

Environmental Assessment

Rainbow Beach Project Application Central Corridor and Associated Works

Part 3A Project Application | St. Vincent's Foundation Pty. Ltd. | 8 July 2010

Volume 1 | Environmental Assessment



Environmental Assessment

Rainbow Beach Project Application for Central Corridor and Associated Works

Prepared for

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Certification

Submission of an Environmental Assessment prepared under the *Environmental Planning and Assessment Act 1979* Section 75F

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Project

Project application	MP 07_0007
Applicant name	St Vincent's Foundation
Applicant address	C/o Tierney Property Services, 122 William Street, Port Macquarie, NSW, 2444
Land to be developed	Part Lot 1232 DP 1142133, Lots 1, 2, 3 and 4 DP1150758 and Lot 5 DP 25886
Proposed project	Development of a Central Corridor, site excavation and filling and beach access.

Environmental Assessment

The attached Environmental Assessment has been prepared in accordance with the Director General's Environmental Assessment Requirements issued under Part 3A of the *Environmental Planning and Assessment Act 1979*.

Certification

I certify that I have prepared the contents of this Environmental Assessment and to the best of my knowledge it is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

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Abbreviations

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AHD	Australian Heritage Database
ANZECC	Australian and New Zealand Environment Conservation Council
APZ	Asset Protection Zone
ASS	Acid Sulfate Soil
ASSMP	Acid Sulfate Soil Management Plan
CAMBA	China-Australia Migratory Bird Agreement
CPA	Concept Plan Application
CEMP	Construction and Environmental Management Plan
DCP	Development Control Plan
DEC	NSW Department of Environment and Conservation
DECC	NSW Department of Environment and Climate Change
DECCW	NSW Department of Environment, Climate Change and Water
DG	Director General
DGRs	Director General's Environmental Assessment Requirements
DII	NSW Department of Industry and Investment
DLWC	NSW Department of Land and Water Conservation
DNR	NSW Department of Natural Resources
DoP	NSW Department of Planning
DP	Deposited Plan
DPI	NSW Department of Primary Industries
DWE	NSW Department of Water and Energy
EA	Environmental Assessment
EPBC Act 1999	Environment Protection and Biodiversity Conservation Act 1999
EEC	Endangered Ecological Community
ELUMP	Environmental Land Use Management Plan
EP&A Act 1979	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
HLEP 2001	Hasting Local Environmental Plan 2001
IWCM	Integrated Water Cycle Management
JAMBA	Japan-Australia Migratory Bird Agreement
KPOM	Koala Plan of Management
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area

PMHC	Port Macquarie – Hastings Council
NCREP 1988	North Coast Regional Environment Plan 1988
NEPC	National Environment Protection Council
NRCAP	Northern Rivers Catchment Action Plan
OSMS	Open Space Management Strategy
NOW	NSW Office of Water
PA	Project Application
Part 3A	Part 3A Major Project or Part 3A of EP&A Act
PASS	Potential Acid Sulfate Soil
PEA	Preliminary Environmental Assessment
POEO Act 1997	Protection of the Environment Operations Act 1997
PSI	Preliminary Site Investigation
REP	Regional Environmental Plan
RFS	Rural Fire Service
RL	Reduced Level
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy
STP	Sewer Treatment Plant
SSFCF	Swamp Sclerophyll Forest on Coastal Floodplains
SVF	St Vincent's Foundation Pty Ltd
ELUMP	Environmental Land Use Management Plan
VPA	Voluntary Planning Agreement
WBNM	Watershed Bounded Network Model
WEDGRA	Water Engineering and Environment Report (Cardno Pty Ltd April 2010)
WSUD	Water Sensitive Urban Design

Definitions

Area 14 Structure Plan	Port Macquarie – Hastings Council adopted Lake Cathie & Bonny Hills Master Plan 2004 for the Area 14 Release Area
Central Corridor	As delineated on Figure 3 . Being part of the Open Space, Drainage and Wildlife Corridor as defined by the Concept Plan
Concept Plan Area	Part Lot 1232 DP 1142133, Lots 1, 2, 3 and 4 DP1150758 and Lot 5 DP 25886, as shown on Figure 3 .
Construction Certificate	Approval by Port Macquarie – Hastings Council as Principal Certifier (civil works) pursuant to Section 109E of the EP&A Act
Council	Port Macquarie – Hastings Council
Landowner	St Vincent's Foundation Pty Ltd
Minister	NSW Minister for Planning
Project	Elements of works for this Project Application
Project Application Area	As delineated on Figure 3
Proponent	St Vincent's Foundation Pty Ltd

Executive Summary

Director General's Requirements	Compliance
The Environmental Assessment (EA) for the project application must include: An executive summary	This section provides an executive summary of the findings of the report.

Introduction

St Vincent's Foundation Pty Ltd (the Landowner and Proponent) has engaged AECOM Pty Ltd (AECOM) to undertake an Environmental Assessment (EA) of the proposed development of a Central Corridor and associated works on land at Rainbow Beach, Bonny Hills (the Project).

The site, which is the subject of this Project Application and EA Report is also the subject of a Concept Plan Application (MP06_0085) for the delineation of a number of land uses including an Open Space, Drainage and Wildlife Habitat Corridor area. The proposed land uses include a number of environmental and urban elements, and are consistent with the land uses provided for by the Project and the Port Macquarie – Hastings Council's adopted Structure Plan for the Area 14 Urban Release Area.

Redevelopment of the site has been declared 'Major Development' by the Minister for Planning under the provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *State Environmental Planning Policy (Major Development) 2005* (MD SEPP), and is therefore subject to the provisions of Part 3A of the EP&A Act. The Director General's Environmental Assessment Requirements (DGRs) for this Project Application were provided by the DoP on 10 January 2007, with updated requirements issued on the 31 May 2010. This Environmental Assessment has been prepared in accordance with the DGRs for the Project.

This Project Application involves the design of land uses occupying the Central Corridor, as well as the excavation and placement of fill to reclaim a portion of the site which is currently low lying and is subject to periodic inundation. The Project Application also seeks approval for formalised access to Rainbow Beach.

Strategic Context and Project Need

In 2004, Port Macquarie – Hastings Council adopted the Area 14 Structure Plan for the framework of a new urban area referred to as Area 14. The Structure Plan estimates that Area 14 would accommodate a population of 10,000 by 2021. The primary focus of the Structure Plan is on the area between the villages of Lake Cathie and Bonny Hills, where the majority of this future urban development is expected to take place. The Concept Plan Area and Project Application Area are located within this land.

Detailed planning of Area 14 has commenced. A Concept Plan Application (MP 06_0085) was lodged with the Department of Planning (DoP) by the Proponent in June 2010. The Concept Plan Application seeks approval for the delineation of future land uses within the 177.4 ha Concept Plan Area 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;
- 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 the site for future eco-tourist development; and
- the delineation of the extent of the Open Space, Drainage and Wildlife Habitat Corridor.

This Project Application is for the design of the proposed Central Corridor, which is located within the Open Space, Drainage and Wildlife Habitat Corridor. The Open Space, Drainage and Wildlife Habitat Corridor is a major land use element defined by the Concept Plan. This Project Application is submitted for concurrent assessment with the Concept Plan Application.

Alternatives Considered

Throughout the design and environmental assessment of the Project, a number of options and alternatives were presented and considered for the Project Application Area. The development of the Project was driven by the focus to provide the best possible design response to the environmental opportunities and constraints of the Project Application Area. The alternatives investigated include:

- stormwater management alternatives; and
- fill source alternatives.

Three alternative options for stormwater management were examined by Cardno Pty Ltd, being the wetland stormwater treatment option, and two Bio-infiltration stormwater treatment (66 ha and 45 ha development yield) options. These options were assessed, and an evaluation was made, based on the performance of each option against a number of evaluation criteria and their ability to satisfy regulatory requirements. The proposed Project, involving the use of wetlands for stormwater treatment, was adopted as the most advantageous option overall because it is the only option which satisfies the evaluation criteria.

Investigations into alternative sources of fill for the Project have been undertaken by Luke & Co. Two quarries were identified as potential sources of fill, however both were found to be unsuitable sources, due to procurement costs and environmental, traffic and general amenity impacts.

Project Application Area – The Subject Site

The Concept Plan Area relates to part Lot 1232 DP 1142133, Lots 1, 2, 3 and 4 DP1150758 and Lot 5 DP 25886, and is referred to within this EA as the Concept Plan Area. Within the Concept Plan Area is the Project Application Area, which contains works proposed as part of this Project Application. The Project Application is the subject of this EA.

The Project Application Area is located at Rainbow Beach, Bonny Hills, within the Port Macquarie – Hastings local government area (LGA). The regional context of the Project Application Area is shown in **Figure 5**. The Project Application Area comprises a parcel of land of approximately 120.2 ha situated between the coastal villages of Bonny Hills to the south and Lake Cathie to the north. To the west the Project Application Area is bounded by Ocean Drive, to the south by existing residential development (known as the Rainbow Beach Estate) and to the east by coastal dunes and the Lake Cathie/Bonny Hills Sewage Treatment Plant.

Pursuant to the *Hastings Local Environmental Plan 2001* (HLEP 2001), the majority of the Project Application Area is zoned 2(a1) Residential, however a portion of the Project Application Area is zoned 1(a) Rural to formalise a buffer around the sewage treatment plant located to the east.

Project Description

The Project Application seeks approval for the Central Corridor and associated works as follows:

- Works location 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 to create reclaimed areas; and
 - a formalised access way located across the proposed eco-tourist development site to allow access to Rainbow Beach.

The application is accompanied by an integrated, multifunctional landscape master plan which has been designed by AECOM. This landscape master plan illustrates the regeneration and revegetation works and recreational elements proposed as part of the Project.

The landscape master plan divides the Central Corridor into eight precincts, each providing different recreational, educational and revegetation elements. A detailed description of each of the proposed uses within the eight Central Corridor precincts and the relationship between open space, drainage and habitat functions is provided

within **Section 4.1.1** of this EA, as well consideration of how each precinct of the landscape master plan has responded to site constraints.

An Open Space Management Strategy (OSMS) has been prepared by Cardno Pty Ltd (Cardno) providing a framework within which the Central Corridor is to be managed as part of the staged development of the Project Application Area. The OSMS also provides management guidelines for implementation by the Port Macquarie – Hastings Council subsequent to Council assuming responsibility for the ongoing management of the Central Corridor.

The OSMS aims to enrich the biodiversity of existing vegetation, enhance existing terrestrial and aquatic habitat values, while providing a balance between public use and controlled access within the Central Corridor. The detailed management strategies and actions can be viewed within the OSMS (see **Appendix D** of this EA).

Planning and Legislative Framework

In accordance with Section 75B(1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) the Minister for Planning declared, by Ministerial opinion dated 30 November 2006, that the 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.

A range of Environmental Planning Instruments (EPIs) created under the EP&A Act provide further detailed guidance and regulation for development at a State, regional and local level.

In accordance with clause 75J of the EP&A Act in deciding whether or not to approve the carrying out of a Project, the Minister may (but is not required to) take into account the provisions of EPIs that would apply if the Project were approved. As this is a discretionary matter for the Minister, a range of EPIs have been considered in relation to the Project and include:

- MD SEPP;
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*; and
- *State Environmental Planning Policy No. 26 – Littoral Rainforest*.

A discussion of the application of these instruments to the Project and the permissibility of the Project is provided in **Chapter 5.0** of the EA.

The Project has been designed in consideration of planning policy and guidance set out in the relevant Commonwealth, State and local planning policy documents and feedback from discussions with the DoP and Port Macquarie – Hastings Council.

Consultation

The preparation of the EA has involved a program of consultation with a number of statutory and non-statutory organisations and interest groups in order to identify the views and concerns of interested/affected parties with respect to the likely environmental effects of the proposed development.

Consultation has continued throughout the preparation of the EA and in particular meetings have taken place with Port Macquarie – Hastings Council and the DoP. A list of groups and organisations consulted during the EA process is provided in **Chapter 6.0**.

The consultation process has been instrumental in determining the issues surrounding the proposed development and in shaping the design of the proposed Project. A comprehensive review of the issues raised through the consultation process is provided in **Chapter 6.0**.

Environmental Assessment

The environmental issues associated with the Project have been identified through the preparation of a Preliminary Environmental Assessment, consultation with the community, State and local government agencies and with reference to the Director General's Environmental Assessment requirements. The issues identified include:

- Flora and fauna;
- Water cycle management and watercourses;
- Hazard management and mitigation;

- Heritage and archaeology;
- Public access and safety; and
- Construction management.

Flora and Fauna

An ecological survey and assessment undertaken by Darkheart Eco-Consultancy (September 2009) indicates that there are no areas of constraint due to threatened flora and fauna that would preclude the proposed Project (see **Appendix G** and **Chapter 7.0** of this EA). The Project would involve the removal of approximately 62.85 ha of Pasture/Pastoral Woodland. This vegetation, particularly the pasture, has been identified as having low habitat value, and removal of limited vegetation within these areas is not expected to have significant impacts on threatened species within and around the Project Application Area. The Project also includes the revegetation and enhancement of a significant portion of land within the Central Corridor. The revegetation of such a substantial portion of the Project Application Area as an integral part of the development provides the positive ecological benefit of securing higher value habitat area under conservation with appropriate ongoing management.

Revegetation within the Central Corridor includes several vegetation communities which provide high quality habitat for a number of threatened mammals and birds, as well as the Wallum Froglet thereby resulting in positive impacts on these threatened species.

A number of amelioration and environmental management measures have been recommended by the ecology specialists involved in the Project. These measures would be implemented as part of the Project to protect and enhance flora and fauna habitats within the Project Application Area. These measures have been incorporated into the OSMS, which also includes a Environmental Land Use Management Plan (ELUMP) for the Project Application Area.

An aquatic assessment has been undertaken by the Ecology Lab (April 2008) (**Appendix H**), with the results of this assessment informing the design of the proposed wetland and associated works. This assessment concludes that aquatic impacts within the Project Application Area would be minor; the most significant issue relates to the management of weed infestations within the existing lagoon and proposed wetlands. To effectively manage this issue, it is recommended that ongoing monitoring of water quality within the existing lagoon and proposed wetland be undertaken to assist with the adequate management of aquatic weeds so that water quality remains at an acceptable standard to support aquatic flora and fauna.

Littoral rainforest is not present within the Project Application Area, but is found on Crown land to the north east. An assessment of the potential impacts of the proposed Project on the rainforest has been undertaken by Darkheart Eco-Consultancy (see **Appendix I**). The assessment concludes that the Project would not result in adverse impacts on the rainforest. Further, vegetation management to control the spread of weeds across the Project Application Area, new indigenous planting and measures to formalise access to Rainbow Beach would reduce intrusion into areas of native vegetation resulting in positive impacts on the adjacent littoral rainforest.

Water Cycle Management and Watercourses

Cardno was engaged to prepare a Water Engineering and Environment Assessment (April 2010) to address potential hydrological impacts which were raised in the DGRs. This work has been further refined by AECOM (stormwater treatment, July 2010) and the Water Research Laboratory of the University of NSW (WRL) (groundwater, March 2010). The assessment included consideration of the existing hydrological environment including site issues and constraints, and site management recommendations for hydrological, flooding and stormwater management. The Water Engineering and Environment Assessment is included at **Appendix N** of this EA. Groundwater Characterisation and Numerical Modelling undertaken by WRL and AECOM's Rainbow Beach Stormwater Management Strategy are included at **Appendix L** and **M** respectively.

Site investigations and water quality sampling relating to groundwater demonstrated that the aquifers are of poor quality and limited extent due to contamination from the STP and acid sulfate soil (ASS). Modelling was undertaken to examine the impacts of the proposed wetland on groundwater. The modelling illustrated that drawdown would occur, however, it would not impact upon the groundwater source that sustains the littoral rainforest. The investigations also confirmed that the Wallum Froglet habitat was not sustained by groundwater, and the Project is not expected to impact the Wallum Froglet habitat (refer to **Section 8.1.4**).

The adopted stormwater treatment measures outlined in **Section 8.3** have been modelled by Cardno and AECOM to illustrate that water quality objectives for stormwater runoff treatment have been adopted to meet the Port Macquarie – Hastings Council Integrated Water Cycle Management (IWCM) policy. The proposed treatment

train would allow runoff from the development to be treated to meet the adopted water quality objectives. The runoff would then be delivered to the open water wetland at a suitable quality to meet Council guidelines. This would preserve the ecosystem health of the open water wetland and Duchess Gully.

Hazard Management and Mitigation

Australian Bushfire Protection Planners (ABPP) was engaged to undertake a Bushfire Risk Assessment (September 2008) for the Project, as following revegetation, the proposed Central Corridor would be classified as bushfire prone land. This assessment found that mitigation measures including the provision of asset protection zones are considered to be appropriate to reduce the risk from bushfire to future development. **Section 9.1** of this EA and **Appendix O** discuss bushfire risk in further detail.

Results of a Phase 1 Preliminary Site Investigation undertaken by ERM (November 2007) identified some minor localised areas of potentially contaminated soils and fibrous building materials within the Project Application Area that are required to be remediated in order for the area to be developed for recreational purposes. No broad-scale contamination threats were identified for the Project Application Area as a result of known past and present land uses. See **Section 9.2** of this EA and **Appendix Q** for further details.

Council's existing land class system identifies the Project Application Area as being prone to acid sulfate soil (ASS). This classification is confirmed by borehole test results, showing the occurrence of 'low' and 'high' potential acid sulfate soils (PASS) within the proposed open water wetland area generally in the order of reduced level (RL) 1.25 m Australian height datum (AHD). This profile has been used to establish a bed level for the open water wetland of 0.5 m above the estimated PASS profile, avoiding the disturbance of "high" PASS and minimising the risk of ASS exposure. Appropriate management practices have been detailed within a site specific Acid Sulfate Soil Management Plan (see **Section 9.3** of this EA and **Appendix P**). Provided these measures are implemented, ASS threats can be safely managed.

Modelling undertaken by Cardno illustrated that it is possible to develop the Project Application Area without increasing flood levels or discharges upstream or downstream of the Project by incorporating a number of hydraulic control structures within the overall stormwater management system, including changing the existing lagoon outlet geometry and incorporating an additional open water wetland of 10.5 ha (see **Section 9.4** of this EA and **Appendix N**).

Heritage and Archaeology

A review of potential European heritage sites was undertaken for the Project Application Area. No European heritage items are located within or in the immediate vicinity. As such the proposed Project would not result in adverse impacts in respect of European heritage. **Section 10.1** of this EA discusses European heritage in further detail.

Indigenous heritage site investigation and consultation was undertaken by Jackie Collins and Associates (2006, 2009) (see **Appendix S** and **T**) with the Birpai, Bunyah and Bril Bril Local Aboriginal Land Councils. No sites of Aboriginal, ceremonial, mythological or other spiritual significance have been recorded in the Rainbow Beach area, however a number of artefacts have been discovered. A total of seven Aboriginal archaeological sites are located within the Project Application Area. While some of these sites are of low significance, in the case of highly significant sites consideration has been given to the potential impacts of the Project on Aboriginal cultural heritage and design modifications have been made where appropriate so that the Project would not adversely impact on Aboriginal cultural heritage.

Management practices have been recommended in order to mitigate potential impacts of the Project on aboriginal heritage. These mitigation practices have been formulated with regard to the provisions of the *National Parks and Wildlife Act 1974* and advice from Aboriginal stakeholders. **Section 10.2** of this EA discuss Indigenous heritage in further detail.

Public Access and Safety

Potential impacts of the open water wetland and existing lagoon on public safety and liability have been assessed by Cardno (April 2010), based on the estimated population usage of the Project Application Area and access arrangements. Based on these parameters, the Project falls into the medium risk category. A number of design measures and operational safety controls have been incorporated into the design of the open water wetlands and within the OSMS for the Project to maximise safety. **Chapter 11.0** of this EA and **Appendix D** discuss this issue in further detail.

Construction Management

Potential construction impacts including increased traffic, dust and noise impacts, erosion control and water quality management have been identified and assessed (see **Chapter 12.0** of this EA). Construction impacts are considered to be minor and are not expected to result in detrimental impacts to surrounding residential areas or users of the local road network. This is largely as a result of the sourcing of fill from within the Project Application Area which minimises truck movements on the surrounding road network. Appropriate mitigation measures have been incorporated into a Construction Environmental Management Plan (prepared by Cardno and contained within **Appendix U**), which would be implemented during the construction phase of the Project.

Conclusions

Project approval is sought for works within the Project Application Area including open space, environmental and recreational elements within the Central Corridor, establishment works for the district playing fields, excavation works to construct wetlands, placement of fill to reclaim low lying areas and a formalised beach access way.

The Project satisfies the criteria for Major Development under the MD SEPP and has therefore been declared by the Minister to be a project to which Part 3A of the EP&A Act applies.

This Project Application forms part of a broader Concept Plan Application for the wider Concept Plan Area. Approval of this Project is integral to the completion of the Concept Plan in its current form.

This EA has been prepared in accordance with the DGRs for the Project. Specialist investigations have been undertaken within the Project Application Area, for the purpose of identifying potential environmental impacts of the Project. This EA assesses key environmental issues in relation to the Project and recommends appropriate mitigation measures so that these impacts are managed and mitigated where appropriate.

In accordance with the requirements under Part 3A and the DGRs, a Statement of Commitments (SoC) has been prepared and is provided **Chapter 13.0** of this EA. The SoC outlines the Proponent's environmental commitments and details the environmental management and monitoring of the proposed Project.

The principles of ESD have been considered throughout the design and development stages of the Project. The assessment of potential environmental, social and economic considerations has been undertaken in line with precautionary, equality, biodiversity and valuation principles.

The Project has been found to be satisfactory with regard to potential environmental impacts in consideration of the recommended mitigation measures. It is considered that this Project is an appropriate form of development within the Project Application Area.

1.0 Introduction

This chapter provides the relevant background to the Project including details of the Project Application Area and planning history, the context of the Project and the approvals regime. The structure of the report is outlined to enable a broad understanding of the scope of the Environmental Assessment in relation to the relevant statutory requirements.

1.1 Background

This Environmental Assessment (EA) report has been prepared by AECOM on behalf of the St Vincent's Foundation Pty Ltd (the Proponent) to assess the potential environmental impacts of the proposed Central Corridor and associated works. Project Application approval is sought for works within the Project Application Area including open space, environmental and recreational elements within the Central Corridor, earthworks associated with the creation of constructed wetlands, filling of low lying lands and formalisation of beach access.

AECOM has prepared this EA in accordance with the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) and the Director General's Environmental Assessment Requirements (DGRs) issued by the NSW Department of Planning (DoP).

1.2 Overview of the Project

1.2.1 The Proponent

The Proponent for the Project is St. Vincent's Foundation Pty Limited (SVF). SVF is a charitable, not for profit organisation which is wholly owned by the Trustees of the Roman Catholic Church for the Diocese of Lismore.

1.2.2 Strategic Context

In 2004, Port Macquarie – Hastings Council adopted the Area 14 Structure Plan for the framework of a new urban area referred to as Area 14. The Structure Plan estimates that Area 14 would accommodate a population of 10,000 by 2021 in the Rainbow Beach area, located to the south of the town of Port Macquarie in the Lake Cathie/Bonny Hills localities.

The Structure Plan area encompasses the existing urban areas of Lake Cathie and Bonny Hills as well as land around the villages, which is expected to have potential for urban development (refer to **Figure 1**). The primary focus of the Structure Plan is on the area between the villages of Lake Cathie and Bonny Hills. This major landholding is known as Area 14 and is one of two urban investigation areas identified in Port Macquarie – Hastings Council's strategy document "*Hastings Urban Growth Strategy*."

Planning of Area 14 has commenced, with submission of the Rainbow Beach Concept Plan Application (MP 06_0085) to the DoP by the Proponent in June 2010. The Concept Plan Application seeks approval for the delineation of future land uses within the 177.4 ha parcel of land 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;
- 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 the site for future eco-tourist development; and
- the delineation of the extent of the Open Space, Drainage and Wildlife Habitat Corridor.

The nature and location of land uses proposed by the Concept Plan are consistent with the existing Structure Plan for Area 14. **Figure 2** illustrates the Concept Plan for which approval is sought.

This Project Application, for the design of the proposed Central Corridor and associated works is consistent with the Rainbow Beach 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 would be accommodated. This 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 proposed Project is not carried out, there is no possibility to complete the Concept Plan in its current form.

1.2.3 The Subject Land and Project Application Site

The Concept Plan Area relates to part Lot 1232 DP 1142133, Lots 1, 2, 3 and 4 DP1150758 and Lot 5 DP 25886, and is referred to within this EA as the Concept Plan Area, as it relates to the lands over which Concept Plan approval is sought. The Concept Plan Area comprises of a parcel of land of approximately 177.4 ha and is located within the Port Macquarie – Hastings local government area (LGA) between the coastal villages of Bonny Hills to the south and Lake Cathie to the north.

Within the Concept Plan Area is the Project Application Area, which contains works proposed as part of this Project Application. The Project Application is the purpose of this EA.

The Project Application Area comprises a parcel of land of approximately 120.2 ha and is bounded by Ocean Drive to the west, existing residential development to the south (known as the Rainbow Beach Estate) and coastal dunes and the Lake Cathie/Bonny Hills Sewage Treatment Plant (STP) to the east.

Pursuant to the *Hastings Local Environmental Plan 2001* (HLEP 2001), the majority of the Project Application Area is zoned 2(a1) Residential, however a portion of the Project Application Area is zoned 1(a) Rural to formalise a buffer around the STP located to the east. The Project Application Area and its relationship with the Concept Plan Area are illustrated in **Figure 2** and **Figure 3**.

Figure 1 Council Area 14 Structure Plan

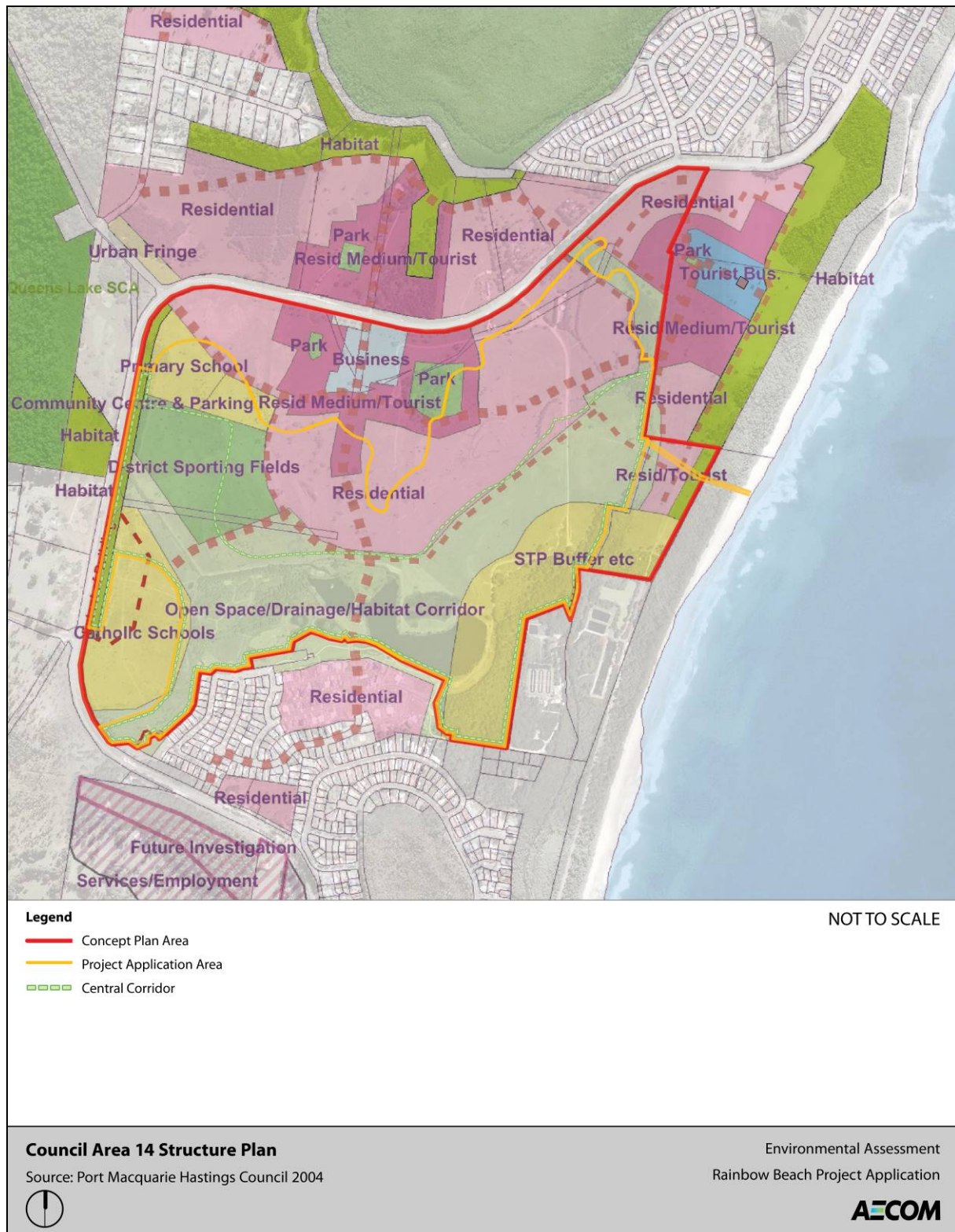


Figure 2 Concept Plan Application

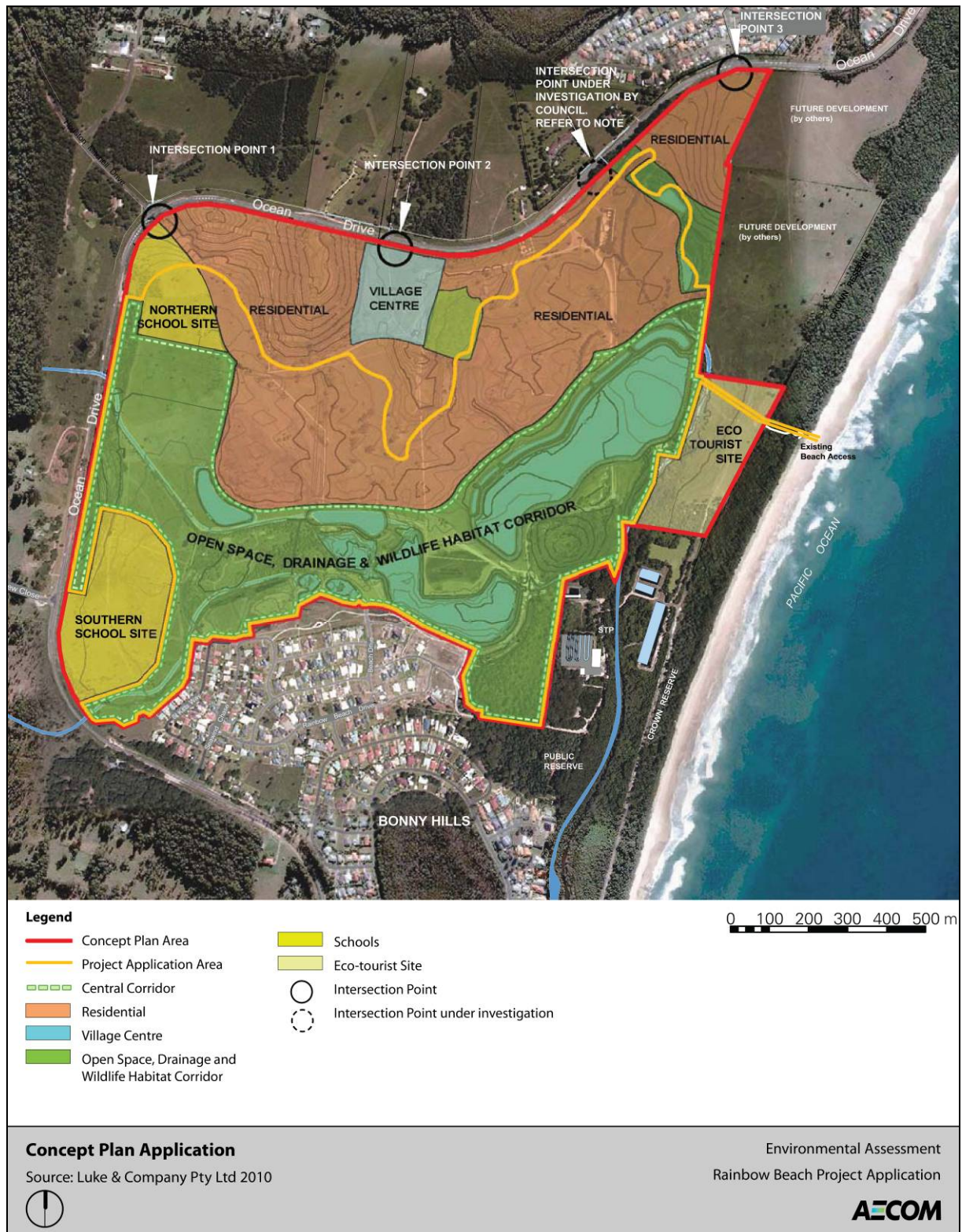
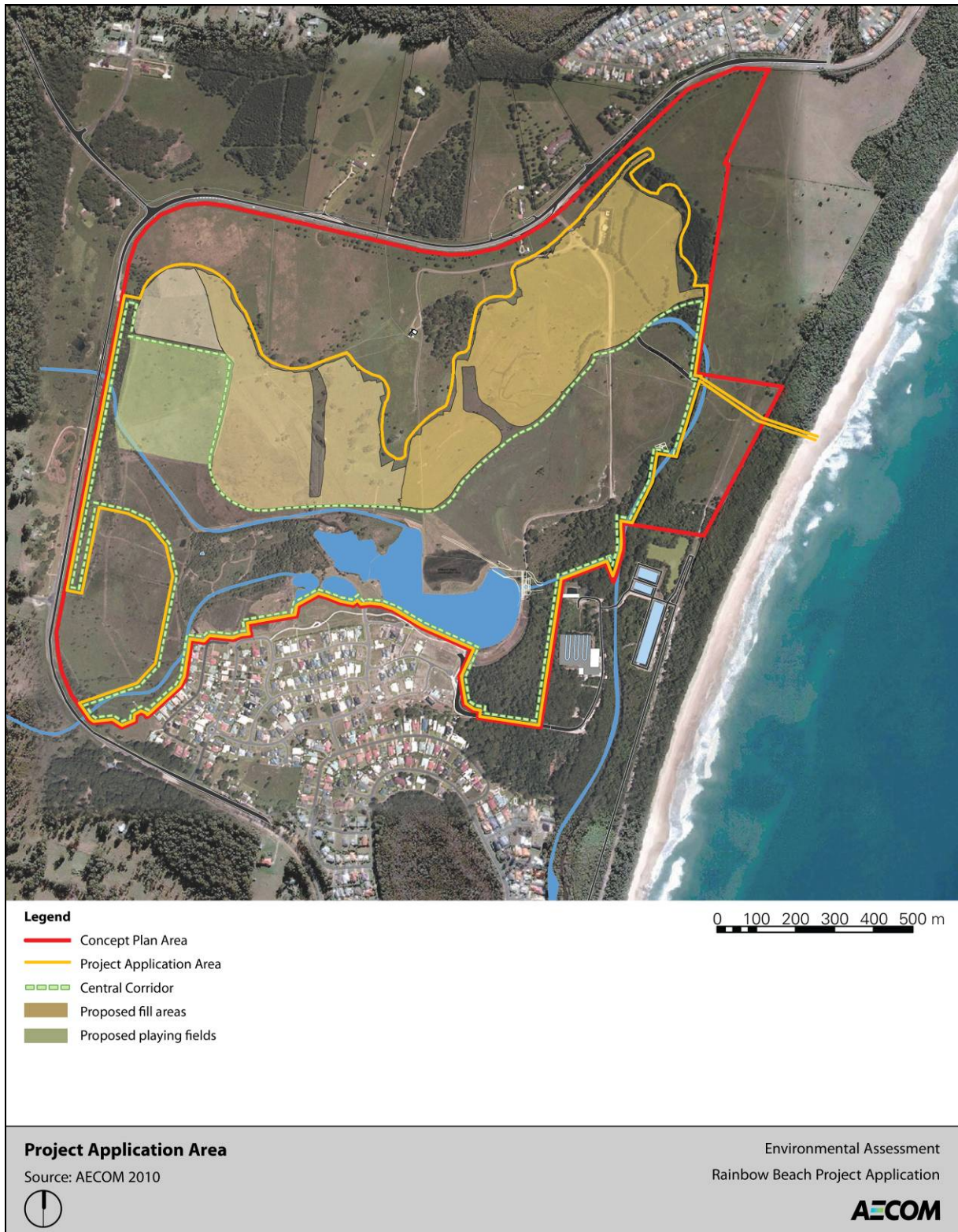


Figure 3 Project Application Area



1.2.4 Project Overview

The Project Application Works boundary is illustrated in **Figure 3**. Within this boundary, works for the Project Application fall into two categories being:

- 1) works that are undertaken within the Central Corridor; and
- 2) works that are located outside the Central Corridor but remain within the Project Application Area.

The Project Application seeks approval for the Central 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 to reclaim low lying areas; and
 - a formalised access way located across the proposed eco-tourist development site to allow access to Rainbow Beach.

The proposed works are detailed in **Chapter 4.0** of this EA.

Completion of the works described in this Project Application would advance the development of the Project Application Area to the following stage:

- future urban and residential development areas are filled to elevations above inundation levels and appropriately protected and vegetated;
- the open space, habitat and drainage corridor areas of the site are rehabilitated with locally-sourced indigenous coastal habitats appropriate to the location and the incorporation of passive recreational facilities (pathways, cycleways, park seating, children's playgrounds and picnic areas); and
- the district sporting fields land is filled, topsoiled, stabilised and readied for transfer to Port Macquarie – Hastings Council.

1.3 Approvals Process

1.3.1 Major Development

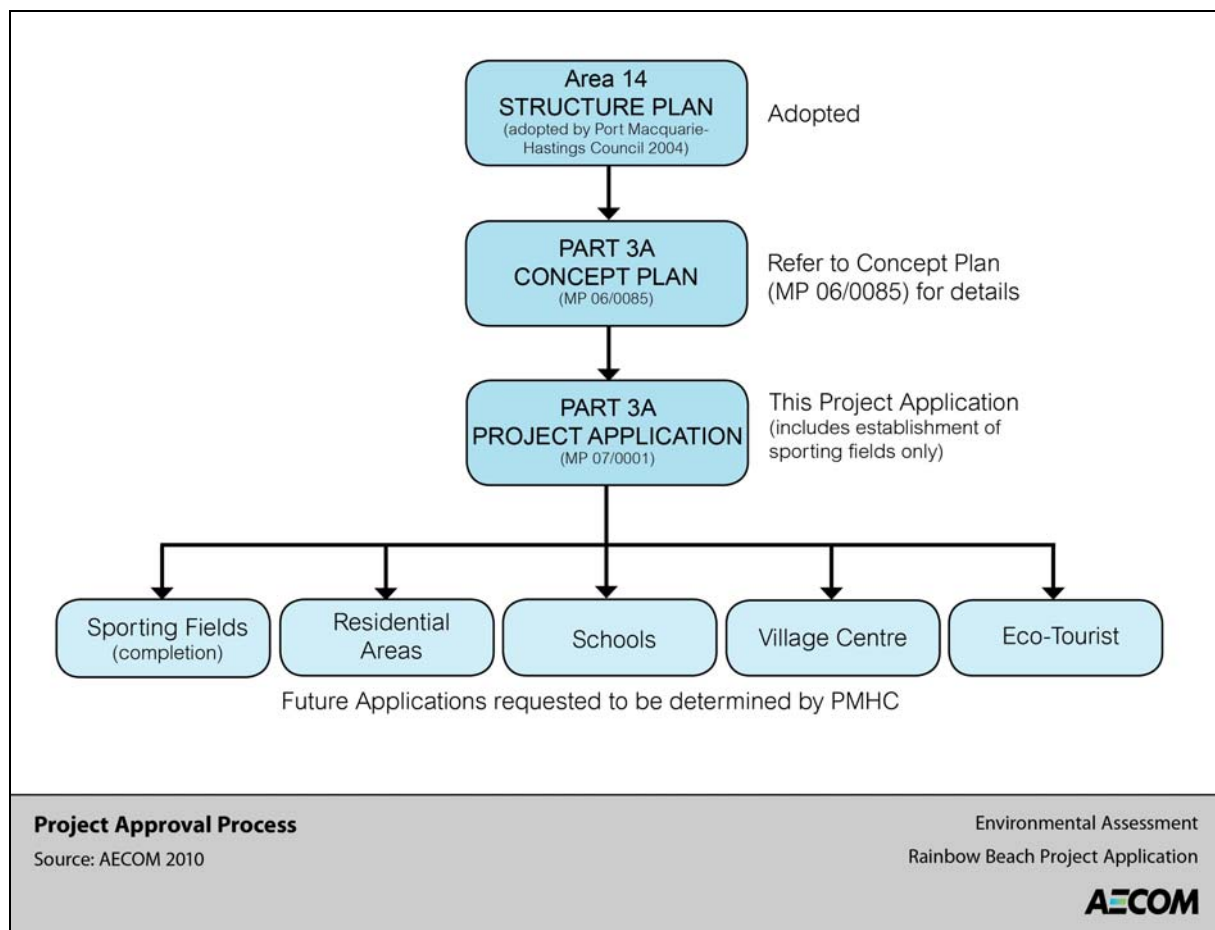
In accordance with Section 75B(1) of the EP&A Act the Minister for Planning declared, by Ministerial opinion dated 30 November 2006, that the proposal for a residential subdivision of more than 25 lots, two schools, playing fields and open space, constructed wetland, business retail centre and eco-tourist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

In accordance with Clause 73 of the EP&A Regulation, the requirements of the Director General were requested for the Project. The DGRs for this Project Application were provided by the DoP on 10 January 2007. These DGRs were subsequently updated and reissued by DoP on the 30 May 2010. A copy is attached at **Appendix A**.

This Project Application has been lodged concurrently with the Concept Plan Application (MP 06/0085). The flowchart in **Figure 4** sets out the process for approval of the Project Application and the integration with the wider Concept Plan Application. **Figure 4** also outlines the requested process for the delegation to Port Macquarie – Hastings Council for the assessment and approval of subsequent development applications for residential subdivisions, school sites, village centre, eco-tourist site and completion of the district sporting fields.

Following approval of the Project Application by the DoP, detailed design of the Project elements outlined in **Section 1.2.4** would be the subject of separate Development Applications and/or Construction Certificates submitted to the Port Macquarie – Hastings Council as applicable.

Figure 4 Rainbow Beach Project Approval Process



1.3.2 Environmental Assessment

The proposed Project was the subject of an initial scoping exercise to identify the potential environmental impacts that may arise from the construction and operational phases of the Project. A Preliminary Environmental Assessment (PEA) outlining the issues considered relevant to the Project was compiled and submitted to the DoP for consideration. DGRs for the Project were subsequently issued by the DoP.

A Draft EA was lodged with the DoP on 7 March 2009 for adequacy review. Following a review of the EA and supporting documentation, the DoP and other agencies requested further information in respect of a range of matters. This revised EA is the result of extensive work over the course of the last 12 months to refine the design of the Project and the EA documentation to respond to the DoPs comments. This work has involved additional site investigations and changes to the detailed design of the Project. The fundamental components of the scheme remain unchanged.

1.3.3 Director General's Environmental Assessment Requirements

The results of the scoping exercise, DGRs issued for the Project, advice received from the DoP in respect of the Draft EA and issues identified through ongoing consultation during the design process, have informed the preparation of this EA. The key matters assessed are set out below.

- strategic planning;
- land use and management;
- earthworks and filling;
- flora and fauna;
- water cycle management and watercourses;
- Hazard management and mitigation;
- heritage and archaeology;
- public access and safety; and
- construction management.

The key project specific issues identified by the Director General for consideration in the EA are identified in **Table 1** together with the section of the EA which addresses the matter.

Table 1 Director General's Requirements

DGRs – General	EA Reference
1. An Executive Summary	Executive Summary
2. An outline of the scope of the project including: • any development options; • justification for the project taking into consideration any environmental impacts of the project, the suitability of the site and whether the project is in the public interest; • outline of the staged implementation of the project if applicable.	Chapter 3.0 and Chapter 4.0
3. A thorough site analysis and description of the existing environment.	Chapter 2.0
4. Consideration of any relevant statutory and non-statutory provisions and identification of any non-compliances with such provisions, in particular relevant provisions arising from environmental planning instruments, Regional Strategies (including draft Regional Strategies) and Development Control Plans as well as, if any, matters of national environmental significance under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.	Chapter 5.0
5. An assessment of the potential impacts of the project and a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures to be implemented to minimise any potential impacts of the project.	Chapter 7.0 to Chapter 12.0 provides an assessment of the potential impacts of the Project. Chapter 13.0 details the draft Statement of Commitments.
6. The plans and documents outlined in Attachment 2: • Existing site survey plan • Aerial photograph • Site analysis plan • Locality/context plan • Subdivision plans • Stormwater concept plan • Erosion and sediment control plan • Landscape concept plan • Construction management plan	The required plans are included in relevant chapters of this EA and/or its appendices. A full scale Landscape master plan and site analysis plan at suitable scale are submitted as separate drawings to this EA. No subdivision is proposed as part of this Project Application. As such, subdivision plans

DGRs – General	EA Reference
View analysis	have not been prepared. Given the nature of the Project, a series of open space plans and sections have been developed to satisfy this requirement.
7. A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.	See signature page at front of EA.
8. An assessment of the key issues specified below and a table outlining how these key issues have been addressed.	An assessment of the key issues specified in the DGRs is undertaken in relevant chapters of this EA as described below. This table outlines relevant chapters where these issues have been addressed.
Key Issues	
1. Strategic Planning	Section 3.1 and Section 1.2.2
1.1 Justify the proposal with reference to relevant local, regional and State planning strategies including specific reference to Hastings Council's Area 14 Structure Plan. Provide justification for any inconsistencies with these planning strategies.	
1.2 The project application would need to demonstrate consistency with the concept plan application (MP06_0085).	
2. Land Use and Management	Section 4.1 and Section 4.3
2.1 Provide a detailed description of each of the proposed uses across the site and describe the relationship between open space, drainage and habitat functions.	
2.2 Describe the proposed ownership and long-term management regime for each component of the site including playing fields, open water wetland and general open space.	
3. Earthworks and Fill	Section 2.3.4 and Section 4.1.5
3.1 Provide a detailed survey showing existing and proposed levels and quantities of fill required.	
3.2 Describe the methods for excavation, transportation and spreading of fill. Address potential alternative sources of the fill required for the residential subdivision and playing fields.	
4. Flora and Fauna	Chapter 7.0
4.1 Outline potential impacts on flora and fauna and their habitats (within the meaning of the Threatened Species Conservation Act 1995 and the Fisheries Management Act 1994) across the site and, where relevant, provide conservation measures. Specifically address the impact of the open water wetland on fish and their habitats. Note: The Department of Primary Industries states that open water wetlands are inappropriate habitat for fish.	
4.2 Provide a vegetation management plan that describes the proposed revegetation and regeneration works across the site. Consider the role of revegetation in the provision of habitat for threatened species including the Koala (with reference to Hastings Council's Area 14 Koala Plan of	

DGRs – General	EA Reference
Management).	
4.3 Address the potential for the open water wetland to harbour exotic weeds and, where necessary, identify measures for their management.	
5. Water Cycle Management and Watercourse	Chapter 8.0
5.1 Address and outline measures for Integrated Water Cycle Management (including stormwater) based on Waster Sensitive Urban Design principles with reference to 'Area 14 Integrated Water Cycle Management Plan' (report to Hastings Council, 2006). Specifically describe the function of the open water wetland within the larger IWCM plan for the site.	
5.2 Address the impacts of the proposal on surface and groundwater hydrology and quality. Specifically address any impacts on Duchess Gully and the ongoing management of the waterway and its riparian zone. Describe any potential impacts to the existing exfiltration system attached to the Bonny Hills Sewage Treatment Plant.	Chapter 9.0
6. Hazard Management and Mitigation	
6.1 Address the requirements of Planning for Bushfire Protection 2001 (RFS) or relevant policy in the design of the proposal with regard to proposed adjacent land uses such as residential land and schools.	
6.2 Identify any contamination on site and appropriate mitigation measures in accordance with the provisions of SEPP 55 – Remediation of Land.	
6.3 Identify the presence and extent of acid sulfate soils on the site and, where relevant, appropriate mitigation measures.	
6.4 Provide an assessment of any flood risk on site in consideration of any relevant provision of the NSW Floodplain Development Manual (2005). Consider the potential impacts of any filling on the flood regime of the site and adjacent lands.	
6.5 Assess the potential impacts of sea level rise and an increase in rainfall intensity on the flood regime of the site and adjacent lands with consideration of Practical Consideration of Climate Change – Floodplain Risk Management Guideline (DECC, October 2007) and the draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise.	
7. Heritage and Archaeology	Chapter 10.0
7.1 Identify whether the site has significance to Aboriginal cultural heritage and identify appropriate measures to preserve any significance (refer to draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation and Interim Community Consultation Requirements for Applicants).	
7.2 Identify any other items of European heritage significance and, where relevant, provide measures for conservation of such items.	Chapter 11.0
8. Public Access and Safety	
8.1 Propose measures for the provision of public access throughout the site, to proposed adjacent residential, retail, tourist and school sites and to Rainbow Beach.	
8.2 Provide an assessment of the potential impacts of the open water wetland on public safety and liability and provide, where relevant, appropriate management measures.	
9. Construction Management	Chapter 12.0
9.1 Provide an assessment of the potential impacts during construction of the	

DGRs – General	EA Reference
proposal. The assessment should include, but not be limited to, consideration of: - Truck movements required and traffic routes proposed for use; - Impacts on traffic and pedestrians; - Impacts on the amenity of adjoining properties including noise, dust and sediment and erosion controls; - Where relevant, mitigation measures to manage identified impacts.	
Consultation	Chapter 6.0
Undertake an appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment: a) Agencies or other authorities: - Port Macquarie – Hastings Council; - Department of Environment, Climate Change and Water; - Road and Traffic Authority; - NSW Rural Fire Service; - Land and Property Management Authority; - NSW Industry and Investment; - NSW Office of Water; and - Department of Education and Training. b) Public: Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community consultation and an effective communications strategy. The consultation process and the issues raised should be described in the Environmental Assessment.	

1.3.4 Community and Stakeholder Consultation

The EA has involved a program of consultation with a number of statutory and non-statutory organisations and interest groups to identify the views and concerns of interested/affected parties with respect to the likely environmental effects of the Project. Pre-application discussions have taken place with a range of stakeholders including local businesses, residents and adjoining land owners and the general public. Specifically, stakeholder and community consultation has been undertaken at two levels:

- specific consultation with identified stakeholder groups and individuals; and
- general communication to members of the public through the delivery of newsletters, and articles in the local Port Macquarie newspaper.

Details of this consultation process and the feedback received are provided in **Chapter 6.0** of this EA.

1.4 Environmental Assessment Structure

1.4.1 Environmental Assessment Document

The EA has been structured to provide information to address relevant statutory requirements and to inform the community, relevant government agencies and Port Macquarie – Hastings Council of the level of environmental assessment undertaken as outlined in **Table 2**.

Table 2 EA Report Structure

Chapter		Details
Executive Summary		Provides a comprehensive summary of the findings of the EA in non-technical language.
1.0	Introduction	Introduction to the EA and description of the methods used to prepare the technical chapters. It details the process and methods of identifying and assessing the likely significant environmental effects of the Project.
2.0	Site Details and Context	Describes the existing site and surrounding land uses and its context.
3.0	Project Need and Alternatives	Outline the need for the project, strategic justification and the main alternatives considered by the Proponent.
4.0	Project Description	Provides a detailed description of the Project and works for which approval is being sought. Provides a description of proposed land uses for the Project and the relationship between different ecological, recreational and drainage functions.
5.0	Planning and Legislative Requirements	Sets out a review of Commonwealth, national, regional and local planning policy.
6.0	Consultation	Details of the nature and extent of consultation with statutory and non - statutory consultees together with details of comments and concerns raised and the approach adopted in dealing with these matters.
7.0	Flora and fauna	Identifies the effects on flora and fauna with particular regard to threatened species including consideration of impacts on terrestrial and aquatic flora and fauna. Assessment of the potential impacts on littoral rainforest has also been undertaken.
8.0	Water cycle management and mitigation	Provides an assessment of the impact on water resources including drainage issues, groundwater and stormwater management.
9.0	Hazard management and mitigation	Consideration is given to acid sulfate soils, contamination, bushfire hazard and flood risk.
10.0	Heritage and archaeology	Provides an assessment of the potential effects of the Project on cultural heritage resources.
11.0	Public access and safety	Provides an assessment of the potential impacts of the open water wetland and existing lagoon on public safety and liability.
12.0	Construction management	Outlines mitigation measures to be employed during construction.
13.0	Statement of Commitments	Details the Proponent's environmental management and commitments in relation to the Project.
14.0	Ecologically Sustainable Development	An assessment of the Project against the principles of ecologically sustainable development is set out in this chapter.
15.0	Conclusion	Provides a summary of the key findings of the EA.

1.4.2 Specialist Studies

The EA technical studies have informed the evolution of the scheme design. The findings of baseline environmental studies were used to identify the environmental sensitivities and constraints associated with the redevelopment of the Project Application Area.

Design, project and EA team meetings, attended by members of the specialist team, were held throughout the EA process. These meetings provided a forum for the exchange of information so that the design team were appraised of the environmental constraints and opportunities which were then fed into the final scheme design.

The technical EA studies have been undertaken in accordance with relevant regulations. The majority of this guidance is specific to the various disciplines and is therefore referenced within the assessment chapters.

The majority of assessments involved consultation with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and impact mitigation where appropriate.

The content and conclusions of the EA are based on the fullest assessment that could be made, given the information available at the time of writing. The main objective of the EA is to present a clear assessment of the adverse and beneficial impacts of the proposed development and to identify necessary mitigation measures. A list of consultant, technical studies and supporting information is provided in **Table 3**

Table 3 Technical Studies and Supporting Information

DGR Key Issue	Technical Study/supporting information	Consultant Details	Appendix Reference
Strategic planning	Landscape Master Plan Design Report	AECOM	C
Land use and management	Open Space Management Plan	Cardno Pty Ltd	D
Earthworks and filling	Earthworks Report	Luke & Company Pty Ltd	E
	Geotechnical Report	Luke & Company Pty Ltd	F
Flora and fauna	Ecological Survey & Statutory Assessment	Darkheart Eco-consultancy	G
	Management and Enhancement measures for Crown Land and SEPP 26 Littoral Rainforest #116	Darkheart Eco-consultancy	I
	Matter of National Environmental Significance Assessment	Darkheart Eco-consultancy	J
	Aquatic Flora & Fauna Survey	The Ecology Lab	H
Water cycle management and water courses	Water Engineering and Environment	Cardno Pty Ltd	N
	Groundwater Characterisation and Numerical Modelling	UNSW Water Research Laboratory	L
	Groundwater Management Plan	UNSW Water research Laboratory	L
	Stormwater Treatment and Wetland Functionality	AECOM	M
	Surface Water Monitoring Plan	AECOM	M
Hazard management and mitigation	Earthworks Report	Luke & Company Pty Ltd	E
	Acid Sulfate Soils Management Plan	Cardno Pty Ltd	P
	Preliminary Site Investigation	Environmental Resources	Q

		Management (ERM)	
	Bushfire Protection Assessment	Australian Bushfire Protection Planners	O
	Coastal Hazard Study	SMEC	R
Heritage and archaeology	Aboriginal Cultural Heritage Reassessment 2006	Jacqueline Collins	S
	Aboriginal Cultural Heritage Assessment 2009	Jacqueline Collins	T
Public access and safety	Traffic Impact Study	Luke & Company Pty Ltd	V
	Open Space Management Plan	Cardno Pty Ltd	D
Construction management	Earthworks Report	Luke & Company Pty Ltd	E
	Construction Environment Management Plan	Cardno Pty Ltd	U

1.4.3 Documents Accompanying the Project Application

In addition to the technical specialists studies included within this EA and Appendices, this Project Application is supported by a number of documents as detailed in **Table 4**.

Table 4 Documents Accompanying the Project Application

Document/Plan
Assessment of Capital Investment Value Report - RLB Report (June 2010)
Central Corridor VPA Draft Heads of Agreement – Tierney Property Services (May 2010)
Memorandum of Understanding with adjoining properties – Tierney Property Services (June 2010)

2.0 Site and Context

This chapter provides an overview of the Port-Macquarie LGA and a description of the physical characteristics of the Project Application Area and the location of Project components across the Project Application Area. The chapter also provides an overview of existing and future surrounding land use in order to provide an understanding of how the Project fits within the local and regional context.

Director General's Requirements	Compliance
The Environmental Assessment (EA) for the project application must include: 2. An outline of the scope of the project including: - outline of the staged implementation of the project if applicable 3. A thorough site analysis and description of the existing environment.	This chapter provides a detailed description of the site and project. A site analysis plan is attached at Figure 9. Further information about the existing environment is provided in Chapters 7.0 to 12.0 as they relate to each specific discipline.

2.1 Regional Context

The Project Application Area is situated within the Port Macquarie – Hastings Local Government Area (LGA). Port Macquarie - Hastings LGA is located midway along the New South Wales Mid-North Coast, approximately 420 km north of Sydney (refer to **Figure 5**). It comprises three main townships: Port Macquarie, Wauchope and Laurieton, as well as a number of small villages. The LGAs total population exceeds 70,000. The town of Port Macquarie is the focal point of the LGA, situated at the mouth of the Hastings River it accommodates more than half the LGAs population.

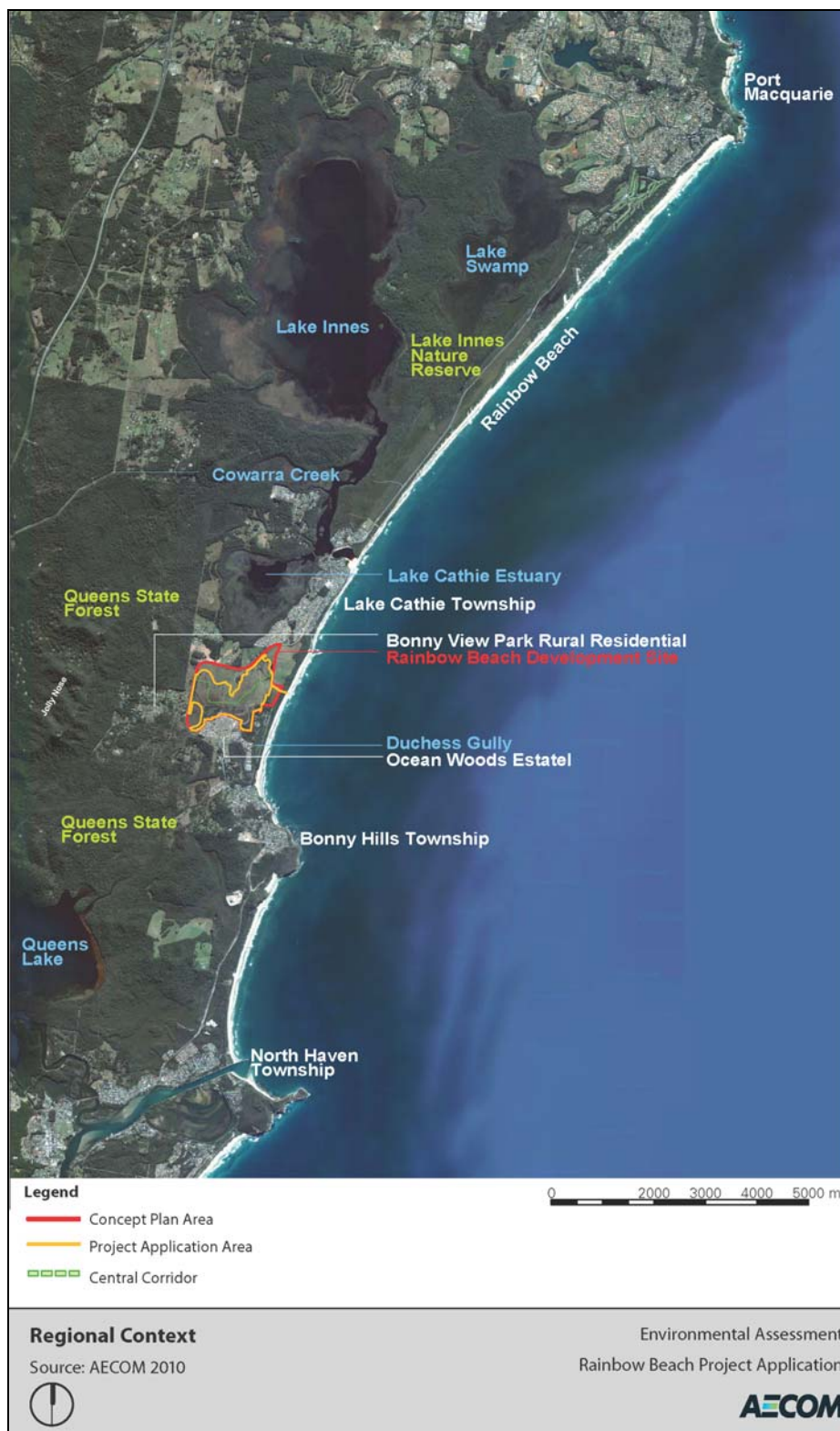
Recent estimates suggest that the Port Macquarie – Hastings population would reach approximately 100,000 by 2026. It is anticipated that much of this population growth would be accommodated in the Lake Cathie and Bonny Hills area.

In 2004, Port Macquarie – Hastings Council adopted a Structure Plan for the framework of a new urban area to accommodate 10,000 people by 2021 in the area south of Port Macquarie in the Lake Cathie/Bonny Hills localities. The primary focus of the Structure Plan is on the area between the villages of Lake Cathie and Bonny Hills, where the majority of this new urban development is expected to take place. This major landholding is known as Area 14 and is one of two urban investigation areas identified in Port Macquarie – Hastings Council's strategy document "*Hastings Urban Growth Strategy*."

Area 14 is being progressively developed to support the majority of the LGAs population growth. Land uses are anticipated to include residential development, education and community facilities including child care, sport and recreation and open space facilities as well as employment opportunities in the form of commercial/retail centres.

The Structure Plan provides an overall framework for development in Area 14 and for the sustainable management of the local environment within which urban development is proposed to take place. Council is currently working on the preparation of a draft Local Environmental Plan and Development Control Plan to provide more detailed policy to guide the development of Area 14 and to drive the implementation of the Structure Plan.

Figure 5 Regional Context



2.2 Site Location

The Project Application Area is located at Rainbow Beach approximately 18 km to the south of the town of Port Macquarie on the New South Wales North Coast, and is situated between the coastal villages of Bonny Hills to the south and Lake Cathie to the north. It occupies land that has been identified for future urban development by Port Macquarie – Hastings Council through the Area 14 Structure Plan.

The eastern boundary of the Project Application Area fronts a Crown Beach Reserve, and the south eastern boundary adjoins a sewage treatment plant (STP) which services both Bonny Hills and Lake Cathie. Adjoining the southern boundary is the existing Rainbow Beach residential estate, which was developed under a development consent issued in the late 1980s. The irregular northern boundary of the Project Application Area adjoins land identified for future residential development as part of the Concept Plan Application.

The Project Application Area is rural in character and is predominately used for cattle grazing and associated pasture improvement.

2.3 Site Description

2.3.1 Property Description and Land Ownership

The Project Application Area is located within the Concept Plan Area, which is legally referred to as part Lot 1232 DP 1142133, Lots 1, 2, 3 and 4 DP 1150758 and Lot 5 DP 25886. The Concept Plan Area is approximately 177.4 ha in area and is owned entirely by the St Vincent's Foundation Pty Ltd.

2.3.2 Site History

The majority of the Project Application Area has been cleared in the past in order to accommodate pastoral and grazing activities. Around the middle of the last century an extensive drainage network was constructed on the coastal plain, which was eventually linked to Duchess Gully. This modification of historic drainage lines resulted in pasture improvement and ease of maintenance of regrowth via slashing.

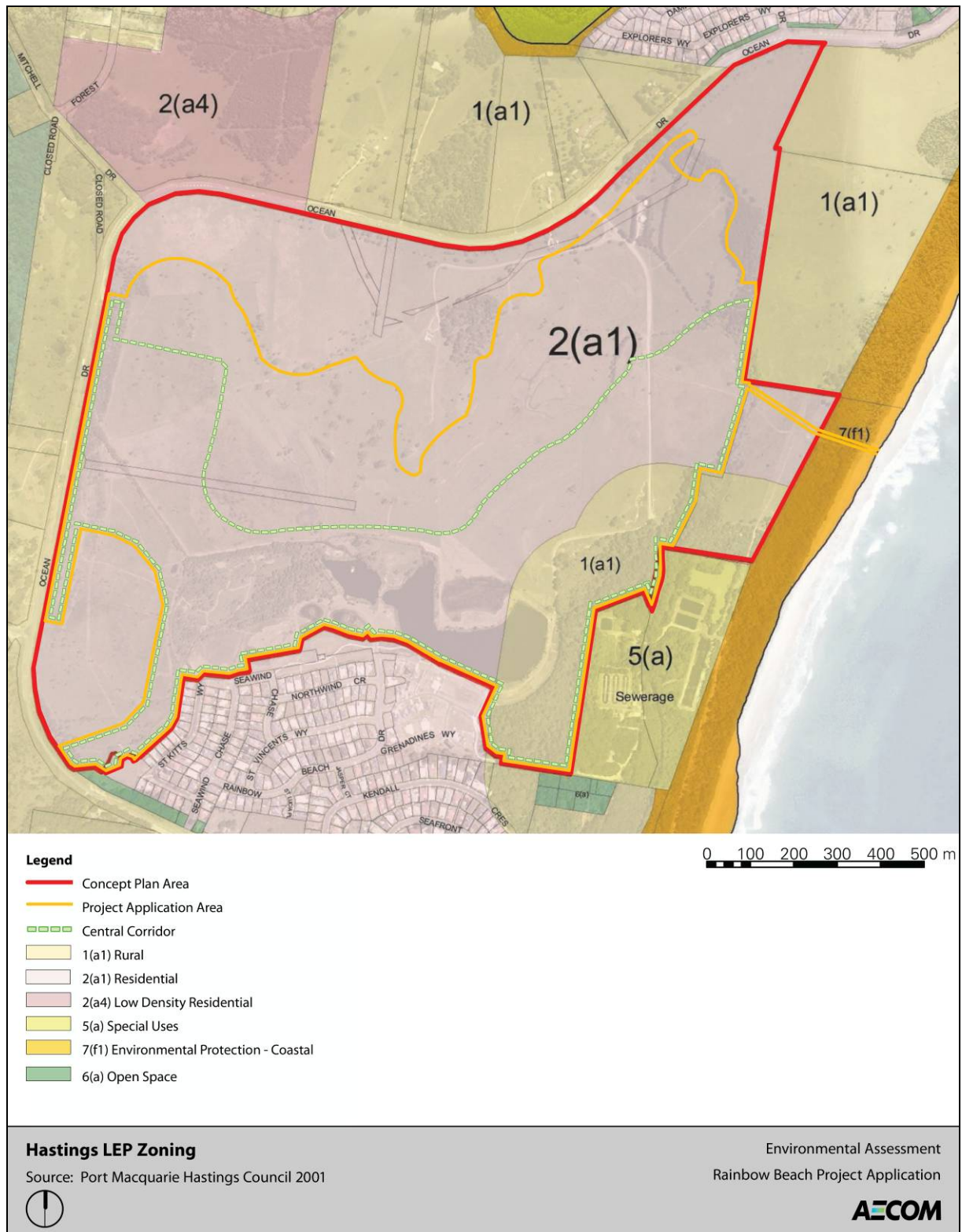
The approval of an "international sports and leisure facility" over the Concept Plan Area in the 1980s resulted in further construction works including landform modifications, artificial drainage lines and bulk earthworks. Works undertaken for this sports and leisure facility are still evident on site, including the establishment of the existing lagoon in the southern portion of the Project Application Area, construction of roads and guttering for residential land adjacent to the southern property boundary (now developed), and partial formation of a golf course over the middle of the Concept Plan Area. Development of the sports and leisure facility was subsequently abandoned. Periodic inundations as a result of these modifications and previous land clearing and pastoral activities are now experienced in the low lying areas of the Project Application Area.

Material from the excavation of the existing lagoon was used to provide fill for part of the existing residential development known as Rainbow Beach residential estate located on the southern side of the existing lagoon. Other works that were recently completed in association with the residential development include stormwater facilities, a cycleway and two small stormwater treatment wetlands (referred to in this EA as existing treatment wetlands).

2.3.3 Existing Uses

The Project Application Area is predominately zoned for residential use. A recent amendment to HLEP 2001 introduced a rural zoning to part of the Project Application Area to formalise a buffer around the STP located to the south east (**Figure 6**) The majority of the Project Application Area is undeveloped and is used primarily for agricultural activities such as cattle grazing.

Figure 6 Hastings LEP Zoning Map



2.3.4 Topography and Soils

The majority of the Project Application Area is generally flat with an elevation of around 6 m Australian Height Datum (AHD), with some higher elevations of around 12 mAHd to the south of the proposed open water wetland (Prospect Hill) within the Project Application Area (**Figure 7**).

Soils are generally sandy and well drained. The HLEP 2001 identifies the Project Application Area as having Acid Sulfate Soils (ASS) and Potential Acid Sulfate Soils and onsite testing confirms the presence of Potential Acid Sulfate Soils (refer to **Section 9.3**).

2.3.5 Drainage

The Project Application Area drains to the east into Duchess Gully. Duchess Gully drains south and then east to the Pacific Ocean approximately 800 m from the Project Application Area. Surface water flows to the eastern boundary, towards Duchess Creek via the existing drainage lines within the Project Application Area.

The watercourses of the Duchess Gully and its tributaries extend through the Project Application Area in the form of deep drainage gullies and vegetated ditches. Most reaches of the Duchess Gully have been extensively modified by manmade channel improvements and additions. Catchments to the west of Ocean Drive drain into the upper reach of the Duchess Gully and the upper tributary entering from the north. Constructed channels direct flows into the existing lagoon which is approximately 6.3 ha in area (**Figure 8**).

Flows from the existing lagoon bypass the original upper reaches of Duchess Gully via a constructed culvert which discharges into a channel flowing directly into the middle reach of the Gully. The Central Corridor is subject to periods of inundation after severe stormwater events which cause heightened flow conditions through the Gully and associated channels.

2.3.6 Microclimate

The Project Application Area is located within the North Coast Bioregion, which generally experiences sub-tropical climate with a humid and warm temperate. Annual rainfall is influenced by distance from the coast and topographic position, with rainfall in the area predominantly and somewhat reliably occurring in summer and autumn, with distinct dry periods through spring. The northern movement of subtropical anticyclones centres results in the dominance of dry west to south winds in winter, resulting in fine days and cool nights, and prevailing summer winds mostly between north easterly and south easterly.

Average annual rainfall appears to be moderate at 1,540 mm, with the wettest season being summer and winter the driest. Temperatures vary from a mean daily maximum of 26 °C in February to a mean daily minimum of 7.2 °C in July.

2.3.7 Flora and Fauna

Since 1997 the Project Application Area has been continuously used for grazing purposes and has not been substantially modified but it has been the subject of several development applications and proposals for urban development. As such the Project Application Area has been extensively surveyed in respect of flora and fauna providing a sound body of information about existing site conditions and species. Previous investigations include a Vegetation Survey and Fauna Survey conducted by Greg P. Clancy and Rod Ayres on behalf of Cox and Corkhill Pty Ltd in 1983 prior to initial development in the area, and a more recent Threatened Species Impact Assessment including an 8-part test prepared by Mr Kel Mackay and David Bray in 1997. The 1983 reports are useful in relaying the environmental condition of the land prior to substantial development, and provide information on flora species then present within the Project Application Area that may be suitable for replanting during landscaping and habitat creation within the Central Corridor.

The 1997 report concluded that the existing conservation values of the land were considered to be low with no recovery potential. There were no endangered fauna and flora species identified within the Project Application Area and were not considered likely to occur in the future due to the absence of suitable habitat on the site. The report concluded that development of the Project Application Area would not significantly affect endangered flora and fauna species due to the lack of existing habitat.

More recently, the land was considered during the various studies undertaken by Port Macquarie – Hastings Council for the Area 14 Urban Growth Strategy, and the resultant Area 14 Structure Plan. The land was generally found to be unconstrained for urban development with regard to flora and fauna.

Further ecological studies have been undertaken with specific reference to the Project Application. The details are provided in **Chapter 7.0** of this EA.

Figure 7 Existing Terrain

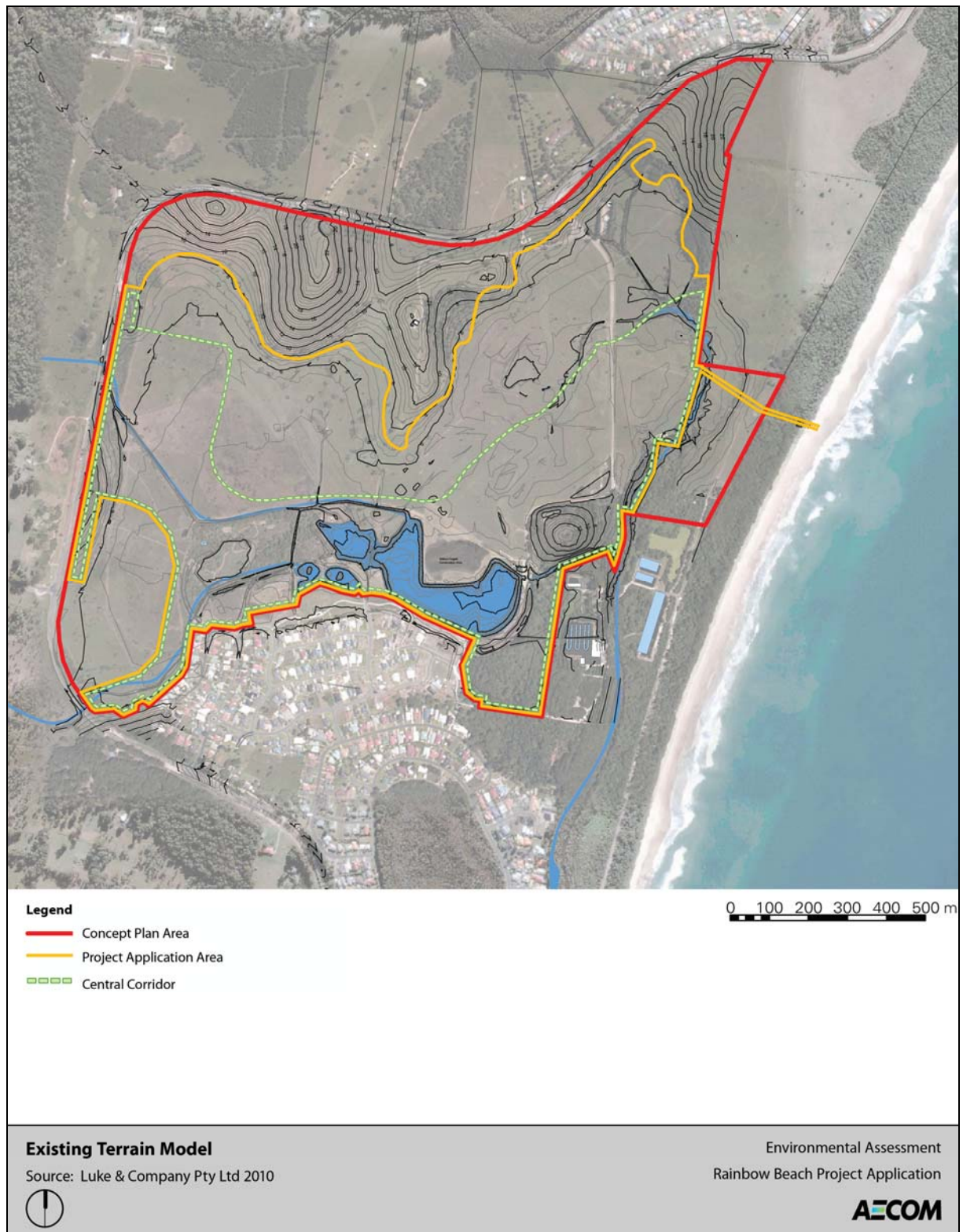


Figure 8 Existing Drainage



2.4 Surrounding Land Use

Land use surrounding the Project Application Area is predominately residential and rural residential, with the exception of the Lake Cathie National Park located to the north and the Queens Lake State Forest to the west.

The land to the northwest, which is currently zoned rural, is predominantly used for rural residential style development. The land to the northeast is vacant. The land to the west is rural with a number of dwellings. Also to the north is a motel and a manufactured housing estate which has been recently been approved.

2.5 Site Analysis, Opportunities and Constraints

Analysis of the Project Application Area has been undertaken as part of the Area 14 Structure Plan preparation, and the development of the related Concept Plan Application for the Concept Plan Area.

For the purpose of this Project Application, a thorough and comprehensive site analysis is embodied within AECOM's Landscape Master Plan Design Report (**Appendix C**). Based on this detailed site analysis, an opportunities and constraints analysis plan has been formulated which has informed the development of the proposed open space and recreational elements of the Central Corridor. **Figure 9** illustrates the opportunities and constraints analysis.

2.6 Current Site Activity

In June 2007 the Proponent made the decision to commence a bush regeneration program within the Central Corridor. The aim of the regeneration works is to give the Central Corridor as much time as possible to regenerate prior to the commencement of construction works within the Project Application Area.

The activities to date include:

- fencing off areas previously grazed by cattle;
- removal of lantana and other invasive weed species;
- control of pasture grasses, in particular torpedo grass, in certain areas, and supplanting by native species;
- a program for the collection and propagation of local species; and
- planting of selected indigenous species within the designated vegetation communities consistent with the ELUMP prepared for this Project Application.

The works are being undertaken by Wild Things Native Gardens, a local bush regeneration contractor who regularly undertake work for the Port Macquarie – Hastings Council and other landowners in the area. The intention is to continue these works through the approval phase, construction phase and into the operational phase of the Project.

Figure 9 Site Analysis

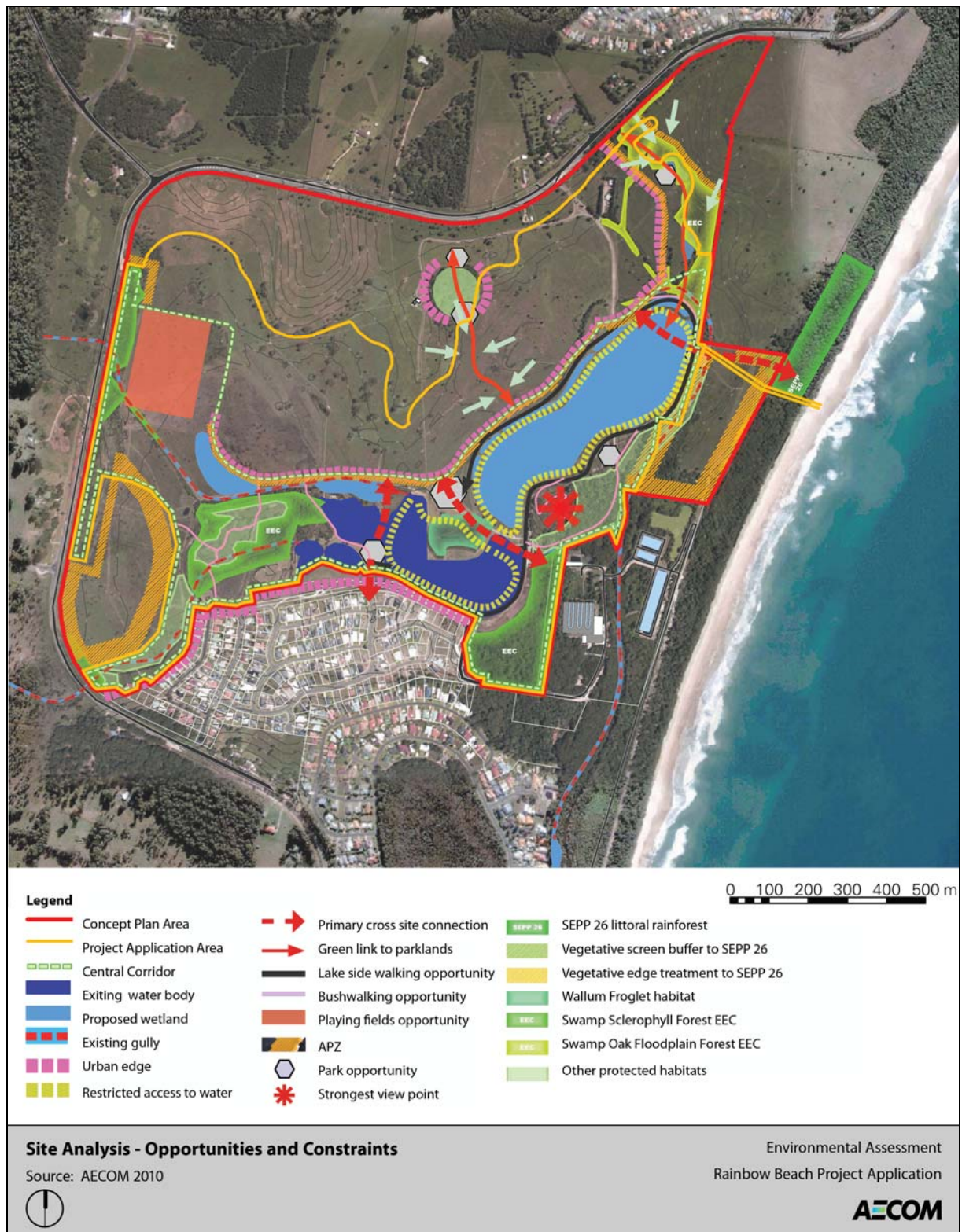


Figure 10 Current Bush Regeneration Works



3.0 Project Need and Alternatives

This chapter provides an explanation of the need for the Project and outlines alternatives considered in relation to the carrying out of the Project, including the consequences of not proceeding.

Director General's Requirements	Compliance
The Environmental Assessment (EA) for the project application must include: 2. An outline of the scope of the project including: - any development options - justification for the project taking into consideration any environmental impacts of the project, the suitability of the site and whether the project is in the public interest. Key Issue: 1. Strategic Planning 1.1 Justify the proposal with reference to relevant local, regional and State planning strategies including specific reference to Hasting Council's Area 14 Structure Plan. Provide justification for any inconsistencies with these planning strategies. 1.2 The project application will need to demonstrate consistency with the concept plan application (MP06_0085).	This chapter provides an explanation of the need for the Project and outlines a number of alternatives considered by the Proponent in relation to the carrying out of the Project. This chapter examines the local and regional strategies for the area and provides strategic justification with regard to these strategies.

3.1 Project Need and Strategic Justification

3.1.1 Port Macquarie – Hasting Council Area 14 Structure Plan

The Project Application Area is located within Area 14, which is one of two urban investigation areas identified in *Port Macquarie – Hastings Council's Hastings Urban Growth Strategy* (2001). As defined in Council's 2003 *Greater Lake Cathie and Bonny Hills Urban Design Master Plan* (referred to as the Structure Plan), the Area 14 Structure Plan study area encompasses the existing urban areas of Lake Cathie and Bonny Hills, as well as the area between the villages, namely the Concept Plan Area, where the majority of future urban development in Area 14 is proposed to take place.

The Structure Plan estimates that Area 14 would accommodate a population of 10,000 by 2021, with a number of facilities being identified for future residents including education, community facilities, child care, sport and recreation and open space facilities. Employment opportunities would also be required in order to support the proposed population, with areas being required for commercial/retail centres that can support industry sectors that are most vital to the economy of the area, such as retail, community services, tourism and property/financial services.

The Area 14 Structure Plan supports the development of the Project Application Area for future residential, commercial, educational, recreational and community facilities. Currently a portion of the Project Application Area is low lying. The development of the Project, specifically the placement of fill to secure flood free development area would create a productive use of land which would otherwise be undevelopable. To preserve the Project Application Area in its present state would reduce the availability of developable land within Area 14 by approximately 600 allotments, thereby reducing the achievement of the Structure Plan population targets.

The Project would provide for passive and active recreational lands servicing existing and proposed communities, which are essential in order to provide adequate facilities to the incoming future residential population of Area 14. Further, the Project would enhance the biodiversity of the Project Application Area by regenerating significant areas of pastureland to native bushland, while providing for the ongoing management of the Central Corridor.

3.1.2 Site Suitability

Investigations have been carried out as part of this Project Application to justify the Project having regard to the suitability of the site. The potential biophysical, social and cultural impacts are discussed within the environmental assessment chapters of this EA (**Chapters 7.0 to 12.0**) and include the following:

- water cycle management, including effluent management and stormwater;
- impacts of the Project on surface water and groundwater;
- impacts of the Project on flora and fauna;
- hazard management, including bushfire risk, acid sulfate soil management, flooding and contamination risks;
- cultural heritage;
- public access and safety; and
- construction management.

Results of investigations demonstrate that the land is suitable for the proposed Project with the adoption of appropriate environmental safeguards. Further, the Project complies with relevant planning controls and the planning framework. As such, it is considered that the proposed open space, environmental and recreational elements within the Central Corridor and associated earthworks and fill are suitable on the site.

3.1.3 Public Interest

The Project is considered to be in the public interest by providing high quality passive and active recreational opportunities and open space areas. Existing and proposed communities within the Area 14 Structure Plan area and surrounding townships of Bonny Hills and Lake Cathie would have access to these areas.

This Project includes the allocation of land and establishment earthworks, filling and stabilisation works for the future creation of four public sporting fields. The district sporting fields, which are to be completed by Council, would ultimately comprise four full size football fields, with two central cricket pitches, together with associated amenities building and parking. These facilities are described in Council's Section 94 Open Space Contributions Plan as the Lake Cathie Regional Sporting Complex, and would service the expanding district community.

While no residential or urban development is proposed as part of this Project Application, the Project does include the filling of low lying areas that are currently unsuitable for residential development due to periodic inundation. By filling these areas, the Project seeks to provide developable area for additional housing in accordance with the Area 14 Structure Plan. Without the completion of the proposed Project Application works, the intent of the overall Concept Plan cannot be brought to fruition, and the Area 14 Structure cannot be realised.

Access from the Central Corridor to the Crown land beach access point is proposed as part of this Project via an access way through the eco-tourism site. This access way would link the proposed pathway/cycleway network within the Central Corridor with the Crown land beach access point, as well as the Bonny Hills and Lake Cathie Area Coastal Walking and Cycle Tracks, providing increased recreational benefit for existing and proposed communities within the Area 14 Structure Plan area and surrounding townships of Bonny Hills and Lake Cathie.

3.2 Alternatives Considered

This section describes the alternative options that were considered during the project design and environmental assessment of the Project. The Project is driven by the focus to provide the best possible design response to the environmental opportunities and constraints of the Project Application Area.

The alternatives include the following:

- stormwater management alternatives; and
- fill source alternatives.

3.2.1 Stormwater Management Options

This section provides a summary of the results of investigations into alternative stormwater management options. The Water Engineering and Environment report (Cardno 2010) details these investigations and is included as **Appendix N** of this EA.

Three options have been assessed, and an evaluation of the trade-offs made, based on the performance of each option against a number of evaluation criteria and their ability to satisfy regulatory requirements. The following evaluation criteria were used to assess stormwater management options:

- balancing earthworks within the Project Application Area to avoid importing fill;
- achieving the residential yield desired under Council's preferred planning scenario;
- minimising disturbance of acid sulfate soils; and
- minimising excavation in areas with rock strata.

Table 5 outlines the three options and the evaluation criteria.

Table 5 Stormwater Management Options

Evaluation Parameter	Option 1	Option 2	Option 3
Development Features	Wetlands stormwater treatment – end of line	Bio-infiltration stormwater treatment – end of line	Bio-infiltration stormwater treatment – end of line
Residential yield Area	66.22 ha	66.22 ha	45 ha
Total earthworks volume	approx 400,000 m ³	approx 800,000 m ³	approx 400,000 m ³
Volume imported fill	0	approx 250,000 m ³	0

Source: Cardno 2010

The proposed Project, involving the use of wetlands for stormwater treatment, was adopted as the most advantageous option overall because it is the only option which satisfies all of the evaluation criteria.

Option 2, which utilises bio-infiltration treatment is not economically feasible because of the increased volume of earthworks required. This option would require additional cut from the elevated areas of the Project Application Area and large volumes of imported material.

Option 3 was also discounted as it does not result in sufficient fill material to achieve the desired residential capacity, i.e. 45 ha of residential areas verses 66.22 ha of residential area.

3.2.2 Fill Source Options

This section provides a summary of the results of investigations into alternative sources of fill for the Project. The Earthworks Report (Luke & Co 2010) is included as **Appendix E** of this EA.

The volume of consolidated structural and non structural fill material required for the proposed roads, residential and school precincts is estimated to be 417,200 m³. Enquiries were undertaken to identify alternative sources of fill material. Only two external sources were identified:

- **Hurd's Quarry:** located approximately 5 km from the Project Application Area, Hurd's Quarry has suitable material but it is of road pavement quality and not generally used for bulk filling. It is also prohibitively expensive. Other material of lesser quality is available from the quarry but not in the quantities required.
- **Bago Quarry:** the quarry advised that it has sufficient fill material available. However, being located approximately 21 km from the Project Application Area transportation of the fill material would require a considerable number of truck movements.

The locations of Hurd's and Bago quarries are shown in **Figure 11**.

Alternate Fill Procurement Costs

The procurement of fill material from Hurd's Quarry is not considered economically feasible due to the insufficient quantity of material in the quarry suitable for bulk filling, and the need to use the more expensive road pavement quality material.

A costing exercise has been carried out based on the delivery of material from the more distant Bago Quarry. At the time of enquiry, the estimated cost of material supplied to the Project Application Area by Bago Quarry was \$17 per m³. Therefore the total cost of supply only for structural fill material from Bago Quarry is estimated to exceed \$5.8 million, and is therefore not economically feasible.

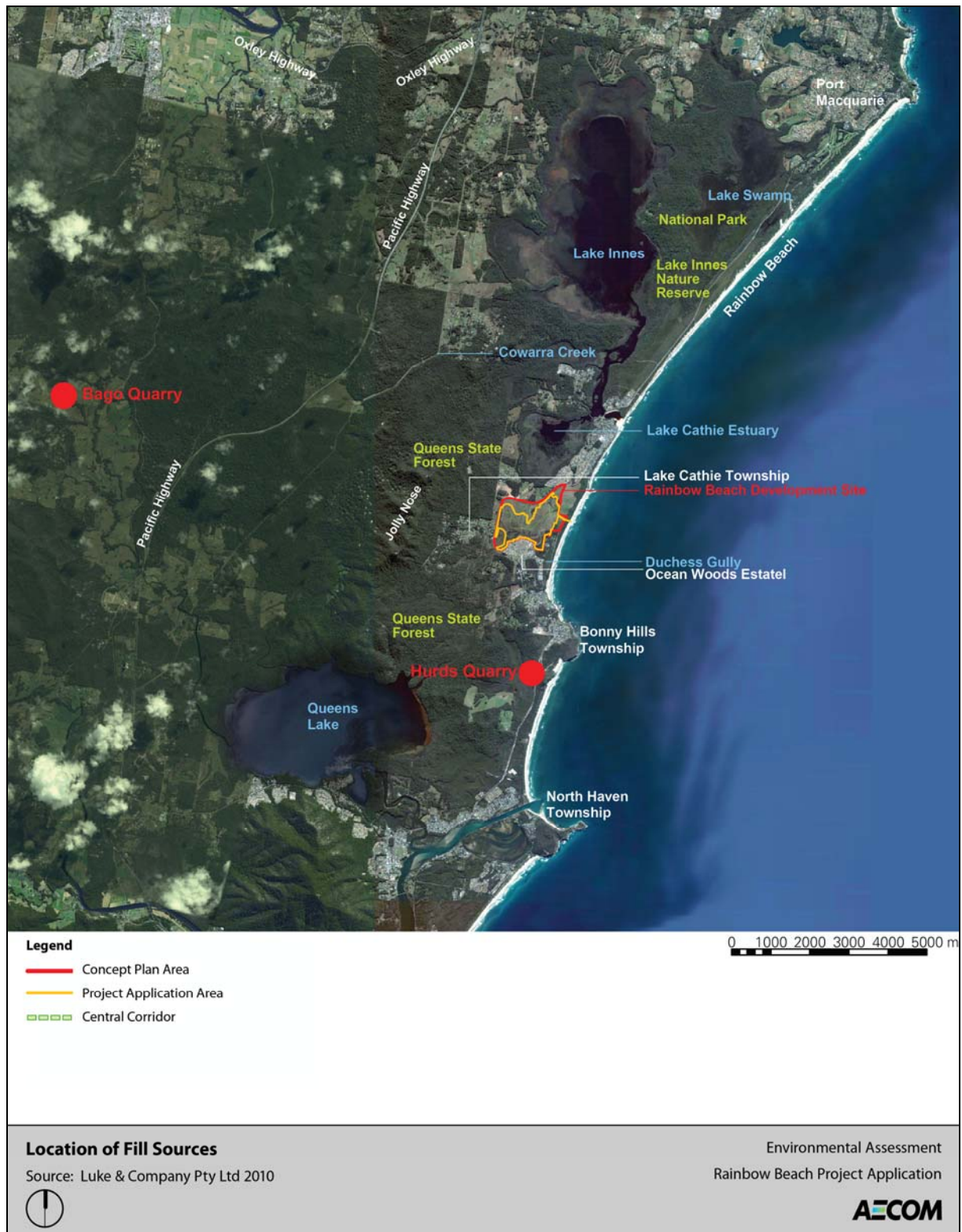
Environmental, Traffic and General Amenity Impacts

In addition to the financial implications of sourcing fill material from outside the Project Application Area, the alternative sources would result in environmental impacts. The need to transport fill material from the quarries to site would increase traffic along the haulage route. Material would be hauled using “truck and dog trailer” combinations which deliver approximately 22 m³ per trip. It is estimated that more than 40,000 trips would be required to supply the required amount of fill.

Transportation of the fill material from Bago Quarry would involve an estimated 40,000 truck movements, which equate to some 840,000 km of travel by heavy vehicles and potential impacts in terms of energy usage, emissions, damage to local roads and road user safety.

The route from Bago Quarry requires travel along the gravel surface of Milligans Road. The increased truck movements on this road may result in increased dust impacting on adjacent flora and fauna. The route then uses Bago Road likely resulting in an increased maintenance requirement on that road. From Bago Road, trucks would then turn onto the Pacific Highway and into Houston Mitchell Drive. At both intersections additional truck turning movements may increase the hazard to other vehicles at these intersections. Trucks would then utilise Houston Mitchell Drive, which has a poor alignment and surface condition in some sections. The increased truck movements on this road would potentially result in safety impacts to road users and an increase in the required maintenance of the road.

Figure 11 Location of Fill Sources



4.0 Project Description

This chapter describes the Project, including the activities for which project approval is sought. Details of the construction and operational phases of the Project are also outlined, including proposed long term management of the Central Corridor.

Director General's Requirements	Compliance
2. Land Use and Management 2.1 Provide a detailed description of each of the proposed uses across the site and describe the relationship between open space, drainage and habitat functions. 2.2 Describe the proposed ownership and long-term management regime for each component of the site including playing fields, open water wetland and general open space.	This chapter describes works proposed as part of this Project, and outlines proposed future land use within the Project Application Area. Proposed staging of works and long term management is also included.

4.1 Proposed Works

Works proposed as part as this Project are located within the Project Application Area. Works proposed within the Project Application Area fall into two categories, being works that are undertaken within the Central Corridor and works that are located outside the Central Corridor. **Figure 3** delineates the Project Application Area boundary and the Central Corridor boundary. The following section outlines the works for which approval is sought under this Project Application.

The Project Application seeks approval for the Central Corridor and associated works as follows:

- Works location 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 to create reclaimed areas;
 - a formalised access way located across the proposed eco-tourist development site to allow access to Rainbow Beach.

Descriptions of works proposed as part of this Project are outlined in **Sections 4.1.1 to 4.1.5** below.

4.1.1 Open Space, Environmental and Recreational Elements

AECOM has designed an integrated, multifunctional landscape master plan for the Central Corridor, as detailed within the Landscape Master Plan Design Report (**Appendix C**), and illustrated in **Figure 12**.

The 75.2 ha of area that comprises the Central Corridor has been divided into eight precincts (see **Figure 13**) with each precinct embodying a defined open space, drainage or habitat function within the overall landscape master plan. A description of each of the proposed uses within the Central Corridor and the relationship between open space, drainage and habitat functions is provided within the following subsections.

The Project also proposes a network of concrete and gravel shared pedestrian and cycle paths around and across the Central Corridor. This network is described in the following subsections. These paths have been designed to connect to existing and future cycle and pedestrian linkages within the area. The overall integration of cycle and pedestrian linkages with future adjacent residential, retail, tourist and school sites and to Rainbow Beach is shown in **Figure 14**.

Figure 12 Landscape Master Plan



Figure 13 Landscape Precincts

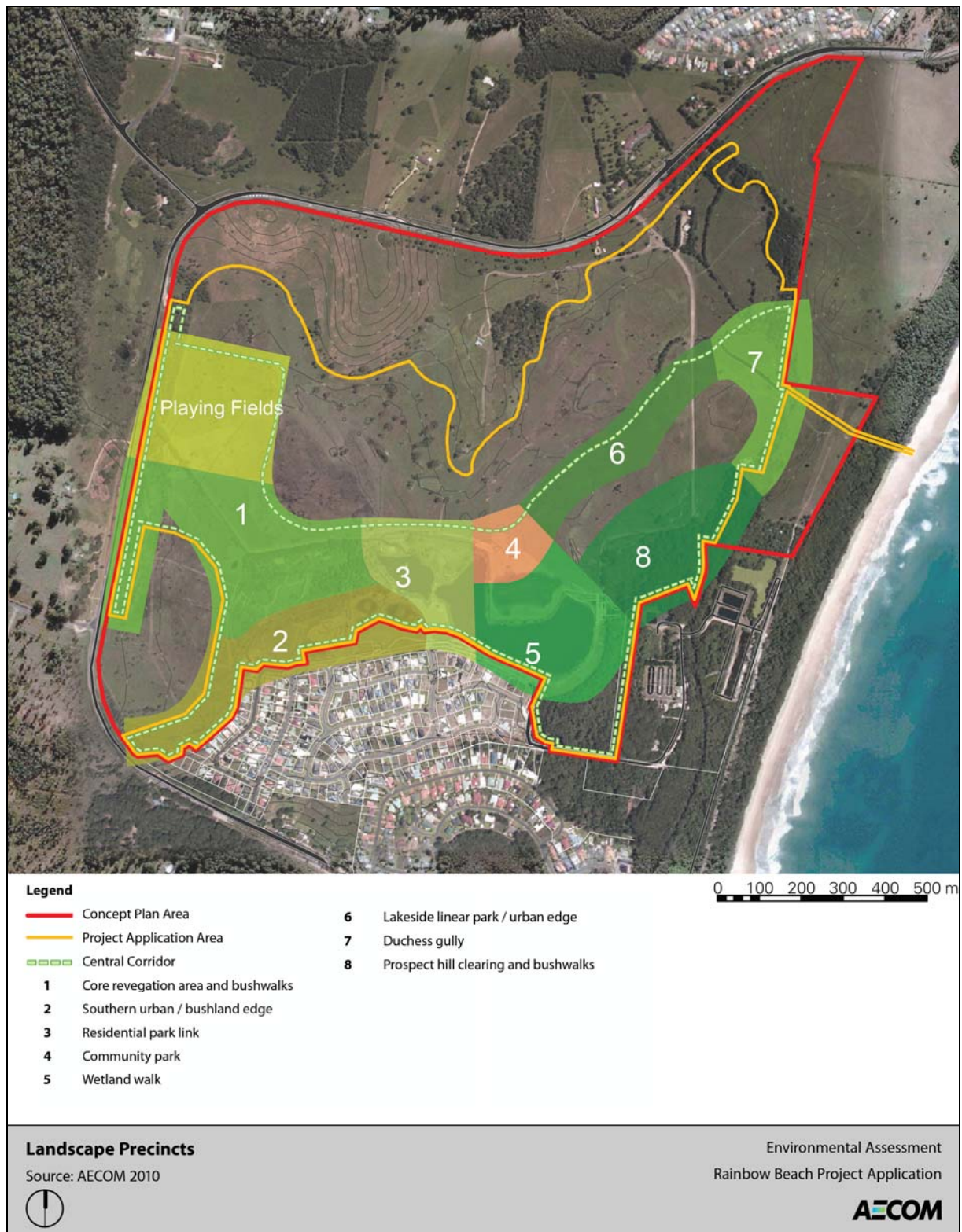
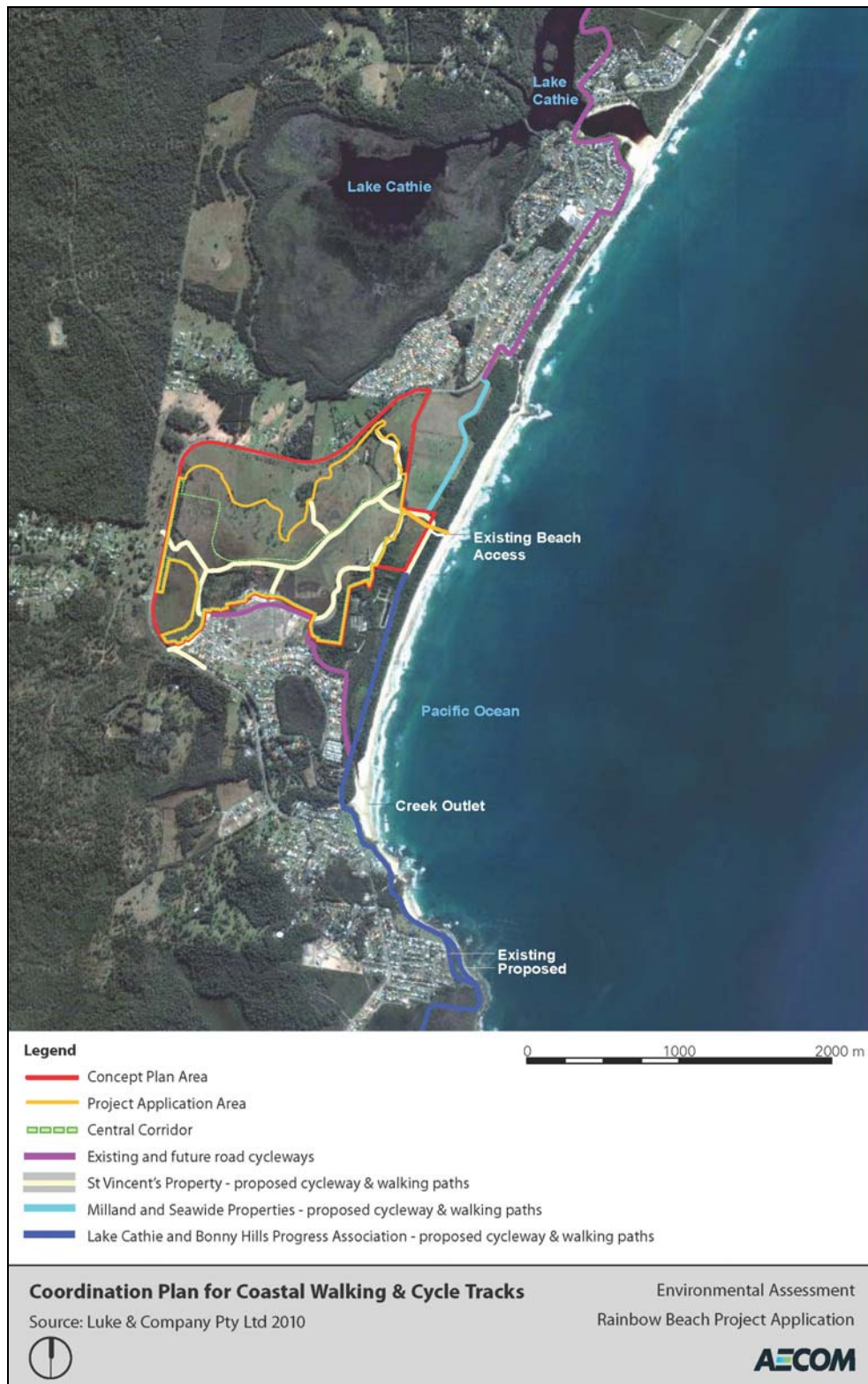


Figure 14 Coordination Plan for Coastal Walking and Cycle Tracks



Precinct 1 - Core Revegetation Area and Bushwalks

This area of the Central Corridor is to be predominantly given over to regeneration of Swamp Sclerophyll Forest – an endangered ecological community (EEC), and Subtropical Coastal Forest. The core revegetation area sits between the existing treatment wetland to the south west and proposed treatment wetlands north of the Central Corridor. Ecological objectives of this precinct include the restoration of degraded EEC's, strengthening of east west fauna movement corridors and strengthening of potential fauna foraging habitat.

A secondary use of recreation is proposed within this precinct. A north – south gravel path is proposed to travel through the precinct, providing informal connections from the existing parkland of the southern residential estate to the linear park that forms the interface to the future subdivision. Where the path crosses existing drainage lines, timber boardwalk bridges are proposed. A floating timber boardwalk is proposed to provide access along the edge of the existing treatment wetland to the east of this precinct. Human access into revegetation areas would be managed by defined pathways, which control human access into core regeneration area and a densely planted terrestrial edge to proposed treatment wetlands to prevent access to water.

Precinct 2 - Southern Urban / Bushland Edge

This precinct provides the interface to the existing residential estate south of the Project Application Area. The existing estate has a parkland edge currently managed as mown lawn with a shared pedestrian/ cycle path.

Landscaped parkland and native grasses would provide the buffer and transition from urban park to the inner area of bushland regeneration. Existing planting of native grasses around the edges of the existing treatment wetland would be increased with additional plantings of grasses, bordering an area of managed parkland, which would consist of lawn, groups of trees and grasses. Ecological objectives for this precinct include the strengthening of east west fauna movement corridors and strengthening of potential fauna foraging habitat.

Passive recreational uses are also proposed within this precinct via the inclusion of gravel bushland trails connecting into the existing estate parkland. These trails would provide secondary informal access through the bushland and to the north of the Project Application Area. These defined pathways would assist in controlling human access into primary regeneration areas, while densely planted terrestrial edge to existing treatment wetlands prevents human access to water.

Precinct 3 - Residential Park Link

This precinct would provide the primary connection from the southern residential estate to the future residential subdivision proposed to the north of the Central Corridor. Primary uses within this precinct would include a picnic park and play area with equipment for children, a viewing platform to the edge of the existing lagoon, walking paths and a cycleway.

A main 2.5 m wide pathway would connect into the existing bike track from the residential estate and directly link to the northern linear park and cycleway of the Central Corridor. A timber bridge with a small viewing platform is proposed where this pathway would cross the existing lagoon and proposed open water wetland. This link bridge would be designed to accommodate cyclists, pedestrian and scooters, be above the 1:20 flood level. The timber viewing platform and bridge would be provided with a balustrade to prevent access to the water. A secondary gravel pathway would provide access to the west of the Central Corridor and around the existing lagoon, linking to the proposed floating boardwalk through sedgelands.

Precinct 4 - Community Park

This precinct would form the main community open space area within the Central Corridor, being a centrally located park providing a combination of active and passive amenity. The park would be located at the end of the main pathway between the existing lagoon and the proposed open water wetland outlined in Precinct 3 above. This pathway would open out into the park, creating a central gathering space and formal seating area for supervision of the play areas. The play areas would provide children's play equipment to supplement the play park within Precinct 3. A lawn area with shade trees would provide opportunity for passive recreation and picnics.

Ecological objectives of this precinct include the restoration of the degraded Swamp Sclerophyll EEC, strengthening of east west Koala movement corridors, and protection of the Wallum Froglet habitat located within Precinct 5 directly to the south. To achieve these objectives, shade trees and formal tree groves within the park would be native and endemic to the area, and where possible, Koala food trees would be planted within the buffer planting to strengthen movement corridors. Further, the park would be separated from the Wallum Froglet habitat by dense bush regeneration of Swamp Sclerophyll Forest EEC. This would be fringed at the edges of the parkland by more structured planting of native canopy trees and rows of native grasses.

A flexi-mat ramp is also proposed within this precinct to provide access for maintenance vehicles to the proposed open water wetland. A densely planted terrestrial edge to wetlands would prevent access to water generally, and a shallow gradient (>1:6) to ephemeral wetland zone and barrier wall would prevent access to open water.

Precinct 5 - Wetland Walk

This precinct connects the southern shore of the proposed open water wetland to the existing residential estate parkland via the north eastern edge of the existing lagoon. This connection would take the form of a gravel pathway running behind the terrestrial planting zone of the existing lagoon, which would connect to the existing cycleway within the residential estate parkland and splits two ways, providing access around the proposed open water wetland directly to the central community park within Precinct 4. A proposed viewing area located along the pathway to the park would allow views across the existing lagoon and proposed open water wetland. This area would also allow views over the Wallum Froglet habitat, with educational and interpretive elements incorporated.

A small pedestrian bridge is also proposed on the north eastern shore of the existing lagoon. A trafficable culvert behind would provide access for maintenance vehicles. Densely planted terrestrial edge to wetlands would generally prevent access to water while viewing areas and bridges would be provided with a balustrade to prevent access to water and Wallum Froglet habitat.

Ecological objectives within this precinct include the restoration of degraded EEC's, protection of Wallum Froglet habitat, strengthening of east west koala movement corridors and strengthening of habitat corridors for squirrel gliders. Planting of flowering trees either side of the path is proposed to enhance habitat/movement corridors for squirrel gliders and the planting of dense vegetation to deter access and provide a buffer to the Wallum Froglet habitat.

Precinct 6 - Lakeside Linear Park / Urban Edge

This precinct would provide the landscape interface between the proposed future residential subdivision and the proposed open water wetland. A cycle path would travel along the edge of the open water wetland, and at some points, provide connections to the water's edge via timber and concrete structures. These connecting would allow views across the open water, while educational signage would provide information about the treatment wetlands, native waterbirds and aquatic habitat of the open water wetland.

The managed parkland located between the open water wetland and proposed future residential subdivision would combine informal groups of canopy trees and native grass understorey with more formalised rows of trees and swathes of grasses, within a predominantly turfed area.

Ecological objectives within this precinct primarily consist of the creation of wetland habitat and aquatic habitat. Access to these habitat areas would be generally restricted via safety benching of 1:6 gradient, densely planted terrestrial edges to wetlands and high balustrades to boardwalks and/or concrete structures located over open water or water deeper than 300 mm.

Precinct 7 - Duchess Gully Inlet

This precinct connects Precinct 6 to the beach access proposed over the eco-tourist site. A lakeside walk is also proposed to travel around the northern boundary of the proposed open water wetland. As well as recreational objectives realised as part of this beach access and lakeside walk, this precinct includes a number of ecological and educational elements. Specifically, the lakeside walk would be intersected by a timber bridge allowing views over the whole water body and also providing opportunity for eco education. The proposed rocky environment at the waters' edge and in the overflow channel would potentially provide habitat for native aquatic species. A small intersection with appropriate signage and feature planting would mark the pedestrian turnoff to the beach which would run along the eastern boundary of the future eco-tourist site.

Planting within this precinct would be predominantly reconstructed mixed Wet Sclerophyll Forest to the north and west of Duchess Gully and revegetation of the riparian edges of the gully. Koala food trees would be introduced into the mix of regeneration planting species in this area to strengthen north south Koala movement corridors.

A combination of densely planted terrestrial edges to wetlands, safety benching of 1:6 gradient and balustrades to bridges over open water or water deeper than 300 mm would generally prevent access to water.

Precinct 8 - Prospect Hill, Clearing and Bush Walks

This precinct incorporates an existing hill, referred to as Prospect Hill, and Aboriginal heritage site found to be of significance and warranting permanent conservation. Both elements are situated on the eastern edge of the proposed open water wetland open water. The heritage site consists of an artefact scatter/open campsite found to be of high significance to the Bunyah LALC. The location of the heritage site within this precinct results in primarily educational objectives for this precinct.

This precinct proposes a clearing of mown lawn over the area of archaeological significance, enclosed by planting of native grasses and structured forest planting. The forest planting would be augmented with structural planting of endemic trees that have heritage significance such as Bushfoods or timbers used in Aboriginal camp sites. A cast concrete plinth is proposed to extend into the clearing. Interpretive art and signage would inform of the archaeological significance of the site.

This precinct includes a gravel pathway that would provide access along the edge of the open water of the open water wetland, diverging around the back of the heritage site and connecting to a proposed slashed maintenance track within the Coastal Forest. This path would provide an informal bushland walk through the intact Coastal Forest, connecting to the lakeside walk and proposed viewing platform at the edge of the existing lagoon in Precinct 5. A second gravel path is proposed to diverge from the lakeside walk and wind up the face of the existing hill to an upper lookout and simple seat wall. Densely planted terrestrial edge and safety benching of 1:6 gradients to the water's edge of the open water wetlands open water would hinder human access.

4.1.2 District Sporting Fields

This Project includes the provision of land and establishment earthworks for the creation of public sporting fields. The district sporting field land is located in the north western sector of the Central Corridor and is 7.7 ha in area.

Works proposed to be undertaken for the district sporting fields as part of this Project Application include:

- construction of the playing fields to a base standard, namely filling, topsoiling and grassing the site; and
- integration of stormwater flows from the site into the overall stormwater treatment train for the wider Concept Plan Area, including the provision of drainage swales and other treatment devices at the perimeter of the playing fields.

The final detailed specification for the establishment of the district sporting fields would be agreed, as part of the construction certificate process, with Port Macquarie – Hastings Council. As such, this Project does not specify details of the district sporting fields.

On completion of the establishment of the district sporting fields to Council's specification, the Proponent would dedicate the ownership of the district sporting fields to Council. On dedication of the district sporting fields land, Council would assume further responsibilities for further enhancement, including completing the playing surface, subsoil drainage, water and sewerage services, lighting, parking, amenities and associated facilities within the district sporting fields, and the long term management of the district sporting fields land. Facilities proposed to be provided by Council include four full size football fields, with two central cricket pitches.

4.1.3 Wetland System

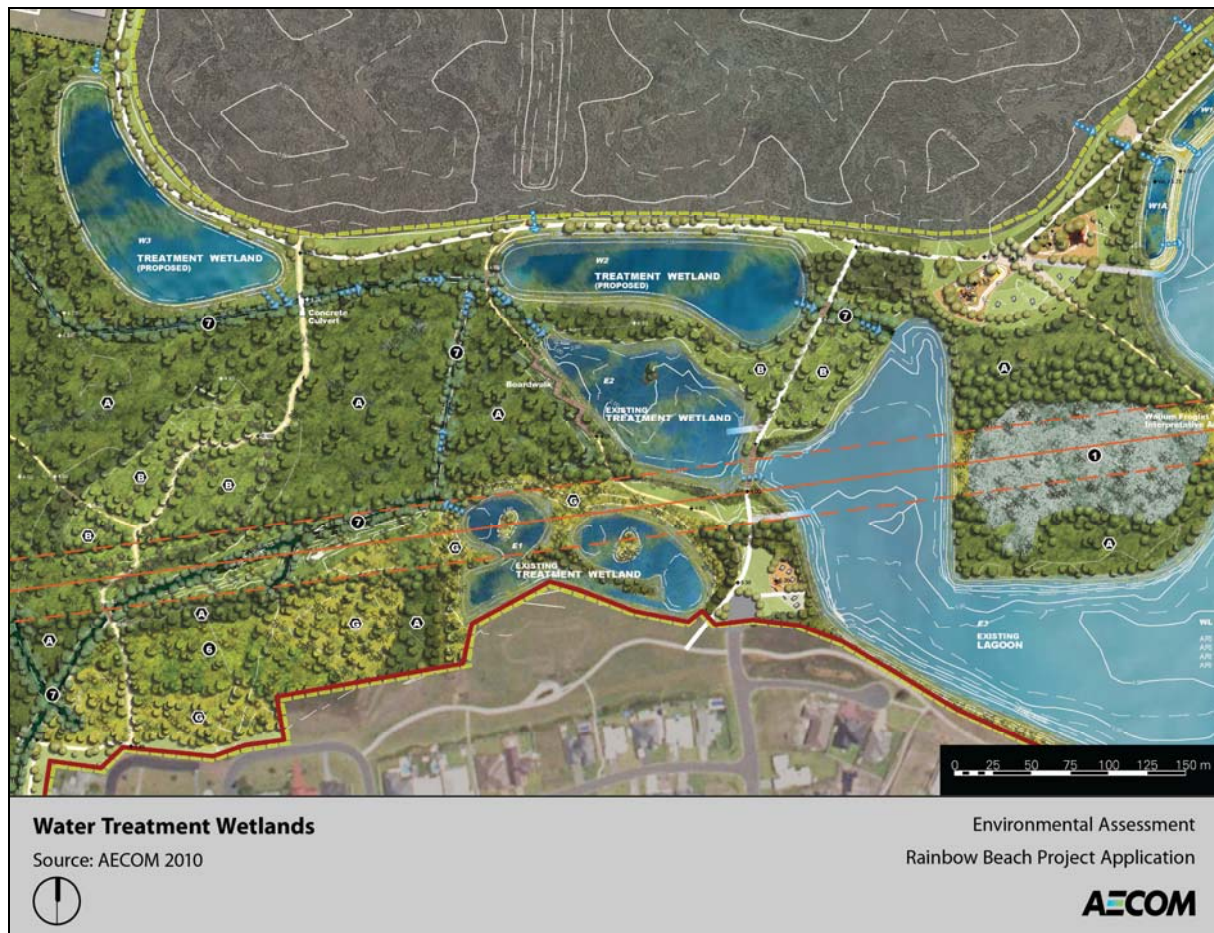
The Project includes the construction of a 10.5 ha open water wetland located adjacent to the middle reaches of Duchess Gully and to the north east of the existing lagoon within the Central Corridor (see **Figure 15**). This wetland would incorporate five water treatment areas, located along the north eastern edge of the open water wetland. These treatment areas are referred to as W1A, W1B, W1C, W1D and W1E.

Two smaller water treatment wetlands are also proposed within the Central Corridor as part of the overall water treatment strategy. These wetlands are located to the south of the district playing fields and north of the existing lagoon and are referred to as W2 and W3 (see **Figure 16**).

Figure 15 Open Water Wetland



Figure 16 Water Treatment Wetlands



The water treatment wetlands and treatment areas of the open water wetland would generally have the following elements:

- an inlet zone (which is basically a sediment basin);
- a macrophyte zone (a heavily vegetated area of different water depths to remove fine particulates and take up soluble pollutants); and
- a high flow bypass channel (to protect the macrophyte zone).

Flows would be re-directed from the existing lagoon through the proposed open water wetland by means of a new outlet structure connecting the two water bodies. The new open water wetland would be provided with an outlet discharging into the defined middle reach channel of Duchess Gully and the existing lagoon overflow would be upgraded. The banks of both the existing lagoon and the open water wetland would be graded and stabilised in selected areas to allow major storm event flows to discharge over the banks.

Wetland plants would be planted to stabilise shorelines and reduce soil erosion. These plants would filter and trap sediment from stormwater inflows and reduce turbidity and sedimentation in the receiving waters of Duchess Gully. Additional plantings are proposed that would enhance biodiversity. Plans have been selected to provide nesting and roosting habitat for egrets, herons and ibis, reedy margins which offer breeding areas for native waterfowl and vegetation in shallow pond margins supplying foraging sites for shorebirds.

4.1.4 Formalised Beach Access

Access from the Central Corridor to the Crown land beach access point is proposed as part of this Project. Access would be provided via an access way through the eco-tourism site (see **Figure 17**). This access way would link the proposed pathway/cycleway network within the Central Corridor with the Crown land beach access point, as well as the Bonny Hills and Lake Cathie Area Coastal Walking and Cycle Tracks (see **Figure 14**).

Figure 17 Beach Access and Cycleway



4.1.5 Earthworks and Filling

Earthworks and filling are proposed as part of this Project Application, both within and outside of the Central Corridor. The material excavated from the 10.5 ha open water wetland would be utilised as fill to reclaim low lying parts of the Project Application Area.

Fill Volumes

Fill material would be excavated from the proposed open water wetland for deposition within four areas of the Project Application Area. **Table 6** and **Table 7** summarise the earthwork volumes required to reclaim low lying parts of the Project Application Area. The location of the four fill areas is illustrated in **Figure 18**.

Table 6 Fill Volumes Required

Fill area	Structural fill (m ³)	Non-structural fill (topsoil) (m ³)
Northern school site – fill area one	27,300	3,340
North west fill area – fill area two	152,000	20,200
North east fill area – fill area three	168,000	14,700
Perimeter roads and outer boundaries	-	11,250
District sporting fields – fill area four	-	20,400
Total consolidated fill	347,300	69,900
Total Structural and Non-structural Fill	417,200	

Source: Luke & Co 2010

Table 7 Excavation Volumes Available

Fill area	Structural fill (m ³)	Non-structural fill (topsoil) (m ³)
Open water wetlands	437,120	24,000
Topsoil stripped from fill areas one, two and three	-	57,360
Total volume of excavated material	437,120	81,360
Allowance for compaction and other losses	20%	15%
Net material available for fill	349,700	69,100
Total Structural and Non-structural Fill	418,800	

Source: Luke & Co 2010

Earthworks Design

As outlined in **Table 6**, a bulk volume of 417,200 m³ of material is calculated to be required for filling and topsoil.

The proposed extent of fill for the future urban areas has been designed as far as practical to achieve a balance between the available excavated material from the open water wetland and the volume of fill required for the reclamation of future urban areas to flood free levels.

A balance between the volumes of cut and fill is desirable to:

- reduce the number of vehicle movements off site, either transporting fill material to site or transporting excess excavated material off site;
- reduce the impact of additional vehicle movements on the current road infrastructure, reducing required maintenance of adjacent roads;
- reduce the impact of additional vehicle movements to the surrounding environment in the form of reduced noise, dust and fuel use; and
- reduce the impact of additional vehicle movements to the surrounding residents and landowners through reduced noise and traffic congestion.

As shown in **Table 7**, a total volume of 461,120m³ is proposed to be excavated from the open water wetlands, which is made up of:

- Sandy alluvium (structural fill) – 437,120 m³
- Topsoil, average 150mm thick(non-structural fill) – 24,100 m³

Additional earthworks would involve the removal of a further 57,360 m³ of topsoil (non-structural fill) from fill areas one, two and three prior to fill taken from the open water wetland being deposited in these locations. This would result in a total of 528,480 m³ of bulk excavated material or 418,800 m³ of net excavated material allowing for compaction losses.

The proposed finished surface levels for the fill area are based on the following criteria:

- Minimum level at boundary of residential allotments of 0.5 m above the calculated 1 in 100 year ARI inundation levels at that location. This is consistent with the requirements of Hastings Council as set out in *Auspec 1 – Stormwater Drainage Design*.
- Maximum depth of water on a roadway of 200mm during a 1 in 100 year ARI event so that the road way remains within the low hazard category as required by *Auspec 1 – Stormwater Drainage Design*.
- Minimum grade on residential allotments of 1.0 %.
- Minimum longitudinal grade on residential streets of 0.5 %.
- Stormwater and stormwater treatment train designs in line with Ecologically Sustainable Development (ESD), Water Sensitive Urban Design (WSUD) and Total Water Cycle Management (TCM) and principles in accordance with *Auspec 1 – Stormwater Drainage Design*.
- Minimum grade on sports fields of 0.5 %.

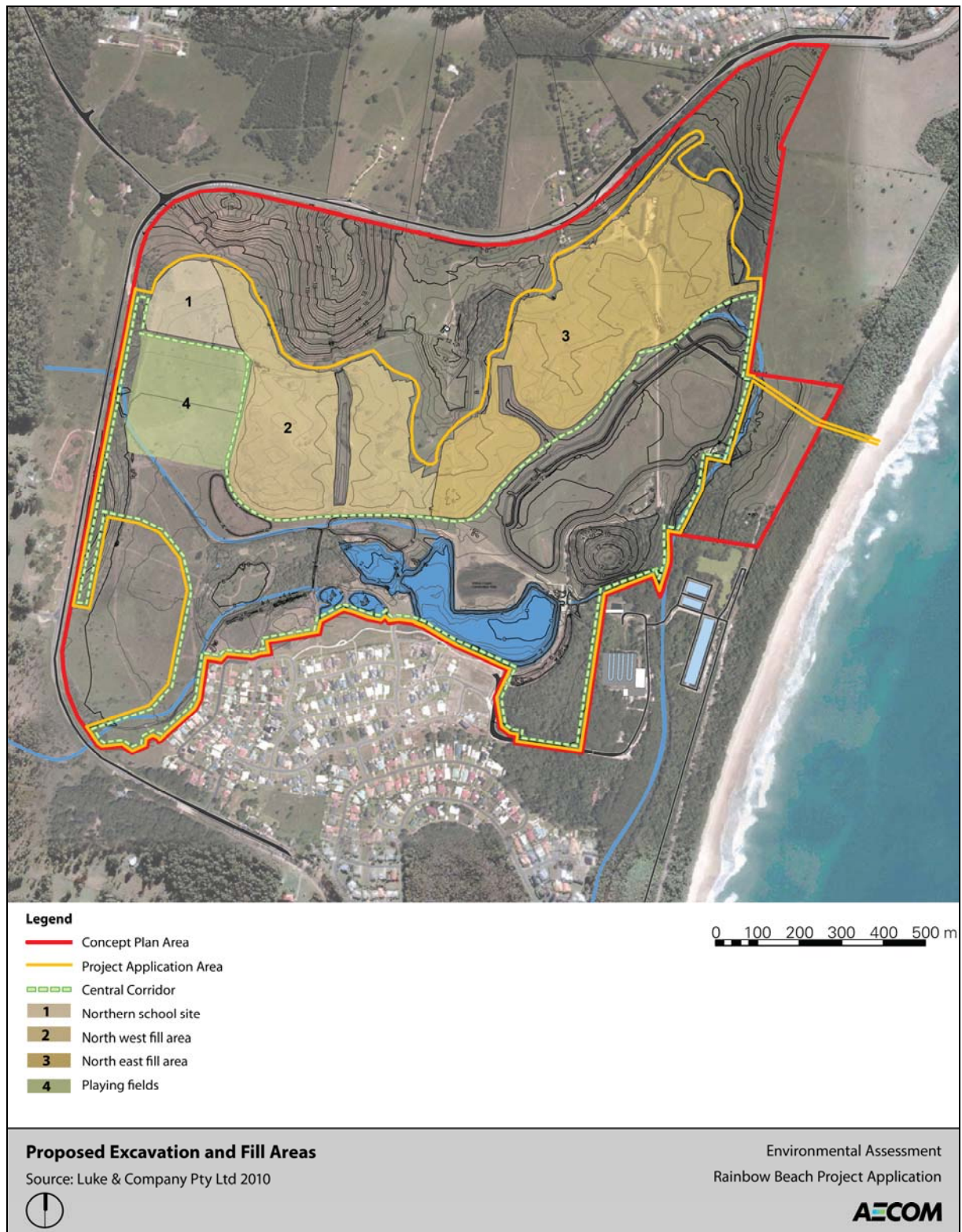
Proposed Excavation Methods

Excavation procedures would be undertaken in accordance with the Acid Sulfate Soil Management Plan prepared by Cardno (see **Appendix P**). The final method of excavation to be adopted would be determined once a contractor has been selected for the works. Excavation activities would generally be undertaken in the following sequence:

- strip and stockpile topsoil from both excavation and fill areas;
- undertake excavation;
- transport material from excavation zone to fill areas;
- spread and compact material on fill areas and
- spread and trim topsoil.

Material would be transported within the Project Application Area via motorised scrapers and/or dumper trucks. Transport movements would be contained within the Project Application Area.

Figure 18 Proposed Excavation and Fill Areas



4.2 Staging of Works

Staging of works would be divided into two stages. Works to be undertaken as part of Stage 1 include the following:

- excavation of open water wetland system;
- filling of nominated areas;
- establishment of planting with the Central Corridor for regeneration and landscape works.

These works are proposed to be carried out immediately upon issue of the Construction Certificate. A construction period of 18 months has been estimated for these works.

Stage 2 includes certain hard works included in the landscape master plan that would be deferred, pending construction of underground service mains within and adjacent to the Central Corridor during the establishment of the future adjacent residential development. These works would include the following:

- concrete and gravel cycleway/pathway along northern boundary of Central Corridor;
- sections of the boardwalks not required to create the initial walking circuits and walking connections;
- timber viewing platforms;
- seats and other furniture; and
- playground furniture and equipment.

The hard works to be deferred largely coincide with and overlay the planned locations of these underground mains, and deferral would avoid having to demolish affected hard works to permit construction of the services. It is further recognised that certain non-durable hard works may be a target for vandalism if constructed before residents move into the future residential precincts, and it is proposed that these works be deferred until such time as a level of community surveillance can be provided from the residential precincts. It is proposed that the subsequent stages deferred landscaping hard works be constructed and installed by the Proponent.

4.3 Operational Management

4.3.1 Proposed Voluntary Planning Agreement

Negotiations are currently being undertaken between the Proponent and Council regarding the management of open space areas of the Project. In this regard, the Proponent would enter into a VPA with Council under Section 75F(6) of the EP&A Act with regard to the management and dedication of the Central Corridor. The principles of the VPA are as follows:

- The Central Corridor comprises 75.2 ha of land, and includes the district sporting fields (7.7 ha) and 'management land' (67.5 ha, being the remainder of the Corridor excluding the district sporting fields).
- The Proponent would construct the district sporting fields to Council specification.
- The Proponent is to provide public access to the district sporting field to facilitate use of the fields by the general public as soon as is practically possible.
- On completion, the Proponent would dedicate or otherwise transfer the district sporting field land to Council.
- The Proponent would complete to Council's satisfaction, the establishment obligation for the remaining management land.
- Council's written confirmation that the Proponent has completed the establishment obligation would trigger the commencement of the management obligation.
- The Proponent would carry out the management obligation for the Central Corridor for the duration of the management period, being 20 years (subject to the early management period expiry option).

A draft Heads of Agreement outlining the above was submitted to Council on the 25 May 2010. Negotiations with Council regarding the finalisation of the VPA are ongoing.

4.3.2 Open Space Management Strategy

An Open Space Management Strategy (OSMS) has been prepared to manage the Central Corridor as part of the staged development of the Project Application Area (see **Appendix D** of this EA).

The management objectives and management issues outlined within the OSMS are summarised in the following subsections.

OSMS Management Objectives

As outlined by Cardno, the OSMS seeks to provide management specifications that would protect and enhance the ecological values and functions of the Central Corridor whilst facilitating public access and use of designated recreational areas. The aims of the OSMS are to:

- enrich the biodiversity of existing vegetation within the Central Corridor;
- enhance the existing corridor values of vegetation along Duchess Gully;
- create better movement opportunities in an east-west direction for native wildlife;
- reduce the extent of existing weed infestations within the Central Corridor;
- protect and enhance aquatic habitat values within existing and to be constructed waterbodies within the Central Corridor;
- provide an appropriate interface between native vegetation and wildlife habitats within the Central Corridor and adjacent areas of existing and future urban development; and
- provide a balance between public use and controlled public access within the Central Corridor.

OSMS Management Issues

Key management issues identified in the OSMS are outlined below.

- 1) Terrestrial vegetation management and rehabilitation, in respect of providing management actions that would:
 - preserve native flora species and vegetation communities within the Corridor during both the construction and occupational phases of the long term development of the Project Application Area;
 - rehabilitate and enhance the ecological values and functions of degraded native vegetation communities within the Corridor;
 - provide for a reduction in the prevalence of weed species within the Corridor;
 - provide passive recreational opportunities and facilities for future residents of the Concept Plan Area; and
 - rehabilitate the Corridor in a manner that protects human health and property in the event of a bushfire occurring within and/or adjacent to the Project Application Area.
- 2) Terrestrial fauna and corridor linkage management, in respect of providing management actions that would:
 - preserve native fauna species and their associated habitats that currently exist within the Corridor during both the construction and occupational phases of the development of the Project Application Area;
 - enhance vegetated corridors and linkages to improve movement opportunities for native fauna residing within or dispersing through the Corridor; and
 - minimise the potential for mortality and/or harm to be inflicted on native fauna as a consequence of domestic pets and vehicular traffic associated with the future residential development.
- 3) Aquatic habitat management, in respect of providing management strategies that would:
 - preserve the ecological values of the existing lagoon;
 - provide habitat within the open water wetland that is favourable to native aquatic flora and fauna species; and
 - minimise the risk of aquatic weeds establishing in the existing lagoon and proposed open water wetland.

- 4) Weed management, in respect of providing:
 - appropriate control mechanisms for the treatment of existing and future weed infestations; and
 - monitoring programs to minimise the risk of weed infestations becoming established in the future.
- 5) Access and public safety management, in respect of providing:
 - appropriate mechanisms to restrict unauthorised and inappropriate forms of access into the Corridor by contractors involved in construction phases;
 - appropriate infrastructure to facilitate controlled public access to and within the Corridor for passive recreational pursuits compatible with the area's environmental values; and
 - appropriate infrastructure to facilitate Council access to and within the Central Corridor for environmental management purposes.

5.0 Statutory Planning

This chapter provides an overview of the statutory planning framework for the Project. It includes a review of the Commonwealth, state and local planning legislation and instruments applicable to the Project.

Director General's Requirements	Compliance
The Environmental Assessment (EA) for the project application must include: 4. Consideration of any relevant statutory and non-statutory provisions, in particular relevant provisions arising from environmental planning instruments, Regional Strategies (including draft Regional Strategies) and development control plans as well as impacts, if any, on matters of national environmental significance under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	A review of the Project against the provisions of relevant environmental planning instruments is provided within this chapter. Additional licences and approvals necessary for the project are also identified.

5.1 Commonwealth Legislation

5.1.1 Environment Protection and Biodiversity Conservation Act 1999

Part 3 of the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* provides that an action which “has, will have or is likely to have a significant impact on a matter of national environmental significance” may not be undertaken without prior approval from the Commonwealth Minister for the Environment, Water, Heritage and the Arts, as provided for under the provisions of Part 9 of the EPBC Act. The EPBC Act defines the following as matters of national environment significance:

- world heritage properties;
- national heritage places;
- wetlands of international importance (listed under the Ramsar Convention);
- listed threatened species and ecological communities;
- migratory species protected under international agreements;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park; and
- nuclear actions (including uranium mines).

The Administrative Guidelines for the EPBC Act 1999 set out criteria intended to assist in determining whether an action requires approval. In particular, the Guidelines contain criteria for determining whether a proposed action is likely to have a significant impact on a matter of national environmental significance.

A search of the EPBC on-line database has revealed that the Project Application Area is not located within a World Heritage area, a Commonwealth marine environment, nor does the Project involve nuclear activities. However, the preliminary review of the database has revealed that threatened ecological communities, threatened species, migratory species and listed marine species may occur on or near the Project Application Area. Ecology assessments have been undertaken by suitably qualified specialists in respect of terrestrial ecology and aquatic ecology. Additionally, an assessment of the potential impacts of the Project in accordance with the requirements of *State Environmental Planning Policy No. 26 – Littoral Rainforest* (SEPP 26) has been undertaken by Darkheart Eco-Consultancy. These assessments confirmed that the Project does not pose a threat to EPBC listed species. Details are provided in **Section 7.3.3** and **Appendix I** of this EA).

On 11 September 2009, the Proponent received a letter from the Department of Environment, Water, Heritage and the Arts (DEWHA) in relation to the Concept Plan Application and this Project Application. The letter sought clarification in respect of the occurrence of matters of national environmental significance and the need for referral of the Project to the DEWHA. In response to this query, the Proponent engaged Darkheart Eco-Consultancy to undertake a detailed assessment of matters of national environmental significance for both the Concept Plan and Project Application. The assessment concluded that referral to DEWHA is not required in this case. Justification for this decision is set out in **Table 8** below and detailed within **Appendix J**.

Table 8 Matters of National Environmental Significance - Project Assessment

Matter of National Environmental Significance	Project Details
World Heritage properties	There are no world heritage properties proximate to the Project Application Area, or that would potentially be affected by the Project.
National heritage places	There are no Commonwealth or National heritage places identified within or near the Project Application Area.
Wetlands of national importance	There are no wetlands of national importance identified within or near the Project Application Area.
Commonwealth listed threatened species	Grey-headed Flying Fox and Swift Parrots have been recorded within the Project Application Area. Neither species were considered likely to be significantly affected by the proposal.
Commonwealth listed endangered ecological communities	Littoral Rainforest and Coastal Vine Thickets of Eastern Australia is a Commonwealth listed EEC. The Rainbow Beach littoral rainforest No. 116 lies on Crown land adjacent to the northeast corner of the Project Application Area, and qualify as example of this EEC. Following assessment of the potential impacts of the proposed development on Rainbow Beach littoral rainforest No. 116 it is concluded that the Project would not result in significant adverse impacts on the littoral rainforest.
Migratory species protected under international agreements	Five migratory species have been recorded within the Project Application Area: • Cattle Egret • Great Egret • White Breasted Sea Eagle • Fork Tailed Swift • Rufous Fantail One additional species is considered to have potential to occur within the Project Application Area due to potential habitat. • Rainbow Bee-Eater The proposal is not considered to have potential to significantly adversely affect any population or species of migratory birds.
Commonwealth Marine Area	There are not Commonwealth Marine Areas proximate to the proposed Project, or that would potentially be affected by the Project.
Great Barrier Reef Marine Park	The proposed Project would not have impact on the Great Barrier Reef Marine Park.
Nuclear Action	The proposed Project would not involve a nuclear action as defined under the EPBC Act 1999.

Source: Darkheart Eco-Consultancy 2009

5.2 State Legislation

Relevant State legislation and policies relevant to the Project are described in the following section.

5.2.1 Environmental Planning and Assessment Act 1979

Approvals Process

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 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.

Objects of the EP&A Act

This Project Application is consistent with the object of the EP&A Act (Section 5 of the Act), as demonstrated in **Table 9**.

Table 9 Objects of the EP&A Act

EP&A Act Objectives	Compliance
<i>(a) to encourage:</i>	
<i>(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,</i>	The Project provides for the ongoing management of areas of the Project Application Area identified for conservation and rehabilitation. The Project includes the creation of areas of habitat and the incorporation of water reuse facilities for future urban areas proposed within the Project Application Area, aiding in the proper management and conservation of water resources.
<i>(ii) the promotion and co-ordination of the orderly and economic use and development of land,</i>	The majority of the Project Application Area has been zoned for residential development since the early 1980s and was identified in the Area 14 Structure Plan as having areas suitable for urban development, signifying the demand for residential, open space, environmental, and some commercial development in the locality. A portion has been zoned Rural1(A1) under Hastings Local Environmental Plan (HLEP) 2001 as a buffer to the STP. The Concept Plan Application currently being assessed over the Concept Plan Area seeks to formalise these land uses and outlines the structure for the orderly and economic development of the Project Application Area. This Project Application represents a portion of the overall development proposed for the property in line with the Concept Plan.
<i>(iii) the protection, provision and co-ordination of communication and utility services,</i>	The provision of communication and utility services is not required as part of this Project Application. Appropriate provision of services would be undertaken as part of subsequent applications for the development of residential, commercial and educational land, and is assessed as part of the Concept Plan Application. The existing sewage treatment plant located to the south east of the Project Application Area would be protected via a vegetated buffer area, which is zoned 1(a1) Rural under HLEP 2001.
<i>(iv) the provision of land for public purposes,</i>	The Project would formalise the development of a portion of the Project Application Area for public purposes. These areas include the formal and informal parks and open spaces within

EP&A Act Objectives	Compliance
	the Central Corridor.
<i>(v) the provision and co-ordination of community services and facilities, and</i>	The establishment works proposed for the district sporting fields located within the Central Corridor ensures the provision of community facilities as part of the Project.
<i>(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and</i>	Large areas of the Project Application Area are degraded as a result of past agricultural and grazing activities. Where remnant vegetation does exist, rehabilitation and restoration works are currently being undertaken to protect, preserve and enhance these habitats.
<i>(vii) ecologically sustainable development, and</i>	The principles of ESD have been considered throughout the design and development stages of the Project. The assessment of potential environmental, social and economic considerations has been undertaken in line with precautionary, equality, biodiversity and valuation principles.
<i>(viii) the provision and maintenance of affordable housing, and</i>	This Project does not provide for residential development but provides essential community assets to support subsequent stages of development.
<i>(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and</i>	While the assessment of applications submitted under Part 3A of the EP&A Act falls primarily with the DoP and the Minister, the process ensures that responsibility for environmental planning is shared with local government and numerous State government departments and agencies, through consultation undertaken throughout the assessment process.
<i>(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.</i>	This Project is the implementation of a portion of the Concept Plan Application, which covers the wider Concept Plan Area. The Concept Plan was the subject of extensive public consultation during the development of the Area 14 Structure Plan. In addition, public consultation was undertaken during the development of this EA and further consultation would be undertaken during the public exhibition period.

5.2.2 Other Acts

While the EP&A Act provides the framework for the planning and development approvals system within NSW, there are several other Acts and Regulations which contribute to the environmental and planning system.

Pursuant to Section 75U of the EP&A Act, Part 3A has removed the application of integrated development provisions for Major Development and therefore with the exception of the *Protection of the Environment Operations Act 1997* (POEO Act), there are no concurrent licensing provisions that apply to Part 3A development, and therefore the Project.

There are several Acts that, save for the provisions of Part 3A, would be relevant to the Project. While compliance with the provisions of these Acts is not mandatory their consideration in the design and incorporation into the Project ensures that the Project would have a negligible environmental impact and would contribute positively to the environmental and socio-economic position of the Rainbow Beach locality. Relevant Acts include:

- *Threatened Species Conservation Act 1995 (TSCA)*: provides for the conservation of threatened species, populations and ecological communities of animals and plants. It provides a framework for the assessment of actions that may impact on threatened species.
- *National Parks and Wildlife Act 1974 (NPWA)*: governs the establishment, preservation and management of national parks, historic sites and certain other areas. The NPW Act also provides the basis for the legal protection and management of threatened native flora and fauna and Aboriginal sites within NSW.

- *Native Vegetation Act 2003 (NVA)*: provides for the conservation of native vegetation through the prevention of inappropriate clearing and promotion of rehabilitation practices. Development on site that would result in clearing of native vegetation would need consideration by DoP in consultation with DECCW during the preparation of the environmental assessment requirements for this Project Application.
- *Coastal Protection Act 1979 (CPA)*: regulates development and other activities undertaken by public authorities in the NSW coastal zone and prohibits a public authority from authorising development or use of the coastal zone that is inconsistent with principles of ecologically sustainable development, adversely affects the behaviour of water bodies, beaches and associated ecological systems.

Protection of the Environment Operations Act 1997

The Project Application includes the proposed excavation of the open water wetlands and subsequent filling activities. These activities may require an Environment Protection Licence (EPL) under Section 48 of the POEO Act from the Department of Environment, Climate Change and Water (DECCW).

The excavation and filling works are defined as “land-based extractive activity” in Schedule 1 of the POEO Act as follows:

- **“land-based extractive activity**, meaning the extraction, processing or storage of extractive materials, either for sale or re-use, by means of excavation, blasting, tunnelling, quarrying or other such land-based methods.
- **extractive materials** means clay, sand, soil, stone, gravel, rock, sandstone or similar substances that are not minerals within the meaning of the Mining Act 1992.”

An EPL is required for the extraction, processing or storage of more than 30,000 t/yr of extractive materials under Schedule 1 of the POEO Act. Typically the EPL would guide the environmental management, control and monitoring of water quality and air quality. These issues are considered in **Section 12.0** of this EA.

5.3 State and Regional Planning Framework

5.3.1 State Environmental Planning Policies

The following SEPPs are relevant to the proposed Project Application.

It is noted that, as of 1 July 2009 changes to the legislative framework resulted in the removal of Regional Environmental Plans (REPs) from the hierarchy of EPs in NSW to simplify the State's planning system. As a result some REPs were revoked; those that remain are now deemed to be SEPPs under Division 2, Part 3 of the EP&A Act.

State Environmental Planning Policy – Major Development

State Environmental Planning Policy (Major Development) 2005 (MD SEPP) provides details of specific sites, types of developments and State significant sites which are subject to assessment and determination under Part 3A of the EP&A Act.

The Project is subject to the provisions of SEPP Major Development being a project with a capital investment value of more than \$10 million.

State Environmental Planning Policy 26 – Littoral Rainforest

SEPP 26 seeks to preserve littoral rainforest areas in their natural state.

The Project Application Area does not comprise littoral rainforest but is situated adjacent land which is mapped as littoral rainforest pursuant to SEPP 26. This area of littoral rainforest is referred to within this EA as Rainbow Beach littoral rainforest No. 116.

Pursuant to Clause 4 of SEPP 26, the Project Application Area is exempt from the provisions of SEPP 26 as it is zoned residential. Notwithstanding this, an assessment of the impacts of the proposed development on Rainbow Beach littoral rainforest No. 116 has been undertaken by Darkheart Eco-Consultancy (refer to **Appendix I**). The findings of this assessment are detailed in **Chapter 7.0** of this EA.

State Environmental Planning Policy 44 – Koala Habitat Protection

The aim of *State Environmental Planning Policy No 44 – Koala Habitat Protection* (SEPP 44) is to encourage the conservation and management of areas which provide habitat for koalas with a direction of establishing a permanent population over their present range and reverse the current trend of decline. The Project Application

Area is located within Port Macquarie - Hastings LGA which is listed on Schedule 1 of SEPP 44, and as detailed in Clause 6, is more than 1 ha in area. Therefore SEPP 44 applies to the Project.

Following the adoption of the Area 14 Structure Plan, Council commissioned a number of related environmental investigations, which included the preparation of a draft Koala Plan of Management (KPOM) in accordance with the provisions of SEPP 44. The draft KPOM was undertaken by Biolink Pty Ltd (Biolink) in 2004 and was subsequently amended in November 2005 to include all of the Project Application Area.

The draft KPOM identifies one koala sighting within the Project Application Area, in the area directly adjoining the sewage treatment plant. The draft KPOM also categorises the quality of koala habitat in the locality, and identifies possible habitat corridor locations. **Figure 19** illustrates the location of these areas of koala habitat and suggested corridor locations.

The Project has been designed in accordance with the recommendations outline within the draft KPOM. The proposed habitat linkages illustrated in **Figure 19** are contained within the Central Corridor. The only area of primary koala habitat is within the sewage treatment buffer, which is also within the Central Corridor. Consistent with the recommendations of the KPOM the secondary habitat on the far western side of the Project Application Area would primarily be contained within a vegetated buffer to Ocean Drive.

State Environmental Planning Policy 55 – Remediation of Land

The object of *State Environmental Planning Policy No 55 – Remediation of Land* (SEPP 55) is to provide for a consistent, State-wide planning approach to the remediation of contaminated land for the purpose of reducing risks to human health or other environmental aspect.

A Phase 1 Preliminary Site Investigation has been undertaken to support the Concept Plan. Specifically the investigations identified minor localised areas of impacted soils and fibrous building materials that require remediation prior to the redevelopment of the Concept Plan Area for residential, educational and recreational purposes. No broad-scale contamination threats were identified within the Project Application Area as a result of known past and present land uses.

Appropriate management practices have been recommended in order to mitigate potential contamination impacts within the Project Application Area and the Project. **Section 9.2** of this EA discusses these results in further detail.

Figure 19 Area 14 KPOM



State Environmental Planning Policy No 71—Coastal Protection

State Environmental Planning Policy No 71 – Coastal Protection (SEPP 71) is intended to provide a uniform approach to planning within the Coastal Zone. Clause 8 of SEPP 71 identifies the matters for consideration in determining an application for development on land within the Coastal Zone.

The Project Application Area is located within the Coastal Zone, and is therefore subject to the provisions of SEPP 71. An assessment of the Project against the matters set out in Clause 8 of SEPP 71 is provided in **Table 10**.

Table 10 Clause 8 Matters for Consideration

Clause 8 Matters for Consideration	Compliance
<i>(a) The aims of this Policy set out in clause 2.</i>	The Project complies with the aims of the Policy by responding to the environmental constraints of the site.
<i>(b) Existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved.</i>	Public access to the foreshore from the Project Application Area currently exists and is proposed to be upgraded as part of this Project.
<i>(c) Opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability.</i>	As outlined in the above point, the existing access to the foreshore would be upgraded as part of this Project.
<i>(d) The suitability of development given its type, location and design and its relationship with the surrounding area.</i>	An Environmental Assessment has been carried out as part of this Project Application, including consideration of the existing environmental constraints. This assessment demonstrates the sites suitability for the Project. Furthermore, the Project Application Area is located within the Area 14 urban investigation area, which has been the subject of numerous site investigations and assessments. The suitability of the site was considered during the development of the Area 14 Structure Plan and in further detail as part of this Project Application.
<i>(e) Any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore.</i>	The Project does not involve the construction of built form that would cause overshadowing of the coastal foreshore or impede views to the coastal foreshore area.
<i>(f) The scenic qualities of the New South Wales coast, and means to protect and improve these qualities.</i>	The Project would not detract but improve the scenic quality of the coastal area through the provision of environmental restoration works and the ongoing management of the Central Corridor.
<i>(g) Measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats.</i>	Terrestrial and aquatic flora and fauna assessments have been undertaken for the Project Application Area and surrounding area, which have identified relevant threatened fauna species. Hydrological assessments have also been undertaken in order to determine and mitigate potential impacts of the Project on the habitat of threatened species. Chapter 7.0 discusses the Project's potential impact on these threatened species and recommends mitigation measures to ameliorate adverse

Clause 8 Matters for Consideration	Compliance
	impacts.
<i>(h) Measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats.</i>	As outlined above, a detailed aquatic flora and fauna assessment has been undertaken for the Project Application Area, in order to determine and mitigate potential impacts of the Project on fish, marine vegetation and their habitats. Chapter 7.0 discusses the Project's potential aquatic impacts and recommends mitigation measures as appropriate.
<i>(i) Existing wildlife corridors and the impact of development on these corridors.</i>	Through substantial revegetation proposed as part of this Project Application and existing regeneration works currently being undertaken within the Project Application Area, the Project would enhance existing wildlife corridors, which at present are degraded as a result of land clearing.
<i>(j) The likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards.</i>	A coastal processes study was previously undertaken by the Department of Public Works and it was concluded that the Project Application Area was not likely to be adversely affected by coastal processes or coastal hazards. Further, Section 9.5 of this EA details potential coastal hazards
<i>(k) Measures to reduce the potential for conflict between land-based and water-based coastal activities.</i>	The land uses identified within this Project Application and within the associated Concept Plan are not likely to create a conflict between land-based and water-based coastal activities.
<i>(l) Measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals.</i>	A number of Aboriginal archaeological sites have been identified within the Project Application Area. In the case of highly significant sites, design modifications to the scheme design, specifically involving changes to the proposed open water wetland have allowed the retention of these sites in situ. Appropriate management practices have been recommended in order to mitigate potential impacts of the Project on aboriginal heritage. Further details are outlined in Chapter 10.0 .
<i>(m) Likely impacts of development on the water quality of coastal waterbodies.</i>	A Water Cycle Management Plan prepared by Cardno (refer to Appendix N) has been developed for the Project which brings together the results of the stormwater quality and quantity assessment, hydrological assessment and flood analysis to form an overall water management plan which satisfies objectives for future development management outlined by Port Macquarie - Hastings Council and NSW State Government legislation. Stormwater quality modelling undertaken as part of the development of the strategy demonstrates that the treatment train and open water wetland measures proposed for the treatment of stormwater would meet the specified water quality criteria. It is therefore considered that the Project would not create water quality impacts for nearby waterbodies in coastal areas. See Chapter 8.0 for details.
<i>(n) The conservation and preservation of items of heritage, archaeological or historic significance.</i>	Design modifications have been employed and mitigation measures have been recommended for the proper protection and management of indigenous heritage. A preliminary desk-top assessment found no items of non-indigenous heritage within the Project Application Area or surrounding area (see Chapter 10.0).
<i>(o) Only in cases in which a council prepares a draft local environmental plan that applies to land to which</i>	N/A

Clause 8 Matters for Consideration	Compliance
<i>this Policy applies, the means to encourage compact towns and cities.</i>	
<i>(p) Only in cases in which a development application in relation to proposal is determined:</i> <i>i) The cumulative impacts of the proposal on the environment.</i> <i>ii) Measures to ensure that water and energy usage by the proposal is efficient.</i>	N/A

North Coast Regional Environmental Plan (REP) 1988 (deemed to be SEPP)

The North Coast Regional Environmental Plan (NCREP) 1988 applies to the Port Macquarie - Hastings LGA, including the Project Application Area. The function of the NCREP is to provide the basis for new urban and rural development, with an emphasis on protection and management of the natural environment and creating efficient and attractive built environments.

As outlined in Part 3 Division 2 of the Policy, the NCREP sets out specific objectives with regard to coastal development as follows:

- a) *“to enhance the visual quality of the coastal environment;*
- b) *to provide for the appropriate recreational use of beaches;*
- c) *to protect the water quality of the coastal environment;*
- d) *to minimise risks to people and property resulting from coastal processes;*
- e) *to minimise changes to coastal processes resulting from development; and*
- f) *to encourage retention of natural areas and regeneration of those natural areas which are already degraded”*

The Project is generally consistent with the objectives of the Plan. The Project would enhance the visual quality of the Project Application Area by creating a usable space which restores the damage and scarring of the landscape caused by previous earthworks and developments. The proposed construction wetlands system would lead to the regeneration of natural areas by providing for natural habitats.

One of the primary functions of the proposed open water wetland is to reduce the impacts of stormwater pollution arising from proposed future residential subdivision. By incorporating sustainable WSUD principles into the design of the wetlands, stormwater runoff from the proposed residential development would be addressed, and in turn, improving water quality of the coastal environment.

At present, much of the Project Application Area is periodically inundated and, the placement of approximately 417,200 m³ of compacted fill won primarily from the excavation of the open water wetlands onto the low lying areas of the Project Application Area would aid in the minimisation of risk to existing and future communities, as well as providing land suitable for development as proposed by the Concept Plan.

5.3.2 Other Policies, Guidelines and Strategies

NSW Coastal Design Guidelines

The NSW Coastal Design Guidelines complement SEPP 71 and identify a number of principles which seek to guide future developments to be sensitive to the unique natural and urban settings of coastal places in NSW and define a hierarchy of coastal settlements which include:

- Coastal cities
- Coastal towns
- Coastal villages
- Coastal hamlets

This Project Application is an integral component of a Concept Plan Application which seeks consent for the development of a new coastal settlement between the existing coastal towns of Lake Cathie and Bonny Hills. An analysis of compliance with the provisions of the NSW Coastal Design Guidelines is contained within the Concept Plan EA.

The design guidelines that apply to new settlements (as relevant to the Project) and an assessment of the Project considered against these guidelines is set out in **Table 11** below.

Table 11 NSW Coastal Design Guidelines

Design Guidelines	Project Response
Desired Future Character of New Settlement	
Relationship to the environment • New development avoids areas of ecological value and respects setbacks between natural areas. • Wildlife corridors, existing mature trees, rivers, streams, lakes and natural features are incorporated into green space networks, reserve areas, riverine and foreshore corridors. • Aboriginal and European places, relics and items are protected. • Foreshore and estuarine vegetation is protected. • The potential disturbance to acid sulfate soils is managed. • Original native landscape is maintained and reinstated. • Waterways and coastal lakes are protected through water sensitive urban design and total cycle water management. • Degraded natural areas are rehabilitated. • Vegetation is maintained whilst managing asset protection areas for bushfire protection. • Land swaps, community stewardship programs, transferable development rights and voluntary conservation agreements provide opportunities to sensitively locate development and protect ecosystems and views. • Native vegetation is preferred on public and private land. • Land is revegetated with species native to the local area.	Detailed consideration of the environmental constraints present within the Project Application Area has been integral to the design process. Ecology, hydrology and heritage assessments have been undertaken by qualified specialists to identify potential environmental constraints and to develop appropriate mitigation measures where impacts are identified. Where environmental constraints have been identified the following approach has been adopted: Avoid – Minimise – Mitigate – Offset. The Project is an integral to the proposed redevelopment of the area for urban and open space purposes in accordance with the Concept Plan. This element of the Concept Plan would bring environmental benefits, associated with the regeneration of native vegetation. A program of vegetation rehabilitation is currently underway. This programme is focused on the eliminating of threats to native vegetation such as weeds and the introduction of native plants.
Visual Sensitivity • Views to and along the foreshore align with streets. • Views and vistas of the foreshore and natural features in or surrounding the site are aligned with public streets.	The Project does not involve built development. Views would be impacted to the extent that new vegetation would be introduced. This would contribute to the overall appearance of the foreshore and as such the Project is considered to have a positive impact on views and vistas.
Edges to the water and natural areas • In new coastal settlements the centre and surrounding residential areas are separated from the foreshore by a parkland or roadway	The Project is integral to the development of the area for urban purposes as proposed by the Concept Plan. It incorporates open space uses that would provide a buffer

Design Guidelines	Project Response
or nature reserve. • Setbacks from the coastal edge and other surrounding natural areas, such as reserves and lakes, respect environmental constraints and protect properties from coastal hazards. • Public access along the foreshore is generally located on the boundary between public and private land and along streets. • Pathways through foreshore vegetation are restricted to ensure the ecological integrity is not degraded. • Foreshore vegetation is not removed to create views. • Land is not filled to promote views.	to the coastal edge for future urban development.
Defining the Footprint and Boundary	
New settlements contain: • Substantial surrounding greenbelts • Substantial and continuous foreshore reserves, where relevant • Maximum setback distances required to protect natural areas • Provisions so as not to impact on the visual character or vistas or existing settlements or agricultural land.	The Project involves the development of open and recreational spaces associated with the Rainbow Beach Concept Plan. The Concept Plan provides for the comprehensive redevelopment of the area for a mix of urban uses complemented by significant areas of open space and wildlife habitat.
Design criteria for new settlements involve: • Responding to the environmental constraints of the location • Maintaining the water quality of lakes, rivers and coastal waters at pre-development levels • Retaining existing trees and vegetation • Providing facilities and services appropriate to scale and type of settlement • Including a town/neighbourhood centre or a main street • Requiring a permeable, hierarchical street subdivision pattern that relates to the original topography.	Thorough assessments of environmental constraints present within the Project Application Area have been undertaken and regard has been given to these constraints within the design of the Project. Vegetation is retained where possible and new planting would be introduced to enhance the quality of the local environment.
Connecting Open Spaces	
Locate and connect new and existing open spaces which protect and maintain: • Nature reserves, conservation areas, park lands and environmental protection areas • The natural and rural setting of the settlements including the scenic values of the visual catchment • Remnant native vegetation.	The Project focuses on the provision of high quality reserves and open spaces appropriately located and connected to existing and future communities. The Project also seeks to protect the natural environment through measures to rehabilitate native vegetation.
Establish continuous ecological corridors to incorporate existing remnant vegetation by connecting reserves and conservation areas from the hinterland or surrounding mountains to the	The Project is for the development of a Central Corridor proposing recreational and vegetation elements. The corridor has been positioned with regard to the positioning of existing vegetation corridors and would reinforce and more clearly define the existing corridor which extends

Design Guidelines	Project Response
coastal edge.	from the coastal edge inland. This would result in substantive benefits for native flora and fauna.
Provide setbacks to protect property from the effects of coastal erosion, flooding and bushfire.	The project involves the introduction of open and recreational spaces which would act as a buffer for new urban uses to be developed under the Concept Plan. The location of these open spaces has been developed with regard to avoiding coastal erosion, flooding and bushfire.
Locate open spaces to build on the special attributes of an area for long term public amenity and identity of the place. An open space network may include hill tops, river frontage, mature trees, places with panoramic views, rocky outcrops and remnant vegetation.	Open spaces are proposed in areas recognised as being of high environmental value. Proposed measures would both protect and enhance these areas through the vegetation rehabilitation.
Where feasible preserve settings for places of cultural heritage within the open space network	Assessments of Aboriginal cultural heritage have informed the scheme design. Areas recognised as being of high Aboriginal cultural significance are proposed to be retained in-situ.
Provide areas within the open-space network sufficient to detain and cleanse stormwater runoff and avoid impacting sensitive ecologies.	The proposal addresses drainage issues associated with the development of the Concept Plan. This includes the construction of the proposed open water wetland. The proposed strategy would effectively manage stormwater runoff.
Provide pedestrian and cycle access that: - Does not compromise the ecological values of high conservation areas - Connects important places throughout the settlement - Connects residential areas to commercial and retail locations without compromising the visual, aesthetic or ecological values of the foreshore.	Access to Rainbow Beach is proposed to be retained. The Project involves works to formalise the existing access to provide a more clearly defined route for pedestrians thereby preventing encroachment into surrounding areas of vegetation.
Provide a variety of large and smaller open spaces to serve a range of different active and passive recreational roles, for example: - Playing fields - Playgrounds and small pocket parks - Walking and cycling connections - Places and activities for people with physical disabilities.	Formal and informal recreation spaces are proposed. In addition to the large areas of open space to be provided in the southern portion of the Project Application Area, the scheme would facilitate the introduction of sporting fields in the northern part of the Project Application Area close to proposed residential areas.
Co-locate recreational facilities with shops, schools and other community facilities to reduce parking and minimise walking distances.	Recreational spaces have been carefully sited with regard to the proposed location of new urban uses. The future district sporting fields are located adjacent to areas proposed for future residential and school uses ensuring good accessibility.
Landscape design of open spaces should reflect the different qualities of the location and their functions.	The majority of the Project Application area is being developed for informal open space and wildlife habitat and has been developed for this purpose. The detailed design of the district sporting fields would be determined at a later stage, including drainage, playing surface and other associated infrastructure.

Design Guidelines	Project Response
Protecting the Natural Edges	
Define the key characteristics and function of public spaces along the foreshore with particular regard for sites of significant social and cultural importance.	Signage would be introduced to identify vegetation rehabilitation efforts and to identify sites of Aboriginal cultural significance.
Maintain foreshore areas and setbacks in public ownership.	The Project Application involves recreational spaces that would be dedicated for public use.
Ensure that existing and remnant native vegetation is protected through generous setbacks and defined points of access.	Native vegetation would be retained within the Project Application Area. In addition, an extensive programme of vegetation rehabilitation is underway which involves the clearance of weeds and other threats to native vegetation and the introduction of new planting.
Provide pedestrian access to and along the foreshore with provision for those with less mobility.	The Project involves the formalisation of the existing public access to Rainbow Beach. This would improve accessibility for mobility impaired people.
Areas adjoining freshwater estuarine, coastal habitat and the coastal edge are managed to reduce land use impacts through setbacks that also support the protection of properties from erosion, protection of sensitive ecologies, provision of public access along the foreshores and to natural areas, provision of visual amenity along the foreshore, protection of properties from the effects of sea level rise, improvement of water quality.	Improvements to the natural environment are fundamental to the Project. Development including the proposed open water wetlands has been designed to manage and mitigate potential impacts.
Setbacks should also address coastal erosion hazards such as storm surge events and river flooding, long term shoreline recession and sea level rise, cliff retreat and catastrophic collapse, sand drift hazard, entrance stability, estuarine erosion and changes in tidal current position.	An assessment of coastal hazard on the proposed development has been undertaken. This assessment concludes that risk to the project from coastal inundation is unlikely (see Section 9.5).
Setbacks are designed to protect ecosystems and reserves covered under SEPP 14 wetlands, SEPP 26 littoral rainforest, SEPP 44 koala habitat as well as salt marsh and mangrove communities, riparian vegetation, frontal dunes and headlands, national parks, protected areas and reserves.	The Project largely involves the development of open spaces which would provide amenity space for existing and future residents of the Rainbow Beach locality. Additionally these spaces provide a natural setback from ecologically sensitive areas.
Setbacks may need to be marked and their vegetation preserved. Setbacks should where possible be increased to 100m or more where they are adjacent to ecologically sensitive areas or in situations where the coastal erosion hazard requires greater distance.	Extensive investigation into environmental constraints present within the Project Application Area has been undertaken. The Project involves measures to protect environmentally sensitive areas.
Setbacks for redevelopment should consider a 100 year planning timeframe to address shore line retreat and sea level rise.	Coastal hazard has been considered and assessed. Risk to the project from coastal inundation is considered unlikely (see Section 9.5).
Setbacks in public ownership where ever possible, allow opportunities for public access and have limited development including no roads, private allotments, infrastructure and retaining walls in these locations.	The Project involves the formalisation of the existing access to Rainbow Beach so that public access to the beach is maintained.

Northern Rivers Catchment Management Plan

The *North Rivers Catchment Action Plan* applies most of the NSW north coast area within the Northern Rivers Catchment Management Authority area and is applicable to the Project Application Area. The Plan prioritises the delivery of natural resource management outcomes by identifying long-term directions to address issues that adversely impact on the catchment and sustainable development within the area. The Plan also seeks to establish a clear direction for the rehabilitation and repair of natural resources in the catchment which are under stress.

The Plan outlines a number of State-wide targets and themes. These targets fall under four themes being biodiversity, water, land and community. These themes generally relate to the improvement of existing habitats, ecosystems and environments and the prevention of decline in condition of these habitats, ecosystem and environments.

The Project is consistent with the targets outlined in the Plan. Large portions of the Central Corridor are currently being revegetated as part of a comprehensive programme of vegetation rehabilitation. This Project seeks to establish bush regeneration areas and habitats further within the Central Corridor. This would help to support and contribute to the conservation of threatened species in the area, such as the Wallum Froglet. Detailed geotechnical and hydrological investigations have resulted in a number of mitigations measures, which would serve to alleviate potential impacts on soil and water resources.

NSW Government Sea Level Rise Policy Statement

In October 2009, the NSW Government adopted a policy in relation to sea level rise resulting from climate change. The policy statement establishes sea level rise planning benchmarks above 1990 mean sea levels of 40 cm (400 mm) by 2050 and 90 cm (900 mm) by 2100. This requirement is incorporated in other recently prepared NSW guidelines including the *Floodplain Risk Management Guideline Practical Consideration of Climate Change*.

The policy aims to provide a consistent approach to addressing sea level rise to assist the NSW Government, local councils, developers and landowners in the preparation of land use strategies and local environmental plans, as well as the preparation and assessment of development applications on land potentially at risk from sea level rise. The primary objective of the Sea Level Rise Policy Statement is to minimise the social disruption, economic costs and environmental impacts resulting from long-term sea level rise.

An assessment of coastal hazard in respect of the section of Rainbow Beach located adjacent to the Project Application Area has been undertaken by SMEC (refer to **Appendix R**). The assessment describes the coastal processes affecting the beach and the impact of these processes on the areas of the beach where future development areas may be at risk. Specifically, result of the wave runup analysis for the design storm has indicated that maximum runup levels of 6.6 m AHD would not pose an inundation hazard to the Project Application Area as the embankment height is above 7.5 m AHD. As outlined in **Section 9.5** SMEC (2010) has concluded that:

"Despite the conservative (worst-case scenario) values of storm erosion volume chosen for the calculation of the hazard lines, the developed portion of study area would not be at risk nor be subject to reduced foundation capacity by the 2100 planning period."

In addition, the relevant inundation risks for the development arising from sea level rise and climate change on the Project have been considered by Cardno. Hydraulic controls incorporated into the existing lagoon and open water wetland system which control the water levels in the water bodies are located at RL 3.5 m AHD and above. An increase in the adopted sea level used in storm modelling to RL 3.2 m AHD should not materially alter the behaviour of hydraulic systems in the Project Application Area as the raised sea level at the outlet of Duchess Gully is still well below the hydraulic control structures. It is further estimated that a 1 m sea level rise could occur without increasing inundation levels at the site. Further details are outlined in **Section 9.4** of this EA.

Mid-North Coast Regional Strategy

The Mid-North Coast Regional Strategy prepared by the DoP covers the north coast area from Hawks Nest in the south, to Iluka in the north and as far west as Dorrig and Stroud. The Port Macquarie - Hastings Council area falls within this region and is subject to the provisions of the Strategy. The purpose of the Strategy is to allocate adequate land available and appropriately located to accommodate the projected housing and employment needs of the region over the next 35 years (2006-31) and is based on a potential population increase of 91,000 during this time.

One of the challenges in providing the level of housing as identified in the Strategy is the need to “retain the coastal and local character of existing settlements”.

In the development of the Area 14 Structure Plan, detailed consideration has been given to the community desire to maintain the village character of both Bonny Hills and Lake Cathie. Through the associated Concept Plan Application, the proposed Central Corridor seeks to achieve the aspirations for the development of the settlement. The Project is designed to rehabilitate and conserve the coastal environment, while confining urban development to appropriate areas within the Concept Plan Area.

5.4 Local Planning Instruments

5.4.1 Hastings Local Environmental Plan 2001

The Project Application Area lies within the boundaries of the Port Macquarie – Hastings local government area (LGA) and as such is subject to the provisions of the Hastings Local Environmental Plan 2001 (HLEP 2001). In accordance with Section 75R(3) of the EP&A Act, Local Environmental Plans do not apply to Projects assessed under Part 3A of that Act. However, pursuant to Section 75J (3) and 75O (3) the Minister may take into account the provisions of environmental planning instrument (EPI). As such, this section provides a discussion of the permissibility and general principles of development control imposed under HLEP 2001.

Permissibility

Pursuant to HLEP 2001, the majority of the Project Application Area is zoned 2(a1) Residential. A portion of the Project Application Area is zoned 1(a) Rural. This parcel of land provides a formalised buffer around the sewage treatment plant located to the east.

The proposed development is permissible with development consent within the 2(a1) Residential and 1(a) Rural zones.

The following provides an assessment of the Project against the relevant zoning provisions of HLEP 2001.

Table 12 HLEP 2001 Zoning Provisions

Relevant Clause under HLEP 2001	Comment
Clause 9 Zone objectives and development control table Zone 2 (a1) Residential <u>Zone objectives</u> (a) To identify land suitable for residential purposes. (b) To ensure the provision of services and facilities associated with residential land uses or which are unlikely to affect residential amenity. (c) To ensure a variety of housing choice. (d) To enable appropriate development where allowed with consent.	The Concept Plan Area has been allocated for residential development for several years. Work to develop the area for urban purposes is at an advanced stage and is being progressed through the development of a Concept Plan. This Project Application is one component of the overall development of the Concept Plan providing essential drainage and earthworks to enable the development of urban uses in the northern portion of the Concept Plan Area. This Project Application, specifically the design of the Central Corridor provides for a number of facilities which would serve the future residential population of the area. These comprise of formal facilities such as district sporting fields and cycle paths, along with less formal passive recreation areas. The proposed development is permissible with development consent within Zone 2(a1).
Zone 1 (a1) Rural <u>Zone objectives</u> (a) To protect and encourage utilisation of the productive potential of agricultural, extractive and mineral resources located in rural areas. (b) To protect the amenity of rural residential	The parcel of land zoned rural 1(a1) acts as a buffer around the sewage treatment plant. This land is heavily vegetated and has been identified within the draft KPOM as being Primary and Secondary Habitat for the koala. As such, it is considered that while this area is zoned for rural purposes, agriculture, extractive industries and mining are inappropriate land

Relevant Clause under HLEP 2001	Comment
subdivision areas. (c) To prevent the unnecessary, premature or sporadic fragmentation of rural land, to protect the agricultural potential of land and also to ensure that development does not create unreasonable or uneconomic demands for the provision or extension of public amenities and services. (d) To enable appropriate development where allowed with consent.	uses given its potential to support this threatened species. Section 5.3.1 and Section 7.0 provides an assessment with regard to the draft KPOM and flora and fauna. Works proposed within the rural buffer consist of bush regeneration works only and as such, they would not result in the fragmentation of land or impact on the amenity of nearby rural residential land. Works proposed within the rural 1(a1) are permissible with development consent.

Clause 26 – Acid Sulfate Soils (ASS)

Clause 26 aims to ensure that assessment of development which may create an acid sulfate hazard has been undertaken adequately. In this regard, a person must not, without development consent, undertake works (being any form of landform alteration that involves digging works) on land identified as Class 1, 2, 3, 4 or 5 on the acid sulfate soils map.

The Project Application Area extends over land which, for the purposes of assessment of potential impacts associated with acid sulphate soils, is categorised as Class 2, 3, 4 and 5. The proposed open water wetlands would take place within land identified as Class 4 and would involve works extending 2 m below natural ground level. In accordance with the requirements of Clause 26 of Hastings LEP 2001, a preliminary soil assessment has been undertaken which considers acid sulphate soils. Further details are provided in **Section 9.3** of this EA.

6.0 Consultation

This chapter provides a summary of the consultation undertaken as part of the EA process to date, including formal consultation undertaken by the DoP with relevant regulatory authorities and independent consultation undertaken by the Proponent with key stakeholders. This chapter summarises the key issues raised by consulted parties and references where these issues are addressed in the EA document.

Director General's Requirements	Compliance
You should undertake an appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment: Agencies or other authorities: - Port Macquarie – Hastings Council - Department of Environment, Climate Change and Water - Road and Traffic Authority - NSW Rural Fire Service - Land and Property Management Authority - NSW Industry and Investment - NSW Office of Water - Department of Education and Training (b) Public: Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community consultation and an effective communications strategy. The consultation process and the issues raised should be described in the Environmental Assessment.	Consultation has been an integral to the design evolution of the project. Regular meetings with Port Macquarie – Hastings Council have taken place. Advice has also been sought from the relevant agencies to assist in the preparation of the specialist reports. The issues identified through the consultation process are discussed within this chapter.

6.1 Consultation Strategy

6.1.1 Area 14 Structure Plan Consultation

Consultation with local and state government authorities and agencies, along with the local community has been undertaken and continues as part of the EA process. The following section identifies relevant stakeholders and their role in the EA process, strategies that have been undertaken to carry out consultation, issues raised by stakeholders and how those matters have been considered in the EA.

Extensive consultation has been undertaken in respect of the proposed development of Area 14 for urban purposes. Preparation of Area 14 Structure Plan involved a high level of consultation, both with the public and government departments and agencies. The development of the Area 14 Structure Plan commenced with a Conceptualisation Workshop; this workshop included site visits, visual assessments and meetings with the Hastings Urban Growth Strategy (HUGS) Committee. This was followed by a four day design workshop involving representatives from the following organisations:

- Roads and Traffic Authority
- Environmental Protection Agency
- NSW Coastal Council
- Koala Preservation Society
- Economic Development Board
- Area Health Service
- Department of Education & Training

- Planning NSW
- Hastings Council Departments (Planning, Community & Cultural Development, Libraries, Parks, Infrastructure)

From this consultation, a list of Community Issues and Values was derived, with qualities most valued by the community being identified as follows:

- village atmosphere;
- wildlife and the natural environment;
- clean beaches and foreshores;
- views and vistas;
- existing safe road system;
- lifestyle and community spirit; and
- Lake Cathie (the actual lake).

The most significant issues, in order of priority where listed as:

- maintaining a village atmosphere and environmental values;
- sensitive water management;
- environmental management and wildlife corridors;
- adequate infrastructure for development;
- remedy existing infrastructure deficiencies;
- urban/community/environment relationships;
- integrated community centre;
- ensure road system adequacy; and
- danger of overdevelopment.

The Area 14 Structure Plan notes that there are varying opinions within the local community as to the precise form that future development should take. There is however broad support for an urban design master plan that would result in a village atmosphere, conservation and care of the natural environment and provision of infrastructure to meet the health, transport, recreational and other needs of the community.

The Concept Plan has been designed in accordance with the adopted Area 14 Structure Plan. **Section 1.2.2** illustrates the subject Project Application's consistency with the Concept Plan Application and in turn, the Area 14 Structure Plan. As such it is considered that adequate consultation regarding the identification of the land uses proposed for the Central Corridor has been undertaken during the Area 14 Structure Plan process.

6.1.2 Procedural Consultation

Pursuant to Section 75F of the EP&A Act, prior to the issue of the DGRs, the Director General sought advice from relevant government agencies to confirm potential key issues and assessment requirements. Responses received from these agencies as a result of this consultation process have assisted in the formulation of the DGRs. While these responses do not form part of the DGRs, issues raised have been considered and have informed the EA process where possible.

In addition to agency consultation undertaken by the Director General, a number of agencies have been consulted individually during the assessment process either by the Proponent in face-to-face meetings or relevant specialist consultants during the preparation of their individual studies.

6.2 Authority and Agency Consultation

A number of regulatory and other relevant local and state authorities and agencies were consulted during the EA process. The methods of authority and agency consultation and related outcomes are listed below.

6.2.1 Port Macquarie – Hastings Council

Port Macquarie – Hastings Council was consulted by DoP during the formulation of the DGRs. Feedback from Council as a result of consultation has been considered during the Project design and is discussed in the relevant chapters of this EA report. A summary of key issues raised in writing by Council and where they are addressed within this EA are listed in **Table 13**.

Table 13 Council Key Issues

Key Issue	Comment
How the water body would contribute to water quality in the context of Council's preferred water management strategy at the site (based on WSUD principles).	Investigations undertaken by Cardno and AECOM show that the open water wetland would have good water quality and has been designed in accordance with Council's Integrated Water Cycle Management (IWCM) requirements. Refer to Chapter 8.0 and relevant appendices for details.
How the water body contributes to aquatic habitat improvements.	This issue has been considered during the design of the open water wetland. Refer to Chapter 8.0 and relevant appendices for details.
Impacts of the proposed water body on surface water.	Impacts of the open water wetland on surface water have been considered and assessed in Chapter 8.0 of this EA, based on information provided by AECOM. Refer to relevant appendices for details.
Impacts of the proposed water body with regard to groundwater draw down effects.	Impacts of the open water wetland on groundwater have been considered and assessed in Chapter 8.0 of this EA, based on information provided by the UNSW Water Research Laboratory (WRL). Refer to relevant appendices for details.
Impacts of the proposed water body with respect to potential acid sulfate soils.	Impacts of the open water wetland on with regard to acid sulfate soils have been considered and assessed in Chapter 8.0 of this EA, based on information provided by Cardno and WRL. Refer to relevant appendices for details.
Impacts on the existing exfiltration system attached to the Bonny Hills Sewerage Treatment Plant.	This issue has been assessed in Chapter 8.0 of this EA, based on information provided by Cardno and WRL. Refer to relevant appendices for details.
Potential for ongoing water quality problems, including algal blooms.	This issue has been assessed in Chapter 8.0 of this EA, based on information provided by Cardno. Refer to relevant appendices for details.
The effect of the works on flood levels and existing development in the catchment.	This issue has been assessed in Chapter 8.0 of this EA, based on information provided by Cardno. Refer to relevant appendices for details.
A flood study to be undertaken in accordance with the NSW Floodplain Development Manual.	This issue has been assessed in Chapter 8.0 of this EA, based on information provided by Cardno. Refer to relevant appendices for details.
Details of additional habitat and connectivity for koala populations in the area.	Habitat connectivity for koala populations is discussed in detail in Appendix G .
Consultation with Council regarding the revised Area 14 KPOM.	Consultation with Council regarding the KPOM was undertaken by Luke & Co during the preparation of the Concept Plan Application (MP06_0085).
Analysis of alternative options for sourcing fill for residential development.	Chapter 3.0 of this EA and Appendix E refer to alternative fill source analysis.
Public safety and public liability risk assessment associated with the water body.	See Chapter 11.0 of this EA and Section 5.6 of Appendix J for details.

Key Issue	Comment
A risk assessment and analysis of the potential for the lake to provide habitat for aquatic weeds.	A detailed Environmental Land Use Management Plan (ELUMP) has been developed for this Project, and is included within Appendix D .
The proposal needs to address the establishment requirements (e.g. landscaping standards) for all areas.	A detailed ELUMP has been developed for this Project, and is included within Appendix D .
The proposal needs to address the on-going management requirements for all areas.	A detailed ELUMP has been developed for this Project, and is included within Appendix D . See Section 4.3.2 of this EA for details.
Ongoing management requirements including maintenance programs, cost assessment, risk assessment and any necessary mitigation measures.	Chapter 4.3.1 of this EA outlines details of discussions being held with Council with regard to a Voluntary Planning Agreement for the Project.
Describe the relationship between open space, drainage and habitat functions in the proposed corridor and that connectivity is provided between different parts of the proposed corridor (e.g. footpaths, cycleways and roads) in accordance with the Concept Plan.	Appendix G describes the difference functions of the Corridor and their relationship to the Concept Plan.
Describe the proposed ownership of different parts of the corridor.	Chapter 4.3.1 of this EA outlines details of discussions being held with Council with regard to a Voluntary Planning Agreement for the Project.
Where land is to be maintained in private ownership, detail how the corridor is to be maintained in conjunction with the associated use.	The entire Central Corridor would be dedicated to Council.

6.2.2 Department of Environment, Climate Change and Water

DECCW, previously the Department of Environment and Conservation were consulted by DoP during the formulation of the DGRs. Key issues raised by DECCW relate to the following:

- surface and groundwater impacts including management of potential acid sulfate soils and stormwater;
- potential impacts on Aboriginal cultural heritage;
- protection of threatened species; and
- management of air quality, noise impacts and soil management during construction.

Feedback from DECCW as a result of consultation has been considered during the Project design and is discussed in the relevant chapters of this EA report.

6.2.3 NSW Department of Industry and Investment

DII, previously known as the Department of Primary Industries were consulted by DoP during the formulation of the DGRs. Key issues raised by DII relate to the management of fish and aquatic habitats, and requirements for activities that damage marine vegetation, impact on threatened species or contribute to key threatening processes. Comment from DII as a result of consultation has been considered during the Project design and is discussed in the relevant chapters of this EA report.

6.2.4 NSW Rural Fire Services

The RFS was consulted by Australian Bushfire Protection Planners (ABPP) as part of their bushfire risk assessment. As advised by ABPP, no Issues were raised by the RFS that would warrant modification of the Project or the contents of the report prepared by ABPP, in respect of the provision of fire protection measures and compliance with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006*.

6.2.5 NSW Office of Water

The NOW, previously the Department of Natural Resources and Department of Water and Energy were consulted by DoP during the formulation of the DGRs. Key issues raised by the Office as a result of consultation include the following:

- impacts on biological/ecological and physical characteristics of local streams and bushland;
- protection, rehabilitation and ongoing management of the riparian zone;
- potential for flooding resulting from the Project and changes to the flooding regime;
- assessment and treatment of potentially contaminated soils and potential acid sulfate soils; and
- impacts on surface and groundwater.

Following submission of the Draft EA to the DoP for adequacy review in March 2009, the NOW provided DoP with additional comment in relation to the Project, particularly in relation to potential groundwater impacts as a result of the Project. Specifically, the NOW raised the following key groundwater issues:

- impact on aquifer volume;
- aquifer interference, dewatering and licensing;
- groundwater quality; and
- groundwater dependant vegetation and habitat.

As a result of the above key issues raised by the NOW the Proponent engaged the UNSW Water Research Laboratory (WRL) to assess the above potential issues. Results of the UNSW WRL assessment are detailed in **Section 8.1** of this EA.

6.2.6 Land and Property Management Authority

The LPMA was consulted by the Proponent during the preparation of this EA in the form of an information letter. A response was received from the LPMA which included a number of comments as follows:

- The assessment should identify the location and status of Crown land directly affected by the project.
- The site adjoins Crown lands containing littoral rainforest mapped under SEPP 26, which has recognised conservation and environmental protection values. Adverse impacts of the development on Crown land vegetation are to be avoided.
- The proposed development would create public access demands to Rainbow Beach through the Crown Reserve. The LPMA requests that the project includes strategies to safeguard and protect this valuable asset by formalising this access track (preferably for pedestrian access only). The track can be formalised by a commercial licence from the LPMA.
- To reduce impacts on the reserve, the boundary between the development and the Crown reserve is to be fenced allowing access only to a formalised track.
- Stormwater can significantly impact upon Crown land and downstream environments by causing erosion, sedimentation, altering nutrient levels, increasing pollution, spreading weeds and exacerbating flooding. Stormwater / runoff should be managed so it does not adversely impact upon the adjoining Crown land. The LPMA does not support direct beach outfall. Stormwater measures should be considered as part of a Stormwater Management Plan, with a focus on on-site measures such as retention and treatment for pollution removal. This plan should include an assessment of potential impacts on the adjoining Crown land, in particular the littoral rainforest mapped under SEPP 26.
- Requirements under *Planning for Bushfire Protection 2006* for Asset Protection Zones to be entirely within the development and not impact on the adjoining Crown land.

Comment from LPMA as a result of consultation has been considered during the Project design and is discussed in the relevant chapters of this EA report.

6.2.7 Roads and Traffic Authority

The RTA was consulted by the Proponent during the preparation of this EA in the form of an information letter. The RTA was requested to provide their comment on aspects of the Project seen to be relevant to the Authority. No comment was received from the RTA as a result of this consultation.

6.2.8 Department of Education and Training

The DET was consulted by the Proponent during the preparation of this EA in the form of an information letter. DET was requested to provide their comment on aspects of the Project seen to be relevant to the Department. No comment was received from DET as a result of this consultation.

6.2.9 Local Aboriginal Land Councils

Consultation was undertaken with co-ordinators of the Birpai, Bunyah and Bril Bril Local Aboriginal Land Council's (LALC). This process included site visits with the LALC Officers and Indigenous community representatives. Representatives from the LALCs provided advice to Jacqueline Collins, in the preparation of the Aboriginal Heritage Assessment which has assisted in the formulation of appropriate mitigation measures for the scheme.

6.2.10 Summary

Formal responses provided to DoP and/or the Proponent as a result of agency consultation is included in **Appendix B** of this EA.

Further agency consultation would be undertaken as a result of the public exhibition of the EA report and accompanying documentation.

6.3 Community Consultation

Extensive community consultation was undertaken by Council during the Area 14 Structure Plan development process. The process provided interested parties with the opportunity to raise concerns with regard to proposed land uses and future development of the Project Application Area. Details of this process are outlined at the beginning of this chapter.

Community consultation for the Concept Plan Application and Project Application was undertaken on the 23 September 2008 and consisted of a meeting arranged by the Proponent and attended by the Bonny Hills and Lake Cathie Progress Associations and the public at large. The meeting was publicised by the Lake Cathie Progress Association and the Bonny Hills Progress Association as well as in local newspapers. The meeting was held at the Bonny Hills community hall and was attended by more than 150 residents. At the meeting, the Proponent distributed a newsletter which directed residents to their website which contained relevant Project information. The Newsletter also included contact details to enable residents to obtain further information or provide comment if required. Many issues raised as a result of this meeting relate to the Concept Plan and overall development of the Project Application Area, however relevant issues raised with regard to the Project Application are listed in **Table 14** below.

Table 14 Community Consultation Issues

Issue
• Potential for a wildlife corridor across Ocean Drive
• Integration of the development with existing Bonny Hills and Lake Cathie communities
• Timeframe for construction of sports fields
• Whether the open water wetland is the source of fill for the development
• Access to the beach from the development
• Level of recreation use in the wetlands
• Connection of cycle ways to the current network
• Management and maintenance of the open space corridor and timing for handover to Council

Further community consultation would be undertaken as a result of the public exhibition of the EA report and accompanying documentation, as described below.

6.4 Exhibition of Project Application Documentation

In addition to the consultation undertaken during the preparation of the Concept Plan and subject Project Applications, further consultation would be required to be carried out by the DoP during the Part 3A assessment process. Section 75H of the EP&A Act describes the process for public consultation during the environmental assessment process. Specifically, the EA report is required to be made available to the public for a minimum of 30 days, during which time any person, including a public authority, can make a written submission in relation to the Project. As such, the Project Application, including the EA report would be made publicly available for comment during the assessment process.

During the exhibition period the Proponent proposes to hold a public meeting to present the project to the general public, including the Bonny Hills and Lake Cathie Progress Association.