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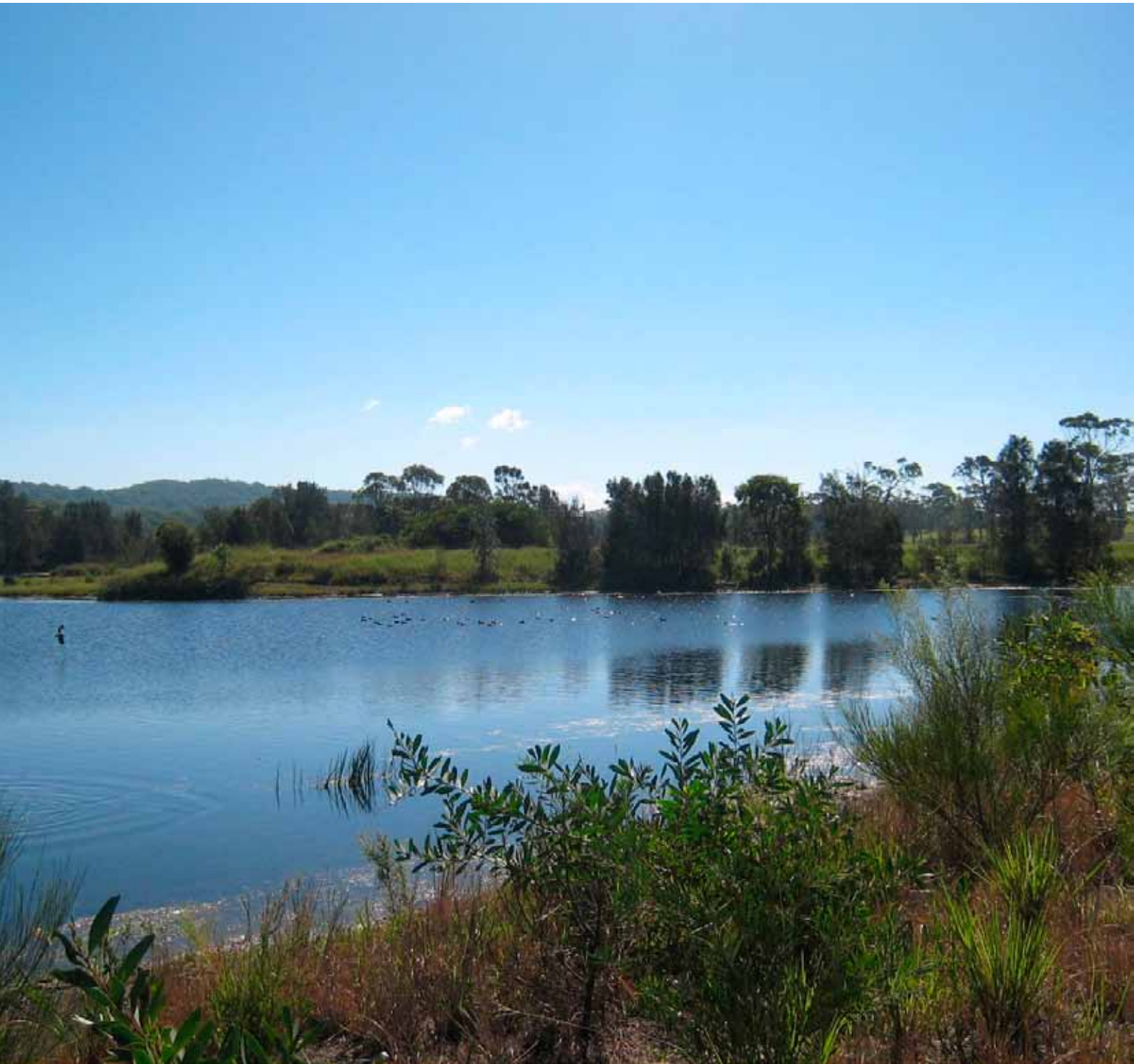
Submissions Report

Rainbow Beach Concept Plan MP 06_0085 and Project Application MP 07_00001

Part 3A Concept Plan and Project Application | St. Vincent's Foundation Pty. Ltd. | 18 April 2011



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Submissions Report

Rainbow Beach Concept Plan MP 06_0085 and Project Application MP 07_0001

Prepared for

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1.0 Introduction

1.1 The proposal

The St. Vincent's Foundation Pty Ltd (the proponent) is seeking approval for a Concept Plan (MP 06_0085) and Project Application (MP 07_0001) on a 177.4 ha parcel of land located within the Port Macquarie – Hastings local government area (LGA) between the coastal villages of Bonny Hills and Lake Cathie. The Project Application is the initial development stage of the overall Concept Plan and comprises drainage, open space and habitat restoration works. This Submissions Report relates to the two component of the proposal, being the Concept Plan and Project Application. These two components are referred to collectively within this report as the Rainbow Beach Proposal (the proposal) and are described individually below.

1.1.1 Concept Plan

The Concept Plan application seeks approval for the delineation of future land uses within the 177.4 ha site as follows:

- the delineation of the limits of the residential subdivision;
- the location of the three adopted intersections with Ocean Drive;
- the location of an additional intersection with Ocean Drive currently under investigation by Port Macquarie – Hastings Council (PMHC);
- the delineation of the extent of the future school sites;
- the general location of the Greater Lake Cathie Bonny Hills village centre
- the delineation of Lot 5 DP 25886 developable area (previously referred to as the eco-tourist site); and
- the delineation of the extent of the open space, drainage and wildlife habitat corridors.

Details of the Concept Plan application and environmental assessment are outlined in the *Concept Plan 06_0085 Rainbow Beach Environmental Assessment Report*, dated August 2010, prepared by Luke & Company Pty Ltd.

1.1.2 Project Application

The Project Application seeks approval for the Central Corridor (located within the open space, drainage and wildlife habitat corridor) and associated works as follows:

- Works located within the Central Corridor:
  - open space, environmental and recreational elements;
  - excavation works required to construct wetlands;
  - stormwater treatment and management elements; and
  - establishment works for the district sporting fields.
- Works located outside of the Central Corridor:
  - placement of fill won from wetland excavation; and
  - a formalised access way located on Crown land to allow access to Rainbow Beach.

Details of the Project Application and environmental assessment are outlined in the *Environmental Assessment Report: Rainbow Beach Project Application Central Corridor and Associated Works*, dated 8 July 2010, prepared by AECOM.

1.1.3 Relationship between applications

The Project Application is inherently linked with the Concept Plan application. The open space, drainage and wildlife habitat corridor is a major land use element defined by the Concept Plan and the Central Corridor forms the largest continuous component of the open space, drainage and wildlife habitat corridor. The Concept Plan also defines future residential land use, within which the majority of residential development proposed for Area 14 will be accommodated. The Project Application plays a critical and integral role in providing for the development of future residential area proposed by the Concept Plan, through the filling of low lying areas that are currently unsuitable for residential land use. If the works proposed within the Project Application are not carried out, there is no possibility to complete the Concept Plan in its current form.

1.2 Statutory context

In accordance with Section 75B(1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) the Minister for Planning declared, by Ministerial Order dated 30 November 2006, that the Rainbow Beach Proposal for a residential subdivision of more than 25 lots, two schools, playing fields and open space, constructed wetland, business retail centre and eco-tourist site is a project to which Part 3A applies.

1.3 Environmental assessment exhibition

The Concept Plan and Project Application environmental assessments (EAs) were exhibited concurrently for 30 days from 2 September 2010 to 1 October 2010 and submissions were accepted until 22 October 2010. The exhibition was advertised in local press including the Port Macquarie News on 1 September 2010. The EAs were made available for review and electronic download on the Department of Planning (DoP) website, as well as exhibited at the display locations listed in Table 1.1. During the exhibition period, the public was able to review the environmental assessments at these locations.

Table 1.1 Environmental assessment display locations

Location	Address
Department of Planning Information Centre	23-33 Bridge Street, Sydney
Port Macquarie – Hastings Council	Corner of Lord & Burrawan Streets, Port Macquarie
Port Macquarie Library	Corner of Gordon & Grant Streets, Port Macquarie

1.3.1 Consultation activities

The public exhibition provided stakeholders and community members with opportunities to speak with the proponent at a public meeting held on 15 September 2010 at the Bonny Hills Surf Club. Meeting attendees were provided with a newsletter.

1.4 Purpose of the document

As a result of the exhibition of the Concept Plan and Project Application EAs, 25 submissions were received. The Director-General of the DoP provided copies of the submissions to the proponent. In accordance with section 75H(6) of the EP&A Act, the Director-General required the proponent to address the issues raised in the submissions. If the response required changes to the Concept Plan or Project Application to minimise environmental impact, a Preferred Project Report was to be prepared and the statement of commitments to be revised for both the Concept Plan and Project Application.

This report identifies the issues raised during exhibition of the Concept Plan and Project Application EAs and provides the proponent's responses to those issues (Section 3.0).

This report is accompanied by two additional reports, being the Concept Plan Preferred Project Report and the Project Application Preferred Project Report. Each Preferred Project Report outlines changes to the Concept Plan or Project Application, describes additional information that supports the proposal, and a revised statement of commitments for each as relevant.

The three volumes outlined above should be read concurrently. In addition, these reports should be read in conjunction with the Concept Plan and Project Application EAs prepared by Luke & Co Pty Ltd and AECOM respectively.

1.5 Specialist assessments

In addition to the changes outlined within the Preferred Project Reports, a number of addendum specialist assessments have been provided in response to comments received from the DoP, State and local government agencies and authorities and the general public as follows:

- Darkheart Eco-Consultancy, *Rainbow Beach Concept Plan (06_0085) and Project Application (07_0001) Response to Agency Submissions*, April 2011. This document addresses issues including potential ecological impacts of the Central Corridor; potential impacts on threatened species and littoral rainforest; vegetation connectivity; and provision of compensatory habitat.
- Cardno Pty Ltd, *SVF Rainbow Beach Development Application MP 06_0085 Rainbow Beach Concept Plan, MP 07_000 Project Application – Open Space Corridor and Constructed Wetland, Reponses to*

Submissions, February 2011. This document addresses issues including stormwater management and hydrology.

- University of NSW Water Research Laboratory, *Review of Data and Response to Submissions*, February 2011. This document addresses issues relating to groundwater impacts and acid sulphate soils (ASS).
- AECOM, *Rainbow Beach Project Application Response to Submissions*, March 2011. This document addresses issues including stormwater management, proposed water sensitive urban design elements (WSUD), habitat creation within wetlands and management of weeds.

The specialist assessments are appended to the Project Application Preferred Project Report.

2.0 Response to issues

2.1 Respondents

A total of 25 submissions were received during the exhibition period from 2 September 2010 until 1 October 2010. Twelve of the submissions were from government agencies (including two from PMHC) and 13 from the community.

2.2 Overview of the issues raised

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted, collated and summarised. Responses to the summarised issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and the proponent's response to these issues forms the basis of Section 3 of this report.

Of the 25 submissions received, only one made a clear statement of objection to the proposal. Eleven of the submissions provided support subject to conditions to address greater mitigation of traffic, habitat protection, water quality impacts, provision of adequate infrastructure and open space management. Nine of submissions did not include a clear statement of objection or support; however the majority of these submissions raised concerns regarding expected negative impacts of the proposal. Four of the submissions stated clear support for the proposal. Overall, submissions addressed issues relating to habitat protection, traffic and transport and provision of infrastructure.

The main issues are outlined below.

2.2.1 Government agencies

Eleven government agencies made submissions, raising a range of issues relevant to their areas of responsibility. Some recommendations for conditions of approval were also made. A summary of each agency's issues is provided below. Section 3.1 of this report provides detail on the issues raised by each agency and the corresponding responses.

Department of Planning

The DoP raised issues about:

- Impacts on existing vegetation from works proposed within the Central Corridor.
- Impacts on threatened species habitat from works proposed within the Central Corridor and the potential requirement for offsets to address impacts.
- Management of air quality and noise impacts during construction.
- Exhibition of the voluntary planning agreement (VPA).
- Appropriateness of scale and design of the open water wetland.
- Future development of Lot 5 DP 25886 (the former eco-tourist site) including design and potential impact on adjoining littoral rainforest.
- Urban design, including future precincts, built form and building types.
- Determination as to whether an environment protection licence (EPL) under the *Protection of the Environment and Operations Act 1997* (POEO Act 1997) is required for proposed earthworks activities.
- Transport, road safety, traffic management and efficiency.

- Delegation of future development applications to PMHC.
- Ocean Drive edge treatment.
- Definition of proposal as a canal estate under *State Environmental Planning Policy No 50 – Canal Estate Development* (SEPP 50).
- Owners consent for works on Crown Land.
- Functionality of proposed stormwater treatment and WSUD measures.
- Assessment of potential mosquito impacts.
- Amendments to the draft statement of commitments.

NSW Office of Water

The NSW Office of Water (NoW) raised issues about the:

- Potential impacts of stormwater runoff on groundwater.
- Potential impacts of ASS on groundwater.
- Payment of a security deposit to enable remediation of ASS impacts should they occur during construction.
- Water licensing.
- Riparian management including revegetation and rehabilitation of Duchess Gully.
- Definition of the proposal as a canal estate under SEPP 50.

Department of Environment and Climate Change

The Department of Environment, Climate Change and Water (DECCW) stated that it does not object to the proposal provided that the following issues are addressed:

- Determination as to whether an EPL under the POEO Act 1997 is required.
- Capacity existing of sewage treatment plant (STP) to accommodate the proposal.
- Potential impacts of vegetation removal and bushfire protection measures on threatened species, endangered ecological communities and vegetation connectivity.
- Biodiversity offsets.

Department of Industry and Investment

The Department of Industry and Investment (DII) notes that the proposal generally avoids direct impacts on key fish habitats and no objections are raised provided that specific aquatic habitat mitigation measures are implemented.

Housing NSW

Housing NSW did not raise any specific issues with regard to the proposal and notes that the proposal does not directly affect any existing Housing NSW properties. Housing NSW also notes the proposals consistency with the *Mid North Coast Regional Strategy* and the *Draft Port Macquarie Hastings Urban Growth Management Strategy* and recognises its potential to reduce pressure on existing housing and house prices. A number of detailed design recommendations are put forward by Housing NSW with regard to the provision of affordable housing, variety of housing types, integrated and permeable road network, adequate walking and cycling paths and public transport services.

Roads and Traffic Authority

The Roads and Traffic Authority (RTA) raised issues about:

- Costing of transport infrastructure with regard to contributions.
- Requirement for a micro-simulation model for the arterial road network.
- Safety and functionality of the existing Pacific Highway and Houston Mitchell Drive intersection.
- RTA concurrence for works on Ocean Drive, being a classified road.
- Potential for traffic signals at proposed new intersections.
- Provision of a grade separated safe link for pedestrians and cyclists across Ocean Drive.
- Provision of street lighting, signage and line markings.
- Development of a traffic management plan for construction.

Council, being the local road authority, has provided the proponent with letter correspondence with regard to traffic matters raised by the RTA. Council's correspondence can be viewed at Appendix A of this report and is discussed further within Section 3.0 of this report.

Rural Fire Service

The NSW Rural Fire Service (RFS) stated that as no detailed site plan for the proposed residential component of the proposal was received a full assessment could not be made. Specific concerns were raised with regard to the inadequacy of proposed asset protections zones for the future school and Lot 5 DP 25886 (former eco-tourist site). A number of recommendations were provided for the detailed design of the proposal including the provision of adequate asset protections zones and compliance with *Planning for Bush Fire Protection 2006*.

Northern Rivers Catchment Management Authority

The Northern Rivers Catchment Management Authority (NRCMA) raised issues about:

- Quality & quantity of stormwater runoff from urban areas during and after construction.
- Management of aquatic weeds.
- Provision of adequate buffers areas to the STP and littoral rainforest.
- Functionality of the Central Corridor as a habitat corridor.
- Clearing of native vegetation.

Department of Education and Training

The Department of Education and Training (DET) has stated their in-principle endorsement of the proposed school site for a primary school. The Department also stated that there is sufficient space at surrounding government high schools to accommodate students as a result of the proposal, however no objection to a proposed high school was made.

Land and Property Management Authority

The Land and Property Management Authority (LPMA) stated that it is satisfied with the contents of the EAs. A number of conditions of approval were recommended relating to the formalisation of beach access from Lot 5 DP 25886, fencing of Crown land, containment of bushfire protection works within the subject site and protection of Crown land from stormwater runoff.

Port Macquarie – Hastings Council

The PMHC raised issues about:

- Contents and progression of the draft VPA, including the addition of beach access maintenance to the draft.
- Clarification of staging of the proposal in order to assist the provision of infrastructure.
- Function of open water wetland as a source for fill.
- Large number and size of proposed water treatment wetlands.
- Proposed ownership and long term management of open space components.
- Recognition of the existing zoned buffer to the STP.
- Potential development constraints of Lot 5 DP 25886, including existing STP buffer and potential buffers to littoral rainforest.
- Ocean Drive edge treatment including provision of noise attenuation.
- Inclusion of beach access maintenance in a draft VPA.

Council has also provided the proponent with letter correspondence with regard to traffic matters raised by the RTA. Council's correspondence can be viewed at Appendix A of this report and is discussed further within Section 3.0 of this report.

2.2.2 Community

Community submissions have predominantly reflected the priorities and concerns of residents of Bonny Hills and Lake Cathie and local groups with social, economic and environmental interests. The main issues raised in community are outlined below. **Section 3.2** of this report provides detail on the issues raised by the community and the corresponding responses.

Inadequacy of proposal detail

- Inadequacy of the EA documentation and community forum meetings to provide sufficient detail on what the proposal will look like with regard to urban form, the village centre and Lot 5 DP 25886.
- Without the provision of sufficient details the community is sceptical of developer intentions and fears the proposal would not be sympathetic to existing development in Lake Cathie and Bonny Hills.

Infrastructure capacity, provision, delivery and funding

- Issues raised with regard to current infrastructure including access to fresh water, sewage treatment, access to recreational and sporting facilities and questions as to how demand on existing infrastructure by increased population within Area 14 would be accommodated.
- Concern over perceived lack of planned and parallel provision of infrastructure for the size of the development.
- Concern raised that neither State nor local government is willing or has the funds to provide additional infrastructure, and that the developer would only pay for what was required as a minimum, resulting in a shortfall of infrastructure and services for existing and future residents.
- Lack of confidence that the proposed schools and playing fields would be built within a reasonable timeframe and with public funds.
- Concern expressed in relation to cumulative impacts when considering the proposal along with similar developments in the area and how this would affect existing infrastructure capacity and provision of new infrastructure.

Traffic and transport

- Concern raised over the general increase in traffic volumes and associated noise and pollution impacts from increased traffic along Ocean Drive and Bonny Hills in general as a result of the proposal.
- Concern expressed over current pedestrian safety along Ocean Drive and Bonny Hills in general due to the lack of pedestrian crossings and the increase of danger to pedestrians as a result of the proposal.
- Concern raised over the existing poor condition of Ocean Drive and Houston Mitchell Drive and inadequacy to accommodate existing and future traffic volumes.
- Concern expressed in relation to cumulative impacts of traffic when considering the proposal along with similar developments in the area.

Habitat protection

- Concern raised that the areas encompassed by the PMHC Structure Plan includes two areas of vegetation protected by state planning instruments as well as an area of native vegetation containing core koala habitat surrounding the Bonny Hills/Lake Cathie STP.
- Concern raised over the location and future development of Lot 5 DP 25886, specifically how development of the site would avoid damaging *State Environmental Planning Policy 26 – Littoral Rainforest* (SEPP 26) littoral rainforest and the dune ecosystem.
- Concern expressed in relation to cumulative impacts of habitat degradation when considering the proposal in conjunction with similar developments in the area and the importance of protecting remaining vegetation.

Open space, drainage and wildlife habitat corridor design and function

- Concern raised that the intent and functionality of the Central Corridor is compromised by the inclusion of the open water wetland and water treatment wetlands, playing fields, school sites and active recreation, which create areas of narrow width and limits areas required for buffers.
- The functionality of the Central Corridor as a movement corridor was questioned given its location between the ocean and Ocean Drive and lack of continuous naturally vegetated strip of sufficient width within the site.

3.0 Issues and responses

3.1 Government agency submissions

3.1.1 Department of Planning issues and responses

Item	Department of Planning Issue	Response
1.1	**Central Corridor ecological impacts**	
1.1.1	Concern is raised with regards to potential impacts on vegetation including Swamp Oak Floodplain Forest EEC from works proposed within the Central Corridor. DoP suggests the proponent further consult DECCW on this issue.	No Swamp Oak EEC is proposed to be removed within the Central Corridor. The area of Swamp Oak EEC to be removed is confined to regrowth of Swamp Oak trees along fence lines and drains in or adjacent to pasture that has not been slashed. This vegetation is limited in width, is of minimal ecological value, provides minimal diversity and limited fauna support. In addition, the extent of Swamp Oak Floodplain Forest EEC has been slightly incorrectly mapped to the northeast of the Eastern Creek reserve. The band adjacent to Ocean Drive and adjacent to the area mapped for regeneration is well above the area of alluvial soils or the 1:100 year flood line and accordingly should not be classified as an EEC (refer Figure 1 of Appendix B of the Project Application Preferred Project Report). Aside from the aforementioned Swamp Oak regrowth, the overwhelming majority and highest quality examples of this EEC are being retained in the protected Eastern Creek reserve area. It is concluded that the proposal does not have a significant impact on Swamp Oak EEC as per the 7 Part Test included with Appendix G of the Project Application EA.
1.2	**Impacts on threatened species**	
1.2.1	DoP notes that based on the information provided in the EAs for both the Concept Plan and Project Application it is understood that certain populations of Wallum Froglet, Eastern Chestnut Mouse and Common Planigale within the site will be unable to persist upon implementation of the Project Application. DECCW has advised that suitable offsetting of the impacts on these species will therefore be required. DoP recommends the proponent consult DECCW with regards to this matter.	Responses to these issues are provided in Table 3.1.3, Items 3.3.3 and 3.3.7 below.
1.3	**Management of air quality and noise impacts**	
1.3.1	The proponent is to ascertain whether or not any of the proposed activities are deemed a Scheduled Activity under Schedule 1 of the POEO Act 1997. If any of the activities are deemed scheduled	The Project Application includes the proposed excavation of the open water wetlands and subsequent filling activities. As outlined in Section 5.2.2 of the Project Application EA, these excavation and filling works meet the definition of *"land-based extractive activity"* under

Item	Department of Planning Issue	Response
	activities, the proponent will require an EPL issued under the provisions of that Act.	Schedule 1 of the POEO Act 1997. As such, the excavation and filling activities proposed under the Project Application will require an EPL to be issued from DECCW. The proponent will make an application to DECCW for the issue of an EPL. This is reflected in the amended draft statement of commitments for the Project Application (see Project Application Preferred Project Report).
1.4	**Voluntary planning agreement**	
1.4.1	DoP notes that discussions in relation to the draft VPA for open space areas within the site are ongoing between the proponent and Council. DoP advises that upon finalising the agreement, arrangements will need to be made to exhibit it at the DoP and Council concurrently pursuant to Section 93G of the EP&A Act 1979. This requirement will need to be carried out and finalised prior to determining the Concept Plan and Project Application.	The proposed VPA for the management of open space areas within the Project Application is currently being negotiated between Council and the proponent. A copy of this VPA will be forwarded to the DoP or Council for exhibition following finalisation.
1.5	**Proposed open water wetlands**	
1.5.1	The proposed scale and design of the main open water wetland is considered to overly dominate the proposed Central Corridor. Suggest that options be investigated to improve the habitat corridor values and break up the expanse of open water. Suggest habitat islands may be utilised to improve such values.	The Project Application EA acknowledges the function of the open water wetland as a source for fill. The fill is required to reclaim future urban areas to flood free levels. Without the reclamation of this land the population growth targets set by the DoP and Council would not be achievable on the site. Section 3.2.1 of the Project Application EA outlines two alternative design options that were considered during the development of the project and environmental assessment. Both alternative options were found to be unsuitable. Option 2 was not economically feasible due to large volumes of imported material required and increased volume of earthworks. Option 3 was discounted as it would not result in sufficient fill material to achieve the desired residential capacity to accommodate population growth targets. As detailed in Section 3.2.2 of the Project Application EA, the only viable means of obtaining enough fill to reclaim sufficient land to accommodate population growth targets is to obtain fill from within the site. As such, the proposed open water wetland excavation is considered to be the most favourable development option. Notwithstanding the above, a redesign of the open water wetland has been undertaken in order to improve habitat corridor values. This redesign involves the widening of the corridor between the existing lagoon and proposed open water wetland from 50 m to 100 m. Fauna migration through this widened corridor will be enhanced by replacing the hydraulic flood connection control structure S2 channel with a widened channel with gentle side slopes. The

Item	Department of Planning Issue	Response
		widened channel will be protected against erosion by appropriate rock placement and vegetation suitable for negotiation by fauna. Details of this redesign are outlined within the Project Application Preferred Project Report. Provision of habitat islands within the open water wetland is not recommended due to the potential colonisation of islands by the Australian White Ibis (*Threskiornis molucca*). This species has adapted well to urban environments along the east coast of Australia and has learnt to exploit urban food sources, increasingly becoming a pest in urban centres. The creation of islands within urban water bodies provides ideal roosting habitat for the Ibis, which can form permanent colonies on islands in urban water bodies, excreting nutrients into the water near their roosting sites. The presence of such colonies has led to a decline in the water quality of the water bodies where Ibis roost. The subsequent increase in nutrient concentrations of the water body can support nuisance plant growth and algal blooms. To avoid creating roosting sites with the potential to impact water quality, the proposal does not include the provision of islands within urban water bodies. Habitat diversity can be created in wetlands in other ways such as by varying the shape (curves and depths) of the littoral edges, providing large woody debris and a diversity of aquatic macrophytes. The proponent agrees to include details of wetland habitat provision at the construction certificate stage. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Project Application Preferred Project Report).
1.5.2	Concern that the proposed system of constructed wetlands and water bodies could meet the definition of a canal estate in accordance with SEPP 50. DoP requires further consideration of this issue.	The aim of SEPP 50 is to prohibit “canal estate development” within NSW. Typically, characteristics that distinguish canal estates include: • Location of development along a waterway (river, estuary, harbour, etc) in which the waterway has open flow connections along the waterway, with tidal and other water movement influences evident. • No flood control or water quality management measures along the waterway. • Exclusive private residential access to the waterway, direct from dwellings. • Boating facilities (moorings, jetties, etc) associated with the dwellings fronting the waterway. • They comprise a series of fingers of filled land within the waterway on which the dwellings are located. The proposal is not considered to be a canal estate as it does not comprise the above characteristics as follows:

Item	Department of Planning Issue	Response
		• Duchess Gully is located within the development area and leads to an intermittently opening and closing lake or lagoon (ICOLL). The ICOLL is generally closed to the ocean, and opens only intermittently. • The proposal is in the form of a series of linear wetlands whose principal function is to manage storm water flows and water quality. • There is no exclusive private access to the wetlands, with a minimum distance of 60 m provided between the open water wetland (W1) and future residential allotments. The wetlands will be contained within an open space and environmental management area. • The proposal does not contain any development land that protrudes into the proposed wetlands. • The arrangement of the water body and adjoining land is similar to recent urban development projects that incorporate an artificial water body produced as a result of cut and fill. The waterbody is designed to manage storm water flows and water quality, with urban and residential land surrounding. Notwithstanding that the definition of "canal estate development" in SEPP 50 may appear technically to apply to the proposal, it is clear that the proposal has characteristics which are fundamentally different from the characteristics of a canal estate. As a consequence, application of the technical definition of "canal estate development" under SEPP 50 to the proposal would be unreasonable, and would not be an appropriate interpretation of the definition. In light of this, the Minister is requested to use the powers conferred by Section 75P(2)(c1) of the EP&A Act 1979 to determine that with respect to the proposal, SEPP 50 has no effect.
1.6	**Increased impacts on adjoining littoral rainforest**	
1.6.1	The development of Lot 5 DP 25886 (former eco-tourist site) proposed as part of the Concept Plan and upgraded beach access, as identified in the Project Application, will result in increased impacts to adjoining littoral rainforest areas. The EAs for both applications do not adequately justify the cumulative impacts on the development interface with littoral rainforest areas. The proposal does not demonstrate that the mitigation measures proposed are adequate in respect to this area's significance as an EEC under the *Threatened Species Conservation Act 1995* (TSC Act 1995) and *Environment Protection and Biodiversity*	The majority of the site is zoned R1 General Residential pursuant to Port Macquarie – Hastings Local Environmental Plan 2011 (PMHLEP 2011). Clause 4(1)(b) of SEPP 26 states that the policy does not apply to residential land. Further, there is no littoral rainforest vegetation within the site that falls under the TSC Act 1995 or the EPBC Act 1999. The existing beach access requires formalisation given the likely increased foot traffic along this track and the potential for erosion. Detailed design of the proposed beach access has been undertaken as illustrated within the Project Application Preferred Project Report. The proposed beach access has been designed to prevent wind funnelling effects and reduce the overall impact on the Crown reserve's littoral rainforest. Design of beach access components has been undertaken in consultation with the LPMA and complies with the *NSW Coastal*

Item	Department of Planning Issue	Response
	Conservation Act 1999 (EPBC Act 1999). DoP states that the Landscape Master Plan prepared by AECOM does not provide sufficient design detail of all proposed works located near or within these areas, notably the proposed beach access.	*Dune Management Manual 2001.* Weeds at the edges of the existing beach access are currently being eliminated by bush regeneration with indigenous plants established by planting and self-regeneration in order to establish a closed edge and to protect the interior vegetation north and south of the existing track. As outlined in Appendix I of the Project Application EA, a detailed assessment of potential impacts that the proposal may have on the adjoining land was undertaken. This assessment found that there will be no significant impact due to the following: • most of the vegetation's edge currently has a closed edge of native species along its western frontage and the unclosed edge in the northeast will be treated with weed removal, plantings of indigenous species and establishment of a vegetated buffer to minimise turbulence and excessive salt deposits; • fencing, signage and barrier planting of spikey-tipped plants will exclude track-making through the dune vegetation; • no change to the current hydrological regime is expected; and • there will be no significant change to current risk of bushfire, noting that the establishment of residential accommodation will result in high surveillance and hence fire protection. Consequently, the proposal is not considered to have the potential to risk significant modification or loss of the local occurrence of littoral rainforest.
1.7	**Future development of Lot 5 DP 25886 (former eco-tourist site)**	
1.7.1	The Concept Plan provides limited built form guidelines governing the future development of Lot 5 DP 25886 (the former eco-tourist site). Further justification and clarification is sought regarding the proposed future height, number of buildings and overall development footprint of this area in consideration of the site's constraints and appropriate buffering. Suggested that the proponent prepare a design guideline for Lot 5 DP 25886 having regard to potential cumulative impacts on the littoral rainforest and location in proximity to the nearby STP. Reduction in the site's intensity may be required to address this issue.	The exhibited proposal has been amended in a number of respects in response to submissions received during the exhibition period and following review by the proponent. A number of these amendments relate to the future development of Lot 5 DP 25886, the site previously referred to as the eco-tourist site. These changes are detailed within the Concept Plan Preferred Project Report and are summarised below: • Removal of proposed eco-tourist land use. Lot 5 DP 25886 is now proposed to be developed as low density residential development. • Development of a Lot 5 DP 25886 principles plan which illustrates interface and setback areas and delineates land available for development following a more detailed consideration of site constraints.

Item	Department of Planning Issue	Response
		• Development of urban design guidelines for low density residential development that provide guidance of future character and built form including proposed future density and building heights.
1.8	**Urban design**	
1.8.1	The information provided in the EA does not demonstrate how the proposed future precincts, built form and building lot types for both the Village Centre and residential areas will relate to the site. It is noted that these areas would be subject to future applications, however detail is requested as to how the proposed Concept Plan would accommodate pedestrian and traffic flow connections in addition to accommodating intended densities and uses of future precincts. Suggest that the proponent provide clarification on proposed building types and controls governing private/public open space, public domain works, lot orientation, height limits, road networks, landscaping concept, pedestrian footpaths and cycleways etc. Proposed design controls should be specific for each lot type proposed for example, setbacks and amount of open space should be provided for each lot type. Diagrams indicating future housing may meet these design controls should also be provided.	The proponent has provided additional details to illustrate how the urban components of the Concept Plan will be developed in the future. This information, which is outlined within the Concept Plan Preferred Project Report, includes a series of urban design principles plans. These plans illustrate the urban design principles developed for the proposal that create the framework and strategic intent for the site development in a more specific level of detail, particularly with regard to future urban form. These urban design principles, which draw upon those developed by Council have been produced to guide the future development of the site in a manner that is sympathetic to site constraints and consistent with existing development and surrounding environments. Details relating to the future development of Greater Lake Cathie Bonny Hills Village Centre were included in Appendix 13a and 13b in the Concept Plan EA. The assessment provides an understanding of the future built form and characteristics of the proposed village centre and how it relates to the site. Specifically, Chapter 11 of Appendix 13b outlines design requirements relating to road and street reserves, utility services, landscaping, street furniture, streetscape and building heights. Detailed design of the village centre will be subject to future development applications(s) for the proposal.
1.9	**Traffic and access**	
1.9.1	As raised in the RTAs submission, several issues regarding transport, road safety, traffic management and efficiency will require careful consideration. Recommended that the proponent consult directly with the RTA on this matter.	The subject site is one of numerous properties within Area 14 with frontage to Ocean Drive. Council has advised the proponent (see Appendix A of this report for Council's correspondence) that as the local road authority, it has the responsibility to resolve with the RTA issues related to transport, road safety, traffic management and efficiency within Area 14 and the arterial road network generally, and coordinate the response of individual property owners The proponent will continue to consult Council and the RTA where appropriate during the preparation of subsequent development application(s) for the remaining urban components of the proposal. It is noted that Ocean Drive is a classified road and the RTA's concurrence to any new access or proposed road works will be sought.

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1.9.2	The access connections to Ocean Drive as proposed in the Concept Plan and provided with the EA do not appear to adequately demonstrate compliance with relevant Australian Standards for intersection safety.	As detailed in Section 5.3 of Appendix 9a of the Concept Plan EA, the location and general configuration of three of the four proposed intersections was determined by Council through the adoption of their Area 14 Structure Plan. These intersections have been included within the Concept Plan EA. More recently Council indicated a fourth intersection may be required to service properties to the north of Ocean Drive. As a result a fourth intermediate intersection has also been incorporated into the Concept Plan. The Concept Plan seeks approval for the location of the four proposed intersections only. Detailed design of these intersections, including compliance with relevant Australian Standards will be undertaken as part of subsequent development applications(s) for the proposal.
1.9.3	The Concept Plan EA and its supporting documentation does not appear to discuss future intended plans to upgrade and improve Houston Mitchell Drive.	The issue of upgrading Houston Mitchell Drive and the local road network in general is discussed in further detail in Table 3.1.6 Items 6.1.1 and 6.3.1 below.
1.10	**Future applications**	
1.10.1	The EAs request that future applications relating to schools, residential areas, village centre, eco-tourist site and sports fields to be delegated to Council. Justification is sought as to why these applications should be delegated to Council for future assessment and determination.	During the development of the Concept Plan EA, Council advised the proponent that it would be the consent authority best resourced to assess and determine future development applications relating to the remaining land uses within the Concept Plan (residential subdivisions, school sites, village centre, Lot 5 DP 25886 and completion of the district sporting fields). As a result of this advice, the Concept Plan and Project Application EAs both stated that further development applications would be submitted to Council, rather than the DoP for assessment and determination. However the proponent wishes to clarify that it does not hold a preference with regard to a preferred consent authority for future development applications and does not seek to pursue this issue.
1.10.2	A staging plan is required to identify how the Concept Plan and its associated infrastructure will be staged and implemented over time.	The proponent has developed a staging plan that illustrates indicative staging of proposed residential precincts. The staging plan can be viewed in the Concept Plan preferred project Report.
1.11	**Ocean Drive edge treatment**	
1.11.1	The View Analysis dated August 2010 compiled by Luke and Company displays some indicative montages of future development along Ocean Drive and the site's edge treatment.	Council is in the process of preparing a draft DCP for Area 14. As part of this preparation Council plans to commission an Area 14 Ocean Drive corridor plan which will address key objectives along the length of the corridor, including noise attenuation, road safety, amenity,

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	However, the Concept Plan does not appear to provide a clear demarcation of this interface and its relationship with future built form on the subject site. The statement of commitments may need to be updated in order to address this issue.	interface with future built form on the adjacent lands, sustainable transport modes and sustainable maintenance of landscaping in the public domain along the corridor edges. The proponent has provided additional details in order to illustrate how the urban components of the Concept Plan will be developed in the future. One of the urban design principles developed as part of this process relates to edge treatments and corridors, and specifically includes detail relating to the Ocean Drive corridor. Further, the proponent commits to participating in the development of Council's Area 14 Ocean Drive corridor plan. This is reflected in the amened draft statement of commitments for the Concept Plan (see Concept Plan Preferred Project Report).
1.12	**Cycle and pedestrian access**	
1.12.1	The Concept Plan should identify relevant pedestrian and cycleway access points traversing the subject site. An indicative pedestrian and cycleway plan demonstrating how the village centre and future residential areas will be connected with relevant access nodes to be provided.	Additional details have been provided in order to illustrate how the urban components of the Concept Plan will be developed in the future. This information includes an access and movement plan, which illustrates the proposed integrated access and movement hierarchy for the site that delivers good legibility, permeability and connectivity for vehicles, pedestrians and cyclists. See the Concept Plan Preferred Project Report for details.
1.13	**Owner's consent**	
1.13.1	In accordance with clause 8F of the *Environmental Planning and Assessment Regulation 2000* (EP&A Reg 2000), the proponent is to provide advice regarding need to obtain the consent of the relevant owner, prior to determination of the Project Application, for any relevant improvement works proposed to be carried out to Crown land east of the site.	Owners consent for proposed works on Crown land has been provided to the proponent from the LPMA (see Appendix I of the Project Application Preferred Project Report for details).
1.14	**Water cycle management and hydrology**	
	Report clarification and inconsistencies	
1.14.1	The main water cycle report prepared by Cardno (Appendix N) has not been updated to reflect the subsequent more detailed investigations described in Appendices L and Appendix M prepared by the University of NSW Water Research Laboratory (WRL) and AECOM respectively. This means that there are considerable inconsistencies between Appendix N, L and M, making assessment time consuming and difficult. It is the responsibility of the proponent of this development to	Three separate but integrated specialist investigations were commissioned to assess potential hydrology, flooding, stormwater, groundwater and ASS impacts for the Project Application. Cardno was engaged to prepare a Water Engineering and Environment Assessment (Appendix N of the Project Application EA) to address potential hydrological impacts which were raised by the DGRs. Cardno's assessment included consideration of the existing hydrological and environmental site issues and constraints, and site management recommendations for hydrological, flooding and stormwater management. Following comments received from a number of government agencies and Council during the

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	present a clear, consistent, integrated concept design and EA. Each appendix should support the main body of work rather than supersede it.	preparation of the Project Application EA, it became apparent that more specialist investigations would be required to review and support Cardno's original body of work as follows: • Appendix L – Groundwater Characterisation and Numerical Modelling Report prepared by WRL regarding groundwater assessment; and • Appendix M – Stormwater Treatment and Wetland Functionality Report prepared by AECOM regarding stormwater treatment. Both of the above reports were clear in their function as review documents that referenced and augmented Cardno's original work. While some minor inconsistencies may be present between the three reports, it was not considered to be practical or necessary to update original work undertaken by Cardno when subsequent reports prepared by WRL and AECOM were supplementary and supporting reports. The inconsistencies between the various appendices are resolved and explained within the following discussion (Items 1.14.2 – 1.14.29). A number of figures from Appendix N have been updated to show consistency with subsequent works undertaken by AECOM and WRL. These figures are included within the Project Application Preferred Project Report. It is intended that Appendix L (WRL) and Appendix M (AECOM) should apply where there is any remaining difference between these later recommendations and the text of Appendix N (Cardno).
1.14.2	An example of an inconsistency between reports is the assessment of the wetting and drying of the proposed open water wetland in Appendix N. This analysis has been undertaken using assumptions that have later been invalidated. In this regard, it was assumed that the open water wetland would seep at a rate of 25mm per day. Later work has shown that in fact groundwater will flow into the lake. Clarification is required as to how this will affect the wetting and drying analysis undertaken.	Groundwater investigations at the site show that groundwater levels are typically above the level of the proposed open water wetland, inferring net inward seepage to the open water wetland under typical conditions. The wetting and drying assessment presented in Appendix N (Cardno) adopted a conservative assumption of seepage flowing the other way - outward from the open water wetland. This assumption is consistent with a period of drought in which water levels in the aquifer were depleted well below their typical levels. This conservative assumption is understood to be selected simply to test an extreme scenario and it is not invalidated by subsequent studies. The fact that seepage is typically toward the open water wetland helps to limit further the risk of 'drying' of the lake.
	Stormwater management and proposed WSUD	
1.14.2	Key aspects of the stormwater treatment system concept design are not documented. Appendix M includes updated MUSIC water quality work by AECOM. AECOM's revised MUSIC models show	Aside from the placement of fill and beach access, the Project Application seeks approval for works located within the Central Corridor, which excludes future works within in the proposed residential areas delineated by the Concept Plan.

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	the extensive reliance on vegetated buffers, swales and bioretention however the location and extent of these treatment measures is not shown on a concept plan. Reliance on a computer model and broad statements noting an intention to use vegetated buffers, swales and bioretention in addition to end of line stormwater treatment wetlands do not constitute a concept design.	The location of the vegetated buffers, swales and bioretention systems proposed as part of the future urban development will be devised during detailed design undertaken as part of separate development application(s) for urban components of the Concept Plan. While the exact location of these elements cannot be determined at this time, the treatment areas required for these elements are stated in Section 4.2.9 of Appendix M (AECOM).
1.14.3	Appendix M fails to document critical assumptions with respect to vegetated buffers including location, widths, construction materials, potential impacts on road cross sections and potential impacts on the drainage plan.	Appendix M (AECOM) relates specifically to stormwater quality treatment, and was produced to supersede aspects of Appendix N as the development design evolved and needed resolution. The critical assumptions are documented in Section 3.4.3.2 of Appendix N (Cardno) and will be adopted except where stated in Section 4.2.4 of Appendix M (AECOM). The impacts on road cross sections and proposed drainage plan will be identified following detailed design and earthworks modelling undertaken as part of separate development application(s) for urban components of the Concept Plan.
1.14.4	Appendix M notes that proposed end of line constructed wetlands are to have 500mm extended detention depth. Figure 13B shows that only 200mm extended detention depth is proposed for Wetland 1 which is the largest of the proposed wetlands. Confirm whether the provision of 500mm extended detention is available on the other proposed stormwater treatment wetlands. If not available, modelling and resizing of the wetlands is to be undertaken so that all modelling is consistent with the proposal and ensure that what is modelled and what is proposed is actually viable to construct.	Extended detention is to be 500 mm as stated in Section 4.2.5 of Appendix M (AECOM). Figure 13B is a conceptual diagram in Appendix N, which was provided by Cardno earlier in the design phase to illustrate several concepts of wetland design.
1.14.5	Appendix N: Figure 13B shows a proposed stormwater treatment wetland which is to be hydraulically separated from the open water wetland via a bentonite clay slurry. The extent of the lining is not clear. Concern raised that if the whole of the proposed constructed wetlands are not lined that they will dry out. The wetting and drying analysis reported in Appendix M fails to document wetland exfiltration assumptions and this is critical. The proposed wetlands are to be constructed partly on marine sands and are likely to be hydraulically connected with the proposed	Cracking liner - Some of the stormwater treatment wetlands are to be built into clay soils and will not require lining. If wetlands are located above sandy soils, they will need to be lined. Water level drawdown analyses were undertaken to ensure the health of the wetland vegetation and these analyses identified that the treatment wetlands are unlikely to drawn down sufficiently to allow the wetlands to dry out. Therefore, the clay liners are also unlikely to dry out sufficiently to crack or leak. Hydraulic lift - This is considered unlikely as the groundwater occurs at depths lower than the treatment wetlands. Hydraulic lift is only likely to occur if the stormwater treatment wetland was empty and the groundwater was unusually high. The occurrence of dry wetland and high

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	lake. When the lake level drops during dry periods so will the level in the proposed treatment wetlands – unless they are to be lined. Conversely if a liner is proposed and the wetting and drying analysis did assume zero exfiltration from the wetland then a cross section clearly showing key components such as a liner must be documented. The liner must be able to withstand drying out (clay cracks when dry) unless a revised wetting and drying analysis shows that it will never dry out. The liner must also be able to withstand hydraulic uplift pressures from groundwater beneath it especially because the MHL report identified that groundwater will flow into the wetland largely from the direction of Wetland W1. If the proponent intends (or partly intend) to rely on naturally occurring clay to line the base of any proposed wetlands then a plan showing the prevailing soil type overlain with the proposed extent of constructed wetlands needs to be provided.	groundwater is not likely to coincide. Every time it rains, the urban catchments provide water to the wetland earlier than it will be able to reach the groundwater, therefore drying in these treatment wetlands is less frequent than in natural catchments.
1.14.6	The Continually Stirred Tank Reactor (CSTR) number adopted for wetland modelling in MUSIC has not been documented. Concern about short circuiting of the proposed wetlands and poor wetland hydraulic efficiency. Proposed drainage plan shows stormwater pipes discharging to what is assumed to be the outlet end of the constructed wetlands. While no objection is raised to this in principle, the proponent is to ensure that the poor hydraulic efficiency proposed has been adequately accounted for in the MUSIC models and that the wetlands are of adequate size.	The default values for CSTRs ("continually stirred tank reactors" - an assumption used in the modelling to determine hydrologic efficiency) were used in the modelling in MUSIC. The assumption that the drainage plan shows stormwater pipes discharging to the outlet end of the constructed wetlands is incorrect. As outlined in the Landscape Master Plan attached to Appendix M (AECOM), the plan shows inlets and outlets at either ends of the wetlands and the expected hydrologic efficiency provided is very high (high length to width ratios, >3:1).
1.14.7	Appendix M: Rainfall used in the MUSIC analysis (about 1150mm) is significantly lower than average local rainfall (1440mm). The proponent is to use an appropriate time series or demonstrate that the impact of using lower than average rainfall is negligible.	Background: MUSIC, the stormwater modelling software, requires rainfall data in 6 minute time steps to accurately model pollutant runoff and stormwater treatment. There are often gaps in 6 minute datasets. To ensure that the model is as accurate as possible, modellers usually try to choose a 6 minute time series without any gaps for stormwater treatment modelling. Available Data: Cardno analysed the available 6 minute data from nearby meteorological stations. Six minute rainfall data was selected from the Port Macquarie Region. Monthly evapo-transpiration data for the Port Macquarie was also used. Complete data sets were available for the periods:

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1966-1970 (5 years) – Average annual rainfall: 1124 mm
1980-1991 (10 years) – Average annual rainfall: 1054 mm

Cardno and AECOM chose to use the 1966 to 1970 data set because the average annual rainfall of that period was 1124mm, and this was the closest to the long term average of 1440 mm for Bonny Hills. Thus, this dataset was the best available local data for stormwater treatment modelling. This was the most appropriate (i.e. local) time series available.

It is acknowledged that the rainfall data set used for the original MUSIC modelling was below the mean annual rainfall for the Bonny Hills site. This was due to the absence of better consecutive continuous data for this region (i.e. missing data in the other rainfall records). In order to confirm the performance of the wetland, a sensitivity analysis of the model has been undertaken by modifying the rainfall data in the model. To determine a suitable rainfall data set records from coastal regions north to Queensland and south to Sydney with respect to two critical factors were examined:

1. Absolute rainfall (i.e. mean annual rainfall); and

2. Seasonal pattern (i.e. mean monthly rainfall).

Note consecutive continuous data had to be available from the examined sites and this immediately ruled out several potential weather stations.

A range of stations were examined and Elanora Water Treatment Plant (station # 40609, Gold Coast, Queensland) was identified as having a reasonably similar long term average annual rainfall to Bonny Hills with suitable pluviograph data. However, seasonal distribution of rainfall for Elanora generally showed wetter summers and drier winters compared to Bonny Hills. The original MUSIC model was re-run with Elanora data providing results as follows:

Original Model (Bonny Hills SILO rainfall data) vs. Elanora rainfall data for pollutant load reductions
<table>
<tr><th>Pollutant</th><th>Bonny Hills % Reduction</th><th>Elanora % Reduction</th></tr>
<tr><td>TSS</td><td>79.7</td><td>77.1</td></tr>
<tr><td>TP</td><td>69.4</td><td>65.5</td></tr>
<tr><td>TN</td><td>46.6</td><td>42.8</td></tr>
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The results show slightly lower percentage load reductions using Elanora rainfall data compared to the original modelling. The sensitivity to the change in rainfall seasonality is as
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		important as the increase in total annual rainfall. The differences in treatment are primarily due to the more extreme seasonal patterns associated with the Elanora rainfall data and this testing is therefore considered conservative. In summary, the meteorological data used in the modelling of stormwater treatment at Bonny Hills uses the closest station available that contained suitable data required to run a continuous simulation that was as close as possible to the long term mean annual rainfall average of the site. Although the sensitivity testing using Elanora Water Treatment Plant showed a reduced performance of the wetland, it is considered to be within the range of accuracy of the model. Another consequence of using a lower than average rainfall can be a greater wetland drawdown than average conditions being represented in modelling. The water level drawdown of all of the wetlands were modelled to ensure that the wetlands will not draw down too far, which is visually unappealing and can threaten the viability of the wetland plants. Since this modelling was done using a lower than average rainfall, it was conservative i.e. there is a low risk of wetland water levels being drawn down unacceptably low.
1.14.8	Appendix N: Drainage Concept Plan D1 shows a piped drainage network planned for the site which is not consistent with the road cross falls necessary to effect the use of a vegetated buffer strip adopted for modelling purposes in Appendix M.	Further work will be undertaken in subsequent development application(s) following detailed urban design of the residential components of the Concept Plan. It is expected that the drainage plan will evolve with the urban design and will be designed to accommodate the required treatment devices.
1.14.9	Appendix N: Based on Drainage Concept Plan D1, the catchment draining to Wetland W4A is not shown and the purpose of the wetland is unclear. It is not known if W4A is on line or off line or what arrangement is proposed.	It is correct that the catchment was not shown on the Drainage Concept Plan D1 of Appendix N (Cardno). The drainage for the north-eastern corner of the site was not indicated. An indication of the approximate flow paths is provided in the image of the treatment train that was modelled in MUSIC in Figure 27 of Appendix M (AECOM). The wetland is offline and its purpose is to treat water from the upstream catchment.
1.14.10	Appendix N: Wetland W4B shown on Drainage Concept Plan D1 seems to serve two catchments of roughly equal size with short circuiting or poor hydraulic efficiency likely. There is no indication this has been accounted for and no indication of the ability to achieve 500mm extended depth.	It is acknowledged that Wetland 4B as shown in the Drainage Concept Plan D1 (Appendix N Cardno) is confusing because the connection of the catchment to Wetland 4B is not clearly indicated. However, the design of drainage infrastructure is expected to evolve with further design of urban components and wetlands will then be designed to accommodate efficient routing of flows. It is not anticipated that there will be any difficulty to achieve 500mm of extended detention as this is readily achievable even on relatively flat sites.
1.14.11	Appendix N: Figure 24 Drainage Hydraulic gradients shows Wetland W3 with a surface water level of RL3.5m discharging to	There was an error in the water level of wetland W3 previously shown in Figure 24 of Appendix N (Cardno). The water level should be RL 4.3. Figure 24 has been revised to

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	Duchess Gully with an invert level of RL4.2m. Explanation required how Wetland W3 will drain under such conditions.	reflect the correct water level and is included within the Project Application Preferred Project Report.
1.14.12	Appendix N: The lake wetting and drying analysis appears to have included runoff volumes from the new development when Figure 8 in shows Wetlands 1A to 1F (as one long wetland) not 6 separate wetlands discharging into Duchess Creek. Clarification is sought as to whether there are separate wetlands discharging into the open water wetland or one long one.	The treatment wetlands W1A to W1E all receive runoff from various separate parts of the new development and discharge into the larger open water wetland (W1). Revised Figures 7 and 8 (included within the Project Application Preferred Project Report) clarify this.
1.14.13	Appendix N: The proposed pipe network shown in Figure 8 differs from that shown on the Drainage Concept Plan D1 in. It is unclear which network is proposed.	Revised Figures 7 and 8 correct and clarify the previous inconsistency. Revised Figure 23 also shows the proposed drainage network. Revised figures are included within the Project Application Preferred Project Report. It is noted that road layout illustrated within these figures is indicative only. Design of actual road layout will be subject to future development application(s) for the proposal.
1.14.14	Appendix M identifies a number of proposed bioretention systems. A plan is required showing where these bioretention systems are to be constructed. This plan should show that it will be viable to construct the bioretention systems in that location such that modelled storage depths and volumes and an ability to drain the devices are achievable.	The design principles for bioretention systems to treat water quality to the required standards are listed in Section 4.2.9 of Appendix M (AECOM). The location of these systems will be defined as the urban design for the urban components of the Concept Plan evolves.
1.14.15	A proposed surface contour or grading plan may have been provided in other documents but one should be included in Appendix N so that it can be assessed together with the relevant water cycle information. The plan should show both existing and proposed surface contours at a clear scale and at frequent contour interval at least 0.5m.	Revised Figures 7 and 8 (see Project Application Preferred Project Report) show the final proposed contours.
1.14.16	A WSUD road layout was developed by PMHC and included in the Area 14 IWCM Plan. The WSUD road layout included features such as a divided carriageway with central bioretention systems. It also included road cross sections showing typical vegetated buffer strips. The IWCM WSUD road layout also included a number of important WSUD features such as the need to have road frontage alongside any open waterways to prevent the dumping of grass	The proposal does not include detailed road design at this stage. The location of proposed WSUD elements including vegetated buffers, swales and bioretention systems proposed as part of the future urban development will be determined during detailed design undertaken as part of separate development application(s) for urban components of the Concept Plan.

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	clippings and rubbish over backyard fences. The proposed road layout has removed many of these features. The proponent needs to justify the departure from the Area 14 IWCM Plan.	
1.14.17	Appendix L identifies that groundwater is not fit for human consumption and certainly unfit for disposal to a receiving water because it contains detectable levels of Mercury, Arsenic and other heavy metals all of which are known toxins. There is no assessment of the impact of these toxins on the proposed open water wetland, on water quality in Duchess Creek and the potential to spread contaminants through proposed excavation.	While the heavy metals that were examined are technically listed as toxins, it should be noted that they each can be found naturally occurring in groundwater. Hence guidelines do not universally prohibit their exchange (or 'disposal' as referred). The proposal maintains existing groundwater-surface exchange processes, including the currently existing exchange of toxins that have been measured in the groundwater. The proposal does not manufacture these toxins, or establish a new and foreign 'disposal' mechanism for these toxins. The contaminants measured in the soil are typical of oxidised ASS, which occurs throughout coastal NSW. The ASS Management Plan has been developed to manage ASS conditions across the site. Maintaining the lake pH > 5.5 will mean that the majority of the metals with remain in insoluble form, and limit the risk to aquatic organisms. The existing lagoon is considered to be a good indicator of the future water quality of the proposed open water wetland and as discussed in previous studies, has provided favourable indications. Duchess Gully is groundwater fed and is expected to currently receive natural and anthropogenic contaminants, none of which could be attributed to the proposal. The proposal does not promote a higher concentration of contaminants to be delivered to Duchess Gully than current conditions and the redirection of the surface water flow path to the northern end of Duchess Gully is expected to promote flushing. Arsenic levels were measured in water samples taken from bores GW1 to GW9, with a mean value of 0.019 mg/L, which is less than the trigger concentration of 0.024 mg/L for impacted aquatic ecosystems. Measurements ranged from 0.005 mg/L (limit of detection) to 0.24 mg/L recorded at GW2, although subsequent measurements of 0.005 mg/L were later recorded at the same location. These concentrations fulfil criteria for irrigation and stock watering. Measured mercury levels were less than 0.001 mg/L, fulfilling the criteria for drinking water. The average recorded values of Mercury were less that aquatic trigger values of 0.0004 mg/L in 4 of the 11 samples, and less than 0.0006 mg/L (for freshwater systems) in 6 samples. Levels of Mercury in the groundwater were therefore marginal for release, although it is not known if these concentrations are higher or lower than the existing surface water characteristics. In summary, measurement of toxins is included in the groundwater monitoring plan (see

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		Appendix L of Project Application EA) to characterise existing groundwater conditions. A dynamic exchange of surface and groundwater will be maintained on the site, including the pre-existing exchange of toxins. Based on the available data, the observed concentrations and the implementation of the ASS Management Plan, the risk of increase of delivery of toxins to receiving waters is considered to be low.
	Hydrology	
1.14.18	The proposed playing fields are to be located on land which is to be filled. There is no comment on proposed flood immunity of the fields. Council's Specification D5 only requires this to be 1 in 1 year.	Proposed playing fields are to be located at the western (not eastern) edge of the residential development. The fill contours for this area indicate that the flood immunity for the playing fields will be at least 1 in 5 year ARI.
1.14.19	Appendix N: Section 4.3.6.5 which talks about hydrology in the context of event based flood modelling notes that impervious areas were assumed to comprise 45% of residential development areas and 17% of rural residential development areas. Council's D5 Specification requires that low density urban development be considered to be 60% impervious and rural residential lots are to be considered 40% impervious.	An increase in the percentage impervious area of residential and rural residential areas would not significantly alter the overall WBNM Model hydrographs applied to the flood control structures proposed for the open space corridor because the developed areas are not a large percentage of the total catchment.
1.14.20	Appendix N: Figure 27 Reach Duch-S shows cross sections that are not perpendicular to the flow path as well as a creek centre line which is located over existing development. The full extent and location of modelled (and surveyed) cross sections should be shown clearly on the plan. Mike 11 is a one dimensional flood model and as such all cross sections should be surveyed perpendicular to the direction of flow. If they aren't then additional cross sections may need to be surveyed.	The cross sections used in the MIKE11 hydraulic model were in general taken perpendicular to the flow direction and selected to fairly represent the available flow conveyance. The chainage marks on Figure 27 are diagrammatic only and do not represent the alignment of the cross-sections actually used. The existing residential development protruding across the flow path at one point is a local constriction only which does not invalidate the model.
1.14.21	Appendix N: Figures 29, 30, 31 and 32 are not intelligible. Plans showing outlet structures should clearly show the location and a typical cross section so that one can work out what is shown and where it is.	Figures 28, 30, 31 and 33 had printing errors which have now been corrected. Revised figures are included in the Project Application Preferred Project Report.
1.14.22	Appendix N: Table 45 identifies a cross section called Duchess N60 as an inflow location. No such cross section has been shown to exist on Figure 26 which shows the existing scenario Mike	The location of Chainage 60 (the adopted inflow location) can be interpolated on Figure 26 from the position of adjacent cross-sections which are marked.

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	layout.	
1.14.23	Appendix N: The legend on Figure 36A does not match the line type used in the graph. However it is noted that the minimum lot level of about RL 5.7m AHD has been plotted upstream of the existing lagoon. It is noted that the downstream of the overflow S3, 100 yr developed flood levels drop well below RL5 with the minimum fill levels shown at about RL 5.1.	Figure 36A is correct.
1.14.24	Appendix N: Section 4.3.8.5 - The impact on creek health and morphology of a threefold increase in peak flows in the middle reaches of Duchess Gully has not been assessed. It is irrelevant that peak velocities remain largely the same because the flow regime in that part of the creek will be substantially altered. Clarification is sought on the following: • Impact on creek health/morphology and stability during smaller more frequent events. • Impact on creek bed and bank stability should the original flow path of Duchess Gully if it reverts back to the original flow path more than 100 years on. • Whether any stabilising works need to be undertaken. • The current ecological status of the creek in this area in terms of the presence of native vegetation and weed propagules and potential impact following construction. • Impacts on Duch-N.	Although there is a significant redirection of flows within the middle reaches of Duchess Gully, absolute velocities during flood events are low, and are not significantly increased by the proposal. Appendix N Figure 37 shows predicted 100 year ARI average velocities within the middle reaches of Duchess Gully ranging from 0.3 m/s in the vicinity of DUCH-N Ch. 835 to 0.7 m/s in the vicinity of DUCH-L Ch 150 just upstream of the junction with the Overflow Channel. These velocities are well below the non-scouring limit for well-vegetated surfaces (1.8m/sec) and it is not expected that there will be significant morphological impacts from the changes. Notwithstanding the above, pursuant to the VPA the proponent is committed to maintain the sector of the middle reaches of Duchess Gully within the Central Corridor for a period of 20 years following establishment of the Central Corridor, as detailed within the Open Space Management Strategy (OSMS) (Appendix D of the Project Application EA). The condition and stability of the creek bed and banks will be monitored during that period and any necessary stabilising works undertaken. Further, the sector of the middle reaches of Duchess Gully lying within Lot 5 DP 25886 will remain under the ownership and management of the proponent pending negotiation of a new VPA with Council associated with a subsequent development application(s) for Lot 5 DP 25886. The proponent's obligation to maintain this section of Duchess Gully will include monitoring and maintaining the riparian interface and shown as Zone 4 for an extended period, to be negotiated with Council (see Concept Plan Preferred Project Report for zone details).
1.14.25	The relationship between the existing residential development located to the south and west of Duchess Creek and the predicted flood levels is unknown. Clarification required as to whether this development would be inundated in a 100yr flood event.	The existing residential development located to the south and west of Duchess Creek was developed by the proponent and is described as Stages 1, 2 and 3 of Rainbow Beach Estate. The flood modelling shows that flood levels are not increased in this area by the proposal. Specifically, Table 48 (Appendix N of the Project Application EA) shows for the developed case the predicted 100 yr ARI maximum water levels in DUCH-S are in the main significantly

<table>
<tr><th>Item</th><th>Department of Planning
Issue</th><th>Response</th></tr>
<tr><td></td><td></td><td>reduced from the existing case.
As part of the approvals process, Council imposed a minimum floor level of RL 6.2 m AHD on Stages 1, 2 and 3 in respective Section 88B instruments for each stage. The resultant minimum floor heights above predicted 100yr ARI water levels are shown in the following table.
<table>
<tr><th>Existing stage</th><th>Representative branch and chainage</th><th>Max water level developed case 100yr ARI</th><th>Min dwelling floor height (AHD)</th><th>Min floor height above 100yr ARI water level (AHD)</th></tr>
<tr><td>Stage 1</td><td>DUCH-S 540</td><td>5.5 m</td><td>6.2 m</td><td>0.7 m</td></tr>
<tr><td>Stage 2</td><td>DUCH-S 900</td><td>5.13 m</td><td>6.2 m</td><td>1.07 m</td></tr>
<tr><td>Stage 3</td><td>DUCH-S 1230</td><td>5.12 m</td><td>6.2 m</td><td>1.08 m</td></tr>
</table>
Generally all parts of the developed lots in Stages 1, 2 and 3 are above RL 6.0 AHD.</td></tr>
<tr><td>1.14.26</td><td>What is the impact of an increase in predicted flood levels on reach Duch L Sections 885 to Sections 1135 on existing properties adjacent to the channel?</td><td>These existing properties are located well above the predicted flood levels in Duchess Gully.</td></tr>
<tr><td>1.14.27</td><td>Appendix N: Section 4.3.8.9 – Impact on Milland Property, Table 55 refers to Sections 750 and 675. These are not shown on Figure 27 which depicts the developed scenario Mike Layout. Appendix N, Section 4.3.8.9 – Comparison of the predicted afflux impact against any historical channel alignment is not relevant. The proponent must assess the impacts of the proposed development on the existing state of the site. The report notes that Milland will experience an economic loss as a result of the proposal because increased flood levels will reduce the flood free portion of that land. While this may not be significant in terms of the scale of the Rainbow Beach proposal, it may be significant to Milland. The proponent is required to estimate the volume of fill to be imported onto Milland land and the economic cost of restoring the flood free portion of that land to facilitate in defining the economic impact of the Rainbow Beach proposal on Milland.</td><td>The proposal includes the restoration of the natural flow path in Duchess Gully across a small section of the Milland property at its south western corner. The flood modelling compares future flood levels on the Milland site under developed conditions against existing conditions, and shows an afflux of 110 mm at the Milland southern boundary, decreasing to zero upstream at the Milland western boundary. The flood levels under developed conditions are lower than the original natural flow conditions as the existing man-made overflow channel (S3) constructed in the early 1900’s is being retained.
The Milland property is the subject of a Part 3A Concept Plan and Project Application (MP07_0010). The Milland EA assesses the impact of filling 470 m^2 of Duchess Gully up to RL5.0 m AHD within the south western corner of the Milland property and found that the fill will have no effect on the conveyance at this location and will not increase flood levels.
The minimal impact on the Milland property by the restoration of the natural flow path in Duchess Gully is known and acknowledged by both parties, who have agreed to enter into a Statement of Mutual Intent regarding this issue.</td></tr>
</table>

Item	Department of Planning Issue	Response
1.14.28	Appendix N, Section 4.3.9.4 – The document states that with climate change the 1% AEP tide level will be RL3.2mAHD. This may occur because of a combination of severely low air pressure, naturally high tides and unfavourable or on shore wind conditions. This event will not necessarily coincide with a storm event. A storm tide level of 3.2m AHD will fully inundate both the proposed open water wetland and the proposed treatment wetlands located at RL 3.0. Potential impact of saline tidal inundation on the open water wetland and the treatment wetlands is to be assessed.	It is unlikely that extreme ocean levels would occur without significant freshwater runoff from the catchment. The 1% AEP storm surge level is RL 2.6m AHD whereas the lowest hydraulic control for the open water wetland is RL 3.0. Sea water inundation of the wetland would only occur with ocean surges far exceeding the 1% AEP and/or with possible future climate change sea level rise and in absence of concurrent freshwater runoff. It is possible that this could occur but it would be a very rare event. Such an event would cause significant levels of salinity in the wetlands with some die-off of vegetation and loss of function in the treatment wetlands. The wetland freshwater regime would eventually re-establish after such an event. Such a temporary disruption to wetland function could be accepted as an inevitable impact of such rare events without adopting it as a reason to reject the proposal as unacceptable. The same impact would occur at countless other similar locations during such a rare event.
1.14.29	Appendix N, Section 4.5 Tailwater levels for local drainage - It is sufficient to adopt any tailwater level for local drainage provided that the drainage system complies with the performance standards of Council Specifications D5 and D7. Clarification is sought as to whether the volume of fill proposed to be excavated could be reduced if tailwater levels of 3.1m were adopted for discharges to wetlands W1A to F and Wetland W2. It is noted that this may not be possible if the volume of fill to be excavated is governed by the need to provide flood immunity.	Appropriate tailwater levels were adopted in the assessments for checking the design of local drainage systems. The local drainage systems will comply with performance standards of AUSPEC D5 and D7. The volume of fill required is based on the need to provide appropriate flood immunity not on the requirements for local drainage.
1.15	**Mosquito assessment**	
1.15.1	An assessment should be carried out to identify the need for appropriate measures necessary to provide protection for residents from mosquito and sandflies. This requires analysis by qualified persons as to whether the mosquitoes and sandflies will have a detrimental impact on future residents of the development.	There is no significant mosquito or sandfly issue observed or experienced within the existing development area immediately to the south of the Central Corridor. This development area has a similar wetland treatment and open water setting to the proposal. The presence of Plague Minnow in existing water bodies should also be noted. It is not expected that there will be a significant mosquito or sandfly issue created by the proposal.

3.1.2 Office of Water issues and responses

Item	Office of Water Issue	Response
2.1	**Groundwater excavation**	
2.1.1	NOW previously raised concerns to the proponent about the proposed main groundwater excavation open water wetlands being used as a stormwater detention basis. Request that the proponent provide further information on stormwater management and WSUD for the site in order to assess whether WSUD measures will adequately treat the point source prior to directing stormwater to the proposed excavation.	Section 4.2 of Appendix M (AECOM) provides detailed information on the treatment of stormwater required prior to discharge to the open water wetland (the proposed excavation). Section 5.1.3 of Appendix M (AECOM) provides a discussion of the expected water quality of the open water wetlands, and concludes that the water quality of the open water wetlands is adequately protected.
2.2	**Pond lining**	
2.2.1	This application proposes a series of 9 or more pre treatment ponds prior to stormwater discharge to the main groundwater excavations. NoW recommends these pre treatment constructed wetland ponds be lined before water enters the two main groundwater excavations (W1A, W1B, W1C, W1d, W1E, W2, W3, W4A, W4B and any other constructed wetland treatment ponds). This is considered necessary as the ponds are in close proximity to the groundwater table and therefore there is not adequate material between the pond and the groundwater table to provide adequate treatment or removal of the pollutants expected to be entering these ponds.	The requirement for a hydraulic barrier between the ponds and the groundwater may be invoked if the surface water quality is shown to be of poorer quality than the groundwater, such that a reduction of the quality of the groundwater from its existing 'beneficial usage characteristic' may be incurred. A comparison of the modelled surface water quality against the measured groundwater quality adjacent to each of these ponds will be undertaken to check the requirement for a hydraulic barrier. The usage of the natural geology as the hydraulic barrier is appropriate where the natural materials can be shown to provide an effective barrier to flow and it can be shown that the clay materials adjacent to proposed wetlands can provide a sufficient hydraulic barrier. To verify this, laboratory tests of the permeability of samples of the in-situ material will be required. It may be necessary to verify that the rate of groundwater flow through the in-situ materials is less than the rate of flow through a comparably constructed lining material with thickness of 300 mm and co-efficient of permeability of 1×10^{-9} m/s. If this is the case, then in-situ materials will be used in place of a liner. Even if the in-situ material is shown to provide an effective barrier, there will still be a requirement for appropriate preparation of the pond base for construction of the ponds. If the in-situ material is found to be inappropriate as an effective barrier, then that individual pond or ponds will be lined. The proponent commits to undertake testing of in-situ material to determine whether lining will be required. This is reflected in the amened draft statement of commitments for the Project Application (see Project Application Preferred Project Report).
2.3	**Acid sulphate soils and water quality monitoring**	
2.3.1	The water quality information provided in the EA uses the existing lagoon as a predictor of what the water quality in the proposed	Risk of ASS contamination has been acknowledged and addressed through the implementation of a groundwater monitoring and response plan as presented in Appendix B

Item	Office of Water Issue	Response
	open water wetland will be like. The EA states there are no ASS conditions in the existing lagoon. However there are potential acid sulphate soil (PASS) contamination issues associated with the proposed open water wetland. The modelling presents ASS issues as a low to moderate risk, however the risk of ASS contamination is possible. Therefore, there is the potential for the groundwater quality in the locality to be affected.	to WRL's report (Appendix L of the Project Application EA). As detailed in Section 13.1 of the Project Application EA, the draft statement of commitments includes a commitment to undertake groundwater monitoring in line with WRL's recommendations. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
2.3.2	A security deposit (Bond or Bank Guarantee) of $250,000 is required to enable remediation of any ASS impacts should they occur. This is in line with security deposits based on similar developments held with NoW and would be required prior to the commencement of work. Further, a detailed groundwater and excavation monitoring program and ASS contingency plan should be prepared and approved by NoW as a condition of the consent.	The proponent agrees to consult with NoW regarding the security bond at the construction certificate stage. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
2.3.3	The Project Application EA indicates that the proposed groundwater monitoring plan (Appendix B of the Groundwater Characterisation & Numerical Modelling for Rainbow Beach Estate, WRL, March 2010) would be used as a basis for the monitoring program for the water licence. It is noted that an additional parameter 'analytes' will be monitored in the groundwater bores. These 'analytes' should also be monitored in the water treatment wetlands during construction and post construction. The monitoring plan outlines that two years of post monitoring and reporting by a qualified consultant will be undertaken. NoW would tie the release of the Security Deposit (Bond/Bank Guarantee) to the results of the groundwater monitoring program provided it demonstrated that the proposal will meet the water quality requirements, including minimal risk of the development of ASS, into the longer term.	The proponent agrees to undertake monitoring of 'analytes' during construction and post construction. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
2.4	**Stormwater management**	
2.4.1	NoW have concerns with the constructed wetland treatment ponds that are within close proximity of the groundwater table not being lined with impermeable material.	This issue is addressed in Item 2.2.1 above.

Item	Office of Water Issue	Response
2.5	**Water licensing**	
2.5.1	The excavation is a window to the watertable and the groundwater excavation would have to be approved by NoW and licensed under the *Water Act 1912*. In addition any of the construction wetland treatment ponds that intersected the watertable would be included in the same licence. The proponent may be required to provide additional information as part of any water licence application with NoW.	The proponent agrees to consult with NoW regarding the potential requirement to obtain water licences for works proposed as part of the Project Application. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
2.5.2	All works that intersect an aquifer require a water licence which should be obtained prior to any work being carried out. This includes for example, groundwater excavations, dewatering for dam construction, wells, spear points, bores and monitoring bores. There appears to be a number of bores drilled across the property. A search of the NoW licensing database revealed that none of these bodies are registered. Licences may be required under the *Water Act 1912* for all bores (existing and proposed) on the property.	WRL were responsible for supervision of the installation of monitoring bores GW1, GW2, GW3, GW4, GW5, GW6, GW7A, GW7B, GW8 and GW9. An application for groundwater licenses for installation of monitoring bores at the site was sent by fax to NoW on the 7th June 2009, prior to installation. The same application was resent by email along with the drilling and well construction details and surveyed locations to Information@water.nsw.gov.au and a confirmation response (from nizerah.elniz@water.nsw.gov.au) was received, stating that the application will be processed by the licensing office in Grafton. The proponent is still awaiting a response from NoW on this issue, however remains committed to obtaining the appropriate licences.
2.5.3	Dewatering of groundwater appears to be required as part of the development. Any proposed dewatering for the construction of the water treatment wetlands and open water wetland requires a licence under Part 5 of the *Water Act 1912*, accompanied by a groundwater management plan.	Temporary dewatering will be necessary during the construction phase. The proponent agrees to consult with NoW regarding the potential requirement to obtain water licences for works proposed as part of the Project Application. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
2.5.4	If the proposal is approved, NoW proposes to issue a Water Licence under Part 5 of the *Water Act 1912* for the main excavation and additional smaller constructed wetland treatment ponds. The Security Deposit (Bond or Bank Guarantee) placed on the licence will be set initially at $250,000 to account for the ASS, with further increases associated with stormwater and other potential impacts being assessed to determine any additional increases required to the security deposit.	The proponent will consult with the NoW with regard to water licensing and payment of a security bond for works proposed as part of the Project Application. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).

Item	Office of Water Issue	Response
2.6	**Riparian management**	
2.6.1	Duchess Gully is located within the proposed subdivision site. Most of the reaches of Duchess Gully have been modified by man-made channel improvements and additions. As part of the Project Application a number of works are proposed within the existing waterway features. Whilst approvals under Part 3A of the EP&A Act 1979 do not require a separate Controlled Activity Approval under the *Water Management Act 2000,* NoW's advice to the DoP is based on the former Department of Water and Energy's 'Guidelines for Controlled Activities (2008)'. These Guidelines outline the management requirements for works within 40m of a watercourse. Specifically, they require that all works within riparian areas are undertaken with minimal disturbance, incorporate erosion and sediment control measures, provide adequate drainage and maintain hydrological flow regimes. All disturbed areas are to be revegetated and rehabilitated appropriately.	Pursuant to the VPA the proponent is committed to protecting the riparian environment of Duchess Gully during construction and proposes that works within riparian areas will be undertaken with minimal disturbance, incorporate erosion and sediment control measures, provide adequate drainage and maintain hydrological flow regimes. Further, the proponent is committed to maintaining Duchess Gully within the Central Corridor for a period of 20 years following establishment of the Central Corridor, as detailed within the OSMS (Appendix D of the Project Application EA). This assurance is reflected in the amended draft statement of commitments for the Project Application (see Preferred Project Report) and will be monitored by Council during the construction phase of the development.
2.7	**Canal development**	
2.7.1	The development proposes to construct an additional large waterbody adjacent to an existing waterbody. It is important a proper assessment is undertaken to determine whether the proposed development is captured under the definition of the SEPP 50.	This issue is addressed in Table 3.1.1 Item 1.5.2 above.

3.1.3 Department of Environment, Climate Change and Water issues and responses

Item	Department of Environment Climate Change and Water Issue	Response
3.1	**Air quality and noise impacts**	
3.1.1	Management of air quality and noise impacts are key issues that have not been addressed in the EAs and DECCW advises that these issues must be adequately addressed prior to project approval. The proponent must ascertain whether or not any of the proposed activities are deemed a Schedule Activity under Schedule 1 of the POEO Act 1997. If any of these activities are deemed scheduled activities, the proponent will require an EPL issued under the provisions of that Act.	Excavation and filling works proposed under the Project Application are a Scheduled Activity under the POEO Act 1997 and require an EPL. The EPL will guide the environmental management, control and monitoring of noise and air quality impacts during construction. The proponent will make an application to DECCW for the issue of an EPL. This requirement is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
3.2	**Infrastructure capacity**	
3.2.1	DECCW recommends the proponent ensures that there is sufficient capacity within the municipal sewage treatment system to accept all sewage waste from the proposal or detail alterative on site disposal methods proposed.	The Concept Plan EA includes a detailed review of existing and future capacity of Council's STP. As detailed in Appendix 8a of the Concept Plan EA, Council has advised that a recent major upgrade to the Bonny Hills STP has increased the capacity of the STP from the previous 6,000 EP to the upgraded capacity of 12,000 EP. This additional capacity will cater for all of the proposed future development within Area 14. Upgrade works were commissioned in March 2010 and are complete.
3.3	**Biodiversity**	
	Vegetation removal and impact upon threatened species	
3.3.1	The proposal will result in the direct loss of approximately 1.58ha of native vegetation and up to 64.32ha (including the Pastoral Woodland containing a number of habitat trees) of known or potential habitat for a number of threatened species including Wallum Froglet (*Crinia tinnula*), Koala (*Phascolarctos cinereus*), Greg-headed Flying-fox (*Pteropus poliocephalus*) and Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*). The proposed native vegetation removal includes 0.49ha of Swamp Oak Flood Plain Forest and 0.43ha of Swamp Sclerophyll Forest, which are both EECs listed under Part 3, Schedule 1 of the TSC Act 1995).	The previously recorded location of these isolated fauna populations (being in a small area bound by Ocean Drive and maintained grazing land) means that they may currently be low in number and hence of low long term viability. The regeneration works proposed and underway within the Central Corridor provide for a variety of habitats including those favoured by the Wallum Froglet, Eastern Chestnut Mouse and Common Planigale. One of the primary objectives of the Central Corridor and its associated regeneration works is to improve habitat values and allow these populations to expand away from the restricted area of habitat adjacent to Ocean Drive, and increase long term viability. The proposed Central Corridor regeneration and restoration works are outlined within the OSMS (see Appendix D of the Project Application EA). The OSMS provides the framework within which the Central Corridor is to be managed and is referenced within the VPA as the guiding document for regeneration, restoration and management works. As described in Section 3 of the Concept Plan EA the majority of the site is predominantly farmland used for cattle grazing and associated pasture improvement. Table A of Appendix G (Project Application EA) confirms that approximately 150 ha of the total 177.4 ha site is

Item	Department of Environment Climate Change and Water Issue	Response
		farmland. This vegetation is described as predominantly cleared pasture containing isolated scattered trees in severe decline limited to localised areas with negligible habitat value to threatened species (refer Figure 4 of Appendix B of the Project Application Preferred Project Report). Table B of Appendix G notes that 62.85 ha of farmland currently zoned for residential use is to be developed for urban uses as part of the proposal. This part of the site has negligible habitat value, particularly in comparison to habitat retained and being regenerated within the Central Corridor. Further, only 14 hollow-bearing trees have been identified within this area. These hollows are proposed to be recovered and relocated within the Central Corridor as part of regeneration works. Table C of Appendix G confirms that for the 0.8 ha of EEC removed, some 29 ha will be retained or regenerated within the Central Corridor, with an overall EEC offset of some 36:1. Following approval of the Concept Plan and Project Application, the Central Corridor will be rezoned to conservation/environmental management further protecting the retained vegetation. In conclusion, the extent of loss of EEC is not sufficient to have a significant impact on the viability of the local occurrence and or survival of threatened species within the site. The project will result in over 14.3 ha of additional net EEC gain alone. Commitments relating to the OSMS, the recovery of hollow bearing trees have been included within the revised draft statement of commitments (see Project Application Preferred Project Report).
3.3.2	Section 5.3.3.1 of the Ecological Survey and Statutory Assessment prepared by Darkheart Eco-Consultancy (September 2008) states that the western population of the Wallum Froglet (*Crinia tinnula*) is not affected in any manner by the Project Application. However a review of the bushfire protection measures plan provided in the Project Application EA depicts asset protection zones (APZ's) of up to 47m in this area that has been earmarked for future development of a school site. The habitat requirements of this species are not commensurate with the APZ management required for this style of development. It is therefore expected that this population will be unable to persist within the site. Should the DoP grant approval for the	The Concept Plan seeks approval for the delineation of the southern school site boundaries. Development of the site will be the subject of future development application(s) that will include detailed ecological investigations. At that time, the extent of sensitive habitat will need to be confirmed; the extent of actual built form will need to be examined in detail and any APZs or offsets will be assessed and determined. As noted in Section 4.6.3.5.3 of Appendix G (see Project Application EA), at least 50 male Wallum Froglets were recorded in the main depression to the north of the existing lagoon. By comparison only 2 males were recorded at the western population site near to Ocean Drive. The assessment concluded that this population was a small isolated population in the school site area with potential low viability. As part of revegetation works proposed within the OSMS (included at Appendix D of the Project Application EA and referenced within the VPA) potential habitat will be enhanced for this population in the adjacent Central Corridor. The

Item	Department of Environment Climate Change and Water Issue	Response
	Concept Plan, DECCW advises that impacts upon this population will require adequate offsetting in accordance with DECC, 2008a.	corridor will also establish a forested linkage to the main depression where a larger population exists, and hence the potential for dispersal between both populations. Regeneration work is well advanced at the main depression (north of the existing lagoon) which supports the larger Wallum Froglet population. This area had previously been slashed, grazed by cattle and was invaded by Torpedo Grass. Given the significant regeneration work to date on the Wallum Froglet depression and as this location has the principal population on the site, the net benefit to the Wallum Froglet is considered likely to be significant in terms of effecting its long term viability.
3.3.3	Development of Lot 5 DP 25886 (former eco-tourist site) involves the direct removal of known habitat for the Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*). In addition, the southern school site includes the densely vegetated drain adjacent to the southwest patch of dry sclerophyll vegetation. This area is known to support a small population of Eastern Chestnut Mouse and Common Planigale (*Planigale maculate).* Despite the recommendations of the ecological consultants (Darkheart Eco-Consultancy) that this habitat be excluded from development and fenced off, APZ's of up to 47m have been applied to this area. These APZ's will have a negative impact upon the habitat requirements for both of these species. The proposed revegetation and enhancement of the Central Corridor will not provide suitable habitat in accordance with the requirements of these species. It is therefore expected that they will be unable to persist within the site. Should the DoP grant approval for the Concept Plan, DECCW advises that impacts upon this population will require adequate offsetting in accordance with DECC, 2008a.	Development of Lot 5 and the southern school sites will be the subject of future development application(s) that will include assessment of potential impacts on the Eastern Chestnut Mouse and Common Planigale. Recommended APZs would be reassessed and determined at this time. Further, as detailed within the Concept Plan Preferred Project Report, the Lot 5 DP 25886 principles plan provides for increased buffer areas to the west, south and east and a reduced developable area. Bush regeneration within the Central Corridor including the significant extent of swamp forest revegetation will provide potential habitat for the Common Planigale. The floristics and structure of this vegetation is similar to habitat currently occurring on site, and to habitat known to occur near and within Kooloonbung Creek Nature Reserve. A similar situation should also apply for the Eastern Chestnut Mouse, however its presence would also depend on a suitable disturbance regime, which is currently provided by periodic slashing and its actual population size (which appears to be small). A suitable fire regime will therefore be required to enhance the corridor's habitat potential for this species. The OSMS (Appendix D of the Project Application EA) provides the framework within which the Central Corridor is to be regenerated, restored and managed is referenced within the VPA as the guiding document for these works. Commitments relating to the OSMS have been included within the revised draft statement of commitments (see Project Application Preferred Project Report).
3.3.4	The majority of the Swamp Oak Floodplain Forest community has not been included within the Central Corridor; however this vegetation is significant for both regional connectivity and conservation purposes. This community is commensurate with an EEC listed under Part 3, Schedule 1 of the TSC Act 1995. DECCW strongly recommends that the Swamp Oak Floodplain	Figure 21 of the Project Application EA illustrates the location of the Swamp Oak Floodplain Forest EEC within the site. While the majority of the EEC is located outside of the Central Corridor boundary, it is not proposed to be removed as part of the proposal. It is noted that the Central Corridor is separated from the area of EEC by a proposed connector road, however, this road will be appropriately designed to maximise the connectivity between the Central Corridor and the EEC, including appropriate underpass

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	Forest EEC vegetation be included within the Central Corridor and adequately protected from further development such as the filling activities and detention basins proposed for in this area.	connectivity and overhead connectivity. This commitment has been included within the revised draft statement of commitments for the Project Application (see Preferred Project Report).
	Vegetation connectivity	
3.3.5	The majority of the vegetation on the site, including the Swamp Oak Floodplain Forest EEC, forms part of a mapped Regional Corridor identified by DECCW as having regional connectivity significance. It has also been identified as a Koala Habitat Link within the Port Macquarie – Hastings Council Area 14 Koala Plan of Management. DECCW strongly recommends that the Swamp Oak Floodplain Forest vegetation is included within the Central Corridor and that any vegetation within this corridor be protected from any form of development, including bushfire protection measures.	The majority of the Swamp Oak Floodplain Forest EEC is located outside of the Central Corridor boundary. However this vegetation is not proposed to be removed as part of the proposal. The north-eastern corner of the site that contains the EEC is proposed to be retained, expanded and protected in a public reserve dedicated to Council in a future stage of the overall development of the site. The Central Corridor restores the east-west linkage across the site, providing linkage between the two regional corridors as mapped by DECCW and also provides linkage to Lake Innes Nature Reserve. Further, a redesign of the open water wetland has been undertaken to improve habitat corridor values. This redesign involves the widening of the corridor between the existing lagoon and proposed open water wetland from 50m to 100m. Fauna migration through this widened corridor will be enhanced by replacing the hydraulic flood connection control structure S2 channel with a widened channel with gentle side slopes. The widened channel will be protected against erosion by appropriate rock protection and vegetation suitable for negotiation by fauna. This redesign will significantly enhance the connectivity in the east-west direction between the existing lagoon and open water wetand, especially to and from the coastal Crown reserve. Details of this redesign are outlined within the Project Application Preferred Project Report.
	Bushfire protection measures	
3.3.6	An APZ of 54m to Lot 5 DP 25886 has been placed within vegetation proposed to be retained within the Central Corridor between the Lot and the proposed open water wetland. This APZ has also been placed over an existing watercourse refer to the Concept EA, Fig 16 'Eco Tourist Principles Plan'). This vegetation forms part of a regional corridor and threatened species habitat. DECCW acknowledges the requirements of Section 63 of the *Rural Fires Act 1997* which prescribes that it is the duty of the owner or occupier of land to take any practicable steps to prevent the occurrence of bushfires on its land or spreading to adjacent lands. However the management of	The proposal has been amended to refine future development of Lot 5 DP 25886 in order to guide a more sympathetic development of the site. Part of this project refinement includes the development of a Lot 5 DP 25886 principles plan which illustrates required buffer areas and delineates land available for development following a more detailed consideration of site constraints. As detailed within the Concept Plan Preferred Project Report, the Lot 5 DP 25886 principles plan provides for increased buffer areas to the west, south and east and a reduced developable area.

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	vegetation in accordance with this requirement does not adequately maintain the ecological or biological function of the retained vegetation and watercourse. DECCW recommends that this area be redesigned to enable the removal of the need for bushfire protection measures within the retained vegetation and watercourse.	
	Voluntary Planning Agreement	
3.3.7	DECCW notes that a VPA regarding the future management of the open space areas of the site will be publicly exhibited at a later date. DECCW strongly recommends that the details of any proposed offset, including details of the mechanism(s) proposed for the long term protection and management of offset area(s) must be provided prior to approval. It is proposed that the revegetation of the Central Corridor is the primary means of offsetting the impacts of the proposal. Whilst DECCW acknowledges the positive contribution that the Central Corridor will make toward the retention and enhancement of threatened species habitat with the site, it is apparent that the specific impacts upon a number of the threatened species recorded during surveys as well as impacts upon EEC vegetation are not being adequately addressed. DECCW advises that in order for the proponent to adequately address its requirements for offsetting impacts upon state listed species and communities, any offsets must consider and be consistent with DECCW's 'Principles for the use of Biodiversity Offsets in NSW' (DECC, 2008a). When undertaking its assessment of the adequacy of proposed offsets, DECCW will take into consideration the regeneration works undertaken to date.	Offset for the areas of vegetation removed as a result of the proposal will be compensated by the establishment of the Central Corridor. The proposal includes the restoration and regeneration of approximately 20.3 ha of additional vegetation (predominantly EEC) to offset a loss of approximately 1.58 ha of intact native vegetation and scattered trees within areas of farmland proposed to be removed. The majority of the restored EEC should in time provide high quality habitat for threatened species recorded on site. Overall a total of 86.1 ha of the original 177.4 ha site is to be retained with either existing or enhanced habitat value. In conclusion, the extent of loss of EEC is not sufficient to have a significant impact on viability of the local occurrence and the proposal would result in over 14.3 ha of additional net EEC. Any offset that may be called for under a biodiversity offset scheme would be more than catered for on site.

3.1.4 Department of Industry and Investment issues and responses

Item	Department of Industry and Investment Issue	Response
4.1	**Detailed design**	
4.4.1	As more detailed designs are prepared, DII recommends that an effective separation is maintained between the key fish habitat of Duchess Gully ICOLL and water quality control infrastructure. This is an important design criterion.	Commitments relating to the protection of key fish habitats have been included within the revised draft statement of commitments for the Project Application (see Project Application Preferred Project Report).
4.1.2	Ensuring the natural and constructed features are separated reduces the likelihood of fish populations moving into the water quality control ponds, which are generally unsuitable habitats for fish. Final levels for the subject development should be cognisant of projected sea level for the 20 and 50 year time horizons.	

3.1.5 Housing NSW issues and responses

Item	Housing NSW Issue	Response
5.1	**Affordable housing**	
5.1.1	Housing NSW recommends provision for affordable housing as part of the development.	Potential for the provision of affordable housing will be considered by the proponent during detailed planning of the residential components of the proposal.
5.1.2	Housing NSW stresses the importance of providing for a variety of dwelling types and sizes in Rainbow Beach to help meet changing demographics.	As outlined in further detail within the Concept Plan Preferred Project Report, a variety of housing density including low density and medium density is proposed to be supplied as part of the residential component of the proposal.
5.2	**Access and permeability**	
5.2.1	Housing NSW encourages the provision of an integrated road network with good permeability, such as, the road layout proposed in the Urban Design Master Plan which was included in the Environmental Assessment documents. Housing NSW commends the developer's plan to provide a range of walking and cycle paths. The walking paths should be of high quality to allow exercise opportunities for the elderly and disabled as well as the greater community.	Further detail is provided within the Concept Plan Preferred Project Report on the urban design principles plan for the provision of access and movement within the proposal that provides good legibility, permeability and connectivity for vehicles, pedestrians and cyclists both within the site and beyond.

Item	Housing NSW Issue	Response
5.3	**Public transport**	
5.3.1	Housing NSW encourages the provision of an adequate public transport service that complements Rainbow Beach. Discussions with relevant parties, such as public transport providers, should occur early in the planning process.	Public transport services currently exist between Lake Cathie, Bonny Hills, and the major regional centre of Port Macquarie. The extension of existing public transport services to benefit future residents of the site has been considered by the proponent. A public transport (bus) route will be available by utilising the east-west collector road as shown within the urban design principles plan (see Preferred Project Report). Regular bus bays/stops will be provided in accordance with Council specifications. This will include a bus terminal immediately adjacent to the village centre to facilitate access to commercial and community facilities. Permeability and connectivity for public transport vehicles both within the site and beyond is illustrated within the urban design principles plan (see Concept Application Preferred Project Report). Detailed design and consultation with relevant stakeholders will be undertaken as part of future development application(s) for the proposal. This assurance is reflected in the amened draft statement of commitments for the Concept Plan (see Concept Plan Preferred Project Report).

3.1.6 Roads and Traffic Authority issues and responses

Item	Roads and Traffic Authority Issue	Response
6.1	**Infrastructure costing**	
6.1.1	Transport infrastructure ideally needs to be costed to make sure that the proposal is sustainable and that it is provided for in contribution arrangements and determinations.	Council has advised that as the local road authority, it has the responsibility to resolve with the RTA issues related to transport, road safety, traffic management and efficiency within Area 14 and the arterial road network generally, and coordinate the response of individual property owners (see Appendix A of this report for correspondence). It is noted Council met with the RTA on 18 January 2011 to discuss the proposed Area 14 Ocean Drive road and intersection concepts as identified in the Roadnet Traffic Study (2010). Costing and allocation of funding for transport infrastructure is the responsibility of Council. Transport infrastructure costs for Area 14 are to be recovered through a combination of 100% developer funded works, Section 94 contributions plans and voluntary planning agreements to be negotiated with the respective property owners within Area 14. Council's current contributions plan is the Hastings Section 94 Major Roads Contributions

Item	Roads and Traffic Authority Issue	Response
		Plan (2006). Major works included in the current contributions plan relevant to Area 14 include: • Ocean Drive/Houston Mitchell Drive intersection works; • Ocean Drive/Bonny View Drive intersection works; • Bonny Hills Bypass; and • Upgrade Houston Mitchell Drive, from Ocean Drive to Pacific Highway. Council has confirmed that upgrades to the main road network within and servicing Area 14 will be funded from two sources: • Council's existing Section 94 Major Roads Contributions Plan for those elements already included in the Contributions Plan, and • a new Area 14 Section 94 roads contributions plan to cover additional elements required for Area 14 not already provided for in the existing Major Roads Section 94 Contributions Plan, namely the additional intersections on Ocean Drive providing access to the new residential precincts including traffic signals, turning and slip lanes and provisions for safe pedestrian crossings on Ocean Drive.
6.2	**Traffic modelling**	
6.2.1	There are a number of major new residential areas proposed for the Port Macquarie Hastings area. Most of the traffic studies undertaken for them have mainly involved the application of specific analytical transport models. In order to assess their total impact on the road network it would be desirable to develop a micro-simulation model for the arterial road network as soon as possible.	As outlined in Section 5.2 of the Concept Plan Traffic Impact Study (Appendix 9a of Concept Plan EA), Council engaged Roadnet Pty Ltd to undertake a report with the objective to provide sufficient modelling to enable Council to plan future road networks within Area 14. The modelling established existing scenarios as at 2009 and also models predicted traffic for two planning periods to 2019 and 2029. In addition the modelling tested various designs with a range of intersection options and two scenarios (planned and additional) for the road network.
6.3	**Existing traffic constraints**	
6.3.1	The existing junction of the Pacific Highway with Houston Mitchell Drive is an at grade seagull intersection located in a 110km/h speed zone on a dual carriageway. There are no plans to improve this junction in relation to the upgrade of the Pacific Highway at this time. Consideration needs to be given to the impacts on the safety and efficiency of the junction. Any required improvements will need to be included in the local contribution arrangements.	Council has advised that the environmental assessments for the upgrading of the Pacific Highway recognised that local and regional growth in the LGA will be a component of highway traffic growth. Accordingly, in the design of the highway intersections the RTA has allowed for a growth factor for local and regional traffic. Council understands that the RTA was aware of planning for Area 14 at the time of the assessments for the Pacific Highway upgrade. Given this understanding, Council maintains it is unreasonable for Council to contribute towards upgrades of Houston Mitchell Drive intersection with the Pacific Highway.

Item	Roads and Traffic Authority Issue	Response
		Notwithstanding, in its review of its Hastings Section 94 Major Roads Contributions Plan, it will be necessary for Council to investigate with the RTA the need for an upgrade of the junction of Houston Mitchell Drive and Pacific Highway. Subject to the outcome of negotiations between the Council and RTA, the upgrading of this junction may be added as a project to be funded through the revised contributions plan.
6.3.2	Ocean Drive is a Classified Road that requires the RTA's concurrence to any new access or proposed road works. This should be resolved as early as possible.	Council, as the road authority, confirms it will seek the necessary concurrences from the RTA, and is currently seeking the concurrence of the RTA to the planned Ocean Drive upgrades and new intersections. Council confirms it will seek further concurrences as part of the detailed design phase for each upgrade, either through individual construction certificates, Section 138 applications or Council programmed works.
6.4	**Traffic signals**	
6.4.1	The RTA is responsible for the approval and maintenance of traffic signals. Their need will have to be clearly demonstrated and installed at no cost to the RTA. Any contribution plan will also have to include overhead, and the 10 year maintenance contribution fees. Four new connections are proposed and discussed in the EAs. In order to maximise the flows and benefits of traffic signal coordination all of these junctions may need to be signalised.	The Roadnet Traffic Study (2010), which is currently under RTA review, proposes traffic signals at certain intersections. Council confirms that appropriate cost allowances will be made for traffic signal installation and RTA maintenance costs as part of their cost recovery plans for Area 14. The option of coordinated traffic signals for all intersections in Ocean Drive through Area 14 is currently under RTA review and Council is awaiting RTA advice on this aspect.
6.5	**Location of proposed schools**	
6.5.1	Schools should not be located adjacent to a multi-lane arterial road due to the impacts that the traffic would have on safety and amenity. Any school zone installed on Ocean Drive would have an impact on its efficiency and create ongoing compliance problems.	The Concept Plan application seeks approval for the delineation of the school sites only. Detailed design of the schools, including provision of access and allocation of buffers to Ocean Drive will be assessed as part of subsequent development application(s) for the school sites. It is the proponent's intention that access to the northern school site will be limited to the main internal collector road to which it has frontage, with the access point situated at least 200 m from the Ocean Drive/Houston Mitchell Drive intersection. There will be no direct access to or from the northern school site across the Ocean Drive boundary. The southern school site proposes direct connection to Ocean Drive from a rural roundabout at the Bonny View Drive intersection. Aside from this connection, access to the southern school site via Ocean Drive is not proposed. The length of the access road between the roundabout and the school internal roads will be sized for adequate storage length for turning vehicles. Internal traffic movement within the school site will be designed and assessed as

Item	Roads and Traffic Authority Issue	Response
		part of subsequent development applications. In respect of both the northern and southern school sites, it is anticipated that school zones will not be required along Ocean Drive.
6.5.2	The RTA notes that the southern school site proposes a fifth direct connection to Ocean Drive. This would have a significant impact on the safety and efficiency of Ocean Drive. Consideration needs to be given to its impacts, access design and funding of road works.	The Roadnet Traffic Study (2010) identifies five major intersections with Ocean Drive. Three of these intersections are existing (including the T intersection at Bonny View Drive) and will require significant upgrades to cater for traffic growth associated with Area 14 developments. The southern school site is proposed to gain access via a rural roundabout to be provided at the existing intersection with Bonny View Drive. The planned schools do not introduce the need for additional intersections with Ocean Drive. In respect of the funding of the rural roundabout at Bonny View Drive, the proponent and Council have agreed that the existing intersection between Bonny View Drive and Ocean Drive is expected to will remain a T intersection until such time as the southern school site proceeds. Costs associated with upgrading this particular intersection will be borne by the development on the southern school site (see Appendix 9 Traffic Assessment [Appendix 7] of the Concept Plan EA for Council correspondence confirming the above agreement).
6.6	**Detailed design**	
6.6.1	Any connection to a local road should be located at least 90m from Ocean Drive or any traffic signal.	Commitments relating to the detailed design of the internal road network within the proposal have been including within the revised draft statement of commitments for the Concept Plan (see Preferred Project Report).
6.6.2	Safe links need to be established across Ocean Drive for pedestrians and cyclists to connect to schools, shops, beach and other residential areas. These would ideally be grade separated to avoid conflicts with traffic.	
6.6.3	Consideration would need to be given to the provision of street lighting in accordance with local electricity authority's guidelines.	
6.6.4	Standard guidance and delineation facilities such as signs, guideposts and line marking should be provided in accordance with the RTA's guidelines.	
6.7	**Traffic management plan**	
6.7	A Traffic Management Plan should be developed and implemented for the proposed earthworks operations. The plan will need to take into consideration the safe management of	The Project Application proposes to source the fill from within the site which will reduce traffic impacts on the local road network by confining the majority of construction related traffic movements to within the site. Nevertheless, potential traffic related impacts of proposed

Item	Roads and Traffic Authority Issue	Response
	through and turning traffic on Ocean Drive in accordance with the RTA's and AUSTROADS road design guidelines. Any new access and/or road works will require the RTA's concurrence.	earthworks have been assessed in Section 12.0 of the Project Application EA, with a number of mitigation measures put forward to manage potential construction impacts during construction. The draft statement of commitments includes an undertaking to manage construction impacts in accordance with these recommended mitigation measures.

3.1.7 Rural Fire Service issues and responses

Item	Rural Fire Service Issue	Response
7.1	**Proposal detail**	
7.1.1	RFS raised concern on the level of detail provided. No detailed site plan for the proposed residential component was provided. As such, a full assessment of the proposal cannot be undertaken.	Section 9.1 of the Project Application EA assesses the potential bushfire hazard risk of the Central Corridor which following revegetation would be classified as bushfire prone land. The assessment recommended asset protection zones (APZ) to reduce the risk from bushfire to proposed urban areas identified in the Concept Plan. Detailed site planning of residential and educational precincts will be undertaken as part of separate development applications following approval of the Concept Plan. These applications will include the site design of future residential and educational components and will include detailed assessment of potential bushfire impacts on these elements. The RFS will have opportunity to comment on these applications in the future.
7.2	**Asset protection zones**	
7.2.1	RFS has concerns that the asset protection zones provided for the school sites which are identified as Special Fire Protection Purpose (SFPP) developments will be greater than those indicated within the Bushfire Protection Assessment report by Australian Bushfire Protection Planners (September 2008).	Separate development applications for urban areas will be prepared following approval of the Concept Plan. These applications will include the site design of future educational components and a detailed assessment of potential bushfire impacts on these elements will be undertaken as part of these future applications. APZs recommended as part of the bushfire assessment undertaken for the Project Application EA would be reassessed and amended if required as part of these subsequent investigations.

Item	Rural Fire Service Issue	Response
7.2.2	The Concept Plan provided by Luke & Company June 2010 and Proposed Concept Plan drawn by Acroessence dated 10/10/08 for Lot DP 25886 (former eco-tourist site) does not address the required asset protection zones and access as required by *Planning for Bush Fire Protection* 2006.	Detailed bushfire risk assessments will be undertaken as part of future development applications for the residential component of the Concept Plan. Construction levels and APZs for future residential subdivisions will be reassessed and determined as part of these development application(s).
7.3	**Detailed design – residential**	
7.3.1	The vegetation classification of 'forested wetlands' has now been grouped with 'forest' classification under the revised Australian Standard AS3959-2009 Construction of buildings in bushfire-prone areas. Accordingly, a higher Bushfire Attack Level than anticipated maybe required as per AS3959-2009 for future development unless greater APZs are designed for at the subdivision stage.	Detailed bushfire risk assessments will be undertaken as part of future development applications for the residential component of the Concept Plan. Construction levels and APZs for future residential subdivisions will be reassessed and determined as part of these development application(s).
7.3.2	All areas proposed for residential development shall be managed as an inner protection area (IPA).	Recommended conditions of approval for management of proposed residential areas have been incorporated into the revised draft statement of commitments for the Concept Plan (see Concept Plan Preferred Project Report).
7.3.3	Perimeter roads are through roads with public roads to comply with section 4.1.3 of Planning for Bush Fire Protection 2006.	
7.3.4	Road widths shall comply with Table 4.1 in Planning for Bush Fire Protection 2006.	
7.3.5	Water, electricity and gas are to comply with section 4.1.3 of Planning for Bush Fire Protection 2006.	
7.3.6	Landscaping to the site is to comply with the principles of Appendix 5 of Planning for Bush Fire Protection 2006.	
7.4	**Detailed design – schools**	
7.4.1	Asset protection zones are required in accordance with Table A2.6 of *Planning for Bush Fire Protection* 2006.	Recommended conditions of approval for management of proposed educational areas have been incorporated into the revised draft statement of commitments for the Concept Plan (see Preferred Project Report).
7.4.2	Access roads to comply with sections 4.1.3 & 4.2.7 of *Planning for Bush Fire Protection* 2006.	

Item	Rural Fire Service Issue	Response
7.4.3	Water, electricity and gas are to comply with sections 4.1.3 & 4.2.7 of *Planning for Bush Fire Protection* 2006.	
7.4.4	Emergency evacuation measures in accordance with section 4.2.7 of *Planning for Bush Fire Protection* 2006.	
7.4.5	Landscaping and property maintenance within the site is to comply with the principles of Appendix 5 of *Planning for Bush Fire Protection* 2006.	
7.5	**Detailed design – Lot 5 DP 25886**	
7.5.1	Access roads to comply with sections 4.1.3 & 4.2.7 of *Planning for Bush Fire Protection* 2006.	Recommended conditions of approval for management of proposed residential areas have been incorporated into the revised draft statement of commitments for the Concept Plan (see Preferred Project Report).
7.5.2	Water, electricity and gas are to comply with sections 4.1.3 & 4.2.7 of *Planning for Bush Fire Protection* 2006.	
7.5.3	Emergency evacuation measures in accordance with section 4.2.7 of *Planning for Bush Fire Protection* 2006.	
7.5.4	Landscaping and property maintenance within the site is to comply with the principles of Appendix 5 of *Planning for Bush Fire Protection* 2006.	

3.1.8 Northern Rivers Catchment Management Authority issues and responses

Item	Northern Rivers Catchment Management Authority Issue	Response
8.1	**Stormwater management**	
8.1.1	The volume and quality of stormwater runoff to the proposed open water wetlands is a concern if not adequately addressed. The Project Application EA has confirmed that these water bodies alone will be insufficient in absorbing runoff from the proposed urban areas without the use of bioretention systems higher in the catchment, requiring a comprehensive monitoring and	An assessment of potential water quality impacts including modelling was undertaken as part of the Project Application EA (see Appendix M and N). These assessments conclude that the proposed open water wetland will maintain good water quality after the development of the proposal. Sections 4.2.4, 4.2.6, 5.1.4, and 5.4 of Appendix M (AECOM) provide specific recommendations to improve the site's resistance to weeds. These recommendations have

Item	Northern Rivers Catchment Management Authority Issue	Response
	management system to avoid negative impacts. Further, the NRCMA disagrees with the contention that the current lack of significant aquatic weeds in the existing lagoon lowers the risk of future infestation as the site is transformed from a pastoral to a residential landscape. The quality and quantity of any runoff into the water bodies, both during and after construction of the development is to be adequately managed and appropriate measures are to be prescribed for the inevitable increase in aquatic weed propagules. It does not appear that the proponent has adequately addressed this requirement.	been incorporated within the revised statement of commitments for the Project Application (see Preferred Project Report). As outlined in Section 2.6 of the Project Application EA, extensive weed management is currently taking place on the site and has been successful in weed control. Maintenance checklists have been provided as attachments to Appendix M (AECOM) and these have several items that specifically deal with weed monitoring and control.
8.2	**Land use buffers**	
8.2.1	Land use conflict and key natural resources: • a buffer of at least 400m is recommended between the existing STP and Lot 5 DP 25886 (previous eco-tourist site); • a buffer of 100m is required between the development and the SEPP 26 littoral rainforest.	A Lot 5 DP 25886 principles plan has been developed to illustrate a delineated developable area for Lot 5, based on known buffer areas, including Council's zoned STP buffer and littoral rainforest buffer as follows: • The STP buffer shown on the principles plan adheres to Council's zoning boundary pursuant to PMHLEP 2011, which outlines the buffer of RU1 Primary Production land around the STP. • The majority of the Concept Plan area is exempt from the provisions of SEPP 26 as it is zoned residential. An assessment of the impacts of the proposed development on Rainbow Beach Littoral Rainforest No. 116 has been undertaken by Darkheart Eco-Consultancy as part of the Project Application EA (refer to Appendix I of the Project Application EA). Based on the recommendations of this assessment, a minimum buffer to the littoral rainforest has been provided within the Lot 5 principles plan.
8.3	**Habitat connectivity**	
8.3.1	The proposed Central Corridor fails to provide habitat connectivity as the constructed wetlands occupy the bulk of the Central Corridor, leaving effective terrestrial corridors less than 50m in width in some locations, with no buffering, for the movement of terrestrial fauna.	A redesign of the open water wetland has been undertaken to improve habitat corridor values. This redesign involves the widening of the corridor between the existing lagoon and proposed open water wetland from 50 m to 100 m. Details of this redesign are outlined within the Project Application Preferred Project Report.
8.4	**Native Vegetation Act**	
8.4.1	The NRCMA is responsible for the information access and approval processes of the *Native Vegetation Act 2003*. The Act	The proponent is committed to protecting native vegetation onsite and has developed a detailed open space management strategy that seeks to guide the protection of vegetated

Item	Northern Rivers Catchment Management Authority Issue	Response
	regulates the clearing of native vegetation on all lands in NSW except for land listed in Schedule 1 of the Act as "Excluded Land". The rezoning of land in this proposal would result in the land being Excluded Land under the Act.	areas within the site during construction and operation. This assurance is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).

3.1.9 Department of Education and Training issues and responses

Item	Department of Education and Training Issue	Response
9.1	**School location**	
9.1.1	DET previously indicated 'in principle' endorsement to PMHC for a new 3 hectare government primary school to be identified in the SVF's development. This continues to be the case. The proposed general location is acceptable provided there is a buffer between the main road and the school site.	With regard to the provision of a buffer between school sites and Ocean Drive, at present, the Concept Plan application seeks approval for the delineation of the school sites only. Detailed design of the schools, including requirements for the provision of buffers to Ocean Drive will be assessed as part of subsequent development application(s) for the school sites.
9.2	**Detailed design**	
9.2.1	The EA notes that the detailed design of the individual schools will be the subject of future Project Applications or development applications. The Department will work with the developers and council to provide more detailed information, as and when required.	The proponent commits to undertaking ongoing consultation with DET with regard to the future development of the schools sites. This commitment is reflected in the amened draft statement of commitments for the Concept Plan (see Preferred Project Report).

3.1.10 Land and Property Management Authority issues and responses

Item	Land and Property Management Authority Issue	Response
10.1	**Vegetation protection**	
10.1.1	Beach access from Lot 5 DP 25886 should be formalised, constructed to best practice to avoid land degradation and fenced where it passes through the Crown reserve to avoid unwanted access in adjacent dunal vegetation. LPMA would need to be	The Project Application includes the formalisation of beach access from Lot 5 DP 25886 to Rainbow Beach. This requires works over Crown land from which owners consent from the LPMA has been obtained. As a result of consultation undertaken with the LPMA regarding provision of beach access,

Item	Land and Property Management Authority Issue	Response
	contacted prior to any change in access arrangements across the Crown reserve to enable review and possible (conditional) licensing.	detailed design of the proposed beach access has been undertaken in accordance with LPMAs recommendations and requirements. This detail is included within the Project Application Preferred Project Report. The proponent is undertaking continued consultation with the LPMA with regard to approval of beach access.
10.1.2	A fence should be erected between the developed lands and the Crown reserve so that access is directed to the formal beach access.	Agreed. See Project Application Preferred Project Report for details of beach access.
10.1.3	Where the proposal abuts the Crown land, any bushfire protection works/requirements flowing from the development must be contained on the proponent's land, i.e., the Crown land cannot be used for possible asset protection or strategic fire advantage Zones.	Agreed. See Project Application Preferred Project Report for details of beach access. Further, this requirement has been included into the revised draft statement of commitments for the Project Application (see Preferred Project Report).
10.2	**Stormwater management**	
10.2.1	Stormwater runoff (including possible runoff from hard surfaced roads and car parks) must not be directed onto the adjacent Crown reserve.	Agreed. This requirement has been included into the revised draft statement of commitments for the Project Application (see Preferred Project Report).

3.1.11 Port Macquarie – Hastings Council issues and responses

Item	Port Macquarie – Hastings Council Issue	Response
11.1	**Staging**	
11.1.1	No staging of the development has been provided. Identification of staging would assist to clarify future servicing arrangements particularly infrastructure such as road intersections. Clarification of the proposed staging is required.	The proponent has developed a staging plan that illustrates indicative staging of proposed residential precincts. The staging plan can be viewed in the Concept Plan Preferred Project Report.
11.2	**Water cycle management and WSUD**	
11.2.1	The primary function of the open water wetland is to obtain fill to maximise the development footprint at the site. It does not appear	This Item is discussed in Table 3.1.1, Item 1.5.1 above.

Item	Port Macquarie – Hastings Council Issue	Response
	a mid range option has been considered.	
11.2.2	While Council is satisfied that the detailed design of the water treatment wetlands will be able to meet its maintenance access and process requirements whilst achieving the specified water quality targets, the issue of the total number of facilities is of concern from a sustainability perspective. The proposal includes nine treatment wetlands, with sizes ranging from 800-9000m^2 (in addition to three existing wetlands), plus an additional seven bioretention systems with sizes ranging from 150-850m^2 in the upper catchments. The proposal will result in 16 different stormwater treatment systems for Council to monitor and maintain for the life of the development. Council requests that the number of treatment systems is rationalised on the basis that a reduced number of treatment systems will be more cost effective and simpler to monitor and maintain by Council. The Stormwater Treatment and Wetland Functionality Report (AECOM, 9 July 2010) makes reference to this concern and notes that consolidation of some of the wetlands may be possible during the detailed design phase. Council requests that the Concept Plan and Project Application be amended to address this concern prior to approval. However if this is not possible, Council requests the following additions to the statement of commitments: • Commitment to consolidate the total number of treatment wetlands to reduce Council's future maintenance liability. Specific reference is made to combining W4A & B, W1A & W1B, W1D & W1E, Existing treatment wetlands with W2. Preliminary consolidation plans showing the amended layout shall be submitted to Council for review prior to the preparation of Construction Certificate Plans.	Council's Area 14 IWCM Plan recommends the use of nine sand filters of varying size as end-of-pipe treatment devices, as well as 10 gross pollutant traps and a combination of swales, linear sand filters and vegetated buffer strips higher in the catchment. AECOM (Appendix M) and Cardno (Appendix N) recommend the use of constructed wetlands as end-of-pipe treatment, as well as a combination of swales and bioretention systems higher in the catchment. Recommended treatment devices proposed by Council and AECOM/Cardno higher in the catchment are comparable in terms of type, number and maintenance costs. Council's concern relates to the recommended system used for end-of pipe treatment, i.e. wetlands versus sand filters. As detailed within the Project Application EA, the use of a combination of swales, bioretention systems and constructed wetlands for stormwater treatment is considered most appropriate for the site and overall concept development. Section 3.3 of Appendix M (AECOM) and Section 3.4.1 of Appendix N (Cardno) provides justification for the use of wetlands over sand filters as they are appropriate in flat areas with very little grade difference and are complementary habitat for low-lying or inundated areas and swampy habitats, which are conditions pertaining to the site. It is noted that the proposal includes nine treatment wetlands, which would replace the 9 sand filters (bioretention systems) proposed in Council's preferred option. Further, Council's concerns regarding the maintenance costs have been addressed in Section 2.5 of Appendix M (AECOM). Notwithstanding the above, the consolidation of the total number of treatment wetlands has been given further consideration in the preparation of the preferred project. As a result, wetland treatment areas W1A to W1E within W1 have been refined to improve accessibility for ongoing management and maintenance purposes (see the Project Application Preferred Project Report for details). For the bulk of maintenance and management purposes W1A to W1E can be managed as a single consolidated entity. Most of the maintenance of the wetlands would be undertaken by a bush regeneration contractor. Since the area of the wetlands is not increased or decreased through consolidation, there would be very little difference in the maintenance effort required by the bush regeneration contractor. Fewer treatment wetlands would mean fewer pits that require inspection, but this is likely to amount to less than one hours work every three months. The maintenance required during de-silting operations would not increase significantly as the total volume of sediment to be removed would be similar, the total distance to be covered by excavation machinery would be similar and maintenance access for this machinery will be

Item	Port Macquarie – Hastings Council Issue	Response
		provided. The proponent also commits to examine ways to further consolidate the total number of treatment wetlands to reduce maintenance costs where reasonably feasible, during preparation of construction certificate plans for the Project Application. This commitment is reflected in the amened draft statement of commitments for the Project Application (see Preferred Project Report).
11.3	**Voluntary planning agreement**	
11.3.1	Proposed ownership and long term management of the open space components are presently being negotiated with representatives of SVF in a draft VPA that will be exhibited separately. In the absence of a signed VPA, no final determination has been made of Council's acceptance of longer term ownership and management of the open space corridor.	The proposed VPA is currently being negotiated between Council and the proponent.
11.4	**STP buffer**	
11.4.1	There is no recognition on the Concept Plan of the buffer to the STP. If the existing Lot 5 DP 25886 land use delineation is to be retained in the Concept Plan application, a detailed risk assessment for development adjacent to the STP should be required. This assessment should cover the effects of noise, vibration, aerosols, odour, lighting and visual impact of the augmented sewage treatment works in relation to future development and any requirements to mitigate these effects.	Additional information has been provided within the Concept Plan Preferred Project Report in the form of a Lot 5 DP 25886 principles plan. This plan illustrates buffer areas, including the STP buffer, to determine a delineated developable area for Lot 5.
11.5	**Noise impacts**	
11.5.1	The noise report included in the Concept Plan EA prepared by Noise And Sound Services (October 2009) examined the potential to construct 100 lots of single-storey homes along Ocean Drive in 2006. The report measured and then predicted future road traffic noise levels and advised on mitigation measures to address noise impacts from external road traffic on residential land uses. The report recommended 2.2m high acoustic barriers to be constructed along the route, set back 10m from the roadway. The wholesale use of acoustic barriers, particularly fences, is not acceptable particularly in a greenfield development such as Area	Council is in the process of preparing a DCP for Area 14, which includes the preparation of an Area 14 Ocean Drive corridor plan which will address key objectives along the length of the corridor, including noise attenuation. While the use of physical barriers was put forward as a potential option for noise attenuation along Ocean Drive, Section 6.2 of Appendix 9a of the Concept Plan EA states that the specific detail of the measures proposed to mitigate noise will be addressed in future development application(s) for development adjoining Ocean Drive and the recommendation for physical barriers was put forward to demonstrate that the traffic noise associated with Ocean Drive may be mitigated in order to allow residential and other urban development to occur on the subject land.

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	14. Council wishes to achieve a range of outcomes for its corridors including noise attenuation, road safety, sustainable transport modes (bus stops, walking and cycling) and amenity (Ocean Drive is a tourist route). The wholesale use of physical barriers undermines these objectives and imposes an unacceptable maintenance burden on Council that is facing the prospect of having to maintain 6km of structures and/or landscaping through Area 14, in addition to the road corridors through Area 13 and at West Haven. In order to provide a balanced approach to noise attenuation as well as the other aspirations along the corridor Council proposes to commission a corridor plan as part of a DCP for Area 14. Therefore, the Concept Plan approval should not create any expectation that noise walls/mounds will be acceptable as proposed.	The proponent commits to participating in the development of Council's Area 14 Ocean Drive corridor plan and achieving Council's objectives for the Ocean Drive corridor. This is reflected in the amened draft statement of commitments for the Concept Plan (see Preferred Project Report).
11.6	**Lot 5 DP 25886 (former eco-tourist site)**	
11.6.1	Lot 5 DP 25886 (former eco-tourist site) is highly constrained. The concept development plans for the site do not address all of the constraints and therefore infer a development outcome significantly larger than may actually be possible on the site. It is noted that any development of Lot 5 DP 25886 will be subject to a future project or development application and Council will provide a more detailed response at that time. The dunal vegetation south of the SEPP 26 littoral rainforest meets the criteria for listing as littoral rainforest/vine thickets under the EPBC Act. The impact of development on Lot 5 DP 25886 on this littoral rainforest vegetation has not been assessed under the requirements of EPBC Act. The key constraints on the proposed eco-tourist site area as follows: • the STP buffer; • the requirement for vegetated buffer of the SEPP 26 and	A Lot 5 DP 25886 principles plan has been developed to illustrate a delineated developable area for Lot 5. As detailed within the Concept Plan Preferred Project Report, the plan includes: • Council's STP buffer as defined by the RU1 zone boundary under PMHLEP 2011; • vegetated screen with a varying width providing separation between future development and SEPP 26 littoral rainforest and coastal vegetation on Crown land; • a continuous vegetation corridor connecting existing coastal vegetation on Crown land to Ocean Drive via the Central Corridor.

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	EPBC listed Littoral Rainforest communities (EEC), • the need to provide a vegetated setback to compensate for coastal recession; and • the need to consolidate and secure a continuous habitat corridor from Rainbow Beach to Ocean Drive. Preliminary constrain mapping, taking into account all of the above constraints indicates a suitable footprint area of just 1ha on this site.	
11.7	**Beach access**	
11.7.1	The proposal will facilitate greater usage of Rainbow Beach in front of Lot 5 DP 25886. This will impact on the integrity of the dune system and rainforest. The application does not consider this at all.	This issue is addressed in Item 1.6.1 above.
11.7.2	The beach access is subject to Department of Lands approval. If Council is to maintain this access, details are required to facilitate consideration as part of Voluntary Planning Agreement.	The proponent is undertaking ongoing consultation with the LPMA with regard to beach access. The proponent commits to maintain the beach access until a separate development application for Lot 5 DP 25886 is prepared, at which time the responsibility for permanent maintenance of the beach access will be agreed as part of a separate VPA.
11.8	**Coastal walk**	
11.8.1	The proposed coastal walking track south of Area 14 is jointly located on the alignment of the exfiltration trench and partly on Crown Land. A coastal walk along this alignment would have to be fully fenced off with appropriate signage to isolate the track from the STP operational lands due to OH&S issues associated with access to the settlement ponds. Council does not support this alignment and owners consent for this concept has not been granted by Council or the LPMA.	The proposed coastal walk as shown in Figure 25 of the Concept Plan EA is an indicative concept only. Figure 25 seeks to illustrate potential coordination of walkways within the site to informal walkways that currently exist within the STP buffer areas. Approval for these tracks is not sought as part of the Concept Plan or Project Application and formalisation of these paths would be subject to a separate approvals process.

3.2 Community submissions

3.2.1 Community issues and responses

Item	Community Issue	Response
12.1	**Inadequacy of proposal detail**	
12.1.1	• Absence of detail about what the urban component of the proposal would look like, including the urban layout of streets, types of housing, housing densities and building heights. • Lack of information provided about the design of the village centre and Lot 5 DP 25886 (former eco-tourist site). • Concern as to whether future development would be consistent with the existing heights and densities of Bonny Hills and Lake Cathie.	Additional information has been prepared to demonstrate how urban components of the Concept Plan will be developed. This information is included in detail within the Concept Plan Preferred Project Report and includes: • Urban design principles that seek to guide the strategic intent for the site development in a more specific level of detail, particularly with regard to future urban form. • A Lot 5 principles plan which illustrates required buffer areas and delineates land available for development following a more detailed consideration of site constraints. An assessment of the proposed Village Centre is included in Appendix 13 in the Concept Plan EA and provides an overview of the built form and other characteristics of the village centre and how it relates to the site. Lot yields have been calculated based on Council's recommended densities for low and medium housing within the Area 14 UDMP. Urban design guidelines put forward for the proposal have been developed in accordance with Council's draft development control plan for Area 14, which is currently being prepared. Therefore, future development will be consistent with Council's desired future character for Area 14.
12.2	**Consultation**	
12.2.1	• The proponent was unable to provide sufficient information relating to details of the proposal during community forum meetings, specifically relating to stormwater management and traffic impacts.	The Concept Plan seeks approval for the delineation of land uses only, with detail relating to the future development of the site to be design in subsequent stages and assessed as part of future development application(s). The Concept Plan and Project Application EAs included detailed assessment of potential traffic and stormwater management impacts, however these matters are still of concern to the community. Additional information provided in Section 3.2 aims to address these issues.

Item	Community Issue	Response
12.3	**Infrastructure capacity, funding and delivery**	
12.3.1	• Existing infrastructure and services are inadequate for the current population and could not accommodate the future population of Area 14. • Concern expressed over the availability of fresh water supply, capacity of the STP, capacity of existing parks and reserves. • Questions over how infrastructure required for the proposal would be funded. • Suggested that Council bring forward planned road upgrades through the Lake Cathie village to match the timing of population increases south of the village. • Recommended that Council implement plans and carry out the necessary works to upgrade Houston Mitchell Drive to match the construction phases and population increases of new developments. • Lack of confidence that the proposed schools and playing fields would be built within a reasonable timeframe and with public funds.	The Concept Plan EA includes a detailed review of existing and future capacity of infrastructure including water supply, sewer, electricity, telecommunications, gas and waste disposal (see Appendix 8a of Concept Plan EA). This review concludes that the required services have been, or can be upgraded and extended to meet the demands of the proposals future population. This assessment was made in consultation with relevant service providers. Provision of adequate infrastructure is not considered to be a constraint to the proposal. Funding for new infrastructure is outlined in Council's development contributions plans and development servicing plans. These plans set out contributions required from new development to cater for additional works and services that will need to be provided by Council as a consequence of that development. The proponent will contribute to such funding through the payment of Section 94 contributions levied via Council's Section 94 contributions plans. Allocation of funding and delivery of transport infrastructure is the responsibility of Council. The proponent will contribute to such funding through the payment of Section 94 contributions levied via Council's existing Section 94 Major Roads Contributions Plan and proposed new local roads contributions plan to cover additional elements specifically required to implement the Area 14 Structure Plan. Council and the proponent have entered into a VPA which includes requirements relating to the delivery of the playing fields. The VPA states that following dedication of the sporting fields land by the proponent, Council will assume all further responsibilities for further enhancement. These works will be funded via Council's Section 94 Open Space Contributions Plan. Detailed planning on the proposed school sites has not yet begun. Such planning is dependent on the timely development of residential land within the proposal site and area 14 in general.
12.4	**Traffic and transport**	
12.4.1	• Concern raised over the general increase in traffic volumes both during construction and operation of the proposal. • Concern expressed over associated noise and pollution impacts from increased traffic along Ocean Drive and Bonny Hills.	Council has commissioned a study to enable Council to plan future road networks within Area 14. The study modelled existing and predicted traffic for two planning periods to 2019 and 2029 and concluded that Ocean Drive and associated roads within Area 14 are currently operating well within capacity, however safety concerns are expected to limit the ability of intersections to cater for expected traffic growth in future years. The study recommended Council undertake a number of medium and long term road network improvements to

Item	Community Issue	Response
	• Concern expressed over the poor condition of Houston Mitchell Drive and Ocean Drive. • Concern expressed over current pedestrian safety along Ocean Drive and Bonny Hills in general. • Recommended that the school sites be located to avoid the imposition of 40 km/hr zones along Ocean Drive. • Recommended that the proposal include the construction of a bypass around Bonny Hills.	address these concerns including upgrades to Ocean Drive and Houston Mitchell Drive. Details of the study are included in Appendix 9a of Concept Plan EA. Potential traffic related impacts of proposed construction works have been assessed in Section 12.0 of the Project Application EA, with a number of mitigation measures put forward in order to manage potential impacts. Council is in the process of preparing a corridor plan for Ocean Drive within Area 14 which will provide a plan for Ocean Drive that addresses potential noise, amenity and function characteristics of the corridor. Upgrades to Ocean Drive and Houston Mitchell Drive are the responsibility of Council, and upgrades of both roads are included as planned major works in Council's current Section 94 Major Roads Contributions Plan (2006) (refer 6.1.1 above). The proponent will contribute to the funding of these works through the payment of Section 94 contributions levied via Council's Section 94 roads contributions plan(s). Provision for safe pedestrian crossings on Ocean Drive is to be incorporated within Council's new local roads contributions plan, which will contain additional elements specifically required to implement the Area 14 Master Plan. It is acknowledged that the installation of a school zone along Ocean Drive will have an impact on its efficiency. In respect of both the northern and southern school sites, it is anticipated that school zones will not be required to be installed on Ocean Drive. Detailed design of the schools will be assessed as part of subsequent development application(s) for the school sites. The construction of a Bonny Hills bypass is included as a long term planned major work in Council's current Section 94 Major Roads Contributions Plan (2006) (refer 6.1.1 above). The Bonny Hills bypass has not been identified as required infrastructure in strategic transport studies undertaken by Council for Area 14.
12.5	**Stormwater management**	
12.5.1	• Concern that the overflow of stormwater from the open water wetland would be directed into Duchess Gully and in turn would flow into Rainbow Beach causing damage to the beach. • Recommended a permanent outlet to Rainbow Beach to be constructed 300 m north of the existing Duchess Gully outlet	Flows from the existing lagoon are currently directed into Duchess Gully and Rainbow Beach beyond via a weir which discharges into a channel flowing directly into the middle reach of the Gully. The proposal seeks to improve this situation by providing an outlet from the proposed open water wetland to discharge into the defined middle reach channel of Duchess Gully. Potential impacts on Duchess Gully and Rainbow Beach as a result of this arrangement are assessed within Section 8.2 of the Project Application EA. The assessment concludes that the re-direction of overflows will re-establish the Gully's original flow path and

Item	Community Issue	Response
	to control stormwater. • Concern regarding potential impacts from fertilisers used on the proposed sporting fields and likelihood of leaching and/or runoff into adjacent open space, drainage and wildlife habitat corridor.	improve conditions in the middle reaches of Duchess Gully and beyond. Detailed design of stormwater treatment elements for the playing fields will require compliance with Council's Integrated Water Cycle Management (IWCM) policy for Area 14.
12.6	**Habitat protection**	
12.6.1	• Concern raised over potential impacts and cumulative impacts of the proposal on koala habitat and wildlife corridors. • No fill should be placed in areas identified as wildlife habitat corridors and no regrowth should be removed. • Disagreement over the assertion cited in a report by Mackay and Bray which concluded that the conservation values of the site were considered low with no recovery potential. • Concern raised over how development of Lot 5 DP 25886 (former eco-tourist site) would avoid damaging SEPP 26 littoral rainforest and the dune ecosystem as a result of increased human traffic in the area. Questions raised as to whether vehicles would be permitted to access the beach.	A detailed investigation into the potential ecological impacts of the proposal was undertaken as part of the Project Application EA (see Section 7.0 and Appendices G, I and J). Primary koala habitat and the majority of potential koala habitat are proposed to remain as part of the proposal. The implementation of the Draft Koala Management Plan which applies to the site will positively contribute to the survival of the koala within the site and its surrounds. Revegetation of the site proposed as part of the of the Project Application will result in increased prevalence of known koala feed trees and other plants with multiple-species values and reinstatement of degraded fauna movement corridor values throughout the Central Corridor. The placement of fill is not considered to have significant impact on habitat corridors as the majority of the fill area is composed of farmland with limited scattered trees which poses a substantial barrier to the movement of species requiring canopy/understorey tree cover or dense shrub and/or ground vegetation. None of the ecological investigations prepared for this proposal (Appendix G, I, and J of the Project Application EA) rely on information provided within the 1997 Mackay and Bray report. The Mackay and Bray report was cited only as part of review of previous studies. A Lot 5 principles plan has been developed which illustrates required buffer areas and delineates land available for development following a more detailed consideration of site constraints. Detailed design of the proposed beach access has been undertaken in consultation with the LPMA and complies with the *NSW Coastal Dune Management Manual 2001*. Beach access has been designed for pedestrians only. Vehicles are not permitted.
12.7	**Open space, drainage and wildlife habitat corridor design**	
12.7.1	• Concern raised that the intent and functionality of the corridor is compromised by the inclusion of the open water wetland and water treatment wetlands and the 'pinch point' zone between the proposed open water wetland and	A redesign of the open water wetland has been undertaken to improve habitat corridor values including the widening of the corridor between the existing lagoon and proposed open water wetland from 50 m to 100 m and replacement of a hydraulic flood control with a widened channel more suitable for negotiation by fauna. Details of this redesign are outlined within the

Item	Community Issue	Response
	existing lagoon. • Suggested that the inclusion of playing fields, school sites and active recreation areas within the corridor would render the corridor ineffective and lack of sufficient buffer zones to urban and recreational was raised as a concern. • Suggested that as the corridor is located between the ocean and Ocean Drive the word corridor is misleading and should be replaced by park. • Suggested that the requirement for fill on the southern school site is inappropriate given its location within a swampland.	Project Application Preferred Project Report. The school sites are not included within the Central Corridor area. The Central Corridor has been divided into eight precincts (see Section 4.1.1 of the Project Application EA) with each precinct embodying a defined open space, drainage or habitat function within the overall landscape master plan. This designation of precincts seeks to provide separation of between active open space and recreational areas from primary regeneration areas and provides appropriate interface between native vegetation and wildlife habitats within the Central Corridor and adjacent areas proposed for urban development. The ecology assessment undertaken for the proposal (see Appendix G of the Project Application EA) concludes that revegetation of the site as proposed will result in the creation of better movement opportunities in an east-west direction for native wildlife and while connectivity to the north, west and southwest in this area is hindered by the physical barrier of Ocean Road, remnant Dry Sclerophyll forest located along the western boundary of the site does provide a link via woodland trees to the west of Ocean Drive by means of a major culvert under the road, offering linkage to the west for frogs, rodents and reptiles. The proposal does not include filling of the southern school site.
12.8	**Acid sulphate soils**	
12.8.1	• Concern over the potential for ASS exposure during construction of the open water wetland.	Potential risks associated with ASS are assessed in Section 9.3 of the Project Application EA. Appropriate management practices have been detailed within a site specific ASS Management Plan, in order to mitigate potential ASS impacts. With the implementation of these measures, ASS threats can be safely managed.
12.9	**Fill source**	
12.9.1	• Concern expressed that the excavation of the open water wetland is largely to gain fill material in order to create more developable land, which is incompatible with regeneration efforts.	The Project Application EA acknowledges the function of the open water wetland as a source for obtaining material to fill low lying areas that are currently unsuitable for residential land use. The proposal is not seen to be incompatible with the regeneration efforts currently taking place on site and proposed in further detail as part of the Project Application as in addition to providing a source for fill, the creation of the open water wetland has a number of added positive functions, including stormwater treatment, habitat creation and visual amenity.
12.10	**Ongoing maintenance**	
12.10.1	• Suggested that the restoration of formerly existing bushland on the site should be maintained by Council after the developers responsibilities have ceased.	Council and the proponent are currently negotiating a VPA which requires the proponent to carry out the management obligation for the Central Corridor for a period of 20 years, after which time management of the corridor will be passed to Council, who will obtain

Item	Community Issue	Response
		responsibility for the perpetual management of the corridor.
12.11	**Project alternatives**	
12.11.1	• Suggested that the housing component be reconfigured along the lines of a golfing estate as this type of development would not require the wholesale felling of trees and would allow the mass planting of trees along fairways.	Development of the site as proposed will assist with the provision of housing to accommodate increased population projected under Council's Area 14 Structure Plan. If the proposal was to be reconfigured along the lines of a golfing estate, less developable area will be available for housing, putting increased pressure on existing housing stock to accommodate projected population within the LGA. The provision of land for future residential development as proposed does not involve the wholesale felling of trees. The majority of the area allocated for future residential development will involve the clearing of farmland with limited scattered trees, which has low habitat value. Further, the proposal includes substantial revegetation of the Central Corridor to improve ecological functioning.

4.0 Glossary of terms and abbreviations

Terminology	Description
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
Area 14 Structure Plan	Port Macquarie – Hastings Council adopted Lake Cathie & Bonny Hills Master Plan 2004 for the Area 14 Release Area
ASS	Acid Sulfate Soil
ASSMP	Acid Sulfate Soil Management Plan
CEMP	Construction and Environmental Management Plan
Concept Plan	Major Project 06_0085
Council	Port Macquarie – Hastings Council
DCP	Development Control Plan
DECCW	NSW Department of Environment and Climate Change and Water
DG	Director General
DGRs	Director General's Environmental Assessment Requirements
DoP	NSW Department of Planning
DP	Deposited Plan
E1	Existing Lagoon
EA	Environmental Assessment
ECC	Endangered Ecological Community
ELUMP	Environmental Land Use Management Plan
EP&A Act 1979	*Environmental Planning and Assessment Act 1979*
EPBC Act 1999	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
HLEP 2001	*Hastings Local Environmental Plan 2001*
IWCM	Integrated Water Cycle Management
KPOM	Koala Plan of Management
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
MP	Major Project under Part 3A of the EP&A Act
NoW	NSW Office of Water
OSMS	Open Space Management Strategy
Part 3A	Part 3A Major Project or Part 3A of EP&A Act
PASS	Potential Acid Sulfate Soil
PMHC	Port Macquarie – Hastings Council
PMHLEP 2011	*Port Macquaire – Hastings Local Environmental Plan 2011*

POEO Act 1997	*Protection of the Environment Operations Act 1997*
Project Application	Major Project 07_0001
Proponent	St Vincent's Foundation Pty Ltd
Proposal	Rainbow Beach Concept Plan (MP 06_0085) and Project Application (MP 07_0001)
RFS	NSW Rural Fire Service
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy
SSFCF	Swamp Sclerophyll Forest on Coastal Floodplains
STP	Sewage Treatment Plant
Structure Plan	Area 14 Structure Plan
Subject Site	Part Lot 1232 DP 1142133, Lots 1, 2, 3 and 4 DP1150758 and Lot 5 DP 25886
SVF	St Vincent's Foundation Pty Ltd
VPA	Voluntary Planning Agreement
WSUD	Water Sensitive Urban Design
W1	Proposed Open Water Wetland

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Appendix A

Council Area 14 traffic correspondence

Appendix A Council Area 14 traffic correspondence

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ABN 11 236 901 601

PORT MACQUARIE
HASTINGS

4 April 2011

Your ref:
Refers to : AREA 14 TRAFFIC ISSUES
– RTA SUBMISSION

Tierney Property Services
PO Box 493
PORT MACQUARIE NSW 2444

Attention: Mr Brian Tierney

Dear Brian,

RE: **ST VINCENTS FOUNDATION PART 3A APPLICATIONS - MP06_0085 & MP 07_0001 AREA 14 TRAFFIC ISSUES – RTA SUBMISSION**

Council provided comments regarding roadwork and traffic issues in Area 14 in my letter dated 8 June 2010. Council has since been provided with a copy of the RTA's submission dated 23 September 2010 prepared in response to the exhibition of the St. Vincent's Foundation Concept Plan Environmental Assessment.

Council, as the local road authority, has the responsibility to resolve with the RTA issues related to transport, road safety, traffic management and efficiency within Area 14 and the arterial road network generally. Council staff met with RTA staff on 18 January 2011 to discuss the proposed Area 14 Ocean Drive road and intersection concepts as identified in the Roadnet Traffic Study 2010.

Council is currently seeking the concurrence of the RTA to the Roadnet Traffic Study recommendations as the guiding principles for road improvements associated with the Area 14 developments.

Council will, in consultation with the RTA in its concurrence role, determine the detailed road and intersection upgrades warranted at each stage of development within Area 14. This will occur at each Construction Certificate/Section 138 application for each stage of development and each application will require the concurrence of the RTA.

The assessment of the extent of works will be based on actual traffic generation and as with other developments within Area 14 proposing access to Ocean Drive may result in the construction of interim works or the ultimate planned works. If the intersection upgrades involve traffic signals, RTA approval will also be required.

I further comment with respect to the specific items (i to xvi) raised in the RTA's submission dated 23rd September 2010, as follows:

i) Council has been aware of the need to plan for transport infrastructure in Area 14 since the development of the Hastings Urban Growth Strategy (HUGS) 2001. HUGS identified Area 14 as a significant urban release area for a population of around 10,000. Councils Major Roads Network Traffic Modelling & Study undertaken by SMEC Australia Pty Ltd (2001) allowed for the planned growth in Area 14 and made recommendations for

improvements to Ocean Drive. The Area 14 Master Planning resulted in the undertaking of a more detailed traffic study for Area 14 on Council's behalf by Roadnet Pty Ltd. The study results have also recommended further upgrades of Ocean Drive, including the construction of major intersections. This study has been issued to the RTA (Grafton) for their concurrence. The study recommendations have also been included in St Vincents planning for their transport infrastructure to be provided through the development of their properties at no cost to Council. Transport Infrastructure costs for Area 14 are to be recovered through a combination of 100% developer funded works, Major Roads S94 Contribution Plans or Voluntary Planning Agreements to be negotiated with respective property developers within Area 14.

ii) A previously mentioned Councils Traffic Modelling & Study 2001 was prepared for Councils major road network. Traffic growth projections were based on the HUGS 2001 population forecasts with the model simulations run on the basis of the planned major land releases such as Areas 13 &14 and other major employment generating areas. Development site specific traffic impact assessments are also considered in light of the major network modelling as required. Although the 2001 modelling is some 10 years old the traffic projections are reasonably reliable. Council acknowledges it may need to update the 2001 model in the near future.

iii) Council has acknowledged with the RTA (Grafton) the delay in referring the Roadnet Traffic Study 2010.

iv) The SMEC Traffic Study (2001) and Roadnet Study (2010) identify increased traffic generation along Houston Mitchell Drive and thence onto the Pacific Highway. Council have in place plans for the upgrading of Ocean Drive through Lake Cathie designed to cater for future traffic growth. Plans are also in place for a road bypass of Bonny Hills to cater for future growth. Both of these plans are costed in Councils Major Roads S94 contribution plans. Council is also aware that the environmental assessments for the Pacific Highway upgrades recognise that local and regional traffic growth in the LGA will be a component of the Highway traffic growth and accordingly have allowed for in the design of the respective Highway intersections a growth factor for local and regional traffic. It is also my understanding that the RTA would have been aware of the Area 14 planning at the time of the assessments for the Pacific Highway upgrades.

v) Given Council's understanding of the planning of the Pacific Highway upgrades it would appear unreasonable for Council to contribute towards any upgrades of the Houston Mitchell Drive intersection with the Pacific Highway.

vi) Council will seek the necessary concurrences from the RTA. Council is currently seeking the concurrence of the RTA to the "planned" Ocean Drive upgrades and new intersections. Further concurrences will be sought as part of the detailed design phase for each upgrade, either through individual Construction Certificates, S138 Applications or Council programmed works.

vii) As previously mentioned Council is aware of and has planned for progressive upgrades of Ocean Drive through its Major Roads Improvement Plan and Section 94 Contribution Plans. These plans will be updated as required to include the Ocean Drive upgrades planned for Area 14.

viii) Council is aware of the RTA role with respect to traffic signals. The Roadnet Study 2010 proposes traffic signals at certain intersections and is currently under RTA review. Appropriate cost allowances will be made for traffic signal installation and RTA maintenance costs as part of Councils cost recovery plans for Area 14.

ix) Council has discussed the option of co-ordinated traffic signals for all intersections in Ocean Drive through Area 14. This option is currently under RTA review and Council is awaiting RTA advice on this aspect of the planned works in Ocean Drive.

x) Two (2) school sites are planned. Access to the northern site will be limited to the main internal collector road linking with Ocean Drive at the Houston Mitchell Drive intersection. Council will control the access location through the DA conditions to ensure adequate setback from Ocean Drive. The southern site proposes access from a rural roundabout in Ocean Drive recommended by the Roadnet Traffic Study 2010. Council will control the provision of the roundabout either as part of the DA for the school or earlier via its Ocean Drive Works programming. Council will also control through the DA for the school the length of the access road between the roundabout and school internal access roads to ensure adequate storage for turning vehicles. All access to the schools will be limited to these aforementioned access points and no additional access is to be permitted to Ocean Drive. This will be controlled through appropriate restrictions as to user attached to the titles of the school lots as created. It is also proposed that Ocean Drive have suitable landscaped barriers through Area 14. These barriers combined with school security fencing will essentially eliminate the potential for school children to access Ocean Drive other than via the approved access points and formal pedestrian facility crossings.

xi) The Roadnet Traffic Study 2010 identifies five (5) major intersections with Ocean Drive. Three (3) of these intersections exist and will require significant upgrades to cater for traffic growth associated with Area 14 developments. The southern school site is proposed via a rural roundabout to be provided at the existing "tee" intersection of Ocean Drive and Bonny View Drive. The planned schools do not introduce the need for additional intersections with Ocean Drive.

xii) Agreed and will be controlled through appropriate designs as part of the respective DA's and Construction Certificates for each property.

xiii) Council recognises the need for safe pedestrian crossings of Ocean Drive. This further supports the provision signalised intersections as opposed to the proposed roundabouts. Council expects the RTA will take this into consideration as part of their current review of the Roadnet Traffic Study recommendations. Alternative options such as grade separated facilities are to be considered in the event of roundabouts being provided.

xiv) Agreed and will be provided through conditions of development consent for each respective development or through Councils Ocean Drive works programs as they relate to Area 14.

xv) Agreed, as above.

xvi) Traffic Management Plans will be required as conditions of development consent for each respective development. This is normal practice for Council as it is not practical to develop these plans until detailed designs are provided to enable a more informed assessment of construction traffic impacts. It is also normal practice to pass on responsibilities for traffic management to the approved Construction Contractor through the CC and S138 approvals, to be referred to the RTA for concurrence as they relate to Ocean Drive.

In conclusion, and given your advice that St. Vincent's Foundation does not envisage requiring improved access to Ocean Drive within the next 18 months, I see no impediment to the timing or approval of the current Concept Plan and Project Applications, with respect to the issues regarding Ocean Drive. Council plans to resolve all Ocean Drive planning issues with the RTA by the end of 2011.

Yours sincerely,

Cliff Toms
Technical Services Manager
Port Macquarie Hastings Council