in **Appendix B**.

4.6 OTHER PLANS AND POLICIES

The proposal has been considered against the following non-statutory documents:

- 1) Tweed Shire Development Control Plan 2008;
- 2) NSW Coastal Policy 1997; and,
- 3) NSW Coastal Design Guidelines.

A detailed assessment against these controls can be found in **Appendix C**. The proposal is generally consistent with the objectives of these controls.

4.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD) PRINCIPLES

There are five accepted ESD principles:

- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations (the integration principle);

- (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the precautionary principle);
- (c) the principle of inter-generational equity - that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the inter-generational principle);
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making (the biodiversity principle); and
- (e) improved valuation, pricing and incentive mechanisms should be promoted (the valuation principle).

While this report generally represents an assessment of ecologically sustainable development (ESD), it is considered appropriate to consider how the project application addresses the issues of ESD. The principles of ESD have been considered as follows:

4.7.1 Integration

In making its recommendation on the proposed development, the Department has taken into consideration the environmental, social and economic matters. Appropriate environmental management plans, the proponent's Statement of Commitments and conditions of approval ensure that the development will not have an adverse impact on the environment. The development will have a positive impact on the local economy and society through the creation of a range of new residential accommodation close to the Tweed Heads CBD, including affordable housing allotments.

4.7.2 Precautionary Principle

The EA submitted has identified and assessed the range of environmental impacts of the proposal. The proposal includes the following:

- A detailed ASS management plan;
- An erosion and sediment control plan and construction management plan;
- Integrated native landscaping to retain the existing character, protect soils and reduce erosion;
- A stormwater management system is proposed using pollutant and sediment traps, a constructed wetland and a detention basin to help protect water quality; and,
- 40 metre vegetated ecological buffer to protect the SEPP14 wetland.

The proponent has demonstrated that the building design and appropriate mitigation measures will be implemented to prevent any potential environmental impacts. Mitigation measures are outlined in the proponent's Statement of Commitments and/or the recommended conditions of approval.

4.7.3 Intergenerational Equity

The development provides additional residential development opportunities now and into the future in South Tweed. The project will seek to minimize its ecological footprint, and provide a relative degree of local and regional self-reliance and capacity for future adaptability, through:

- appropriate planning and design approaches;
- protection of the SEPP14 wetland;
- stabilisation of unstable steep areas along the western portion of the site and those existing properties along Hillcrest and Ocean Avenue; and,
- consideration of the effects of climate change on flooding and the SEPP14 wetland.

4.7.4 Protecting Biodiversity

The proponent has provided an assessment of the impacts on existing flora and fauna on and adjacent to the site. Appropriate mitigation measures and management strategies will be implemented to prevent any potential environmental impacts, such as:

- Protection of the SEPP14 wetland in the north of the site and provision of a 40m buffer surrounding the associated wetland vegetation communities;
- Protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats;
- Revegetation and management of the cleared buffer area between the integrated housing lots and the SEPP14 wetland and associated wetland communities; and,
- Integrated landscaping will be carried out based on the concept of local forest and wetland habitat systems, using predominantly local native species, enhancing site and locality biodiversity.

4.7.5 Improved Valuation

The subdivision has been designed in accordance with the principles of Water Sensitive Urban Design and includes provision for a dual reticulated system. The system is designed to promote an environmentally sustainable outcome through management of the stormwater runoff, groundwater, potable water and sewerage. These measures will help future development applications for the site to comply with BASIX.

Consequently, the Department is satisfied that the proposal is consistent with the principles of ESD.

4.8 OBJECTS OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The objects of any statute provide an overarching framework that informs the purpose and intent of the legislation and gives guidance to its operation. The Minister's consideration and determination of a project application under Part 3A must be informed by the relevant provisions of the Act, consistent with the backdrops of the objects of the Act.

The objects of the Act in section 5 are as follows:

(a) to encourage:

- (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,
- (ii) the promotion and co-ordination of the orderly and economic use and development of land,
- (iii) the protection, provision and co-ordination of communication and utility services,
- (iv) the provision of land for public purposes,
- (v) the provision and co-ordination of community services and facilities, and
- (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and
- (vii) ecologically sustainable development, and
- (viii) the provision and maintenance of affordable housing, and

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

Of particular relevance to the assessment of the subject application is consideration of the Objects under section 5(a). Relevantly, the Objects stipulated under section 5(a) (i), (ii), (iii), (iv), (v), (vi), (vii), (viii) are significant factors informing the determination of the application.

With respect to ESD, the Act adopts the definition in the *Protection of the Environment Administration Act 1991* including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms.

The Department has considered the Objects of the Act, including the encouragement of ESD in the assessment of the project application.

5 CONSULTATION AND ISSUES RAISED

5.1 PUBLIC EXHIBITION DETAILS

The EA was exhibited for 30 days from 14 June to 13 July 2007. Notification of the exhibition was given in the following local papers:

- Tweed Sun;
- Tweed Daily News; and,
- Tweed Link.

Exhibition locations were at:

- Department of Planning Head Office, Bridge Street Sydney;
- Department of Planning North Coast Office, Victoria Street, Grafton;

- Tweed Shire Council, Murwillumbah; and,
- Tweed Shire Council, Tweed Branch Office, Tweed Heads.

The EA was also provided for download on the Department's website.

Letters were sent to adjoining landowners and relevant government agencies, including Council, notifying of the exhibition and inviting a submission. A total of 81 submissions were received, comprising 73 submissions from the public and 8 submissions from public authorities being:

1. Tweed Shire Council
2. Department of Water and Energy
3. Department of Housing
4. Department of Environment and Conservation (now Department of Environment and Climate Change)
5. Rural Fire Service
6. Northern Rivers Catchment Management Authority
7. Roads and Traffic Authority
8. Department of Primary Industries

The 73 submissions from the public included 71 letters of objection (including 61 form letters) from residents from South Tweed (Hillcrest and Ocean Avenue, Seaview and Ridgeway Street), 1 letter of support and 1 letter from the Gold Coast Airport recommending conditions of approval regarding noise and non-reflective design materials. Of the public authority submissions, all raised objections except for the Rural Fire Service.

A PPR was lodged on 18 March 2008. However, as a number of issues were not adequately addressed the Department requested the PPR be amended. The final PPR was accepted on 22 September 2008. As the changes to the nature of the project were not significant, it was not re-exhibited but was placed on the Department's website.

5.2 SUBMISSIONS FROM THE PUBLIC

5.2.1 Summary of issues raised in public submissions

The following issues were raised in the public submissions:

- Geotechnical engineering – steep and unstable land is unsuitable for development, excessive cut and fill and impact on adjoining properties;
- Aboriginal cultural heritage – potential impacts on a known Aboriginal midden;
- Traffic and access – capacity of existing roads, impacts on residential amenity and safety concerns due to on-street parking;
- Flora and fauna – reduction in biodiversity and clearing of vegetation;
- Land use – site is inappropriate for residential development;
- Stormwater – inappropriate drainage;
- Loss of character – transformation into a metropolitan suburb of the Gold Coast; and,
- Infrastructure provision – insufficient capacity of water and sewerage infrastructure.

A breakdown of the number of times these issues were raised in submissions is shown in **Figure 17** below. An assessment of the key issues from the above list can be found in **Section 6** of this report.

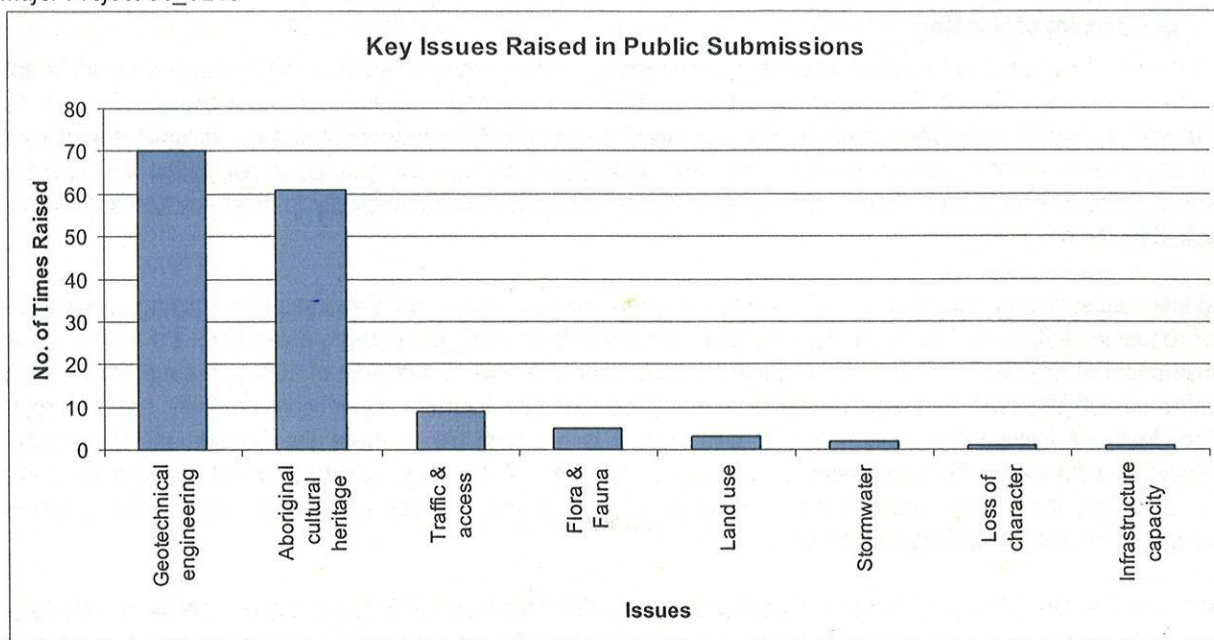


Figure 16: Breakdown of Key Issues Raised in Public Submissions

A summary of all submissions received can be found in **Appendix D**. The proponent responded to these submissions on 18 March 2008. The proponent's response to submission is in **Appendix E**.

5.3 SUBMISSIONS FROM PUBLIC AUTHORITIES

The following submissions were received from public authorities:

5.3.1 Tweed Shire Council

Tweed Shire Council provided a detailed submission that raised a number of issues and requested additional information for assessment. Key issues raised in its submission included the following:

- Cut and fill;
- Geotechnical engineering;
- Roads, public transport and connections;
- Stormwater management;
- Flood evacuation route;
- Provision of functional open space;
- Bushfire management and provision of asset protection zones;
- Water supply;
- Sewer reticulation details;
- Environmental health considerations, including acid sulfate soils, acoustic assessment, groundwater and soil contamination;
- Planning and urban design;

The key issues raised by Council are discussed in detail in **Section 6** of this report.

5.3.2 Department of Water and Energy

The Department of Water and Energy raised concern with the Acid Sulfate Soil Management Plan (ASSMP) submitted in support of the application. DWE advised that the ASSMP would be acceptable if supported by documentation of the data upon which it is based. DWE required that the data from the previous reports prepared in 2000 and 2002 be incorporated into the ASSMP.

DWE also provided comment on the groundwater impact assessment and requested further clarification on proposed detention basin levels, groundwater levels and the proposed method / standard of lining for the proposed detention basin. Further information on areas required to be dewatered were also requested for review and assessment including impacts on acid sulfate soils and ground water dependent ecosystems with any subsequent acid sulfate soils management plans and/or dewatering management plans. This matter has been resolved and is further discussed in Section 6.13 of this report.

5.3.3 Department of Housing

The Department of Housing had a direct interest in commenting on the proposal because of the demand for affordable housing for low to moderate income earners and the need for more diverse housing types and configurations in the housing market in Tweed. The Department of Housing raised concern that the proponent had not included a social and economic impact assessment (SEIA) in the EA. The SEIA should address how the increase in population will impact on services and social infrastructure in Tweed and whether there is adequate existing capacity to meet any demand likely to be generated by the development.

The proponent subsequently submitted an SEIA in the Preferred Project Report. The Department of Housing reviewed the SEIA and requested that conditions to address the issue of affordable housing and housing diversity on the site be placed on the instrument of approval. These would require the proponent to ensure a minimum of 10% one bedroom dwellings and a minimum of 30% two bedroom dwellings in the proposed development. Upon consideration, as the project application does not include the construction of dwellings, it is not possible to place the Department of Housing's recommended conditions on the instrument of approval. The type of dwellings constructed will respond to market demand. However, the recommended conditions will be brought to the attention of Council, who will be assessing subsequent applications for dwellings on the site.

In keeping with the Department of Housing's concerns, and noting that Council does not have a policy on affordable housing, the Department accepts the integrated housing allotment on the site, recognising that this will provide a more diverse mix of housing types on the site and target the issue of affordable housing. According to the Department of Housing, the housing market in the Tweed is very tight with high demand and high housing need. The subdivision provides an opportunity to ensure that the housing in the development meets the needs of the community by providing a diverse range of housing stock.

5.3.4 Department of Environment and Climate Change

The Department of Environment and Climate Change (DECC) raised concern regarding the Aboriginal cultural heritage assessment. In particular, the information submitted was insufficient to assess the management proposals. DECC requested that an investigation survey be completed using an appropriately qualified archaeologist to enable determination of the extent and value of the registered midden site. DECC also noted that the proposed development provided a 50 metre buffer to the mapped SEPP14 wetland boundary, and not the actual wetland communities or the endangered ecological communities.

DECC requested further information on the bushland management maintenance program timeframes, objectives, methodologies and area where the work will occur. DECC advised that rehabilitation work should include all of the open space areas especially the buffer area to the SEPP14 wetland.

The proponent undertook further consultation with the Aboriginal community and surveyed the extent of the Aboriginal midden. A Cultural Heritage Management Plan will be prepared to ensure protection of the midden into the future. This is discussed further in Section 6.5 of this report.

The final subdivision layout was amended to provide a 40 metre fully vegetated ecological buffer between the ground-truthed endangered ecological communities and the integrated housing allotment. This is discussed further in Section 6.3. Furthermore, a condition of approval requires the proponent to prepare a detailed Vegetation Management Plan that addresses the rehabilitation and ongoing management of the wetland, establishment of the ecological buffer, maintenance and monitoring of open space. This issue is discussed in more detail in Section 6.3 of this report.

5.3.5 Rural Fire Service

Based on the plans and documentation submitted for the proposed development, the Rural Fire Service (RFS) advised that suitable Asset Protection Zones (APZ); suitable water, electricity and gas; public road access and property access roads should comply with *Planning for Bushfire Protection (2006)*. An assessment of bushfire risk on the site is provided at Section 6.9 of this report.

5.3.6 Northern Rivers Catchment Management Authority

The Northern Rivers Catchment Management Authority (CMA) raised concern that the 50 metre buffer surrounding the SEPP14 wetland had been measured from the mapped SEPP14 wetland boundary and not the actual extent of the wetland communities. The CMA was not satisfied that the wetland would be adequately protected and recommended that a buffer be extended around the entire wetland system, including the vegetation communities outside of the mapped SEPP14 boundary.

The final subdivision layout was amended to provide a 40 metre fully vegetated ecological buffer between the ground-truthed endangered ecological communities and the integrated housing allotment. This is discussed further in Section 6.3 of this report.

5.3.7 Roads and Traffic Authority

The proposal was referred to the Development Traffic Advisory Group in accordance with State Environmental Planning Policy No.11 – Traffic Generating Development. The Group requested that:

- A further detailed traffic analysis be undertaken for the ultimate major internal road connection with Fraser Drive;
- Consideration be given to proposed Lot 1 having a longer frontage to enable a driveway to be constructed further away from the major intersection; and,
- The layout should be integrated with the Tweed Shire Bicycle Plan.

Following a review of additional information contained within the Preferred Project Report and the traffic modelling data, the RTA subsequently advised that they were satisfied with the proposal.

5.3.8 Department of Primary Industries

The Department of Primary Industries (DPI) raised a number of issues with the proposal including the following:

- Buffer to SEPP14 wetland
DPI noted that the wetland communities extend beyond the mapped SEPP14 boundary and therefore the 50 metre buffer provided from the mapped SEPP14 wetland was insufficient. Furthermore, concern was raised that part of the 50 metre setback to the wetland was to be recreated as an asset protection zone (APZ) for bushfire management. DPI advised that the EA did not contain any indication of how the buffer zone was to be managed to maintain habitat and ecological values of the mapped SEPP14 wetland. The EA also does not justify why the APZ cannot commence from the edge of the 50 metre ecological buffer, negating the need to clear existing wetland vegetation.

The final subdivision layout was amended to provide a 40 metre fully vegetated ecological buffer between the ground-truthed endangered ecological communities and the integrated housing allotment. DPI advised they were satisfied with this. This is discussed further in Section 6.3 of this report.

- Fish friendly floodgate management - DPI requested that a condition of approval requiring the proponent to work with Council to improve management of the floodgate and piped road crossing under James Drive immediately to the north of the site, which restricts tidal inundation to the SEPP14 wetland. This has been addressed through a condition of approval, as requested.
- Ad-hoc planning – cumulative impact of developments, especially when aspects such as filling and various stages are assessed separately.

The cumulative impact of filling has been addressed by Council in the Tweed Valley Flood Study 2005. This is not a matter for consideration in the current assessment.

- Sea level rise / climate change – concern was raised about the ability of the wetland communities to adapt to projected changes in sea level as a result of filling of areas to the edge of the wetland and its buffer.

Sea level rise has been assessed in Section 6.11 of this report.

- State Environmental Planning Policy No.62 – Sustainable Aquaculture – recent modifications to this SEPP require consideration of impacts on priority oyster growing areas within the vicinity of the proposed development to be considered in the assessment.

The proposed stormwater treatment measures ensure that the downstream water quality within the Terranora Broadwater is maintained at the existing levels. No detrimental impacts are expected. Stormwater management is further discussed in Section 6.6 of this report.

6 ASSESSMENT OF ENVIRONMENTAL IMPACTS

Tweed Shire Council was engaged as a consultant to assess the technical engineering aspects of the proposal. Key issues considered in Council's and the Department's assessment of the EA and the PPR and consideration of the proponent's draft Statement of Commitments include the following:

- Geotechnical engineering
- Earthworks and filling
- Wetlands
- Subdivision layout, density and design
- Aboriginal cultural heritage
- Stormwater
- Flora and fauna
- Traffic and access
- Contamination and remediation
- Groundwater
- Bushfire
- Flooding
- Acoustic amenity
- Provision of public services and infrastructure, and
- Construction management.

Some of these issues were resolved following consultation with the Proponent, or were directly addressed via the proponent's Statement of Commitments or the Department's recommended conditions of approval. Significant issues are discussed in detail, below.

6.1 GEOTECHNICAL ENGINEERING

6.1.1 Geotechnical Engineering

Issue

The geotechnical report submitted with the exhibited EA and prepared by Shaw Urquhart Geotechnical Services was based on previous geotechnical reports and a previous subdivision layout. This geotechnical report was deficient in a number of areas, including;

- An assessment of the stability of the proposal, including the subject site and adjoining land;
- Landslip areas to be rectified;
- The expected settlement of compressible clays on the site;
- Recommended design criteria for earthworks, retaining walls, drainage & location for underground services in the zone of influence, including any maintenance requirements;
- Insufficient information regarding the location of specific drainage details, including remediation of landslip areas, cut & fill interface, natural springs and water table;
- Risk Assessment of the proposed development based on the following;
 - The above request for further geotechnical information;
 - Borelog testing of the site and external surrounds;
 - Slope stability analysis in accordance with Tweed Shire Council's Subdivision Manual (Section 5A of the DCP) – Land with risk of Landslip or subsidence;

Preferred Project Report

Slope Stability

The proponent provided further geotechnical assessment based on additional borelog testing of the site prepared by Morrison Geotechnic dated 31 October 2007. In regards to slope stability the geotechnical report targeted areas of known instability (highlighted in previous geotechnical assessments for the site) and the impact on the proposed subdivision layout. The report also addressed the potential instability of general slopes considering the proposed cut and fill earthworks for the development.

Following testing and computer analysis of the in situ soils, the report recommended reducing the slope gradient in steeper sections of site by adding fill up to 6 metres on the lower areas to achieve a lower gradient. The stability analysis indicated

that soils with a similar density and strength to the natural soil have greater stability when placed on slopes with a reduced gradient. The report concluded that the subdivision layout as prepared by Cardno will be suitably stable for a residential subdivision.

Landslip Areas

Four large landslip areas were identified in a basic landslip remediation plan. All areas where landslip is present is currently identified as 'very high risk' (in accordance with Australian Geomechanics Society "Landslip Risk Management Concepts and Guidelines" March 2000). The EA stated that following remediation works and correctly draining the slope, the risk will then be identified as 'low risk' in accordance with the above mentioned Australian Geomechanics Society guidelines. Low risk is defined as generally requiring maintenance to maintain or reduce the risk.

Ten proposed allotments were identified in the Morrison geotechnical report being directly affected by the current landslips, these being proposed lots 97, 98, 117, 118, 125, 157 – 159 and 166 (as exhibited).

The landslips identified to date have not impacted on existing properties located on the ridge above the proposed site. The EA recommends remediation of the landslips and drainage controls therefore reducing the stability risk to zero beyond the property boundary. The EA also states that support to the adjoining boundary above proposed Lots 146 to 161 will be required. The geotechnical assessment concludes that the adjoining land will have a decreased stability risk following proposed remediation works to reduce the adjoining slope gradient and remediation of the landslip areas.

Design Recommendations

The geotechnical report has provided design recommendations for the site in regards to proposed roadworks, sewer, earthworks, retaining walls and drainage to manage site instability. These recommendations include the following;

- Placement of a geofabric sleeved seepage drains in all underground services, connecting to stormwater manholes.
- Roof water drainage from future dwellings is to be directed to defined stormwater outlets, this may be designed as interallotment drainage.
- All cuts greater than 1.2 metres in height are to be supported with a retaining structure.

The above geotechnical recommendations have been included in the conditions of approval, to enable these measures to be implemented during construction.

Furthermore, the report states that seepage flows from the natural springs on the site are small and can be accommodated in a 100mm diameter pipe. Further geotechnical advice will be required at the bulk earthworks construction certificate stage (prior to issue of the construction certificate for civil works) to provide detail on the exact location of the seepage flows and the final pipe design size. Subsurface drainage easements will be required to be placed over all installed subsurface pipes to prevent future building and pool foundations from destroying the pipes. Future maintenance of these subsurface pipes will be the responsibility of the lot owner. The placement of these subsurface drainage pipes is critical to maintaining slope stability.

Settlement of compressible clays

The proponent provided advice that testing and geotechnical recommendations for the settlement of compressible clays could be addressed during the bulk earthworks and prior to the issue of the construction certificate for civil works. It is noted that this area has been filled and also stockpiled with soil.

Consideration

Tweed Shire Council's Development Control Plan (2008) – Section 5A (Subdivision Manual) states that development proposals for sites that are at risk from landslip or subsidence must account for this risk by;

- Excluding the land at risk from land suitable for development;
- Demonstrating that the land is suitable for its intended use; or
- Demonstrating that remediation works will eliminate the risk and render the land suitable for development.

The Morrison geotechnical report submitted with the PPR provides adequate recommendations for the remediation of existing landslip areas located on the steeper areas of the site (identified as stages 1B, 2B & 3B of the development). The report identifies areas to be rectified and has submitted further borelog testing to demonstrate the extent of the slope instability.

Following the geotechnical recommendations in the Morrison report, the remediated areas can be identified as 'low risk'. These recommendations include subsurface drainage of the slopes, level 1 geotechnical testing in accordance with AS 3798, limiting the slope gradient and earthworks using sound engineering principles.

Prior to issue of the construction certificate a detailed landslip remediation works plan is required to be submitted to Council to rectify all landslip affected areas and recommend exact drainage control measures. A condition of approval also requires further geotechnical testing of the low flat area containing compressible clays prior to the issue of the construction certificate for the first stage of the project.

After completion of the remediation works and in accordance with the above mentioned recommendations the land can be considered suitable for the proposed development as submitted in the PPR. The additional geotechnical information and recommendations addresses Tweed Shire Council's criteria for land affected by landslip. The geotechnical assessment also confirms that the long term stability of the proposed allotment layout is satisfactory following the rectification works to the landslip areas.

6.2 EARTHWORKS AND FILLING

6.2.1 Cut and Fill

Issue

The exhibited subdivision layout involved extensive earthworks and proposed retaining structures to comply with Tweed Shire Council's engineering design criteria and Australian Standards for road design, park gradients, water, stormwater and sewer design gradients. The steep topography in Part B of the subdivision requires extensive regrading to achieve minimum engineering design standards. A slope analysis layout plan prepared by Cardno (figure no. DA08A, dated 8 December 2007) details slopes, over 20% for a large portion of the site in Part B of the subdivision. The proposed earthworks would significantly change the landform, such as reducing the slope gradient by the inclusion of retaining walls and filling areas in the lower section of the site.

Tweed Shire Council's Development Control Plan (2008) Section 5A – Subdivision Manual states that the extent of landform change to render a site suitable for subdivision should be kept to a minimum. Site regrading should be sensitive to existing landforms and topography (of both the subdivision site and neighbouring areas) so that the natural setting may be preserved to the greatest extent possible. The subdivision should be designed to fit into the topography rather than altering the topography of the subdivision.

The exhibited EA recommended that building areas within allotments should not be located on land with slopes steeper than 3H:1V (approximately 18 degrees). The slope analysis layout plan prepared by Cardno showed a number of allotments which did not comply with the geotechnical report recommendation.

Additional information requested from the proponent included;

- Demonstrate that building areas within allotments are not located on slopes steeper than 18 degrees.
- Deletion of a 1.2m high retaining wall in Part A of the subdivision, between future lots 28-47, as the wall did not comply with Council's DCP.
- Demonstrate that pre-development levels are preserved at the external (perimeter) boundaries. Tweed Shire Council's DCP – Subdivision Manual states the boundary pre-development level (or within 3m of the boundary) is to be maintained without the use of retaining walls exceeding 1.2m in height.

Preferred Project Report

The proponent provided further geotechnical assessment prepared by Morrison Geotechnic dated 31 October 2007 to address the issue of slope instability. This assessment provided additional testing and information on slope stability. The report concluded that the subdivision layout is satisfactory for the long term stability of the allotments, following landslip remediation works.

Cross-sections were also provided to demonstrate pre- and post-development levels at the external perimeter boundaries of the site. The site layout still included a retaining wall between proposed lots 28-47.

Consideration

No maximum site grade is specified within the DCP although a geotechnical assessment is required for all sites over 25% and where the site has a risk of landslip or subsidence. The mass landform proposal for a residential subdivision is in

accordance with Council's requirements for the site not to have an excess of 5m cut / fill depth limited to no more than 10% of the site. The contours provided in Cardno figure DA09 confirms compliance with this criterion.

Council's DCP states that use of site regrading on sloping (natural slope >10%) residential subdivision sites to manufacture flat earth platforms suitable for construction of concrete slab-on-ground dwellings is not permitted. Dwellings on these sites are to use building techniques suitable to sloping sites such as piled or piered foundations. In accordance with Council's DCP, future dwellings on affected sites within the subdivision are to use building techniques suitable to sloping sites. This has been addressed as a condition of approval to be included within an 88B instrument placed on the title of the land.

The retaining wall should be deleted, as the affected lots would have longitudinal gradients of less than 10% in the absence of the wall. Council's DCP states that no sharp changes of gradient (e.g. associated with batters or retaining walls) are permitted at or near inter lot boundaries or within lots. Batters and retaining walls are not permitted for the purpose of creating terraced lots. A condition of approval requires an amended proposed finished surface contours plan (Figure DA.04) to be submitted to Council for approval to demonstrate that the 1.2m retaining wall between proposed lots 29-39 and 60-67 has been removed prior to the issue of a Construction Certificate for the first stage of the subdivision.

In relation to the levels at the external boundaries, cross-sections submitted in the PPR indicate that post-development levels at the external (perimeter) boundaries are acceptable.

6.3 IMPACTS ON SEPP14 WETLAND

6.3.1 SEPP14 Wetland Buffer

Issue

The proposed buffer to the SEPP14 wetland in the exhibited proposal was insufficient. Although the actual extent of the SEPP14 wetland and associated vegetation communities had been ground-truthed, the 50 metre ecological buffer to the wetland vegetation had been taken from the gazetted SEPP14 mapped wetland boundary, and not the ground-truthed boundary of the SEPP14 wetland communities. The mapped wetland boundaries were initially identified from stereo interpretation of 1:25,000 aerial photographs dated 1984 and 1986. Therefore, it is generally accepted that the SEPP14 wetland maps are by no means accurate and should only be used as an indication of the extent of the wetland area.

The Broadleaved Closed Forest to Woodland community and Swamp She-Oak Closed Forest to Woodland community extending across the buffer to the SEPP14 wetland are considered to be broadly analogous to three Endangered Ecological Communities (EECs) listed under the *Threatened Species Conservation Act 1995*, including swamp sclerophyll forest, swamp oak floodplain forest and coastal saltmarsh. The buffer proposed by the proponent in the exhibited proposal resulted in a 30 metre buffer between the edge of the EECs and the subdivision, reducing to 10 metres in some locations adjacent to the integrated housing lot and the water quality open space area and 4 metres to Lot 168 (refer **Figure 18**).

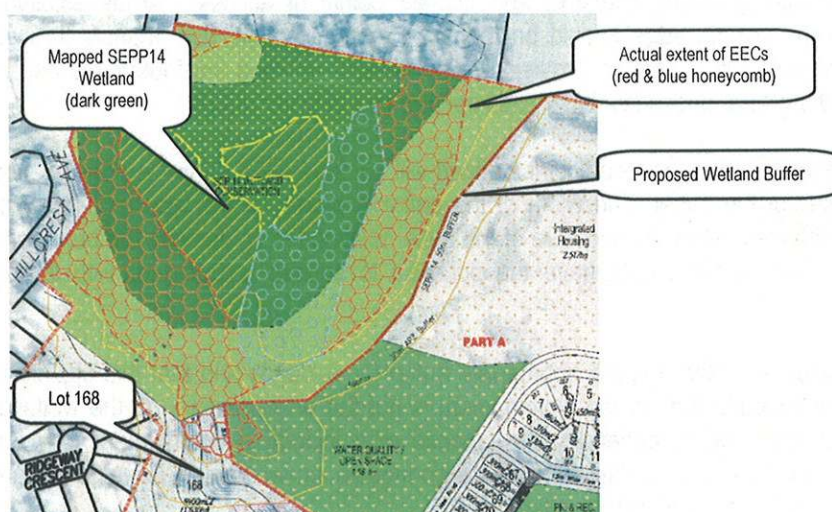


Figure 17: Exhibited Wetland Buffer Arrangement

In their submissions on the exhibited proposal, the DECC, DPI and Northern Rivers CMA also all recommended no variation from a 50 metre buffer from the edge of the EECs. The proponent was advised that the PPR needed to give further consideration to providing an increased buffer to the SEPP14 wetland and associated EECs.

Preferred Project Report

The proponent subsequently submitted a further technical report entitled – '*Ecological Buffer Analysis*' dated January 2008, to support the reduced buffer to the wetland vegetation, maintaining the original exhibited proposal was satisfactory. The Department engaged an independent specialist wetland consultant, Geoff Sainty, to review the additional technical information. Matters considered by Sainty in his assessment included the wider issues of:

- i.) degradation from within the proposed development and development outside the proposal;
- ii.) relative small size and isolation of the EEC;
- iii.) the artificial constraint placed on it by the tidal floodgates under James Drive;
- iv.) projected sea level rise by International Panel on Climate Change (IPCC) 2007;
- v.) death of the freshwater EEC vegetation when it becomes saline; and,
- vi.) midge and mosquito health threats.

Following a site inspection, Sainty concluded that the *Ecological Buffer Analysis* did not provide adequate justification for a reduced buffer between the EECs and the integrated housing allotment. Issues identified with the report included the following:

- The report fails to adequately address the key question of why a reduced vegetated buffer width (as small as 10 metres) should be considered acceptable in this instance and incorrect buffer distances have been quoted;
- Key pieces of policy and legislation relevant to the issue have not been addressed;
- While the report states that the ultimate dimensions and characteristics of the buffer required should take into account the existing ecological character and condition of the environmentally significant areas, there was no specific recognition of the high quality of the SEPP14/EEC Swamp Sclerophyll Forest/Paperbark Forest;
- The report relies on a fauna survey undertaken almost 10 years ago (surveys completed in November 1998 & August 2000), furthermore, no consideration has been given to the buffer requirements of threatened fauna species that may reside in or use the wetland; and,
- A proposed buffer structure has not been provided.

Consideration

Section B3.13.1 of the *Tweed Development Control Plan Section B3 – Banora Point West and Tweed Heads South* states that any development application for the residential subdivision of the land at Fraser Drive shall maximise the opportunity to retain the vegetation directly to the east of the SEPP 14 wetland, subject to being able to provide adequate water quality devices and subject to adequate buffering of the vegetation.

Similarly, the *NSW Coastal Design Guidelines – Design Guidelines for Natural Edges* states that that existing and remnant native vegetation should be protected through generous setbacks and defined points of access. Areas adjoining freshwater estuarine, coastal habitats and the coastal edge should be managed to reduce land use impacts through setbacks that also support the protection of sensitive ecologies, provision of public access along the foreshores and to natural areas, protection of properties from the effects of sea-level rise and improvement of water quality.

Sainty recommends that the buffer width recommended for a particular wetland will be dependent upon the conservation significance of the wetland and the purposes of the buffer. The width of the buffer is based on the type (eg: forest or saltmarsh) and height of vegetation being protected, while the structure of the buffer is aimed at conserving the buffer and not extending the area to be protected. The buffer should have the potential to survive unchanged, with limited management once established.

The Northern Rivers CMA generally advocates that 100 m is the appropriate buffer for wetlands and that this applies to "high risk" land. However, in this case, they concede that as the development is not the only pressure on the wetland, further justification for variation of the standard 100 m buffer in this instance may include a commitment to weed management of the EEC wetland, buffer maintenance, modification of the floodgates under James Drive to ensure appropriate tidal flows and/or compensatory habitat or rehabilitation offsite.

The DECC also confirmed that a reduction of the 50 metre buffer would be acceptable where the buffer adjoins the water quality / open space area and adjacent to Lot 168 provided it is appropriately compensated for via rehabilitation or

management commitments elsewhere. DECC advised that the buffer should consist of native vegetation and should not incorporate other infrastructure.

The Swamp Sclerophyll Forest/Paperbark Forest within the wetland is of extremely high quality and is an unusually tall stand of vegetation (approximately 30 metres). The forest is exceptional with an abundant and diverse mid- and understorey, despite the loss of light from the high forest canopy. The proposed reduced buffer will not provide adequate protection to this area of ecologically significant vegetation. Notwithstanding, the wetland is a relatively small and isolated patch of vegetation and is already relatively degraded in parts.

Based on the various considerations outlined above, Sainty recommended that the proposal should provide for a minimum 40 metre fully vegetated buffer to the integrated housing allotment. A reduced ecological buffer was acceptable to Lot 168 and the stormwater quality open space area.

Therefore, after extensive negotiations the proponent agreed to amend the subdivision to incorporate a 40 metre vegetated ecological buffer from the edge of the EECs to the integrated housing allotment. It should be noted that in amending the subdivision layout, the lot numbers changed. Lot 168 is now labelled as Lot 91. A further 20 metre APZ is located adjacent to the ecological buffer, providing a total of 60 metres from the nearest residential building to the protected wetland vegetation (refer Figure 19). This resulted in a loss of 1.3ha of developable land in the integrated housing allotment.

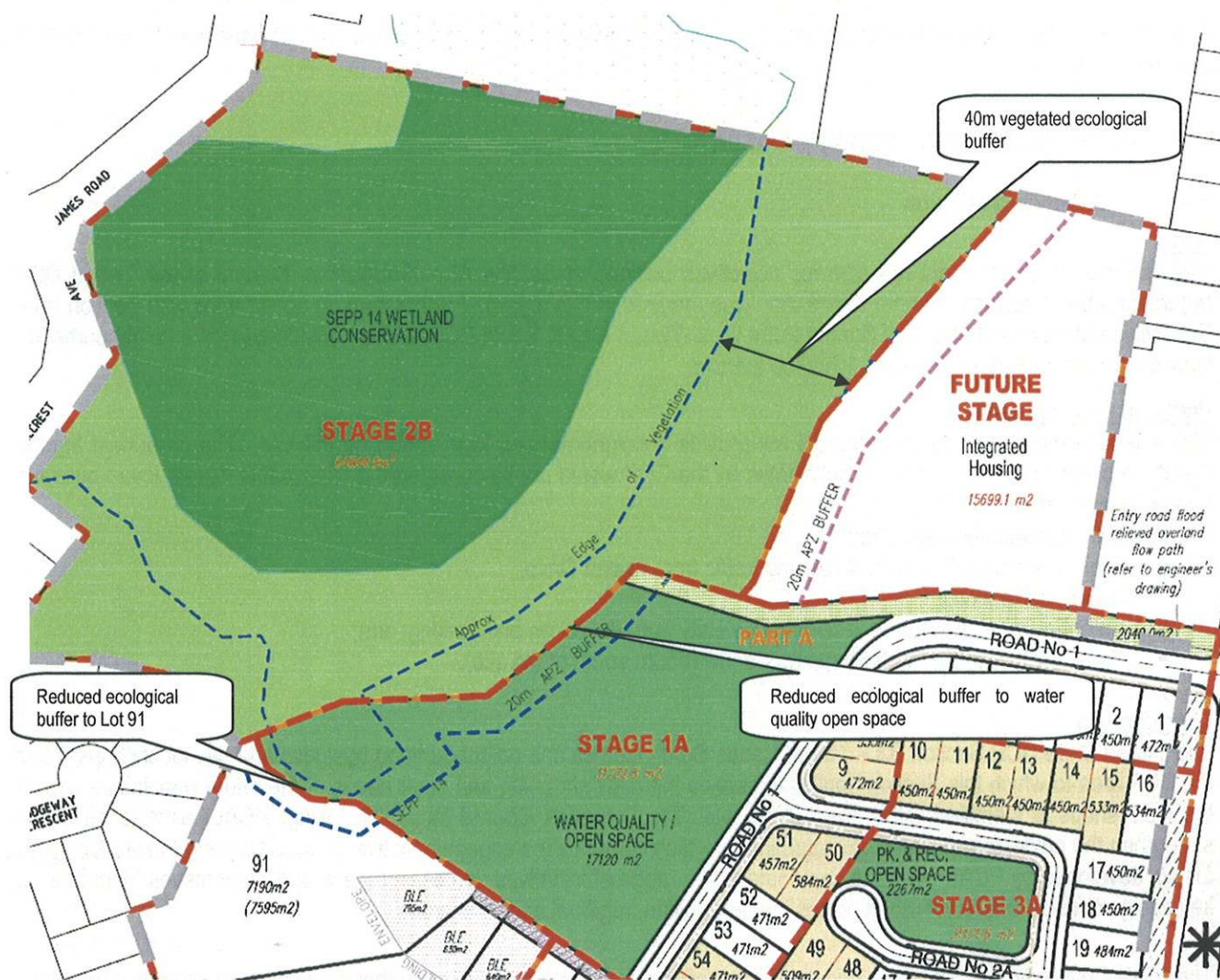


Figure 18: Accepted Wetland Buffer Arrangement

The Department is willing to accept a reduced buffer adjacent to the stormwater quality treatment pond and residential Lot 91 as detailed in Drawing No. 20934-5o (dated 1 October 2008), on the basis of the following mitigation and management commitments:

- a 40 metre fully vegetated buffer is provided from the edge of the EECs to the integrated housing allotment;

- the ecological buffer between the development and the EECs will be revegetated and rehabilitated and that there be ongoing weed management of the EEC wetland and the ecological buffer for a period of 5 years;
- preparation of a detailed Vegetation Management Plan (VMP) for the wetland and associated buffer area;
- the tidal floodgates under James Drive are upgraded to Council-approved floodgates to improve fish passage, enhance water quality and reduce mosquito and midge outbreaks. The floodgates should use a calibrated tidal mechanism, similar to that used in a number of sites throughout the Tweed, which would permit some fish passage, flushing of waters behind the gate and by shutting down at a pre-determined tide height would continue to sustain both saltmarsh and freshwater wetland plant species.

DECC, NRCMA and DPI agreed accept a reduced buffer subject to the terms above.

The Department notes that there is potential for the wetland buffer to be degraded or lost as a consequence of weed invasion, recreational users, urban development and road construction. To address this, management is needed to prevent the loss of the buffer in the longer term. A condition of approval requires the proponent to revegetate the buffer between the wetland communities and the subdivision with suitable native stock following the buffer structure discussed above. A detailed VMP must also be prepared prior to issue of a construction certificate for the first stage of the subdivision (any of Stages 1A to 3B). The VMP is to fully address all matters relating to wetland protection, vegetation to be retained, vegetation to be removed, obtaining plant material for rehabilitation, establishment methods, sequencing of tasks and maintenance relating to the rehabilitation of the wetland.

The Department is satisfied that the proposal, as amended, will provide an appropriate level of protection to the SEPP14 wetland and EECs.

6.4 SUBDIVISION DESIGN, DENSITY AND LAYOUT

6.4.1 Subdivision Design

Issue

The exhibited application did not address objectives outlined in Section A5 – Subdivision Manual of the Tweed DCP regarding urban structure. Further information was required in this regard. Furthermore, in accordance with Section A5 – Subdivision Manual and Map 2 of Banora Point West-Tweed Heads South DCP, it was considered that a neighbourhood / local centre (shops) should be established on the site.

Preferred Project Report

The amended preferred project layout did not provide a neighbourhood local centre on the site. The proponent argued that the a small local retail centre as anticipated by the DCP would not be considered a sustainable development outcome for the following reasons:

- Little opportunity to expand;
- Limited opportunity to attract passing traffic from Fraser Drive;
- Insufficient parking;
- Potential impacts to future residential amenity from deliveries and parking; and,
- Proximity to Banora Point Shopping Centre (800m south of the site).

Consideration

The Tweed Shire DCP Section B3 – Tweed Heads South locates one neighbourhood business and two local shops within the DCP area to which this Section applies to service the daily shopping and other needs of the future population. One of the local shops is identified within the subject site. The Premier's Council for Active Living (PCAL) aims to build and strengthen the physical and social environments in which communities engage in active living. *Designing Places for Active Living*, developed by PCAL, seeks to contribute to the range of initiatives addressing these and other issues by proposing key design considerations for urban places in metropolitan, regional and rural areas.

The NSW Government's *Planning Guidelines for Walking and Cycling* (2004) state that creating a walkable and cycleable neighbourhood is an important element in creating a sustainable neighbourhood — one that is equitable, liveable, cost-efficient, safe, healthy and environmentally sound. This is increasingly a central theme of contemporary neighbourhood-scale planning. A "walkable" neighbourhood is one whose physical environment is conducive to walking. Key elements of a walkable neighbourhood are:

- Good access to local facilities (less than 400 m to the local shop, school or town centre)
- Footpaths

- Aesthetic features of the physical environment
- Good connectivity (i.e. streets that take you directly to facilities rather than weaving about or ending in cul-de-sacs)
- Lots of open space and green space
- A sense of place created through public and community art
- A sense of safety
- Lack of heavy traffic
- Mixed use planning (mix of residential, retail and public amenities)
- Well connected, integrated public transport.

The presence of smaller neighbourhood shopping strips and corner shops also improves walkability and cycleability by providing opportunities for day-to-day shopping to be made within the neighbourhood by bicycle or on foot instead of by car. The *Far North Coast Regional Strategy* also encourages a range of well designed housing within easy access to services and facilities, preferably in walking distance.

The Heart Foundation's *Healthy by Design: a planners' guide to environments for active living* (2004) promotes locating food stores, shops and local facilities (such as post boxes and public telephones) within close walking distance to dwellings and businesses. The concept of 'close walking distance' will vary according to people's different fitness levels. A widely used benchmark is for mixed development neighbourhoods to cover a 400-metre radius. This equates to about a five-minute walk. Corner stores also encourage people to socialise and contribute to the local economy and community life.

While the proposed subdivision achieves many of the key elements of a "walkable" neighbourhood, it does not provide good access to local facilities. Residents will need to drive or take public transport to get to the nearest local shop at Banora Point, approximately 800m to the south of the site, to service their daily needs. This is inconsistent with current urban development guidelines, as outlined above. The proponent's argument regarding limited opportunity to attract passing traffic is not relevant as the shop is to service residents who can access the shop by foot or bicycle within the subdivision and future residents on the eastern side of Fraser Drive. Furthermore, insufficient parking is not a relevant consideration as the subdivision layout can be amended to provide sufficient parking. Potential impacts to future residential amenity can be managed through limited delivery and opening hours enforced through any development consent granted for the shop.

Having regard for the Department of Housing's concerns regarding affordable housing, and noting that Council does not have a policy on affordable housing, the Department has accepted the integrated housing allotment on the site, despite the DCP only identifying low density and duplex housing as the preferred development type on the site. This will provide a more diverse mix of housing types on the site and target the issue of affordable housing. However, it is more appropriate for this more intensive development to be located close to services, such as local shops. This is supported in Council's DCP – Subdivision Manual which states that one of the key success factors for new residential subdivision is higher density housing developed close to a local business or shopping centre.

Section B3 of the DCP specifies that the function of the shop should service the convenience needs of the immediate local residents and that the size should be compatible with its function. It should not outgrow its intended service catchment. In considering placement of the convenience shop, the proponent should have regard to the matters outlined in Section A5 of the DCP, including proximity of high density development, central location within the immediate catchment, access routes to promote walkability but does will not attract shoppers from a catchment external to the immediate locality, connections and location / size of surrounding centres.

As such, a condition of approval requires that the subdivision layout be amended to provide for development of local shops in Stage 1A, 2A or 3A of the subdivision. The size and location of the shop is to be adequately justified. The amended plans are to be submitted to the Department for approval prior to the issue of a Construction Certificate for the first stage of the subdivision (any of Stages 1A to 3B).

6.4.2 Connectivity

Issue

The NSW Coastal Design Guidelines state that the number of connections within the street hierarchy should be optimised. The traditional grid provides high accessibility and permeability for pedestrians and vehicles. Part A of the proposed subdivision is not connected to Part B.

Pedestrian connectivity was not proposed between Roads No.1 and No.3, therefore effectively separating the subdivision into two separate sections. The proponent was requested to provide a pedestrian link between these two roads to provide connectivity throughout the subdivision and to allow residents to access public transport.

The exhibited subdivision layout also did not integrate with the Tweed Shire Bicycle Plan.

Preferred Project Report

The preferred project plans include a 1.2 metre wide footpath / stairway within the 5 metre wide drainage reserve between Part A and Part B of the subdivision from Road No.1 to Road No.3. The pedestrian linkage runs between Lots 97/98 in Stage 1B and 85/86 in Stage 2A of the subdivision. In addition, a 1.2 metre wide footpath will be constructed through the open space adjacent to Lot 125 to link to the bus stop on Fraser Drive for Part B of the subdivision. Full details of the pathway and stairs will be submitted prior to issue of a construction certificate for each relevant stage, that is, Stages 1B, 2A and 3B (refer **Figure 19** and **Figure 20**).

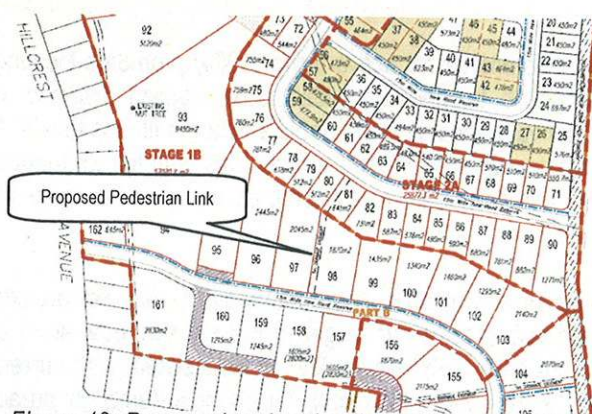


Figure 19: Proposed pedestrian link between Part A and Part B of the subdivision

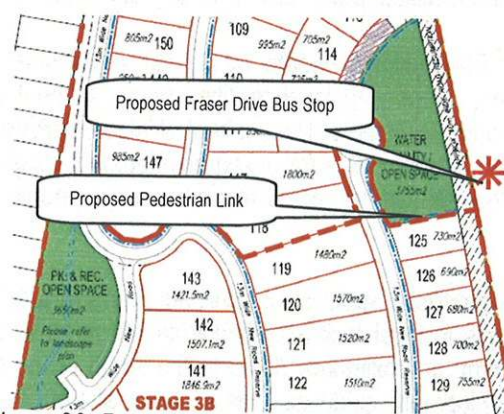


Figure 20: Proposed pedestrian link to new bus stop on Fraser Drive

There is around 4.3ha of sloping and vegetated public land around 100m south of the south-western corner of the subdivision. This land is both Community Land and the Champagne Drive Road Reserve. It contains a small playground and a well formed track along the road reserve leading to the southwest corner of the development. The amended preferred project includes an extension to the park in the south-western corner of the subdivision to link with this public land. This improves pedestrian connectivity between the site and the residential developments to the south.

Consideration

The preferred project improves pedestrian connectivity through and within the site. Conditions of approval require the proponent to submit details of the proposed pedestrian walkways prior to issue of a construction certificate for each relevant stage of the subdivision.

It is accepted that, due to topographical constraints, it is not possible to connect the road network between Part A and Part B of the subdivision. However, the proposed road network does provide an acceptable level of connectivity with adjacent residential areas through the extension of Ocean Avenue to the west and Merlot Court to the south.

6.4.3 Density

Issue

Section B3 – Banora Point West – Tweed Heads South in the Tweed Shire Council Development Control Plan sets out provisions for development in this area. The DCP identifies the site as predominantly 'Residential A', part Open Space and part Hazard Zone – Land Affected by Slip. The predominant housing type in 'Residential A' is conventional detached housing although dual occupancies may be permitted within this land use category in accordance with Section A12 of this DCP.

The following non-compliances with the Tweed DCP were identified in the exhibited proposal:

- The *Tweed LEP 2000* specifies that the minimum lot size for the Residential 2(c) Zone is 450sqm. A total of 5 lots for detached dwellings are proposed to be less than 450sqm in Stage 3A. A variation to the minimum lot size was not justified. This may result in the need for SEPP1 objections when future development applications are lodged for dwellings on these lots. This may become problematic when the new LEP template is adopted and SEPP1 objections may not be permitted.

- Section A12 of the Tweed DCP states that lots identified for dual occupancies must be of a minimum site area of 900sqm or an area not less than 500sqm if the land is within 300m distance of a business centre listed under Schedule 8 of Tweed LEP. The proposed size of the dual occupancy lots within the development ranges are as small as 600sqm. A variation to the minimum lot size was not justified.
- The Tweed DCP states that integrated housing is not noted as a permissible housing type within the 'Residential A' area. It is noted that 26 lots have been identified for integrated housing. A variation to the housing type and density was not provided.
- The Tweed DCP specifies a minimum allotment of 250sqm for integrated housing. The proposed development includes a single integrated housing allotment of 235sqm. No justification for non-compliance with this development standard was provided.

Justification for variations to these development standards were requested in order for the Department to consider whether these non-compliances will be supported or not. Council did not support the non-compliances.

Preferred Project Report

The amended preferred project layout amended the lot layout in Stage 3A such that the minimum lot size was 450sqm. The integrated housing allotment was amended to a superlot to be subdivided at a later stage. However, the use of the lot for future use is still part of the proposal.

In terms of the duplex housing allotments the justification provided was still inadequate. The proponent was asked to provide a further detailed justification for why lots less than 900sqm should be accepted, including an assessment of how the lots will ensure the requirements of dual occupancy developments in the *Tweed Development Control Plan - Section A1 - Residential and Tourist Code Part B - Dual Occupancy Housing, Granny Flats, Town Houses and Row Houses* can be met. Furthermore, the proponent was requested to provide legitimate examples of other duplex lots less than 900sqm in the Tweed LGA, to address the issue of precedence.

The proponent opted to increase the size of the duplex housing allotments, rather than provide justification for smaller lot sizes.

Consideration

The Tweed DCP 2008 states that lots must have appropriate area and dimensions to enable efficient siting and construction of a dwelling and ancillary outbuildings, provision of private outdoor space, convenient vehicle access to a public road and adequate parking. Smaller lots and lots capable of supporting higher density are to be located close to town and neighbourhood centres, public transport and adjacent to high amenity areas such as parks.

As the site is not located close to town or a neighbourhood centre, duplex lots less than 900sqm were not supported. The proponent did not provide any justification that the lots would enable efficient siting and construction of a duplex dwelling without having a negative impact on streetscape or local character. While the minimum lot size is not a prohibition, it is a significant variation from the DCP development standard and will set an undesirable precedent for future development in the Tweed.

6.4.4 Open Space

Issue

Table A5-8.2.1 of the Subdivision Manual in the Tweed DCP sets out the specific development standards for local parks within the Tweed local government area. The proposed subdivision envisages a future population, based on 2.6 people per household for detached housing (137) and 1.7 persons per household for medium density (26) of approximately 400 persons. Tweed Shire Council's *Section 94 Plan No.1 Banora Point / Tweed Heads South Open Space Contribution Plan* specifies that 40% of total open space across the site should be casual (passive) open space (provided at 1.13 hectares per 1,000 people), and 60% of total open space should be structured (active) open space (provided at 1.7 hectares per 1,000 people). The DCP does not identify any structured open space on the site. However, the proposed subdivision requires the provision of 4,520sqm of casual (passive) open space across the site.

The exhibited proposal did not provide sufficient casual open space. The only park that met Council's criteria for casual open space was the 2,500sqm park adjacent to Road 2 in Part A of the subdivision. The inconsistencies of the other two parks proposed within the site are set out in **Table 5** below.

Table 5 – Local Park Open Space Design Elements

	Area	Configuration shape	Landform	Access	Compliant
Development Standard	0.25 to 0.4 ha	Central activity zone of 400m ² for play areas & equipment	> 80% of area to have slopes at < 8%	Local roads	NA
Park on Eastern Boundary Part B	0.38 ha	100 m ² central activity zone	Majority of area on slopes of 10% to 30%	Cul-de-sac & private access easement	No
Park on Western Boundary Part B	0.36 ha	No central activity zone	Majority of area on slopes of 20% to 33%	Private access easement	No

Dual use of drainage facilities for open space purposes is encouraged as a means of establishing a linked open space network, however only those parts of the drainage area that conform to the DCP standards will be credited towards structured and casual open space commitments. Insufficient information was provided on the design of the open space / detention basin in the park on the eastern boundary to determine its functionality as a usable open space area.

Preferred Project Report

Despite the Department and Council advising the proponent that the provision of casual open space was insufficient, the preferred project plans did not make any provision for additional open space. Instead, the proponent submitted more detailed plans for the park on the western and eastern site boundaries, which incorporated 2.4 metre retaining walls to create flatter areas of useable open space. These were not accepted for the following reasons:

- 2.4m retaining walls pose a safety risk and offer the potential for park users to fall. It is likely that Council would need to fence it.
- Retaining walls and fences will require significant ongoing council maintenance for as long as the park remains in existence. Any failure of the wall many years in the future means repair costs to Council.
- The retaining walls and fences produce more edges and level changes. These always mean more park maintenance costs. They can also diminish the overall value of the park by fracturing it into smaller and separate areas.
- The slope achieved for the park was the maximum Council could consider in terms of the DCP requirements. This is still a considerable slope for an 'activity area'.

Following further negotiations with the proponent an amended plan was submitted by the proponent that incorporated a redesign and extension of the open space area in the south-western corner of the site. This created an additional area of 3,630sqm of open space. Therefore, in combination with the 2,471sqm park in Part A of the subdivision, the subdivision provides 7,701sqm of casual open space, exceeding Council's open space requirements.

Consideration

Structured (Active) Open Space

24.255 hectares of structured open space has been identified in the contributions plan area, none of which are located within the development site boundaries. The proponent must therefore pay contributions for the provision and upgrade of structured open space elsewhere in the contributions plan area. The levy per lot for structured open space is nominated as \$2,433 per lot and \$1,591 per medium density lot. In accordance with the contributions plan, the duplex allotments are to be considered individual allotments. Therefore, in Part A of the subdivision, a contribution of \$2,433 x 76 lots = \$184,908 is payable. In Part B of the subdivision, a contribution of \$2,433 x 73 = \$177,609 is payable for structured open space.

Casual (Passive) Open Space

Where a proponent dedicates and embellishes passive open space, a contribution of \$512 per lot for single residential dwellings is payable. The levy rate where the proponent does not dedicate or embellish passive open space is \$1,571 per lot. The proponent proposes to embellish the areas of casual open space consistent with the approved landscape plans prior to the release of a Subdivision Certificate for each stage of the project. Installation of playground equipment and softfall however will not occur until 30% of the relevant stage's allotments are occupied. The developer must contribute the

appropriate financial contribution for these items as a bond prior to the release of the Subdivision Certificate for each stage. Council will undertake the installation at the appropriate time.

The total casual (passive) open space proposed to be dedicated to Council is 7,701sqm, which exceeds the requirement of 4,520sqm. The contributions payable have been calculated and are outlined in Section 6.14 of this report. A condition of approval sets out the required Section 94 contributions payable in lieu of dedication of open space.

6.5 ABORIGINAL CULTURAL HERITAGE

6.5.1 Aboriginal Consultation

Issue

Aboriginal archaeological and cultural heritage investigations were undertaken at the subject site in 2000 and were subsequently updated by the proponents in 2007. The results of these studies formed the Aboriginal Cultural Heritage Assessment submitted with the proponent's EA. The exhibited Aboriginal Cultural Heritage Assessment was unsatisfactory for the following reasons:

- Local Aboriginal community members were not involved in the field inspection;
- The level of consultation with the local Aboriginal community did not comply with the DECC draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005).

The proponent was advised that in accordance with the Guidelines, local Aboriginal community members should:

- be given the opportunity to visit and inspect the site;
- confirm the extent of the midden and its potential for cultural significance; and,
- be involved in the proposed mitigation / management of the midden.

Preferred Project Report

The proponent revised the Aboriginal Cultural Heritage Assessment, undertook further fieldwork and additional consultation with the local Aboriginal community in accordance with the DECC Guideline. As a result, a total of 9 respondents registered their interest in the project.

A draft methodology for undertaking the Cultural Heritage Assessment was provided to all registered stakeholders, including DECC and Council. Responses were received from two registered stakeholders. All registered stakeholders were subsequently invited to a preliminary information meeting and site inspection with the proponent, however, only one stakeholder attended. On-site meetings were proposed for two other dates, however, no other registered stakeholders attended.

A copy of the final Aboriginal Cultural Heritage Assessment was sent to all of the registered stakeholders for comment. No responses were received. On 7 March 2008, the proponent presented the findings of the assessment to the Tweed Council Aboriginal Advisory Committee. As there were not enough attendees to form a quorum and pass a resolution on the report, the members of the Committee advised the proponent they would endeavour to provide an opinion as soon as possible. Notwithstanding, no concerns were raised by those in attendance at the meeting.

Consideration

The proponent has undertaken a satisfactory level of consultation with the local Aboriginal community in preparation of the Aboriginal Cultural Heritage Assessment and the formulation of management options. The Tweed Council Aboriginal Advisory Committee has not raised any further concerns.

6.5.2 Aboriginal Archaeology (Midden No. DEC # 04-2-0088)

Issue

The exhibited Aboriginal Cultural Heritage Assessment stated that the *'Traditional Owner descendents are concerned that the remains of a badly disturbed midden within a road reserve on the southern boundary of the proposed subdivision may extend northward into the proposed subdivision.'* The proponent proposed to excise a portion of the land in the southern part of the site to determine the extent of the midden while construction commenced on other parts of the site. This was not considered an acceptable management approach. The proponent was advised that further site investigation works were required to determine the extent of the midden and its cultural significance prior to determination of the project application to ensure that the midden is adequately protected and the subdivision layout amended as required.

The midden (DECC # 04-2-0088) site was subsequently surveyed and it was found to be more extensive than previously identified, and represented a significant cultural heritage site in the context of the region. Due to cuts in the landscape on either side of the midden the extent of the midden could be ascertained with relative certainty (refer Figure 21).

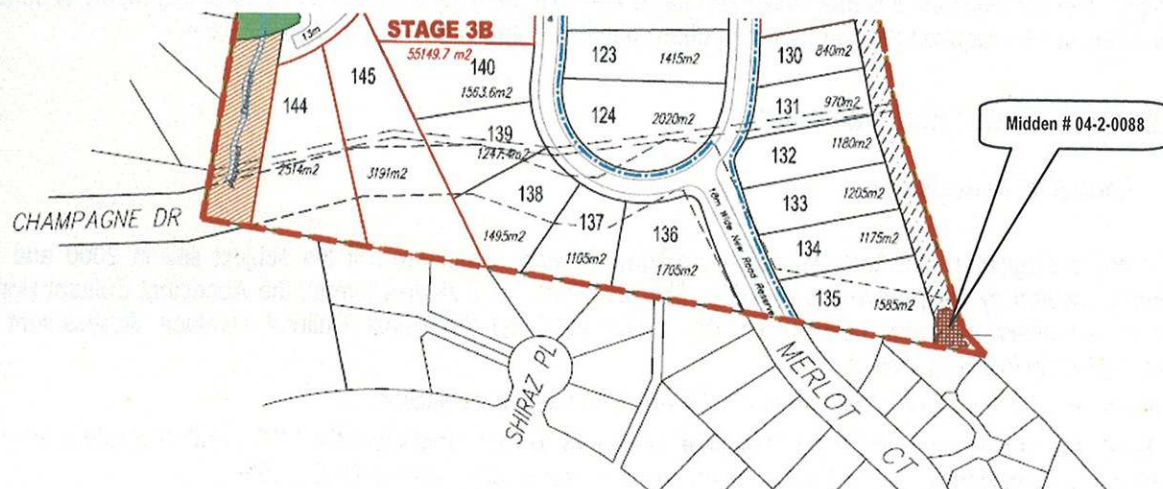


Figure 21: Location of Midden Site

In 2002, Tweed Shire Council and the proponent agreed to a land swap of the Champagne Drive road reserve to provide for land along the western side of Fraser Drive for future road widening. Because of the position of the midden currently being in the Champagne Drive road reserve, the midden will 'move' from the Champagne Drive road reserve to the Fraser Drive road reserve. Council will therefore be the party responsible for future management of the midden. This road reserve buffer is required by Council to allow for the upgrade of Fraser Drive from 2 lanes to 4 lanes in the future.

As a result of the land swap, Council acknowledged that the midden site existed on their land and they would retain responsibility for ensuring that the site was protected in the future in accordance with the CHMP, subject to:

- The proponent financing the preparation of a Cultural Heritage Management Plan (CHMP) and its physical implementation;
- The proponent undertaking appropriate works to protect the site in accordance with the CHMP;
- An access trail being constructed by the proponent to allow access from Merlot Court to the midden site for maintenance purposes; and,
- Council only accepting responsibility for management after all necessary physical site works and restoration has been completed in accordance with the CHMP.

The proponent also agreed to employ monitors during the initial excavation on the southern part of the site to ensure that appropriate management procedures take place if Cultural Material is discovered.

Consideration

SEPP71 'matters for consideration' include measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals. The exhibited Aboriginal Cultural Heritage Assessment provided insufficient information with regard to the potential impact on Aboriginal cultural heritage on and adjacent to the site and to ensure appropriate measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals will be implemented.

The Department and DECC have reviewed the revised Aboriginal Cultural Heritage Assessment submitted with the PPR and are satisfied with the field methodology and management actions recommended. Conditions of approval require the proponent to undertake a range of management and mitigation actions to ensure protection of the midden in the future. This includes submitting a Cultural Heritage Management Plan to the satisfaction of the Department, in consultation with Tweed Shire Council, prior to the issue of a construction certificate for Stage 3B. The Plan is to be prepared in consultation with the Traditional Owners. It is recognised that that midden site will not be located on the proponent's land, however, it is considered appropriate in the circumstances that the proponent prepare a CHMP to ensure management and protection of the midden.

Given the significance of the midden site, a condition of approval requires that the site be fenced off to provide protection from any development works as part of the subdivision until the CHMP can be agreed upon for the site. Employees and contractors conducting earthworks on Lot 135 of the proposed subdivision are to be instructed that they are working close to a midden in a culturally sensitive area and educated about the legislative requirements under the terms of the *National Parks and Wildlife Act 1974*.

6.6 STORMWATER

6.6.1 Stormwater Quantity and Quality

Issue

The exhibited stormwater management plan did not provide sufficient design details or modelling to confirm that the proposed subdivision would not have an adverse impact on flooding in the surrounding catchment areas and water quality in the SEPP14 wetland and Terranora Broadwater. Council also requested that the proponent prepare a plan of management for the SEPP14 wetland and buffer zone that identifies the required channel design to adequately cater for post-development flows from the subdivision, and protocols for Council to carry out maintenance works to maintain an adequate cross-section in the open channel, without compromising the ecology of the wetland.

Preferred Project Report

The preferred project report did not provide adequate information to address all of the stormwater issues. However, a number of the matters relating to detailed design of the stormwater system were able to be dealt with through the recommended conditions of approval.

Outstanding matters requiring additional information from the applicant were:

- Provision of a failsafe system to convey 100 year ARI flows from east of Fraser Drive through the site. Unless this could be demonstrated, Council will not agree to release existing drainage easement across the development site;
- Potential impacts of the development to the south of the subdivision site (Shiraz Place and Merlot Court) due to increased stormwater runoff; and,
- Lawful point of stormwater discharge for the eastern catchment of Part B of the subdivision.

The proponent was able to demonstrate that there was no existing constructed channel through the SEPP14 wetland and that due to the relative ground and standing water levels downstream of the subdivision the proposed systems to mitigate peak stormwater discharge from the site was sufficient to maintain the existing hydraulic regime in this area. This removed the need to provide a management and maintenance plan for the SEPP14 in terms of its role in stormwater management for the subdivision proposal.

Consideration

The stormwater system is depicted in engineering plans produced by Cardno (refer Appendix S of the amended PPR). It utilises piped and overland drainage systems to convey storm runoff from external catchments and the higher parts of the subdivision towards treatment and detention systems prior to discharge from the site. The site is divided into three main internal catchments: the northern catchment drains towards the SEPP14 wetland adjacent to James Road, the central catchment drains in an easterly direction towards culverts under Fraser Drive, and the southern catchment grades towards existing urban land in the Vintage Lakes estate. Due to the increases in runoff due to future urbanisation of the subdivision, the development must ensure that areas downstream of these three discharge points are not adversely impacted upon.

As detailed above, the proponent has satisfactorily demonstrated that the impacts for the northern catchment can be adequately mitigated and discharged satisfactorily in the long term. Subdivision design will ensure that the size of the southern catchment will be reduced to match pre-development flow rates, but the applicant has not so far demonstrated that the downstream infrastructure is capable of accepting the additional flows from the concentration of urban runoff in these areas. This however has been addressed via conditions of approval.

A major concern during the assessment was whether the culverts under Fraser Drive represent a lawful point of discharge for the central catchments. As these culverts discharge onto privately owned land, the rights of discharge need to be confirmed.

In the amended PPR the applicant provided a survey plan (Figure No.DA 02, Appendix S) that demonstrates that under current conditions the central catchment discharges towards the twin culverts under Fraser Drive. Photos provided in Section 3.4 of the amended PPR show that flows from these culverts are diverted in an open channel running in northward

direction parallel to Fraser Drive (which is likely to have been constructed by the landholder some time ago), which then discharges to an existing watercourse. This watercourse appears to be a constructed channel through low lying remnant swamp land, which is confirmed by the 1:25,000 topographic maps, which shows these watercourses in blue. This system is considered to adequately represent a lawful point of discharge as defined by Council's Subdivision Manual (DCP-A5).

The owner of the land to which the stormwater discharges raised concern about additional stormwater being discharged onto his site. However, the Department and Council have accepted that the proposed stormwater system will ensure that post-development flows from the Fraser Drive site to the adjoining land are maintained at pre-development levels. It is therefore considered that the proposed point of discharge is acceptable. In order to demonstrate that the stormwater management system satisfactorily complies with the intended design and the *Tweed Shire Council Development Control Plan Stormwater Design Specification*, a condition of approval requires the proponent to submit a Stormwater Monitoring Plan with the s68 Stormwater Application to Council for approval prior to issue of the Construction Certificate for the first stage of the project.

The site is also influenced by a significant external catchment on the eastern side of Fraser Drive. This urban zoned land currently drains through the subdivision site via Council easements containing open channels to the SEPP14 wetland and James Road culverts to the Terranora Broadwater. A major consideration during assessment of this proposal has been the preservation of discharge access for this eastern catchment through the site without imposing additional capacity constraints when compared to the current situation. The current proposal to provide a 3-cell 1500mm diameter culvert under Road 1 in conjunction with an open channel within the Road 1 road reserve is considered to provide the necessary failsafe system, subject to detailed design.

6.7 FLORA AND FAUNA

6.7.1 Threatened and Vulnerable Flora & Fauna Species

Issue

The single specimen of the Rough-shelled Bush Nut (*Macadamia tetraphylla*) which is located on the east facing slope on large residential Lot 166 (as exhibited), is listed as 'vulnerable' under both the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and NSW *Threatened Species Conservation Act 1995* (TSC Act) (refer **Figure 22**). The proponent advised that this tree will need to be removed for the proposed landslip remediation required for the subdivision to proceed. The exhibited proposal provided for the collection of seed from this tree prior to its removal. The proponent proposes to propagate the seeds and plant 10 specimens within the areas of open space within the site.

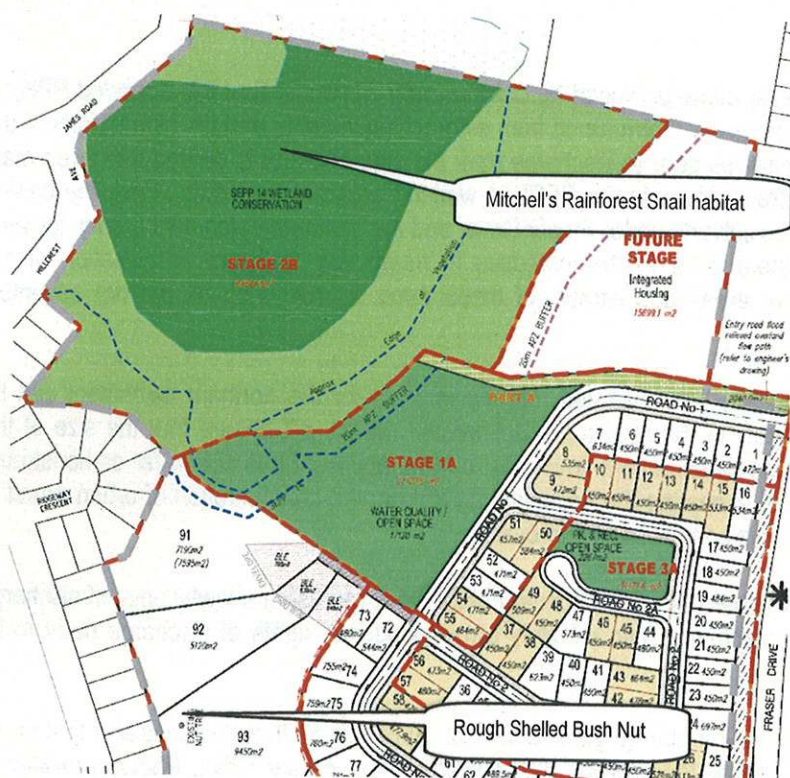


Figure 22: Location of Rough Shelled Bush Nut

In 2000 an ecological investigation was undertaken on the site in support of the previous masterplan application. This assessment noted that the wetland in the northern end of the site contains potential habitat for the Mitchells Rainforest Snail, which is listed as 'critically endangered' under the Commonwealth EPBC Act and 'endangered' under the TSC Act. The Mitchells Rainforest Snail lives in lowland subtropical rainforest and swamp sclerophyll forest (Murphy 2002; Stanisc 1998). The site contains *Broad-leaved paperbark closed forest* in good condition which is considered analogous to EEC described as "*Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions*" in the TSC Act.

Other matters of national environmental significance which are known to be present in the north western part of the site include the Grey-Headed Flying Fox, Osprey and the two specimens of the Stinking Cryptocarya.

While the exhibited proposal contained some consideration of the EPBC Act and the impacts on the Rough-Shelled Bush Nut, it did not note the potential presence of the Mitchell's Rainforest Snail, nor did it make any assessment of the impacts of the development on threatened fauna within the wetland vegetation at the north end of the site, such as, impacts of noise during construction, lights, disturbance by cars and human intervention. Furthermore, the proponent did not consult with the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) to confirm that the Commonwealth was satisfied that the development is not a 'controlled action' and that they are satisfied with the assessment and recommendations for the single species of the Rough-shelled Bush Nut.

Preferred Project Report

The PPR did not contain any additional information about impacts during construction, lights, disturbance from cars and human intervention. However, the DEWHA confirmed that the subdivision was unlikely to have a significant impact on any matters of national environmental significance. DECC did not raise any concern with the removal and propagation of the tree or the potential impact of the subdivision on threatened species.

Consideration

According to *Farm Characteristics and Management Practices in the Australian Macadamia Industry* (Queensland Department of Primary Industries) propagation of the Rough Shelled Bush Nut can be successful and is usually achieved through cutting and grafting. The root stock is readily grown from seed under nursery conditions. This method of propagation is very popular in macadamia farming as it allows the farmer to create specific tree varieties. It is therefore accepted that the removal and propagation of this species to enable remediation of the western portion of the site is an acceptable and workable outcome. A condition of approval requires that details of the propagation methods, management and monitoring be included within the Vegetation Management Plan to be prepared for the site.

According to the Mitchell's Rainforest Snail Recovery Plan (NPWS, July 2001) the major cause of the decline of Mitchell's Rainforest Snail is habitat destruction. The majority of known remaining populations occur in small areas of remnant rainforest including narrow strips of rainforest bordering coastal wetlands. These small remnant areas with a high perimeter to area ratio, such as the wetland on the subject site, are at risk from edge effects, including desiccation, habitat disturbance, frequent fire and invasion by exotic weeds and feral animals. Recovery actions identified by DECC in the Mitchell's Rainforest Snail Recovery Plan include weed management and that all vegetated areas within 50 m of SEPP No. 14 Coastal Wetlands in Tweed, Byron and Ballina Shires be protected from clearing or development in the relevant Local Environmental Plans and Regional Vegetation Management Plans.

No clearing of vegetation is proposed within the wetland as part of the project. To the contrary, the revised subdivision layout includes a 40 metre fully vegetated ecological buffer between the integrated housing allotment and the edge of the EECs forming part of the SEPP14 wetland in the north-western corner of the site. In addition, the proposed water quality control pond in Stage 1A of the subdivision creates a buffer of approximately 100m between the edge of the wetland vegetation and Stages 2A and 3A of the subdivision. It is considered that the proposed ecological buffer will reduce any potential edge effects and that the Vegetation Management Plan will provide adequate ongoing management and protection of the existing habitat for the Rainforest Snail and all other threatened species. In addition, a fence will be constructed between the ecological buffer and the integrated housing allotment to ensure protection of this area from human intervention.

A condition of approval requires the proponent to propagate the seeds of the Rough-Shelled Bush Nut and plant 10 specimens within the areas of open space within the site. Details regarding ongoing management and monitoring of the planted seeds is included as a requirement for inclusion in the Vegetation Management Plan, which is to be prepared by the proponent to the satisfaction of the Department.

6.7.2 Mosquitos and Midges

Issue

The subject site is identified in the Tweed Shire DCP - Section A6 as an area in close proximity to breeding areas for both saltmarsh mosquitos and biting midges. Parts of the wetland provide for temporary retention of ground pools following tidal or rainfall inundation of the site, creating ideal breeding conditions. The Tweed DCP specifies that the first and most important action to take to minimise future biting insect nuisance in the Tweed Council area is to allow as greater open buffer area around the known and mapped insect breeding areas as is possible. As mosquitoes and midges prefer to travel along well vegetated routes, keeping an open, lightly treed buffer is preferable to heavily foliated buffers.

The exhibited proposal did not provide an adequate open buffer between the proposed integrated housing allotments and the mosquito / midge breeding habitat. Furthermore, the asset protection zone was partly included within the ecological buffer zone which further reduced opportunities for an open buffer. A detailed consideration of Council's DCP requirements and recommended mitigation options was not provided.

Preferred Project Report

Following negotiations with the proponent, the preferred project provided a 40 metre fully vegetated buffer from the edge of the wetland vegetation plus a 20 metre APZ that does not contain any built structures and minimal vegetation.

Consideration

To help minimise biting insect nuisance in housing subdivisions proposed near biting midge or mosquito breeding areas, Council's DCP – Section A6 recommends the following:

- Open buffer zones between insect breeding areas and dwelling houses. This zone will vary widely with circumstances, from as little as 50m to 1km.
- Breaks are provided in any continuous vegetation lines leading to residential areas.
- Land fill operations to elevate subdivisions above flood height should be carried out with due regard to minimising impedance of surrounding drainage systems.

The 40 metre vegetated buffer plus a 20 metre APZ will provide an acceptable open buffer between the mosquito breeding habitat and the residential housing. The ecological buffer will not contain any mosquito breeding habitat as it will be heavily vegetated and the APZ will provide a break in the vegetation such that there are no continuous vegetation lines leading to the residential areas. The part of the site adjacent to the wetland has also been filled above the 1 in 100 year flood height. Furthermore, the upgrade of the tidal floodgates will improve the current tidal flushing regime of the wetland so as to enhance water quality and water movement and prevent mosquito and midge outbreaks.

The Department is satisfied that the proposal provides adequate measures to minimise future biting insect nuisance on the site.

6.8 TRAFFIC AND ACCESS

6.8.1 Traffic

Issue

The traffic assessment submitted in support of the exhibited EA did not provide a detailed traffic analysis for the ultimate major internal road connection with Fraser Drive. The traffic modelling files were not provided as part of the exhibited proposal. Furthermore, as the development is to be constructed in stages, further information was requested to confirm at what stage the intersection would be constructed. Constructing the intersection too soon or too late is a safety concern.

Preferred Project Report

The SIDRA modelling files were provided to the RTA for review to ensure that the proposed upgrade of the Fraser Drive intersection with Road No.1 was undertaken at the appropriate stage of the subdivision. The proponent also confirmed that the intersection would be constructed prior to the issue of a subdivision certificate for Stage 1A of the subdivision.

Consideration

The RTA advised that they were satisfied with the traffic modelling undertaken for the project. However, they would need to review the detailed intersection design when it is made available.

Issue

Laneways

Two laneways were proposed within Part A of the exhibited development (refer **Figure 23**). The two laneways were shown to have a 4.5 metre wide pavement width within a 6.5 metre wide road reserve. Neither of these laneways complied with Council's Development Design Specifications in Section A5 of the Tweed DCP. Council's minimum laneway standards require a 6 metre wide pavement width within a 6 metre wide road reserve.

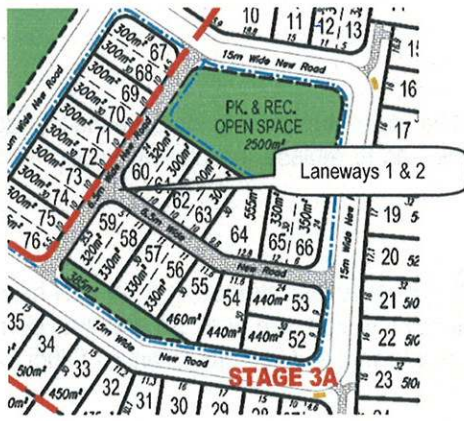


Figure 23: Location of laneways

Laneway 2 did not provide adequate access to the street frontage for proposed lots 56 – 59 and lots 60 – 65 (as exhibited). Council's DCP stipulates that laneways are only to provide access to the side and rear of lots principally for access to garages. The proponent was requested to redesign laneway no. 2 as an access road with a 6 metre pavement width within a 13 metre road reserve.

Right of carriageways

Five 'access easements' were proposed in the exhibited subdivision layout. Tweed Shire Council's development design specifications do not address 'access easements', which identifies either a right of carriageway (maintained privately by users) or a local access road (maintained by Council). The proponent was advised to amend the subdivision layout to serve as either a right of carriageway or a local access road. 'Access easements' not upgraded to a local access street as specified in Council's standards are to have lot boundaries extended to facilitate a right of carriageway benefiting and burdening the appropriate allotments.

A number of issues are associated with the proposed access easements, these include;

- No on street car parking;
- No turnaround at the end of the road to allow for the provision of a garbage truck; and,
- Accessibility of local parks. Two of the proposed parks are located on the 'access easements'. Parks are to be accessible by all residents, with park frontage located on a public road.

'Access easements' serving proposed allotments 112-116, 141-145, 166-168 and 78 (as exhibited) were requested to be upgraded to Council's local access street standards, to address the issues identified above. All remaining 'access easements' were requested to be identified as a right of carriageway.

Proposed Road No.3

Road No.3, which runs for approximately 820 metres along the western boundary of the site from Hillcrest Avenue to Seaview Street, was proposed to have a 6 metre wide pavement within a 13 metre wide road reserve. This design did not conform to pavement and road reserve width requirements as specified in Council's DCP, which stipulate a 7.5 metre wide pavement within a 14.5 metre wide road reserve for roads longer than 200 metres.

Unnamed roads

The proposed integrated housing layout showed a 10m wide road. No typical cross sections were provided in the EA. Council's road design standards are identical for a residential subdivision and integrated housing development. The proponent was requested to amend the road widths to comply with Council's standards for a local access street, this being a 6m wide pavement within a 13m wide road reserve.

Sight Distance

The intersection of Hillcrest Avenue and Road No.3 has inadequate sight distance for vehicles turning right into or out of the site. Detail was requested to improve the intersection sight distance. The recommendation for a no right turn sign was not considered adequate.

Horizontal Alignment

Turning templates for a garbage truck were requested to be shown on the horizontal alignment for the intersections of Road No. 3 / Ocean Avenue and Road No. 3 / Hillcrest Avenue.

Preferred Project Report

Laneways

The two laneways have been removed from the subdivision layout. The layout has been amended to increase the lot size in accordance with Council's minimum standards and the inclusion of a cul-de-sac to replace the previously approved laneways.

Right of Carriageways

The proposed right of carriageway serving lots 141-145 has been replaced with a local access street with a hammer head turn around at the end. The local access street will allow better public access into the proposed park. An area has been provided for garbage collection adjacent to the right of carriageway on the cul-de-sac with a maximum distance of 50m for residents to travel.

The subdivision plan was amended to show lot boundaries extended to facilitate a right of carriageway benefiting and burdening all other affected allotments.

Proposed Road No.3

Proposed Road No. 3 was upgraded in accordance with Council's standards.

Unnamed roads

The proponent has advised that the integrated housing proposal is no longer part of the project.

Sight distance

A concrete traffic island and stop sign have been placed at the intersection of Seaview Street and proposed Road No. 3, improving the safety of this intersection. It is noted that Road No. 3 is the priority road. Measures are required to ensure safe sight distance is achieved for the intersection of Ocean Avenue, Road No.3 and the right of carriageway. This has been addressed by a condition of approval.

Horizontal Alignment

Turning templates were provided in the PPR, demonstrating compliance with Council's requirements.

Consideration

The proposed road layout and design now complies with Council's DCP requirements. Conditions of approval ensure that all roads are designed in accordance with the relevant requirements of Council and the Roads and Traffic Authority. Final road design plans are to be prepared by a qualified practising Civil Engineer and submitted to the Certifying Authority prior to the issue of a Construction Certificate for bulk earthworks for each stage of the project. Traffic calming devices are to be incorporated into the design of Road No.3. Final design plans are to be prepared by a qualified practising Civil Engineer and submitted to the Certifying Authority prior to the issue of a Construction Certificate for below ground works for Stage 1B, 2B and 3B of the project.

6.8.3 Public Transport

Issue

Public transport was not adequately addressed in the exhibited subdivision proposal. The proposed bus shelter on Fraser Drive was not within 400 metres of those residents in Part B of the subdivision as there was no pedestrian link between Part A and Part B of the subdivision.

Preferred Project Report

The amended plans included a second bustop on Fraser Drive adjacent to the open space area in Stage 2B. A pathway along the southern boundary of the park provided pedestrians access to the bustop. In addition, a pathway has been

provided adjacent to Lots 98 and 86 to provide a pedestrian connection between Parts A and B of the subdivision from Road No.3 to Road No.1

Consideration

The second bustop provides adequate access to public transport for all residents within the subdivision. A recommended condition of approval requires the bustops to be constructed prior to the issue of a subdivision certificate for Stage 1A (northern bustop) and Stage 2B (southern bustop), respectively.

6.9 BUSHFIRE

6.9.1 Asset Protection Zones

Issue

The exhibited proposal incorporated a 40 metre Asset Protection Zone (APZ) at the northern end of the site between the SEPP14 wetland vegetation and the subdivision for protection from bushfire hazard. The APZ was partly contained within the proposed ecological buffer to the SEPP14 wetland. This APZ was calculated in accordance with *Planning for Bushfire Protection (2001)* as the bushfire assessment was prepared before the gazettal of *Planning for Bushfire Protection (2006)*. Based on the vegetation type and slope of the land an APZ of 20 metres is required from the bushfire threat under *Planning for Bushfire Protection (2006)*.

The recommendations provided in the exhibited EA stated that the location of the APZ in relation to the SEPP14 vegetation is to be determined by detailed vegetation inspection following determination. The proponent was advised that this inspection should be undertaken prior to determination of this application to ensure that there is sufficient area for the APZ and ecological buffer between the wetland and proposed residential allotments.

The proponent also nominated Fraser Drive as a 30 metre permanent APZ between the proposed lots along the east of the site adjoining Fraser Drive (proposed Lots 95 and 103 – 135) and the bushfire prone vegetation on the eastern side of Fraser Drive. In accordance with *Planning for Bushfire Protection (2006)*, residential subdivisions should not offset bush fire protection measures to neighbouring land. Bush fire protection measures that are essential to a development should occur on the site of the proposed development unless exceptional circumstances apply. As the road reserve is owned by Council, their written agreement to manage the road reserve as an APZ in perpetuity is required prior to determination. The proponent was requested to amend the subdivision plan to provide the required APZ such that it is not dependent on Council's road reserve, or obtain written agreement from Council that they agree to maintain the road reserve as an APZ.

Preferred Project Report

After extensive negotiations, the proponent agreed to move the APZ in the northern end of the site such that it was located adjacent to the ecological buffer and not within it. Amended plans were submitted for approval (refer **Figure 24**).



Figure 24: Location of 20m APZs adjacent to Wetland

Notwithstanding, the APZ in the north-western corner of the site will be located on land to be dedicated to Council. It was not possible for this to be located on private land as this part of the site lies immediately adjacent to existing residential properties on Hillcrest and Ridgeway Crescents. The area is characterized by sloping land right up to property boundaries, and open areas infested with a variety of grass and other weed species.

In the proponent's PPR, it was stated that Council had given consent to manage the Fraser Drive road reserve as an APZ along the eastern boundary in the southern portion of the site. However, this was not the case as in Council's comments on the PPR, Council queried why the APZ needed to be on public land and provided no confirmation that they were prepared to manage the APZ on their land.

Consideration

The Department does not support the APZ being incorporated into the ecological buffer at the northern end of the site. The proponent's bushfire consultant also stated that the APZ should be situated adjacent to the ecological buffer, not within it. The Department required that the APZ be provided outside of the ecological buffer as *Planning for Bushfire Protection* (2006) specifies the following:

- Residential subdivisions should not offset bush fire protection measures to neighbouring land. Bushfire protection measures that are essential to a development should occur on the site of the proposed development, unless exceptional circumstances apply.
- A proponent should not diminish the ecological integrity of adjoining bushland and APZs should be designed to minimise the impacts on any environmental features in the landscape.

As the ecological buffer will be located in the open space area which will be Council owned land (following dedication), it is not appropriate for the APZ to be located on this part of the site. The APZ must be contained wholly within the site boundary on private land. Furthermore, it is not appropriate to locate the APZ within the ecological buffer as an APZ requires management of fuel loads through clearing of vegetation. This has the potential to impact on the ecological integrity of the SEPP14 wetland and associated EECs.

The Department advised the proponent that the APZ should contain a perimeter road to separate the development from the bushfire hazard, but the APZ may also contain backyards, swimming pools and common property (in a body corporate or community title scheme).

In relation to the APZ adjacent to existing properties on Hillcrest and Ridgeway Crescents in the north-western corner of the site, the Department and Council accept that this area is to be dedicated to Council as open space. A condition of approval requires a Bushfire Management Plan to be prepared to address the potential fire management issues at the interface between the stage 2B wetland buffer area and private land located to the west and south. The plan is to make recommendations for management actions required to allow Council to maintain this interface. The plan will be prepared in association with, and be consistent with, the regeneration requirements of the Vegetation Management Plan to be prepared for this area.

With regard to maintaining Fraser Drive as an APZ, the Department does not believe that it is an acceptable outcome to offset bushfire protection measures to neighbouring public land where it is possible to locate the APZ on private land. Maintenance will be difficult to enforce and it is inconsistent with the requirements of Planning for Bushfire Protection (2006). As such, a condition of approval requires a 10 metre APZ in the south eastern portion of the site to be located on private property, affecting Lots 23-25, 71, 90, 103-106, 112, 125-135. This will be enforced through a Restriction as to User on the title of these properties.

6.10 GROUNDWATER

6.10.1 Groundwater Management Plan

Issue

The Groundwater Assessment submitted with the exhibited EA indicated that the proposed water quality control pond / wetland in the northern end of the site in Part A of the subdivision, was proposed to be constructed such that it was sited approximately 1 metre below the water table. Such a structure positioned within the water table would require a licence under Part 5 of the *Water Act 1912* if it were to be in connection with the water table. As this would potentially result in contamination of the SEPP14 wetland through groundwater contaminant and nutrient transport, the DWE advised that a licence under the *Water Act 1912* for this purpose would not be issued. The proponent was requested to provide further clarification on proposed wetland water levels and groundwater levels, and the proposed method / standard of lining for the proposed wetland for DWE's consideration.

Further details were also requested for review and assessment in relation to impacts of dewatering on ASS and groundwater dependent ecosystems within the SEPP 14 wetland.

Preferred Project Report

The preferred project provided additional information regarding the proposed levels for the proposed constructed wetland in the north end of the proposed subdivision. This confirmed that the standing water level of the wetland will generally be higher than the average surrounding groundwater level. Therefore, there is not expected to be any "blowout" of the internal walls of the wetland due to water pressuring the walls of the basin. The proponent proposed that groundwater monitoring be undertaken throughout construction and for a period of operation to confirm if contaminated / untreated groundwater leaves the treatment pond.

Consideration

While the standing water level of the wetland will be higher than the groundwater level there is still potential for groundwater movement between the proposed wetland and the surrounding areas, including the SEPP14 wetland to the north. Groundwater monitoring will not provide an adequate level of protection to the SEPP14 wetland and its associated groundwater dependent ecosystems. A condition of approval requires the constructed wetland to be clay lined to remove any potential for contaminated / untreated groundwater movement into the SEPP14 wetland.

As a license under Part 5 of the *Water Act 1912* will be required for any dewatering undertaken on the site, a condition of approval requires the preparation of a dewatering management plan incorporating further details on the areas to be dewatered within the subdivision prior to release of the Construction Certificate for bulk earthworks for Stages 1A, 2A and 3A. The plan is to give consideration to the acid sulfate soil issues on site and the impact that this may have on groundwater and dewatering activities proposed. DWE have confirmed that they are satisfied with the additional groundwater information and the recommended conditions of approval.

6.11 FLOODING

6.11.1 Sea Level Rise and Increased Intensity of Storms

Issue

Under previous Council approvals (DA02/0837, CC02/1692) fill has been used to raise the flood liable Part A of the subdivision (excluding the SEPP14 wetland area) to a minimum of RL 2.65m AHD, which was the design flood level (100 year ARI flood) at the time of approval. Council's 2005 Tweed Valley Flood Study revised the design flood level for the Lower Tweed Locality, including the subject site, to RL 2.6m AHD. As such, the development proposal generally complies with flood requirements in the *Tweed Development Control Plan Section A3 - Development of Flood Liable Land*.

Agency submissions urged the proponent to take a conservative approach to addressing the potential consequences of climate change related sea level rises and increased rainfall intensities on flooding for the development and the adjoining SEPP14 wetland. In this regard, the proponent was referred to the DECC document *'Floodplain Risk Management Guideline - Practical Consideration of Climate Change'*.

Preferred Project Report

The amended plans show that the majority of residential allotments have a finished ground level at or above RL3.0m AHD, which is 0.4m above the minimum flood planning level requirement of 2.6m AHD. No additional modelling was undertaken by the proponent to account for climate change, as they considered the adopted design flood level to be conservative and to provide adequate allowance for future impacts of climate change on flooding.

Consideration

Climate change is expected to have adverse impacts upon sea levels and rainfall intensities, both of which may have significant influence on flood behaviour at specific locations. Independent Panel on Climate Change (IPCC) 2007 and recent CSIRO modelling indicate that mean sea level change along the NSW coast is expected to be in the range of 0.18 to 0.91m by between 2090 and 2100 (DECC, 2007).

In addition, climate change impacts on flood producing rainfall events show a trend for larger scale storms (rainfall totals for the 40 year average recurrence interval (ARI) 1 day storm events) to increase by 2030 and 2070 (DECC, 2007). The document *'Floodplain Risk Management Guideline - Practical Consideration of Climate Change'* provides a range of climate change management strategies that could be considered for the subject development.

The results of Council's 2005 Tweed Valley Flood Study modelled a 100 year ARI flood level of RL 2.3m AHD for the subject land. A figure of RL 2.6m AHD was later adopted as the design flood level for the Lower Tweed locality in Council's DCP, for consistency with previous policy, to simplify implementation, and to address uncertainty in modelling assumptions. It is therefore recognised that this adopted design flood level is conservative.

Council's flood study incorporated ocean boundary conditions into its flood modelling based on investigations by the Public Works Department in the late 1980's, to account for storm surge and tidal variability. In the Lower Tweed, a peak sea level of 2.6m AHD was adopted for the 100 year ARI event. A report prepared by Cardno Lawson Treloar (CLT) for LEDA in November 2004, recommended the adoption of 2.1m AHD as the peak sea level for the 100 year ARI event. Similar sea level assumptions are understood to have been adopted by Ballina and Gold Coast Councils' recent flood studies. CLT further recommended adoption of a 0.2m allowance for sea level rise due to climate change based on IPCC information at that time. However, on the advice of Department of Natural Resources (now DECC), the more conservative ocean level assumption of 2.6m AHD was retained in Tweed Shire Council's flood study.

In light of the above, future residential development in the proposed subdivision is considered to have adequate freeboard (minimum fill level RL 2.6m AHD, minimum habitable floor level RL 3.1m AHD) to provide a realistic planning horizon should sea levels rise in accordance with the current predictions for climate change as:

- the design flood level (2.6m AHD) is conservative by up to 0.3m above actual modelled 1 in 100 year levels under current conditions; and,
- the sea level assumption of 2.6m AHD is 0.5m above the sea level assumption (2.1m AHD) adopted by Ballina Shire Council and Gold Coast City Council in more recent flood studies.

It is acknowledged that the wetland is susceptible to the potential impacts of climate change. The wetland is currently subject to stormwater inflows and to limited tidal flows due to floodgates. Subdivision drainage is designed to maintain this existing regime and the provision of buffers will provide adequate management measures to account for climate change

impacts. The provision of an adequate buffer (40m vegetated + 20m APZ), the controlled release and treatment of subdivision stormwater, and improved tidal floodgates will provide sufficient management measures to account for the potential impacts from sea level rise on the SEPP14 wetland.

6.11.2 Impact on Emergency Services

Issue

Council's Flood Risk Management Policy Version 1.0 (December 2007) requires that all residential allotments in new subdivisions have adequate high level road and/or pedestrian access to land above probable maximum flood (PMF) level. While direct road connectivity between Part A and Part B of the subdivision would allow this, it is acknowledged that topographic constraints make this unfeasible.

Preferred Project Report

While the proponent has accepted the need to extend the evacuation route to the medium density site, no amended plans have been submitted.

Consideration

An alternative evacuation route via Fraser Drive has been accepted, provided it can adequately service the residual medium density site, and account for stormwater overland flow paths. The Department is satisfied that these issues can be adequately addressed during detailed design as part of the Construction Certificate application. A condition of approval requires the submission of a detailed flood evacuation route prior to the issue of a construction certificate for any stage of the project.

6.12 ACOUSTIC AND VISUAL AMENITY

6.12.1 Acoustic Wall Design and Location

Issue

The exhibited Landscape Concept Plan included design concepts for the entry statement and acoustic fence along the eastern site boundary adjacent to Fraser Drive. However, the exhibited Visual Impact Assessment did not make any assessment of the proposed acoustic barrier. Given the length of the fence required along the frontage (approximately 800 metres) and its height (2.0 to 2.2 metres), further detail was required to understand its visual impacts. The proponent was advised that this may include greater variation in material design, mounding and landscape variation. A cross-section of the Fraser Drive frontage was also required to be submitted depicting the levels of dwellings, fence, mounding / landscaping, proposed height of fill and the ground level in the adjoining road reserve.

The future sound attenuation measures are proposed to be located within the 10 metre wide road reserve on the western side of Fraser Drive, which is the area to be dedicated to Council. The proponent did not confirm whether the location and design of the acoustic wall and mound were consistent with Council's plans for the future widening of Fraser Drive. The proponent was advised that if Council was not satisfied with the location of the acoustic wall and mound, that these structures would need to be moved within the site boundary.

Preferred Project Report

Additional plans showing typical elevations and sections of the noise wall and landscaping were provided with the PPR. These indicated that the noise wall and mound and landscaping would take up between 4 to 6 metres of the 10 metre road reserve to be dedicated to Council along the eastern site boundary. However, the plans did not depict level differences between the road and the site, as requested.

To assist the proponent in preparing more detailed information on the level differences between the site and the road, Council provided them with design drawings for the expansion of Fraser Drive. The proponent subsequently advised that they would review the acoustic wall design and ensure that its location did not encroach upon land required for future road widening. A further review of design recommendations for future dwelling houses was also required if the noise wall and mound need to be moved.

The revised acoustic assessment found that the acoustic wall did not provide sufficient amelioration for noise mitigation purposes at the site. Instead, the proponent proposes that a covenant be placed on the affected lots to require architectural treatment to limit intrusiveness of traffic noise.

Consideration

A review of the noise assessment revealed that the results of the modelling were inaccurate and the assessment was based on incorrect noise criteria, as required by the Environmental Criteria for Road Traffic Noise guideline (EPA, 1999). Furthermore, the Department does not support the placement of a building covenant on affected lots to ameliorate for road traffic noise impacts. New residential areas provide greater opportunities for noise mitigation than existing developments as mitigation strategies should be implemented during the design and planning stages of the project, rather than through building design, which is more suitable for existing residential areas. For new developments, the amenity of future residents and the design of homes should not be adversely affected by existing road traffic noise.

As such, a condition of approval requires that the proponent submit a revised acoustic assessment that demonstrates that the noise criteria for "new residential developments affected by freeway / arterial traffic noise", in accordance with Table 1 of the Environmental Criteria for Road Traffic Noise guideline (EPA, 1999), be achieved at the eastern boundary of all lots in the subdivision prior to the release of a construction certificate for the first stage of the subdivision (Stages 1A – 3B).

6.13 ACID SULFATE SOILS

6.13.1 Acid Sulfate Soil Management Plan

Issue

The exhibited Acid Sulfate Soil Management Plan (ASSMP) was based on two previous investigations undertaken at the site during November 2000 and October 2002. Upon review it appeared that ASS data was obtained from only 6 boreholes over 11 hectares, which does not meet the minimum requirement of 22 boreholes as specified in the *Acid Sulfate Soil Assessment Guidelines* (Acid Sulfate Soil Management Advisory Committee, 1998). There was also no data on the intensity of depth of sampling or results from lab tests to which the samples were subjected. It was presumed that this information was contained within previous reports, which had not been submitted for review as part of the exhibited EA. The ASSMP as submitted was a generic plan that could apply to any works site.

The proponent was requested to provide data from the previous studies undertaken on the site in 2000 and 2002, on which the recommendations of the ASSMP were based, and to incorporate this data into the ASSMP.

Preferred Project Report

The ASSMP was amended to include the results obtained from both investigations. The ASSMP provided the results of samples taken from 16 boreholes across the northern end of the site during 2000 and 2002. The Plan confirmed that 10 boreholes were drilled across the low lying area in the northern end of the site. These were undertaken in the location of the proposed wetland, integrated housing allotment and ecological buffer. The number and layout of the boreholes was determined in accordance with the 2 holes per hectare requirement specified in the ASSMAC Guidelines. In 2002, a further 6 boreholes were drilled within the proposed excavation area at the northern end of the site adjacent to Fraser Drive (proposed Stage 3A), in accordance with the ASSMAC Guidelines.

Consideration

Based on the proximity of the boreholes from the previous investigations to the currently proposed excavation area, the results of the previous studies were considered to be directly applicable to the revised proposal. The ASSMP establishes procedures to ensure that ASS or potential ASS (PASS) encountered at the Fraser Drive site are appropriately identified and treated in accordance with proven management techniques. The ASSMP provides a clear management protocol and identifies each party responsible for each aspect of ASS management.

The revised ASSMP was forwarded to DECC for review and comment. DECC confirmed that they were now satisfied with the ASSMP and have no objections to the proposal. A condition of approval requires a detailed ASSMP for the entire site to be prepared by a suitably qualified person in accordance with the *Acid Sulfate Soil Assessment Guidelines* (Acid Sulfate Soil Management Advisory Committee, 1998). The Management Plan must cover the entire site and be submitted to the satisfaction of the Certifying Authority prior to the issue of a Construction Certificate for below bulk earthworks for the first stage of the project.

6.14 SECTION 94 AND OTHER CONTRIBUTIONS

Prior to the endorsement of a Subdivision Certificate for each stage of the subdivision, the Proponent must pay, in proportion to the additional lots created by that stage, the following contributions to Council pursuant to Section 94 of the *Environmental Planning and Assessment Act (1979)* (refer Table 6).

Relevant plans include the following:

- Banora Point West / Tweed Heads South Open Space Contribution Plan (March 2006)
- Tweed Road Contribution Plan (March 2007)
- Street Tree Planting in Residential Areas Contributions Plan (July 2005)
- Tweed Shire Library Facilities Contributions Plan (2002)
- Bush Shelters Contributions Plan (July 2005)
- Environ Cemetery Contributions Plan (July 2005)
- Emergency Facilities (Surf Life Saving) Contributions Plan (February 2006)
- Council Admin Offices and Technical Support Facilities Contributions Plan (April 2007)
- Cycleways Contributions Plan (August 2005)
- Shirewide / Regional Open Space Contributions Plan (May 2006)

Table 6: Section 94 Contributions

TOTAL CONTRIBUTIONS PAYABLE	
Stage 1	\$16,408.80
Stage 1A	\$186,587.50
Stage 2A	\$542,473.09
Stage 3A	\$569,363.76
Stage 1B	\$375,277.15
Stage 2B	\$456,235.82
Stage 3B	\$479,261.58
TOTAL	\$2,625,607.50

6.14.1 Development Servicing Plans

A Development Servicing Plan (DSP) enables Council, under Section 64 of the *Local Government Act 1993*, to levy contributions where the anticipated development will or is likely to increase the demand for water supply services. Contributions plans relevant include:

- Development Services Plan No.4 - Tweed Heads Tweed Heads South Fingal Head East Banora Point
- Sewer Contributions - Banora Point

Prior to the endorsement of a subdivision certificate for each stage of the subdivision, the Proponent must pay, in proportion to the additional lots created by that stage, the following contributions to Council pursuant to Section 64 of the *Local Government Act 1993*.

Table 7: Section 64 Contributions

STAGES	Water Supply Services		Sewerage Services	
	Calculation	Total	Calculation	Total
Stage 1	1 ET @ \$9,997	\$9,997	1 ET @ \$4,804	\$4,804
Stage 1A	11 ET @ \$9,997	\$109,967	11 ET @ \$4,804	\$52,844
Stage 2A	32 ET @ \$9,997	\$319,904	32 ET @ \$4,804	\$153,728
Stage 3A	33 ET @ \$9,997	\$329,901	33 ET @ \$4,804	\$158,532
Stage 1B	21.8 ET @ \$9,997	\$217,935	20 ET @ \$4,804	\$96,080
Stage 2B	26.6 ET @ \$9,997	\$265,920	26 ET @ \$4,804	\$124,904
Stage 3B	28 ET @ \$9,997	\$279,916	27 ET @ \$4,804	\$129,708
TOTALS		\$1,533,540		\$720,600

7 CONCLUSION

The Department has assessed the EA and PPR and considered the submissions in response to the proposal. The key issues raised in submissions related to geotechnical engineering, ecology, Aboriginal Cultural Heritage, subdivision design, traffic and access, bushfire, stormwater and flooding. The Department has considered these issues and a number of conditions are recommended in conjunction with the proponent's Statement of Commitments these issues are satisfactorily addressed and the proposal has minimal impacts.

The Preferred Project will provide the following public benefits:

- Contribution toward housing targets for the Tweed Shire as identified by the Far North Coast Regional Strategy;
- Provision of a diverse housing choice on the fringe of an existing urban area;
- Protection of the SEPP14 wetland and associated vegetation communities;
- Stabilisation of landslip areas adjacent to existing urban development;
- Protection of Aboriginal cultural heritage;
- Improved stormwater control and management; and,
- Generation of employment in the construction phase.

Furthermore, the proposal has largely demonstrated compliance with the existing environmental planning instruments. On these grounds, the Department considers the site to be suitable for the proposed project and that it is in the public interest. Consequently, the Department recommends the project be approved, subject to the recommended conditions of approval and the proponent's Statement of Commitments.

8 RECOMMENDATION

It is recommended that the Minister:

- (A) consider the findings and recommendations of this Report;
- (B) approve the carrying out of the project, under Section 75J *Environmental Planning and Assessment Act 1979* subject to conditions; and,
- (C) sign the Instrument of Approval (Tag A).