West Ballina Planning Study and Structure Plan

Prepared for:

Ballina Shire Council

Prepared by:

King & Campbell Pty Ltd
1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie
PO Box 243
Port Macquarie 2444
Ph: (02) 6586 2555
Fax: (02) 6583 4064

info@kingcampbell.com.au

Date: January 2010

Preface

Council initiated preparation of a planning study and structure plan for the West Ballina locality in July 2007. The aim of the project was to establish a strategic approach to future land use in the locality. The project involved several key steps as noted below:

- July 2007 - Council resolved to prepare a structure plan for the West Ballina locality.
- October 2007 - Council engaged planning consultants King and Campbell to prepare the West Ballina Planning Study and Structure Plan.
- August 2008 - Council engaged consultants BMT WBM to carry out flood investigations within the study area.
- May 2009 - BMT WBM completed a Flood Impact Assessment for the study area and King and Campbell completed the Draft West Ballina Planning Study and Structure Plan.
- June to August 2009 - Public exhibition of the Draft West Ballina Planning Study and Structure Plan.
- December 2009 - Final Draft West Ballina Planning Study and Structure Plan considered by Council's Environmental Committee and the elected Council (see below).

The Final Draft West Ballina Planning Study and Structure Plan was considered by Council's Environmental Committee at its meeting held on 9 December 2009. The Committee recommended (to the elected Council) as follows:

1. *That Council receive the West Ballina Planning Study and Structure Plan incorporating the recommendations set out by King and Campbell in Attachment 1, subject to point 2 below.*
2. *That the West Ballina Planning Study and Structure Plan incorporate text (as contained in this report) that specifically addresses the need for future site investigations to address projected sea level rise.*
3. *That Council advises the Department of Planning of the receipt of the West Ballina Planning Study and Structure Plan and seeks advice with respect to amendment of the Far North Coast Regional Strategy to reflect the study and plan outcomes.*
4. *That Council records its concerns as to the significant constraints that exist in the study area.*

The role of the Environmental Committee is to make recommendations regarding the matters it considers to the elected Council. These recommendations are then considered at an ordinary Council meeting with the resulting resolution representing the decision of the Council. With respect to the Environmental Committee recommendations regarding the Final Draft West Ballina Planning Study and Structure Plan, the Council considered them at its Ordinary Meeting held on 17 December 2009. In considering the recommendations, the Council resolved as follows:

That Council confirms the minutes of the Environmental Committee meeting held 9 December 2009 and that the recommendations contained within the minutes be adopted and that Council expresses its concerns regarding the potential development of Areas B & C of the West Ballina Structure Plan.

Essentially, the above decision means that the Council endorses the recommendations made to it by the Environmental Committee. In summary, the endorsed recommendations and content of Council's resolution mean that the West Ballina Planning Study and Structure Plan has been acknowledged as being completed (as prepared by King and Campbell) but the plan is not considered to be an adopted policy of Council.

The study and plan will be used as a tool to inform other planning policy and decisions made by the Council with respect to land within and surrounding the study area, particularly given that it contains substantial analysis of the environmental characteristics of the land and potential land use outcomes. Future planning decisions in the West Ballina locality will need to have regard for the content of the study and plan in terms of potential land uses, but also address the Council's concerns regarding land use constraints in the area.

Table of Contents

`

List of Exhibits

List of Appendices

Section 1
Introduction

1.1 Project Background and Purpose

Ballina Shire Council is currently undertaking a comprehensive review of its Local Environmental Plan (hereafter LEP) with a view to establishing a new shire-wide plan and Growth Management Strategy. Council has identified the West Ballina locality as an area which is subject to a range of complex and interrelated issues, and which should be considered as part of this review. The study area is shown in Exhibit 1 – Site Location and Context.

There are significant infrastructure projects planned for the study area, and a number of landholders and associated development groups within the study area have proposed changes of landuse. This coupled with the breadth and complexity of known planning considerations has instigated the need for a locally based planning study and structure plan for the study area (hereafter called the Structure Plan).

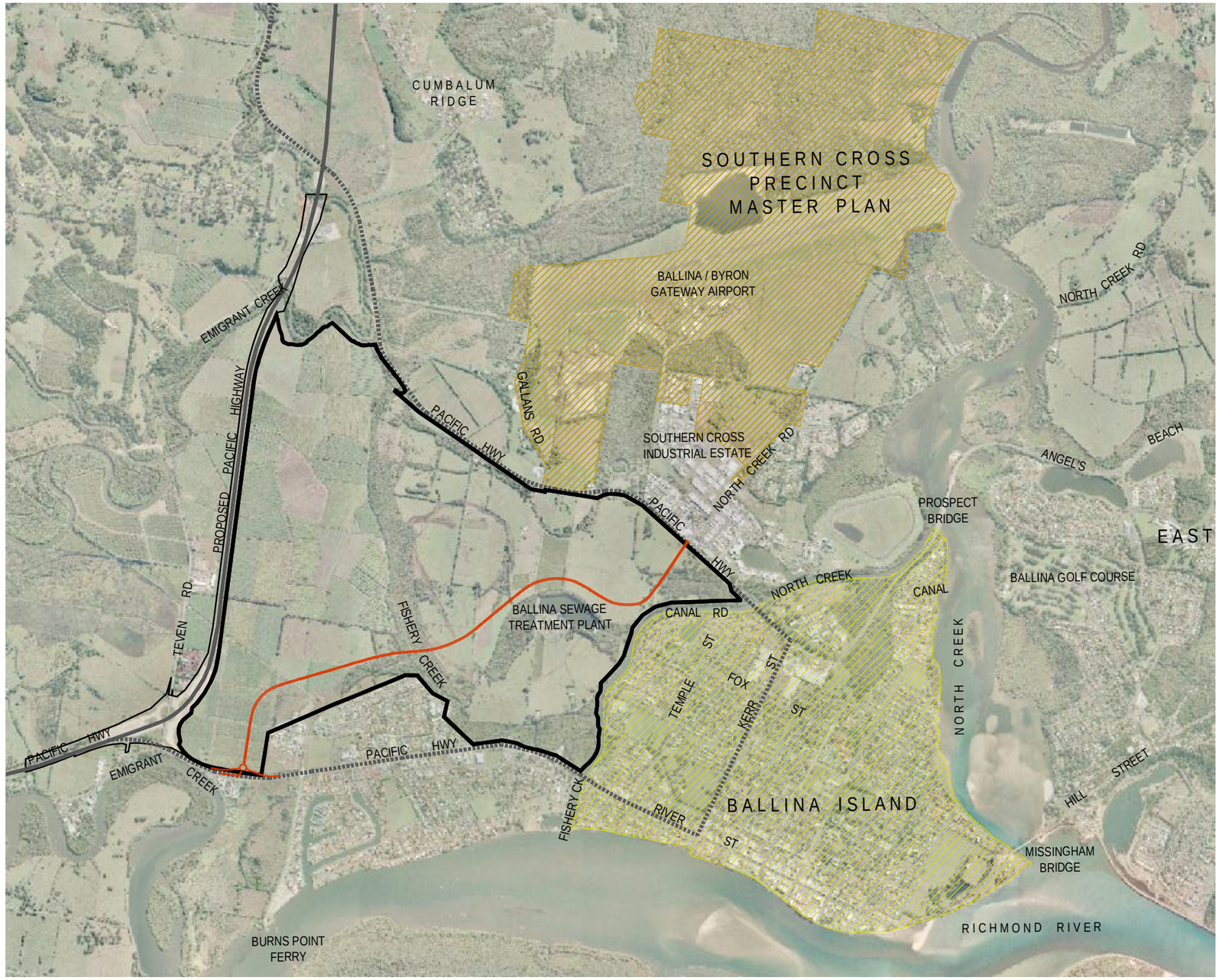
This Structure Plan provides the opportunity to consider the full range of opportunities and constraints relating to the land, in an overall and holistic manner. As part of this, Council is seeking to:

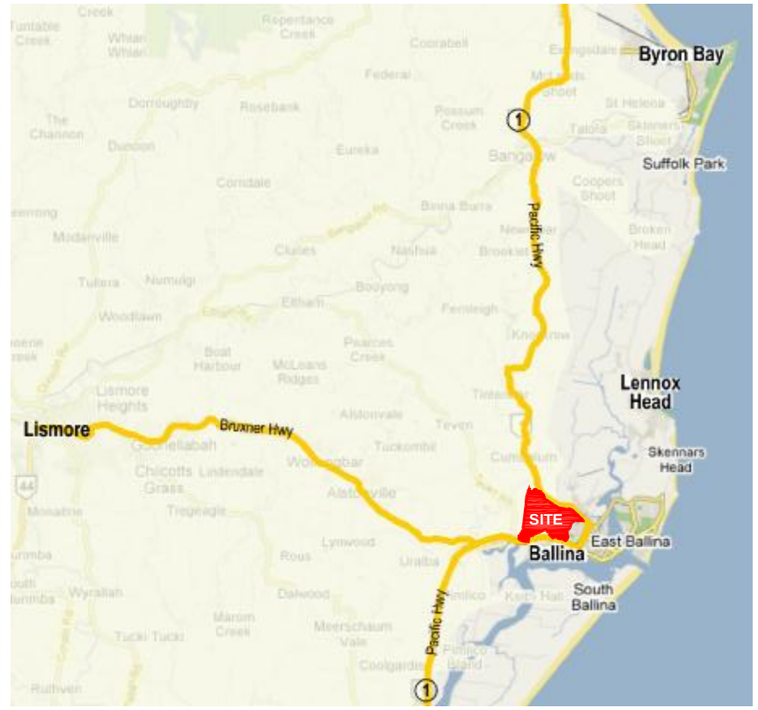
- Provide the optimal opportunity to minimise land use conflict;
- Define a suitable edge to the Ballina urban area;
- Protect the function of key public infrastructure and environmental assets; and
- Identify any areas that have potential for future urban land use.

The purpose of the Structure Plan is to establish a defined direction for the future of this land over the next 15 - 20 years. The findings of this Structure Plan will inform the LEP renewal and preparation of the Shire's Growth Management Strategy, as required by the Far North Coast Regional Strategy (DoP, 2006) (hereafter FNCRS).

1.2 The Study Area and its Context

The study area is part of the extensive Richmond River floodplain. The study area is 538 ha and irregular in shape. It is approximately 3.2 km in its widest east west dimension and approximately 2.8 km in its widest north south dimension. The study area's context is illustrated on Exhibit 1 – Site Location and Context.





LEGEND

GIS INFORMATION PROVIDED BY BALLINA SHIRE COUNCIL
AERIAL IMAGE PROVIDED BY BALLINA SHIRE COUNCIL: 2007

STUDY BOUNDARY

PROPOSED WESTERN ARTERIAL
SOURCE: SKM, 2006

king + campbell

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064
E: info@kingcampbell.com.au

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	JAN.2008	ISSUED FOR INFORMATION
E	MAR.2009	ISSUED FOR INFORMATION

Scale 1:30000 @ A3 Datum AHD

0 750

Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	KW / JC
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 1: SITE LOCATION AND CONTEXT

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 1 Drawing No. 14938P_BasePlan_SiteContext Rev E

Aerial overview of Study Area

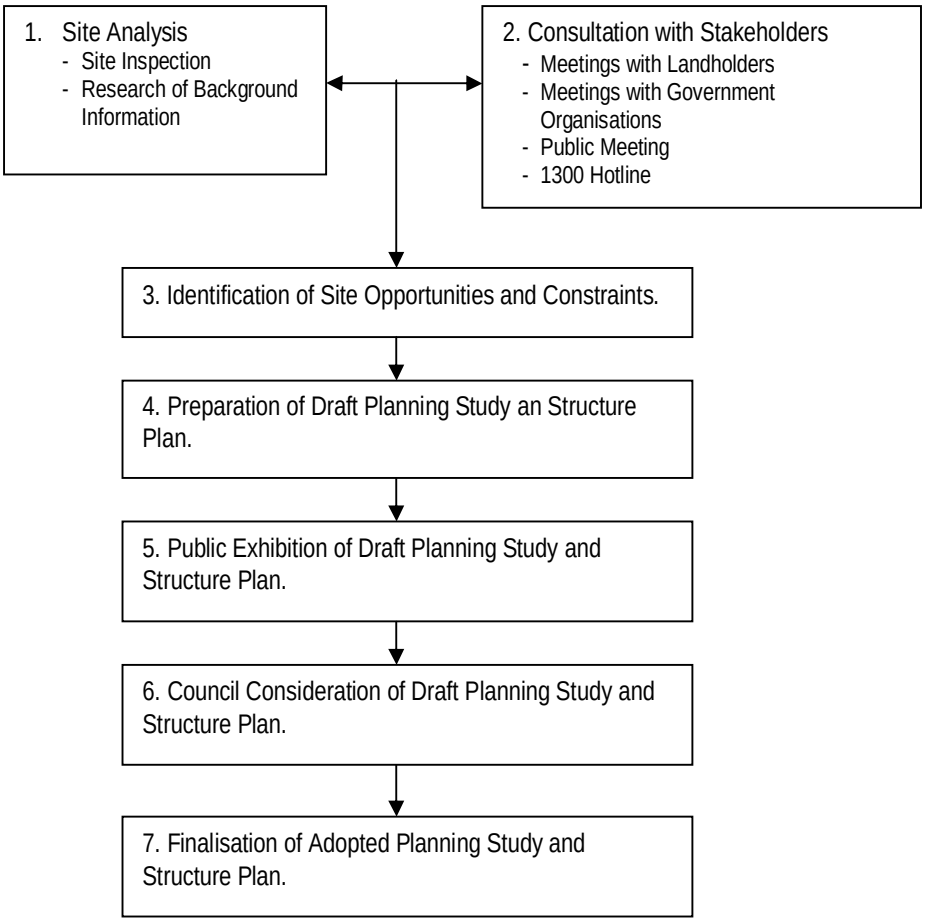
The study area is bounded by the proposed Pacific Highway Bypass to the west, the existing Pacific Highway and existing development associated with Horizon Drive to the south, the existing Pacific Highway to the north and North Creek Canal to the east.

The study area is situated to the immediate east of Ballina Island, the main area of the Ballina Township which is bounded by the Richmond River, North Creek and North Creek Canal. It is situated to the south of the Southern Cross Industrial Precinct and Ballina/Byron Gateway Airport and to the north of residential and commercial development. Existing agricultural areas border the study area to the west and north.

1.3 Broad Study Process

From the outset of the project a clear and comprehensive study process was adopted. Integral to this process was consultation with stakeholders, including one-on-one meetings with landholders and Government organisations in the initial phases of the project. The broad study process is illustrated below:

Table 1.3 Broad Study Process



Note: Detailed flood investigations and additional stakeholder engagement were undertaken at Step 4. The obtaining of additional flood information resulted in the project being put on hold by Council between March 2008 and February 2009.

1.4 Background Information

In the preparation of this Structure Plan the Consultant Team has relied on a large number of planning and specialist studies. These planning studies include:

- Planning studies relating to the future Pacific Highway Bypass and West Ballina Arterial;
- Various documents prepared by or on behalf of Ballina Shire Council relating to future residential, employment and open space planning;
- Statutory planning documents, including LEP and FNCRS;
- A Flood Impact Assessment for the West Ballina Master Plan undertaken (BMT WBM, 2009); and
- Various documents provided by individual landholders proposing a change of use of the land.

The list of the documents reviewed as part of this study is provided in the reference section of this document.

Whilst this background information provided valuable assistance in the development of this Structure Plan, a more detailed investigation of environmental and planning issues will be required prior to any rezoning and development of land in the study area.

1.5 Council and Consultant Team

Key Council Staff and the Consultant Team worked collaboratively in the preparation of this document.

Key Council Staff included:

- Mr Steven Barnier – Group Manager, Strategic Services
- Mr Matthew Wood – Strategic Planner

Key members of the Consultant Team were:

- Mr David Tooby – Registered Landscape Architect
- Mr Tony Thorne – Town Planner / Registered Surveyor
- Mrs Meg Teasdell – Environmental Engineer

- Mrs Kylie Moore – Town Planner

Peter Parker Environmental Consultants and BMT WBM also provided specialist advice with respect to ecology and flooding respectively.

Section 2
Project Analysis

2.1 Analysis of Physical Conditions

This report section should be read in conjunction with the following site analysis mapping:

- Exhibit 1 – Site Location and Context;
- Exhibit 2 – Land Tenure;
- Exhibit 3 – Drainage and Geotechnical;
- Exhibit 4 – Existing Landuses;
- Exhibit 5 – Ecological Characteristics, Roads and Infrastructure; and
- Exhibit 6 – Current Planning Legislation.

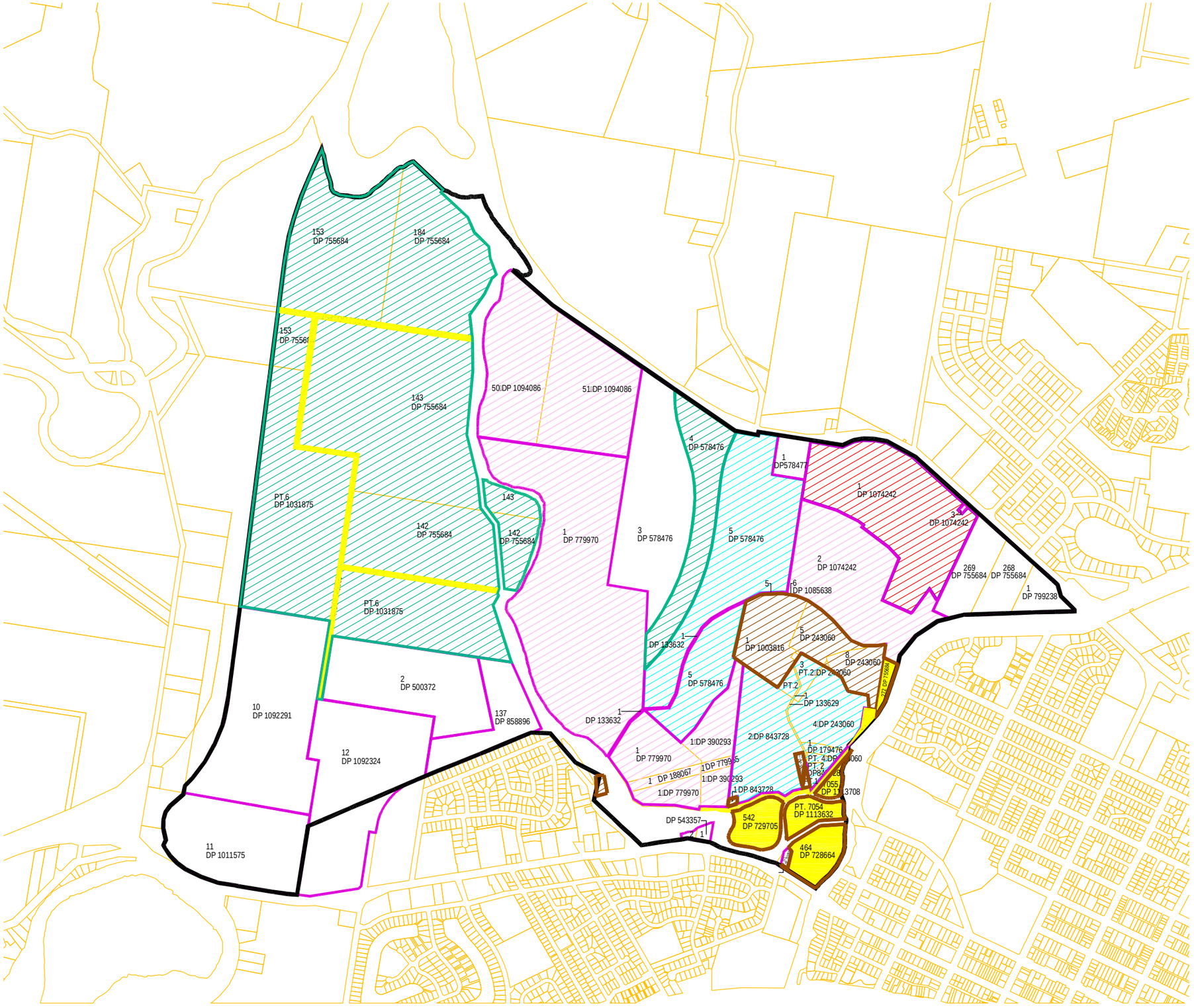
2.1.1 Climate

Ballina has a subtropical climate with average summer high temperatures of around 31° C from December to February and average winter lows of around 21° C from June to July.

Wind direction at Ballina/Byron Gateway Airport weather station (to the north of the study area) is generally from the south and west during autumn and winter. During spring the prevailing winds are more variable, but generally from the north and northeast. Wind direction in summer is highly variable. Generally, morning breezes are from the south and west, while in the afternoon the wind direction varies between the north east and the south.

Climate statistics from the Ballina/Byron Gateway Airport weather station recorded between 1992 and 2007 include the following:

- Annual mean maximum temperature 24.4°C
- Highest temperature 42.0 °C
- Annual mean minimum temperature 14.2°C
- Lowest temperature -2.0°C
- Mean annual rainfall 1696.8 mm
- Mean days of rain 152.9 pa



LEGEND

GIS INFORMATION PROVIDED BY BALLINA SHIRE COUNCIL
AERIAL IMAGE PROVIDED BY BALLINA SHIRE COUNCIL: 2007

STUDY BOUNDARY

CADASTRE PROPERTY BOUNDARIES

LARGE LANDHOLDERS

NSW ROADS AND TRAFFIC AUTHORITY

BALLINA SHIRE COUNCIL

TEKCADL

COOK / RIVER OAKS PROPERTY

RAYSHIELD

CROWN LAND

CROWN ROADS

king + campbell

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064
E: info@kingcampbell.com.au

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	JAN.2008	ISSUED FOR INFORMATION
E	MAR.2009	ISSUED FOR INFORMATION
F	SEPT.2009	ISSUED FOR INFORMATION

Scale 1:16000 @ A3 Datum AHD

0 400

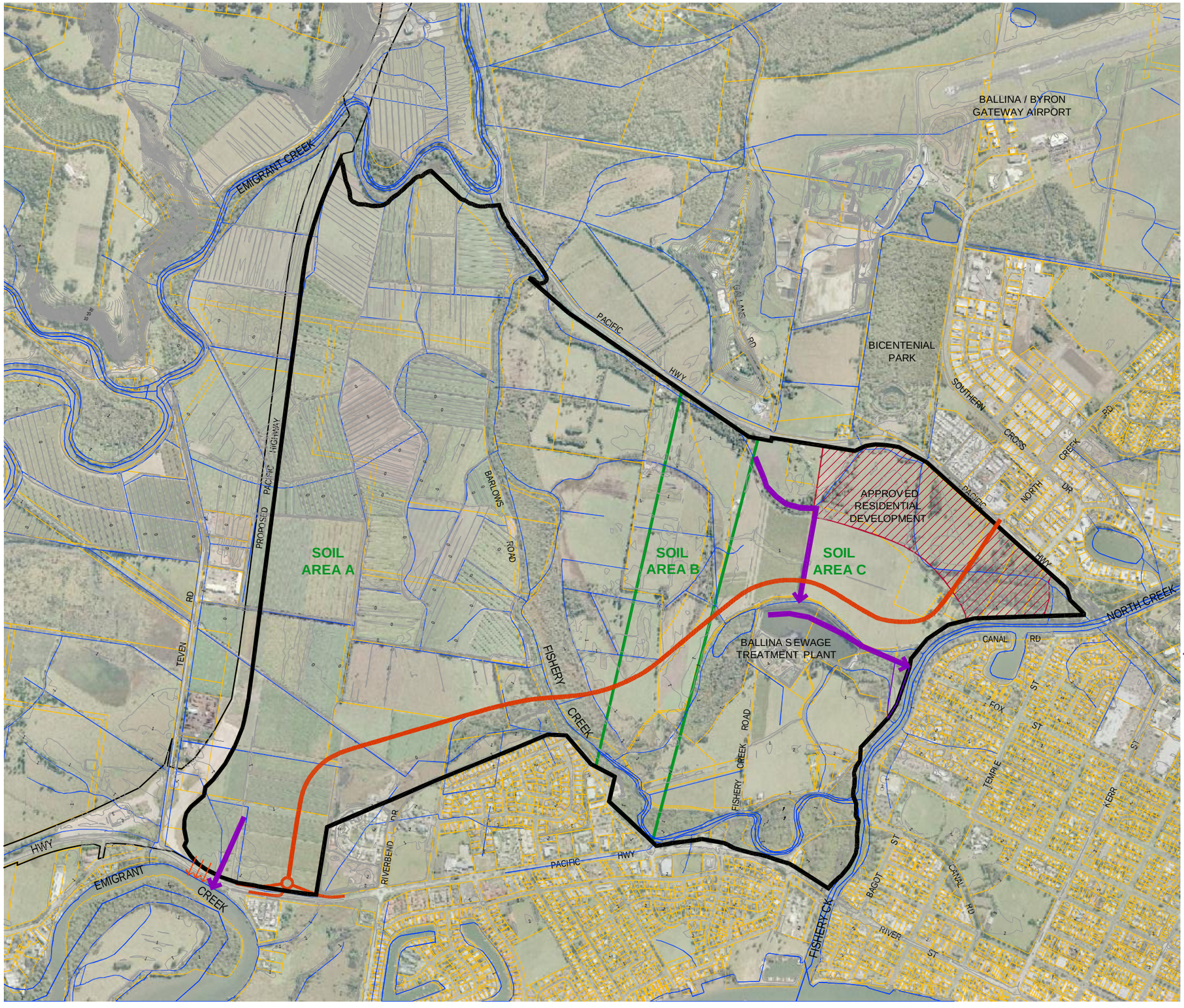
Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	KW / JC
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 2: LAND TENURE

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 2 Drawing No. 14938P_BasePlan_LandTenure Rev F



LEGEND

GIS INFORMATION PROVIDED BY BALLINA SHIRE COUNCIL
AERIAL IMAGE PROVIDED BY BALLINA SHIRE COUNCIL: 2007

- STUDY BOUNDARY
- CADASTRE PROPERTY BOUNDARIES
- CONTOURS AT 1 METRE INTERVALS
- DRAINAGE PATTERN
- PROPOSED FLOODWAYS
  SOURCE: BMT WBM, 200 9
- PROPOSED CULVERTS
  SOURCE: BMT WBM, 2007
- PROPOSED WESTERN ARTERIAL
  SOURCE: SKM, 2006
- GEOTECHNICAL SOIL BOUNDARIES
  AREA A - DEEP COMPRESSIBLE SOIL PROFILE
  AREA B - INTERBEDDED SAND & COMPRESSIBLE SOILS
  AREA C - DEEP SAND PROFILE
  SOURCE: RCA CONSULTANTS, 2004
- PROPOSED RESIDENTIAL DEVELOPMENT
  SOURCE: BMT WBM, 2007

king + campbell

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064
Info@kingcampbell.com.au
E:

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	JAN.2008	ISSUED FOR INFORMATION
E	MAR.2009	ISSUED FOR INFORMATION

Scale 1:16000 @ A3 Datum AHD

0 400

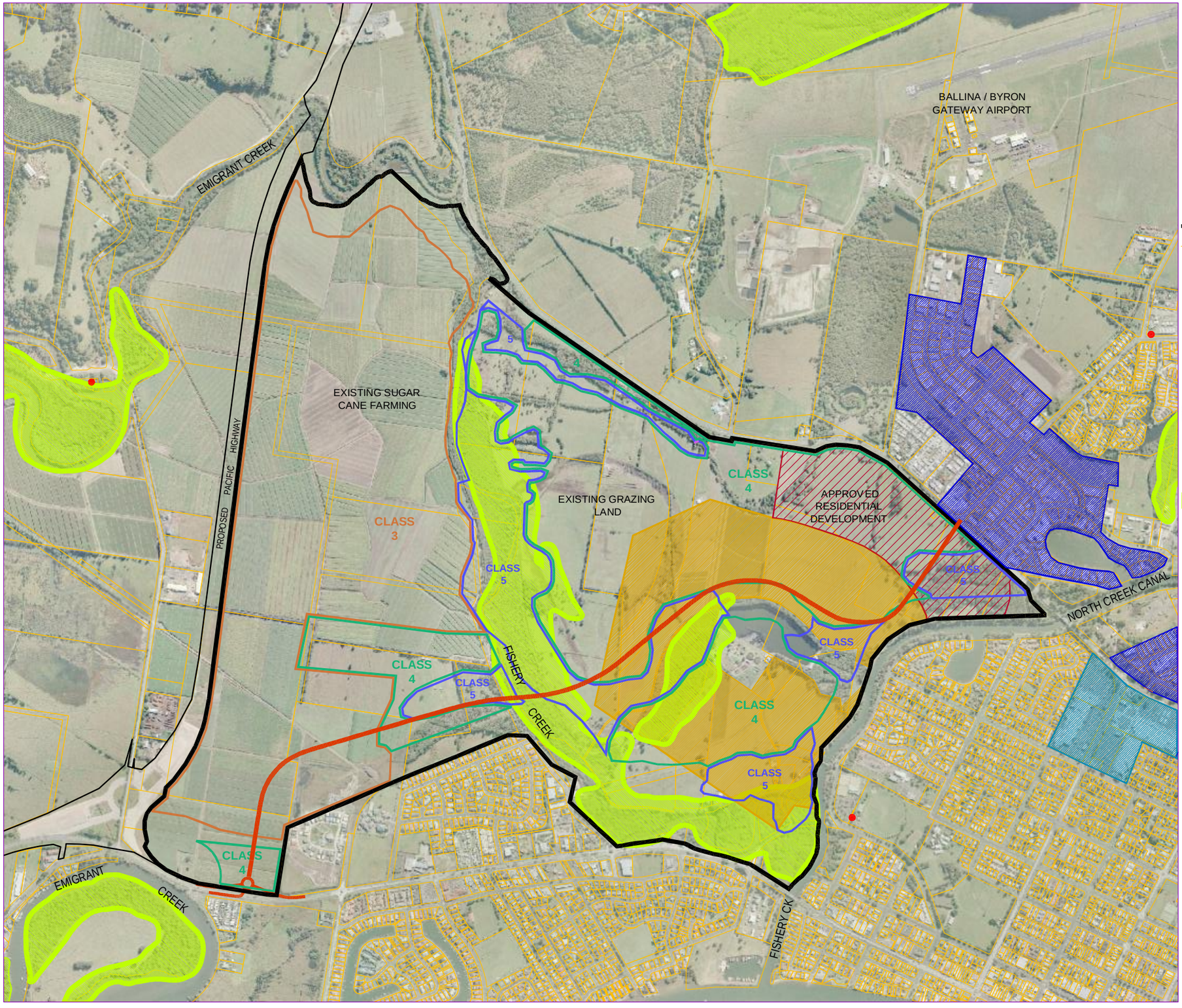
Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	KW
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 3: DRAINAGE AND GEOTECHNICAL

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 3 Drawing No. 14938P_BasePlan_DrainGeo Rev E



LEGEND

GIS INFORMATION PROVIDED BY BALLINA SHIRE COUNCIL
AERIAL IMAGE PROVIDED BY BALLINA SHIRE COUNCIL: 2007

- STUDY BOUNDARY
- CADASTRE PROPERTY BOUNDARIES
- DIP SITES
- PROPOSED WESTERN ARTERIAL
  SOURCE: SKM, 2006
- CURRENT 400m BUFFER TO SEWER TREATMENT PLANT
- PROPOSED RESIDENTIAL DEVELOPMENT
  SOURCE: BMT WBM, 2007
- EXISTING LARGE FORMAT RETAIL
- EXISTING INDUSTRIAL AND BULKY GOODS RETAIL
- SEPP 14 WETLANDS (BSC, GIS)
- AGRICULTURAL LAND CLASSIFICATION

CLASS 3
GRAZING LAND OR LAND WELL SUITED TO PASTURE IMPROVEMENT. IT MAY BE CULTIVATED OR CROPPED IN ROTATION WITH SOWN PASTURE. THE OVERALL PRODUCTION LEVEL IS MODERATE BECAUSE OF EDAPHIC OR ENVIRONMENTAL CONSTRAINTS. EROSION HAZARD, SOIL STRUCTURAL BREAKDOWN OR OTHER FACTORS, INCLUDING CLIMATE, MAY LIMIT THE CAPACITY FOR CULTIVATION AND SOIL CONSERVATION OR DRAINAGE WORKS MAY BE REQUIRED.

CLASS 4
LAND SUITABLE FOR GRAZING BUT NOT FOR CULTIVATION. AGRICULTURE IS BASED ON NATIVE PASTURES OR IMPROVED PASTURES ESTABLISHED USING MINIMUM TILLAGE TECHNIQUES. PRODUCTION MAY BE SEASONALLY HIGH BUT THE OVERALL PRODUCTION LEVEL IS LOW AS A RESULT OF MAJOR ENVIRONMENTAL CONSTRAINTS.

CLASS 5
LAND UNSUITABLE FOR AGRICULTURE, OR AT BEST SUITED ONLY TO LIGHT GRAZING. AGRICULTURAL PRODUCTION IS VERY LOW OR ZERO AS A RESULT OF SEVERE CONSTRAINTS, INCLUDING ECONOMIC FACTORS WHICH PREVENT LAND IMPROVEMENT.

king + campbell

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064
E: info@kingcampbell.com.au

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	JAN.2008	ISSUED FOR INFORMATION
E	MAR.2009	ISSUED FOR INFORMATION

Scale 1:16000 @ A3 Datum AHD

0 400

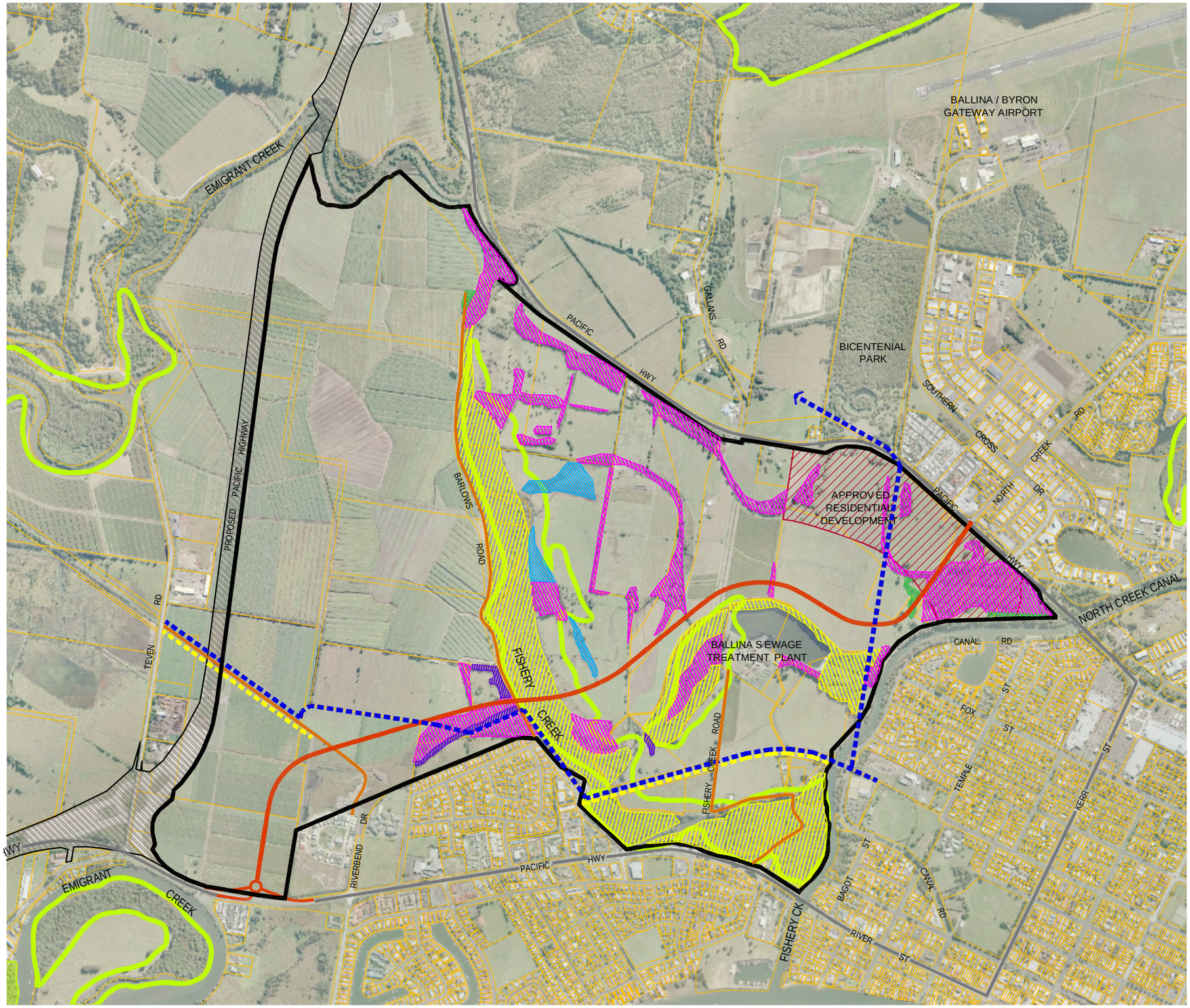
Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	KW
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 4: EXISTING LANDUSES

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 4 Drawing No. 14938P_BasePlan_LandEcol Rev E



LEGEND

GIS INFORMATION PROVIDED BY BALLINA SHIRE COUNCIL
AERIAL IMAGE PROVIDED BY BALLINA SHIRE COUNCIL: 2007

- STUDY BOUNDARY
- CADASTRE PROPERTY BOUNDARIES
- PROPOSED WESTERN ARTERIAL
  SOURCE: SKM, 2006
- MINOR ROAD ACCESS
- CURRENT PACIFIC HIGHWAY
- PROPOSED PACIFIC HIGHWAY ZONE
- OLD BALLINA TO BOOYONG RAILWAY
- ELECTRICITY NETWORK OVERHEAD TRANSMISSION LINE
- PROPOSED RESIDENTIAL DEVELOPMENT
  SOURCE: BMT WBM, 2007
- SEPP 14 WETLANDS (BSC, GIS)

ENDANGERED ECOLOGICAL COMMUNITIES

SOURCE: PETER PARKER ENVIRONMENTAL CONSULTANTS PTY LTD 2008

- LITTORAL RAINFOREST
- SWAMP OAK FLOODPLAIN FOREST
- RIVER-FLAT EUCALYPT FOREST
- COASTAL SALTMARSH

VEGETATION PROTECTED UNDER THE FISHERIES MANAGEMENT ACT 1994

SOURCE: PETER PARKER ENVIRONMENTAL CONSULTANTS PTY LTD 2008

- MANGROVES

NOTE: ABORIGINAL ARTIFACT LOCATED WITHIN STUDY AREA

king + campbell

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064

E: info@kingcampbell.com.au

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	JAN.2008	ISSUED FOR INFORMATION
E	MAR.2009	ISSUED FOR INFORMATION
F	SEPT.2009	ISSUED FOR INFORMATION

Scale 1:16000 @ A3 Datum AHD

0 400

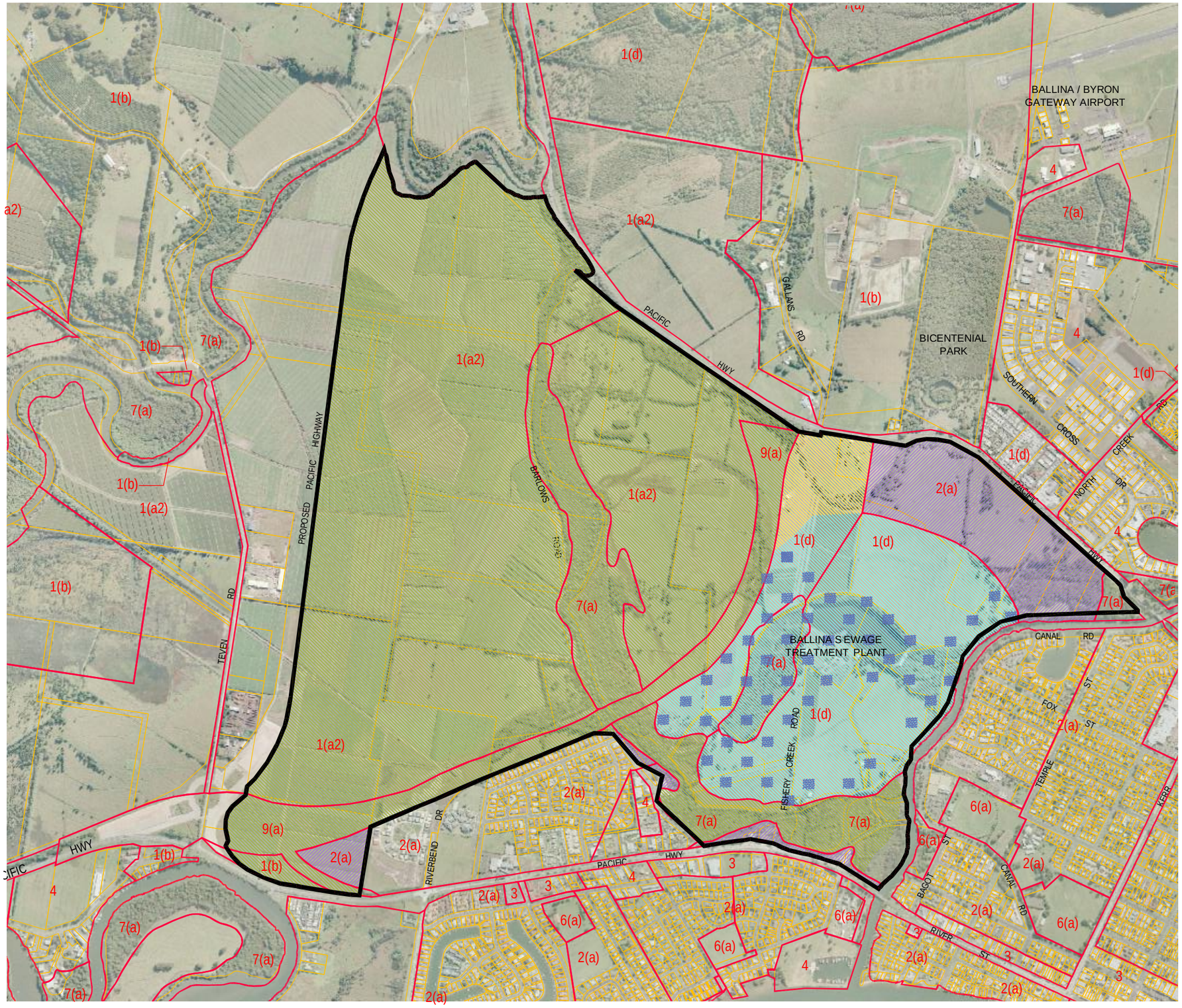
Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	KW
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 5: ECOLOGICAL CHARACTERISTICS, ROADS AND INFRASTRUCTURE

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 5 Drawing No. 14938P_BasePlan_RoadsInfra Rev G



LEGEND

GIS INFORMATION PROVIDED BY BALLINA SHIRE COUNCIL
AERIAL IMAGE PROVIDED BY BALLINA SHIRE COUNCIL: 2007

- STUDY BOUNDARY
- CADASTRE PROPERTY BOUNDARIES
- ZONE BOUNDARIES

CURRENT ZONE 1(a2)
RURAL COASTAL LANDS AGRICULTURE

CURRENT ZONE 1(d)
RURAL INVESTIGATION AREA

CURRENT ZONE 2(a)
RESIDENTIAL LIVING AREA

CURRENT ZONE 7(a)
ENVIRONMENTAL PROTECTION - WETLANDS

CURRENT ZONE 9(a)
ROAD - MAIN ROAD PROPOSED

LEGEND

- EXISTING URBAN FOOTPRINT
- POTENTIAL FUTURE URBAN RELEASE AREAS (FAR NORTH COAST REGIONAL STRATEGY 2006)
- POTENTIAL EMPLOYMENT LANDS (FAR NORTH COAST REGIONAL STRATEGY 2006)
- INDICATIVE AREAS OF HIGH LEVEL CONSTRAINTS WITHIN PROPOSED FUTURE AND POTENTIAL EMPLOYMENT LANDS (FAR NORTH COAST REGIONAL STRATEGY 2006)
- ENVIRONMENTAL ASSETS AND RURAL LAND NATIONAL PARKS AND STATE FORESTS (FAR NORTH COAST REGIONAL STRATEGY 2006)

king + campbell

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064
E: info@kingcampbell.com.au

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	JAN.2008	ISSUED FOR INFORMATION
E	MAR.2009	ISSUED FOR INFORMATION

Scale 1:16000 @ A3 Datum AHD

0 400

Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	KW / JC
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 6: CURRENT PLANNING LEGISLATION

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 6 Drawing No. 14938P_BasePlan_PlanLegislat Rev E

2.1.2 Topography and Drainage Patterns

The study area is broad and flat, the majority of the land being below 2m AHD. One very small portion of the site associated with the Ballina Sewage Treatment Plant (STP) (less than 1 ha) has been filled so as to be elevated out of the flood. This land is 4 - 5m AHD (Ballina Council GIS mapping).

Fishery Creek runs through the middle of the study area in a broadly north south direction, discharging into North Creek Canal in the south eastern corner of the study area and thence into the Richmond River. A large portion of the site is drained via Fishery Creek, however smaller portions of the site also drain directly into North Creek Canal to the east and Emigrant Creek to the north and south west. Intricate networks of man-made agricultural drains, which are characteristically straight in alignment, and floodgates, assist the drainage process. Anecdotal information provided by landholders indicates that in some areas of the study area, where agricultural drains have not been adequately maintained, prolonged ponding of stormwater occurs.

2.1.3 Land Uses

Existing landuses within the study area include:

Existing sugar cane farming

- Approximately 225 ha of sugar cane farming, located in the western sector of the study area;
- Approximately 200 ha of low intensity grazing land, predominantly cattle and horses. A small portion of this land is currently utilised for tea-tree plantation;
- Approximately 10 ha of the study area is used for the purposes of the Ballina STP. The majority of the STP site comprises settling ponds and natural areas associated with the outlet to North Creek Canal; and
- The remainder of the site is undeveloped (approximately 100 ha), being vegetated lands associated predominantly with Fishery Creek.

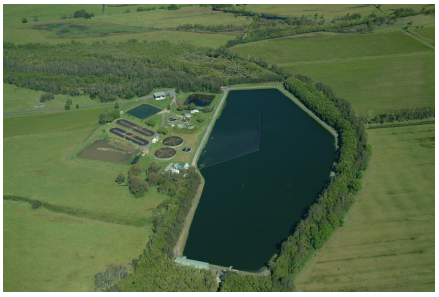
Earth works pre-loading associated with future Tevan Rd interchange

It is relevant to note that Fishery Creek effectively divides the site into two sectors, the western sector characterised by sugar cane farming and the eastern sector of the site characterised by low intensity grazing lands and the Ballina STP.

Existing landuses and their associated characteristics and values are further discussed in Section 2.1.6 Ecology, Section 2.1.7 Agricultural Land Capability and Section 2.1.10 Infrastructure Other than Roads.

Future committed and likely land use changes in the study area include:

- The River Oaks development – this residential development comprising 380 lots was granted Development Consent in 2002 (DA 2002/566). Rayshield Properties, one of the property owners associated with this Consent has lodged a Part 3A application seeking various amendments to the original Development Plan. Rayshield Properties commenced construction on their site in January 2008;
- Proposed Pacific Highway Bypass – construction on the Ballina interchange and works in the Cumbalum locality have commenced. Construction is anticipated to take approximately 4 - 5 years;
- The West Ballina Arterial – a preferred route for this road proposal has been determined by Council. Council's intent is that construction of this road will not commence until the Pacific Highway Bypass is fully constructed;
- Ballina Shire Council is currently investigating upgraded STP infrastructure in the study area. It is considering a range of upgrading options. However, based on the information available in preparing the structure plan (see 4.4 for further detail) it is likely that no additional land will be required for expansion of the facility.



Existing Ballina Sewage Treatment Plant

These committed and likely landuse changes are discussed in greater detail in Section 2.1.5 Road Hierarchy and Access and Section 2.1.10 Infrastructure Other than Roads.

There are also a number of proposed landuse changes by private landholders within the study area. These include:

- A Development Application was lodged in 2007 by The Condon Group Pty Ltd for a proposed service centre development on a 17 ha land parcel in the south western corner of the study area, which has been identified as a "Gateway" site to Ballina. This application is yet to be determined;
- A proposal by WATPAC on land in the ownership of Tekcadl Investments Pty Ltd, in the eastern sector of the study area, to redevelop a 32 ha property within the study area for the purposes of a business park. A submission had been made to Council by WATPAC, requesting that Council consider rezoning the land to support mixed industrial uses. This proposal has, however, now been withdrawn;
- A proposal by the owners of Riverbend Village, a 18 ha property in the south western corner of the site, to extend the existing Riverbend Village to the west and up to the proposed route of the West Ballina Arterial.

'Gateway Site' to Ballina

2.1.4 Flooding

As previously described, the study area is part of the extensive Richmond River floodplain.

The study area is subject to periodic flooding. This presents a significant constraint to most forms of development within the study area. The study area has been the subject of a number of flooding studies. The environmental investigations associated with the Pacific Highway Bypass and West Ballina Arterial Road projects have both included flood analysis studies.

It was clear through the review of existing flood analysis studies, including the Draft Ballina Flood Study Update (BMT WBM 2007), which was still being prepared at the time of the initial project assessment phase (up to February 2008), and through discussion with various stakeholders (in December 2007), that flooding presented a potentially significant constraint to landuse change in the study area. It was for this reason that Council determined to put the study process on hold to enable the preparation of a site specific flood impact assessment for the locality.

The Flood Impact Assessment (FIA) for the West Ballina Master Plan was completed by BMT WBM in February 2009. A copy of the FIA is included in this report as Appendix A. The purpose of this assessment was to assess the likely impacts that the development envelope indicated on the preliminary Draft Structure Plan prepared (unpublished) as part of the West Ballina Planning Strategy (King & Campbell, February 2008) would have on local flood behaviour. The FIA also considered opportunities for mitigation of impacts.

The flood modelling undertaken for the West Ballina area was undertaken in parallel with investigations relating to the Southern Cross Precinct Master Planning locality. Three (3) mitigation measures have been investigated by BMT WBM specifically in relation to the West Ballina area and are summarised in the FIA as follows:

- *Sewer Treatment Plant Floodway: Upgrade of the sewer treatment plant and subsequent decommissioning of the associated pond result in an opportunity to use the pond as a flood reserve. This preliminary investigation has shown the benefits of using this area for flood conveyance. Further investigaton should be carried out to devise a scheme that fits within environmental and site constraints;*

Subsequent advice from Ballina Council in relation to the Ballina STP upgrade has revealed that the settlement ponds will likely not be decommissioned as part of the upgrading works (refer to Section 4.4). Further consultation with Council's technical officers was then undertaken to determine an appropriate alternative path for the floodway that was to go through the decommissioned ponds. It is generally considered that this floodway can be accommodated over land north of the ponds, along the southern side of the identified western arterial road alignment. This approach is consistent with Council's long standing identification of an east-west floodway running to the North Creek between Riveroaks and the STP.

- *STP and North Creek Canal Floodways: Connecting the STP floodway to the floodway currently being constructed as part of the Riveroaks development will improve the overall connectivity of the floodplain. The results of this scenario show an overall improvement to the STP floodway scheme:*
- *Gallans Road Cycleway: This option has been investigated during various prior studies, including the Ballina Flood Study Update. The option presented here is intended to raise an awareness of the actual impacts of the cycleway embankment. Feasibility of works to the cycleway is the main consideration, and further investigation is required to decipher what, if any, works can be undertaken to improve transverse drainage. All schemes investigated to date indicate a reduction in peak flood levels to the west of the cycleway. Such schemes include replacement of parts of the embankment with boardwalks, provision of transverse drainage structures and the lowering of the embankment.*

The mitigation scenarios in the West Ballina study area, including the Sewer Treatment Plant Floodway and the STP and North Creek Canal Floodway, are illustrated on Exhibit 3 - Drainage and Geotechnical.

The FIA concluded that:

"The mitigation scenarios investigated as part of this study and the Southern Cross Precinct Master Plan study, generally indicate a benefit towards the reduction of peak flood level impacts associated with the developments. The results of the assessment have shown that there is no single measure that will mitigate the impacts of each development. Due to the expanse of the development areas, and their location within the floodplain, an holistic catchment approach is required for flood mitigation."

The FIA further recommended that:

"It is recommended that these measures, including those presented in the Southern Cross Precinct Master Plan and Integrated Flood modelling studies, are all investigated further in the context of a broader catchment management approach.

It is important to note that the developers of the West Ballina area have a responsibility to contribute to the broader floodplain mitigation strategy. This is due to:

- *Development of the West Ballina area has been shown to have a significant adverse impact upon flooding; and*
- *On-site mitigation, by itself, is insufficient to mitigate the impacts of the development.*

Mitigation measures that are considered to be 'off-site' have been shown to have benefits for this development as well as others. Thus, implementation of these off-site measures are a necessary part of the West Ballina development."

A Development Application has been lodged for a proposed service centre on Lot 11 DP 1011575, Pacific Highway, West Ballina. This land is located on the "Gateway" site on the corner of the Pacific Highway and the proposed Pacific Highway Bypass in the south western corner of the study area.

With respect to flood planning in relation to this site flood mitigation measures should be applied consistent with the measures identified in the Ballina Flood Study Update (BMT WBM, 2007). BMT WBM have indicated that these measures should include a floodway connection between the south western corner of the study area and Emigrant Creek across the existing Pacific Highway. BMT WBM have calculated that a bank of ten (10) x 3.6m wide, 1.2m high box culverts will be required to carry floodwaters under the Pacific Highway with an invert level equal to 0.0m AHD.

2.1.5 Road Hierarchy and Access

As previously described, the study area is bounded by and contains a number of significant existing and future arterial roads. At present it has a limited number of existing internal roads, owing to its largely undeveloped state.

These roads are as follows:

- Existing Pacific Highway – the existing Pacific Highway has approximately 6 km frontage to the study area, partially bordering the study area along its southern boundary and fully bordering the study area along its northern boundary. The Pacific Highway provides two minor road access connections into the southern side of the study area, they being Barlows Road and Fishery Creek Road. Other access points into the site comprise driveways to rural dwellings and are limited to the northern side of the study area.
- The RTA has indicated that the road, at its busiest point near the southern bridge crossing onto Ballina Island carries approximately 28,000 vehicles per day (per comms. with RTA 6 December 2007), of which approximately 15% are trucks. The RTA also indicated that the biggest long term impact of the Pacific Highway Bypass will be the reduction in the number of trucks on the existing Pacific Highway. In this regard, overall vehicle numbers on this section of road are not expected to reduce markedly;
- The proposed Pacific Highway Bypass - the proposed Pacific Highway Bypass is approximately 14 km in length. It is a continuous dual carriageway incorporating a limited number (four) of grade separated interchanges. The western boundary of the study area is defined by a 2.8 km section of Pacific Highway Bypass alignment.
- The Teven Road/Pacific Highway interchange is located in the south western corner of the study area. The dual carriageway fly over at this point will be elevated approximately 9 - 10m above existing grades (per comms. with RTA 6 December 2007). The RTA has also indicated that the road at this point is projected to carry approximately 8,000 vehicles per day. This interchange has been identified in a number of studies as a future "Gateway" to Ballina. Current configurations for the interchange provide access to the Ballina "Gateway" site for both north and southbound motorists on the Pacific Highway.

  Construction on the Ballina Bypass has commenced (Teven Road interchange and Cumbalum) and it is anticipated that it will take approximately 4-5 years to complete.

- The proposed West Ballina Arterial Road - the proposed West Ballina Arterial is an approximately 3.5 km long road section which will provide motorists with an alternative east west connection through the study area between the southern and northern arms of the existing Pacific Highway. The road will provide a link between North Creek Road, at the Southern Cross Precinct to the south western outskirts of the Ballina Township, in close proximity to the future Teven Road/Pacific Highway interchange. A possible (long term) future bridge over North Creek at North Creek Road would provide a further link to Skennars Head and Lennox Head. The planning of the arterial road to date has culminated in Council selecting a preferred route option. This is illustrated on the site analysis plans.
- Council have indicated that it is preferable to have minimal road intersections with the West Ballina Arterial between its end connections to the Pacific Highway, so as to maximise the road's efficiency (per comms. with Council 12 November 2007). At present the road has one committed internal road intersection, that being a roundabout providing access to the River Oaks development, located approximately 300m south of the road's intersection with the existing Pacific Highway.
- The West Ballina Arterial will require a bridge crossing of Fishery Creek in the southern sector of the study area. The width of Fishery Creek and the associated vegetation community at this point is approximately 200 m.
- Council have indicated that the construction of the West Ballina Arterial will not be commenced until after the completion of the Pacific Highway Bypass. Regardless of the completion of the highway upgrade, Council's S94 Contributions planning indicates that consideration of the arterial is likely to be post 2020;
- Other Road Access – the study area contains minimal existing internal road access owing to its current predominantly rural land use. Barlows Road and Fishery Creek Road are the only named roads within the study area, both connecting directly to the Pacific Highway. Fishery Creek Road which provides access to rural dwellings and the Ballina STP is a narrow and awkwardly aligned road that crosses significant environmental lands associated with Fishery Creek.

2.1.6 Ecology

Section 2.1.6 has been written by Peter Parker Environmental Consultants.

2.1.6.1 Introduction

Existing SEPP 14 Wetlands and bird rookery adjacent to the Ballina STP

Extensive ecologically sensitive lands associated with Fishery Creek

An ecological assessment of the study area was undertaken by Peter Parker Environmental Consultants Pty Ltd on 19 February 2008. The ecological assessment was primarily based on a vegetation survey and an assessment of threatened species habitat.

Vegetation was viewed from a number of strategic vantage points and vegetation transects were undertaken to confirm vegetation association boundaries.

Vegetation was mapped over a coloured aerial photo supplied by Ballina Shire Council (See Exhibit 5 – Ecological Characteristics, Roads and Infrastructure). The mapping criteria selected are in accordance with the Final Determinations of Endangered Ecological Communities provided by the NSW Scientific Committee (NSWSC) for flood plain communities.

The NSWSC has listed as Endangered Ecological Community all of the ecological communities which collectively cover native vegetation on the coastal floodplains. These include:

- Lowland Rainforest on Floodplain in the NSW North Coast bioregion;
- Subtropical Floodplain Forest of the NSW North Coast bioregion;
- River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast;
- Sydney Basin and South East Corner bioregions (including the formerly listed Sydney Coastal River-Flat Forest in the Sydney Basin bioregion);
- Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast;
- Sydney Basin and South East Corner bioregions (including the formerly listed Sydney Coastal Estuary Swamp Forest in the Sydney Basin bioregion); and
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions.

This report has adopted the descriptors provided by the NSWSC in its final determinations over the more traditional ecological approach of classifying vegetation such as that described by Walker and Hopkins (Walker and Hopkins, 1990). This approach provides greater clarity in the planning process and is more suitable for use in this study and Structure Plan.

A Department of Environment and Climate Change (DECC) data review of threatened fauna was undertaken for the Ballina 1:100000 map sheet, which covers the subject land, on 3 March 2008 (under licence to Peter Parker Environmental Consultants Pty Ltd). Relevant fauna records proximal to the site have been extracted from this review and are reproduced in Table 1.

This report does not address any specific development scenario. Instead, it highlights constraints which have been incorporated into the Structure Plan. These will ultimately need to be addressed within a statutory framework (eg pursuant to section 5A of the Environmental Planning & Assessment Act 1979 (EP&A Act)) or under Part 3A of the EP&A Act should the land be rezoned and a development application prepared.

Threatened vertebrate species known from the locality and typical habitat requirements.

Table 2.1.6.1 – Threatened Species

Birds	Scientific name	Typical habitat and status
Black bittern	Ixobrychus flavicollis	Riparian vegetation, Vulnerable
Black-necked stork	Xenorhynchus asiaticus	Floodplain grasslands, Endangered
Bush hen	Amaurornis olivaceus	Riparian vegetation and grasslands, Vulnerable
Glossy black-cockatoo	Calyptorhynchus lathami	Forest and woodlands, Forages on the fruit of she-oaks, Vulnerable
Rose-crowned fruit-dove	Ptilinopus regina	Rainforest and eucalypt forest ecotones, Vulnerable
Wompoo fruit-dove	Ptilinopus magnificus	Rainforest and eucalypt forest ecotones
White-eared monarch	Monarcha leucotis	Rainforest and eucalypt margins, Vulnerable
Osprey	Pandion haliatus	Littoral and coastal habitats and terrestrial wetlands. Vulnerable
Grass Owl	Tyto Capensis	Areas of tall grass. Vulnerable.
Brolga	Grus rubicunda	Dry grassland and wetlands. Vulnerable.
Square-tailed kite	Lophoictinia isura	Wide ranging forest and woodlands, Vulnerable
Mammals		
Black flying-fox	Pteropus alecto	Rainforest, swamp forest and banksia woodlands, Vulnerable
Grey-headed flying-fox	Pteropus poliocephalus	Rainforest, swamp forest and banksia woodlands, Vulnerable
Common blossom bat	Syconycteris australis	Roosts in rainforests and forages in coast banksia woodlands, Vulnerable
Greater broad-nosed bat	Scoteanax rueppellii	Riparian vegetation, woodlands and rainforest, Vulnerable
Common bent-wing bat	Miniopterus schreibersii	Riparian vegetation, woodlands and rainforest, vulnerable
Little bent-wing bat	Miniopterus australis	Riparian vegetation, heathlands, woodlands and rainforest, Vulnerable

2.1.6.2 Endangered Ecological Communities (EECs)

The West Ballina floodplain supports a number of EECs. These are as follows:

- Littoral Rainforest in the NSW North Coast, Sydney Basin and South East Corner Bioregions;
- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions;
- River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions; and
- Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions.

Mangrove community at Fishery Creek

These are patchily distributed but are predominantly associated with the drainage systems linking into Fishery Creek (See Exhibit 5 – Ecological Characteristics, Roads and Infrastructure).

A mangrove community, which generally follows the route of Fishery Creek, is the largest intact stand of vegetation on the coastal floodplain within the study area (See Exhibit 5 – Ecological Characteristics, Roads and Infrastructure). This community merges with the Swamp Oak Floodplain EEC and is a significant component of the local fishery habitat. Mangroves and associated marine life forms such as seagrass are protected under the Fisheries Management Act 1994.

Cane farm within study area, a site of little conservation significance

The DECC provides guidelines for development and assessment (DECC, 2004) which need to be addressed in a statutory context pursuant to section 5A at the development application stage. However, with respect to land zoning, it is prudent to identify issues raised in the guidelines at the rezoning phase of a project.

The guidelines identify how threatened biodiversity assessment is an integral component of the conservation planning in NSW. The identification and preservation of EECs and suitable buffering is an important component of the West Ballina Planning Study and Structure Plan (See Exhibit 5 – Ecological Characteristics, Roads and Infrastructure). Clearly, substantial opportunities exist for enhancing the fragmented nature of floodplain EECs within the study area. For example, the Swamp Oak Floodplain Forest generally occurs as thin remnants of vegetation along the creek lines. These remnants have a substantial edge to area ratio and consequently experience a significant edge effect. Compensatory and enrichment plantings can contribute to significant gains in local biodiversity.

Straw-necked ibis in bird rookery

The majority of the study area contains land dominated by sugar cane and pasture grasses, including pastures dominated by aggressive weed species such as Parramatta grass, *Sporobolus indicus* var*. capensi.* These areas are of limited conservation value and their development for an urban purpose is unlikely to have significant ecological impacts.

2.1.6.3 Fauna

A number of threatened species are listed in Table 1 which are periodically likely to occur in the study area. The majority of these species (eg the black bittern, bush hen, white-eared monarch and fruit doves and all of the bat species) have potential habitat within the EECs, the littoral rainforest or the mangrove forest. Other species (eg the black-necked stork and square-tailed kite) are wide ranging and may pass through the study area opportunistically.

Cattle egret in bird rookery

A bird rookery was located adjacent to the STP (See Exhibit 5 – Ecological Characteristics, Roads and Infrastructure). This rookery contained nests sites containing the white ibis, *Threskiornis molucca,* the straw-necked ibis, *Threskiornis spinicollis,* the cattle egret, *Egretta ibis* and the little egret, *Egretta garzetta*. The royal spoonbill, *Platalea regia,* was also recorded but not as a nesting species.

The protection of mangroves along Fishery Creek and associated habitats is an important component of the Structure Plan. These habitats are currently threatened by cattle grazing, nutrification and bank erosion.

2.1.6.4 Key Threatening Processes

Little egret in bird rookery

A key threatening process is defined as a process that threatens or may have the capability to threaten the survival or evolutionary development of a species, populations or ecological communities.

The DECC draft guidelines note that while a particular proposal may not be recognised as a threat (eg residential development), its impacts may exacerbate threats to biodiversity through for example, vegetation clearing. Thus, the potential impacts of landuse change at West Ballina need to be considered and factored into the Structure Plan so that suitable amelioration and mitigation measures can be taken. Potential impacts include altered hydrology and flood levels in EECs, pollution of EECs and Fishery Creek and impacts on the marine food web through increased runoff and nutrification. Currently, there are few conservation initiatives practiced within the study area. Threatening processes such as cattle grazing, vegetation clearing, nutrification through cane farming and grazing and drainage activities remain relatively unchecked.

2.1.7 Agricultural Land Capability

The study area is part of the extensive Richmond River floodplain. Soil landscape mapping for the area identifies all of the land west of Fishery Creek (Emigrant Creek catchment) as Empire Vale soil landscape and land to the east of Fishery Creek (North Creek catchment) as Tyagarah soil landscape (Soil Landscape Maps, 1994, DT Morand). Empire Vale soil landscapes are suitable for sugar cane growing and Tyagarah soil landscapes are more suitable to a less intensive landuse eg grazing land (per comms. with Mr Rik Whitehead 5 December 2007). This soil mapping correlates strongly with existing agricultural uses in the study area.

The existing land uses in the study area also correlate strongly with Agricultural Land Classification Mapping (NSW Department of Agriculture, 1998). Land within the study area and to the west of Fishery Creek is identified as Class 3 – Grazing land or land well suited to pasture improvement. It may be cultivated or cropped in rotation with sown pasture with an expected overall moderate production level. Land to the east of Fishery Creek is identified as Class 4 – Land suitable for grazing but not for cultivation. Overall production level is low, although may have seasonal highs. Land associated with Fishery Creek is identified as Class 5 – Severely constrained land unsuitable for agriculture (or at best suited only to light grazing).

All farm land within the study area is classified as being "locally significant" (section 117 Farmland Protection Mapping). Mr Rik Whitehead (per comms. 15 December 2007) indicated that the classification of sugar cane land within and adjacent to the study area as "locally significant" appeared to be an anomaly given that the majority of sugar cane land existing elsewhere on the Richmond River floodplain is classified as "regionally significant". He also indicated that, regardless of this classification, the Department of Primary Industries consider sugar cane lands to be an important primary industry and would carefully consider the implications of any intended change of use of such land.

Representatives of the local sugar cane growing industry expressed their views at the public meeting (6 December 2007). Mr R Greentree and Mr A Tickle advised that the sugar cane lands within the study area yield approximately 15,000 tonnes of sugar cane. They indicated that it is important to maintain this landuse, as any reduction in the area of sugar cane farming generally would have significant impacts on the viability of the industry generally and the Broadwater Mill particularly. It was also noted that the Broadwater Mill has been upgraded for the purposes of co-generation. The Mill will produce 30 MW (enough power for 30,000 houses) and, therefore, any reduction in cane farm areas would also impact on valuable electricity generation.

2.1.8 Geology and Geotechnical Conditions

2.1.8.1 Geology

The study area is part of an extensive land system associated with past volcanic activity. The gently to moderately undulating slopes which border the Richmond River Floodplain are comprised primarily of red krasnozen soils, a product of volcanic deposition from the Mt Warning Volcano some 20 million years ago (Cainozoic Era). The floodplain, of which the study area is a part, comprises stream alluvial deposits which have evolved since the Cainozoic Era (Ballina Bypass EIS Visual Assessment, GeoLINK 1997).

2.1.8.2 Geotechnical

An assessment of Geotechnical conditions of the alluvial deposits in the study area was undertaken by Robert Carr and Associates (RCA Aust, 2004) as part of the environmental assessments associated with the West Ballina Arterial. This assessment found that there were three (3) basic soil profiles on the site, as follows:

- Area A - Deep Compressible Soil Profile: The sub-surface conditions within this area are typically:
    - *A thin layer of clay top soil; over*
    - *Loose to very loose sand and clay sand to a depth of about five (5) m; over*
    - *Soft to firm to estuarine clays with some organics and sand into beds to depths of approximately 24 m; over*
    - *Stiff to hard clays and medium dense sands.*

  These soil profiles present significant geotechnical constraints with the following characteristics:

    - *Low strength;*
    - *High compressibility;*
    - *Poor trafficability conditions;*
    - *Poor foundation conditions for structures; and*
    - *Actual and potential acid sulfatesoils.*
- Area B – Interbedded Sand and Compressible Soils: The sub surface conditions relating to this profile are characterised by:
    - *A thin layer of top soil; over*
    - *Interbedded sand, silty clay sand and silty clay to depths in excess of 13m.*

These soil profiles present soft and firm estuarine clays and are likely to be highly compressible beyond their pre-consolidation stress with significant times to the substantial completion of consolidation settlements, albeit notably less than those from Area A.

- Area C – Deep Sand Profile: Area C is generally located to the east of the western boundary of the Ballina STP. This profile is characterised by deep sand, silty sand and clay sands to a depth of 20 - 30m. The density of the sands vary from loose to dense, however the loose sands are more likely to occur within the upper portion of the soil profile. It is noted that this area was considered most suitable for road works and general development.

In relation to Area A, the RTA indicated (per comms. 6 December 2007) that the soils associated with the Teven Road Interchange (currently under earthworks preloading) were some of the worst encountered anywhere along the Pacific Highway route in terms of road foundation characteristics.

It is clear that soil profiles within the study area, and particularly those identified as Area A, present a significant constraint to most forms of development.

2.1.8.3 Acid Sulfate Soils

Acid Sulfate Soils (ASS) are identified in the Ballina LEP and addressed by section 117 ministerial directions, direction 4.1 Acid Sulfate Soils. The ministerial direction aims to ensure that soils identified on ASS Planning Maps do not result in significant environmental impacts through an intensification of land uses.

Under the Ballina LEP, the study area is almost entirely Class 2, where development consent is required for works below the ground surface and works by which the watertable is likely to be lowered.

A small section in the westernmost part of the study area is Class 3, where works beyond 1m below the natural ground surface and works by which the watertable is likely to be lowered beyond 1m below natural surface require development consent.

The Department of Land and Water Conservation identified the whole of the study area as a priority area in the Acid Sulfate Soil Management Priority Areas in the Lower Richmond Floodplain, 1999.

Testing undertaken by RCA Australia as part of the West Ballina Arterial Study (RCA Aust, 2004) found that:

- Of the 17 soil samples obtained from between 0m and 1m, only one was a Potential Acid Sulfate Soil (HA2 at 1.0m). Of the remaining 13 soil samples tested from depths of greater than 1 m, the laboratory test results show all these soils to be Acid Sulfate Soils;
- It would be considered prudent to assume that all soils below 1.0m are Potential Acid Sulfate Soils. Furthermore, it is recommended that where significant excavations to depths of less than 1m are proposed, a specific acid sulfate soils assessment be undertaken to confirm whether or not these soils are Potential Acid Sulfate Soils.

This analysis confirms the presence of Acid Sulfate Soils and Potential Acid Sulfate Soils in the study area. Any proposed development within the study area therefore needs to carefully consider this potential environmental constraint.

2.1.9 Visual

2.1.9.1 Existing Visual Context and Extent of Views

The study area and its surrounding landscape are almost entirely flat. When viewing the landscape of the study area from within, the extent of view is very much dependent on the prevailing land use. In this regard foreground and middle ground views (0 to 600m and 600m to 3 km respectively) from livestock grazing lands which predominate the eastern sector of the study area and which features low grass cover, can be quite extensive. On the other hand the extent of foreground and middle ground views from sugar cane farming or areas of remnant vegetation which dominates the middle and western sectors of the site are usually very limited owing to the height of vegetation, being above eye level in most instances. Almost all areas within the study area experience some extent of background (more than 3 km from study area) views of the escarpment associated with Cumbalum and Tintenbar to the north and the Alstonville Plateau to the west.

2.1.9.2 Existing Views into the Site

There is very limited public access to areas within the study area. Views of the study area are hence limited largely to views from public roads on its edges. Views into the site are summarised as follows:

- Views from Teven Road which is situated approximately 300 – 600m to the west of the Pacific Highway Bypass alignment – extensive areas of sugar cane are viewed from this location. The extent of views into the site is largely dependent on the maturity of the crops at any one time;
- Views from the existing Pacific Highway along the northern boundary of the study area – these views are variable in extent owing to the patterns of existing and regrowth vegetation associated with Emigrant Creek and Fishery Creek. In this regard, the extent of views off the Pacific Highway over the north western section (west of Gallans Road) of this road are typically limited. Views into the site from the remainder of this road section (east of Gallans Road) extend up to 1 km into the site over existing livestock grazing land and tea tree plantation;
- Views from Canal Road along the eastern boundary of the study area – views into the site from Canal Road are very limited owing to vegetation communities which border North Creek Canal over almost its entire extent;
- Views from Pacific Highway between Barlows Road and the Fishery Creek Bridge – views into the site from these road sections are very limited owing to dense vegetation communities associated with Fishery Creek.
- Views from Horizon Drive – there are potential views from the backyards of residential lots fronting onto Horizon Drive. The extent of views over the site from these locations is limited owing to vegetation associated with a minor tributary to Fishery Creek;
- Views from the Pacific Highway in the south western corner of the subject site – views over sugar cane land are experienced from this road section. The extent of views into the site is very much dependent on the maturity of the planted crops at any one time.

It is noted that large areas of the study area are not visible from public roads. These areas include, importantly, the Ballina STP.

2.1.9.3 The Value of the Existing Visual Landscape

The value people place on visual landscapes is subjective and is very much dependent on an individual's tastes and personal circumstances. However, for the purposes of this assessment, the landscape can be broken up into three different landscape units and valued, as follows:

- Sugar cane growing areas – sugar cane plantations are an important cultural feature of the landscape of the Far North Coast of New South Wales from Grafton to Tweed Heads. This, coupled with the strong visual patterns which characterise this agricultural landuse, make it a landscape generally considered to be of moderate to high visual value;
- Vegetated areas associated principally with Fishery Creek – all areas of natural vegetation and particularly those associated with river and wetland areas are generally considered to be of a moderate to high visual value;
- Livestock grazing areas – the visual landscape associated with livestock grazing areas is attributed different values depending on the general condition of these areas and the nature of the topography. Livestock grazing areas within the study area, which are situated on flat land, are considered to be of moderate visual value.

2.1.9.4 Potential Views from Elevated Locations

The visual extent of the landscape of the study area is significantly increased when experienced from elevated viewing locations. This will be the case with the Pacific Highway Bypass and the West Ballina Arterial. Both of these roads will be elevated approximately 1 - 2m above existing levels by virtue of the need to make them flood proof. From these elevated vantage points, which will be experienced by a large number of motorists, the visual sensitivity of the landscape is significantly increased. Of particular significance in this regard is the Pacific Highway/Teven Road interchange.

Views from elevated Teven Road interchange

The dual carriageway flyover structure of the Pacific Highway/Teven Road interchange will be elevated approximately 9 - 10m above existing grades (per comms. with RTA 6 December 2007). Views over the study area at this point will be extensive. Importantly, this is an identified "Gateway" to Ballina, offering motorists a first impression of the landscape of and entry to the Ballina Township. For approximately 300m along this structure it is estimated that motorists will experience this important "Gateway" view. This equates to experiencing the view for approximately 10 seconds (at 100 km/hr traffic speeds). In this context, the form and arrangement of any development of (particularly) the land parcel in the south western corner of the study area needs to be

carefully considered. This land is within the foreground viewing zone of the interchange where the viewer will be able to discern a high level of detail. This will be especially critical for south bound highway motorists or motorists exiting the interchange from the south bound lanes.

2.1.10 Infrastructure Other than Roads

The study area has little infrastructure, owing to its largely undeveloped state. The infrastructure that does exist on the site is either associated with the Ballina STP or is traversing the site.

2.1.10.1 Overhead Transmission Lines

Two major overhead power transmission lines traverse the site. One of these lines crosses the site from east to west and the other from north to south. Both transmission lines have their origin at the Country Energy substation, located in Temple Street on Ballina Island, to the immediate east of the study area.

2.1.10.2 Water Supply

Council engineering staff have advised (per comms. 12 November 2007) that a trunk water main is aligned along the existing Pacific Highway on the northern boundary of the study area. Council engineering staff also indicated that water supply generally was not considered to be a major constraint to potential development within the study area.

2.1.10.3 Ballina STP and Sewer

Existing Ballina STP Infrastructure

Council engineering staff have advised (per comms. 12 November 2007) that the current Ballina STP is in need of significant upgrade. Originally, it was considered that additional land would need to be acquired from a neighbouring landholder to accommodate the expansion of the facility. However, in advice received in October 2009 from Council in relation to this matter, it is understood that additional lands may now not be required for expansion and the existing sediment ponds which were being considered for decommissioning are likely to be retained.

Currently the Department of Planning recommends a 400m buffer around the Ballina STP (Planning Circular E3, DUAP, 1989), which is reflected in the FNCRS. This buffer effectively limits the range of development permissible within this zone such that the future operation of the Ballina STP will not be compromised. In this regard some forms of development, including residential and food preparation are generally considered inappropriate. Within NSW, appropriate land uses within the buffer zones are generally considered to include flora and fauna reserves, grazing, agricultural use, forestry, commercial plant nurseries,

recreation, effluent disposal and public road reserves (DUAP, 1989).

A report on Permitted Activities within Proximity of a Sewage Treatment Plant (Aspect North, July 2005) was prepared by WATPAC seeking the rezoning of land owned by Tekcadl Investments Pty Ltd (refer to Section 2.1.3 Land Uses), much of which is located within the 400m STP buffer zone. This report reviewed the policies of various local councils on the NSW Far North Coast and came to the conclusion that compatible activities may include (in addition to the aforementioned):

- Industries which use reclaimed effluent or biosolids;
- Odour producing industries (eg tanneries); and
- Industrial or commercial enterprises that have low staff and customer visitation (eg storage or distribution).

Guidance for development within the buffer zones of STPs is provided by the risk assessment method set out in the document STP Buffer Zone Land Use Planning Guidelines (Water Directorate, 2006). A risk assessment has been prepared by Council in relation to this facility, and general guidelines consistent with the Water Directorate document were included. Given that the precise nature of future upgrading of the STP is unknown, any future development within this area should be subject to a specific risk assessment that would take into account the size and type of STP, including its planned upgrading and the potential impacts upon it, along with the sensitivity of the proposed development.

2.1.10.4 Telecommunications

Telecommunication infrastructure (telecoms) in the study area is minimal, comprising mostly short connections to individual lots. Telecoms extend further into the study area in the south, connecting some residences and the Ballina STP.

In the south eastern part of the study area, underground cabling is aligned along the northern side of the Pacific Highway, with connections to lots fronting the Pacific Highway.

In the south western corner of the study area (to the west of River Bend Village) telecoms, including the Wardell – Ballina high integrity data lines, follow the southern side of the Pacific Highway, with a connection to Lot 11 DP 1011575.

In the north of the study area telecoms, including high integrity data cabling, follows the northern side of the Pacific Highway, with connections to the following lots in the study area:

- North eastern corner of Lot 51 DP 1094086;
- Buildings in the north western corner of Lot 3 DP 578476;
- Residence on Lot 1 DP 578477; and
- Lot 3 DP 1074242.

2.1.11 Heritage

2.1.11.1 Aboriginal Heritage

Prior to European settlement the custodians of the Ballina area were the Bundjalung people. The Jali Local Aboriginal Land Council manages Aboriginal matters in the Ballina Shire LGA at present. Aboriginal sites in the Ballina Shire LGA include shell middens, open campsites/artefact scatters and one stone quarry (SKM 2004). There are no registered Native Title Claims over the study area. However, there is currently one Unregistered Claimant Application (NC07/1) over a large area which includes the study area (National Native Title Tribunal).

A search of the Aboriginal Heritage Information Management System (AHIMS) in 2007 was undertaken with no registered sites identified within the study area. The Consultant Team was subsequently made aware, by the Department of Environment and Climate Change, of artefacts on the site entered since the time the initial AHIMS search was undertaken. These artefacts are located with natural vegetated areas of the site and are unlikely to be disturbed by any potential development areas proposed in this Study.

There are also licensed sites of aboriginal heritage having locations not made known to the public. The NPWS Aboriginal Officer for Ballina Shire and Council's Aboriginal Liaison Officer have checked these licensed sites and advised that none are within the study area.

The Ballina LEP includes Schedule 1, items of environmental heritage, which includes "buildings, works, relics, trees or places of historic, scientific, cultural, social, architectural, archaeological, natural or aesthetic significance for the Shire of Ballina", and lists the locations of Aboriginal sites. No listed Aboriginal sites fall within the study area.

A search of the items listed within Ballina Combined DCP – Policy Statement 12 – Heritage Matters also showed no Aboriginal heritage items within the study area.

Prior to any development taking place, an archaeological survey will be required, including an archaeologist and a cultural representative of the Jali Local Aboriginal Land Council.

It is noted with respect to the above that a cultural heritage study is currently being prepared by Council.

2.1.11.2 European Heritage

European settlement of the Ballina floodplain began with cedar cutters in the early 1840s. During the 1860s freehold farms were established, for the most part dedicated to subsistence farming for the local area and maize as a cash crop, with some experimentation into sugar cane processed through small private mills. Timber cutting continued to be a strong industry associated with land clearing and housing construction for the rest of the 1800s. Many original timber buildings remain in the Ballina LGA and most are under some form of heritage protection. In 1881 the Broadwater Sugar Mill was established, and since then, sugar cane has been the predominant agricultural crop (Ballina Shire Council website).

A search of the Australian Heritage Database (maintained by the Commonwealth Department of the Environment, Water, Heritage and the Arts), which includes places in the World Heritage List, the National Heritage List, the Commonwealth Heritage List and the Register of the National Estate found no sites within the study area. A search of the National Trust register found no listed sites in the study area.

A search of the State Heritage Inventory for items on statutory lists in NSW includes items on the State Heritage Register, listed by the Heritage Council under the NSW Heritage Act, interim heritage orders or items which are protected under section 136 of the NSW Heritage Act. The information is provided by the NSW Heritage Office. The State Heritage Inventory also includes items listed by local councils and shires, and state government agencies. The State Heritage Inventory does not include any items within the study area.

Ballina LEP 1987 includes at Schedule 1 items of environmental heritage, which includes “buildings, works, relics, trees or places of historic, scientific, cultural, social, architectural, archaeological, natural or aesthetic significance for the Shire of Ballina”, and shows the addresses of European items. No listed items of European heritage fall within the study area.

A search of the items listed within Ballina Combined DCP – Policy Statement 12 – Heritage Matters also showed no European heritage items within the study area.

During 2004, field inspections were undertaken for the West Ballina Arterial road (SKM, 2004). During these inspections non-indigenous historic items were found, associated with the agricultural use of the land, and the Ballina to Booyong railway line which runs through the study area.

The old Ballina to Booyong railway line is one of the 15 shortest lived sections in NSW, with a lifespan of under 18 years. The 20.6 km line was opened in 1930, but only carried passengers for 13 years, closing in 1948 due to landslides (NSWrail.net). Remnants of the bridge structure over North Creek Canal remain, and traces of the line remain in parts within the study area. The railway and its associated structures are not listed on any Heritage Register or in the Ballina LEP. However, Ballina Shire Council's Shire-Wide Heritage study identifies that relics of the railway are likely to have heritage value.

2.2 Land Tenure

The study area has a large number of land holdings (54 properties) and landowners (17). These are represented in the following table and are illustrated on Exhibit 2 – Land Tenure.

The largest landholdings belong to the NSW RTA and two private owners. These landholdings constitute more than 80% of the study area. Agriculture is the predominant land use, with large areas under cane. Other significant agricultural land uses are cattle grazing and tea tree cultivation. There is also a large amount of Crown Lands in the Study Area, including the bed of Fishery Creek and a number of unmade roads.

Table 2.2 Land Tenure (at June 2009)

Lot	DP	Improve Code	Parcel Area (ha)
4	578476	Vacant Land	11.69
142	755684	Agri/Dwelling	20.23
143	755684	Agri/Dwelling	40.47
153	755684	Agri/Dwelling	58.68
184	755684	Agri/Dwelling	20.23
6	1031875	Vacant Land	77.52
1	133629	Vacant Land	0.09
1	133630	Agri/Dwelling	0.17
2	133631	Vacant Land	0.04
1	133632	Vacant Land	0.40
1	179476	Agri/Dwelling	0.61
2	243060	Agri/Dwelling	1.60
4	243060	Agri/Dwelling	7.06
5	578476	Shed	32.43
2	843728	Agri/Dwelling	11.04
5	1085638	Vacant Land	0.10
1	133627	Vacant Land	0.66
1	188067	Vacant Land	1.18
1	390293	Vacant Land	6.16
1	779965	Vacant Land	1.18
1	779970	Vacant Land	54.77
2	1074242	Agri/Dwelling	19.18
3	1074242	Vacant Land	0.06
6	1085638	Vacant Land	0.05
50	1094086	Agri/Dwelling	15.47
51	1094086	Vacant Land	16.24
5	1074242	Vacant Land	0.045
3	578476	Agri/Dwelling	21.14
12	1092324	Manufactured Home Estate	17.64
11	1011575	Vacant Land	17.02
2	500372	Shed	16.98
1	133631	Vacant Land	0.05
3	243060	Treatment Works	0.04
5	243060	Treatment Works	3.60
8	243060	Treatment Works	3.24

Lot	DP	Improve Code	Parcel Area (ha)
1	572329	Dwelling	0.39
1	843728	Dwelling	0.11
1	1003816	Treatment Works	7.14
2	1003816	Treatment Works	0.06
137	858896	Vacant Land	7.89
463	728664	Vacant Land	0.02
464	728664	Vacant Land	3.55
542	729705	Vacant Land	3.24
272	755684	Vacant Land	0.90
7054	1113632	Vacant Land	2.16
7055	1113708	Vacant Land	0.89
1	578477	Dwelling	2.02
1	543357	Vacant Land	0.37
2	543357	Dwelling	0.15
1	404176	Motel	0.06
311	755684	Motel	0.21
226	1121079	Vacant Land	28.79
11	1122527	Vacant Land	11.01
12	1122527	Vacant Land	23.66

2.3 Legislation and Policy Review

The following Commonwealth, State and Local Government planning legislation is relevant to the study area.

2.3.1 Commonwealth Legislation

2.3.1.1 Environment Protection and Biodiversity Conservation Act 1999:

This legislation is designed to protect Australia's environment and heritage. Consideration of any matters of national environmental significance (NES) will be required in the preparation of an LEP for the study area. Matters of NES under the Act include:

- World Heritage Areas;
- Wetlands protected by international treaty (the RAMSAR Convention);
- Nationally listed threatened species and ecological communities;
- Nationally listed migratory species;
- All nuclear actions; and

- The environment of Commonwealth marine areas.

The study area is not located near World Heritage Areas, RAMSAR Wetlands or Commonwealth Marine Areas. Ecological Assessments for nationally listed migratory species, threatened species and ecological communities will be required with applications for development in the study area.

2.3.2 State Policy

2.3.2.1 Far North Coast Regional Strategy 2006 (FNCRS)

The purpose of this strategy is to manage the Region's expected high growth rate in a sustainable manner. The FNCRS aims to manage this future growth by preventing the spread of coastal development and encouraging the development of non-coastal centres.

Residential growth is restricted in the Ballina area by the FNCRS to:

- The land release areas in Lennox Head, Cumbalum, Wollongar and Wardell;
- A section directly to the west of the approved River Oaks development in the north east; and
- The residentially zoned land to the west of the Riverbend Village development in the south west.

Ballina Town Centre to the east of the study area has been earmarked for employment, retail and tourism. Within the study area, as illustrated on Exhibit 6 – Current Planning Legislation, the FNCRS defines the growth boundary for Ballina, having regard for the following:

- Proposed future urban release – potential locations for greenfield releases of new communities including services appropriate for the future population;
- Employment lands – potential areas for "employment related activities such as factories, warehouses, manufacturing and transport logistics". The southern part of the identified employment lands within the study area is shown as being subject to high level constraints. The constraints are not discussed in detail in the FNCRS but generally coincide with the location of the Ballina STP and land surrounding it to the south and west;

- Environmental assets and rural land – areas with "environmental, landscape, natural resource and agricultural production values". The FNCRS prohibits LEPs from zoning this land to permit urban purposes other than rural residential development. Rural residential development may be located on this land where it does not conflict with the values above. Despite this clause, development may still be permitted subject to the sustainability criteria of the FNCRS, given that the study area is currently west of the Pacific Highway.

The FNCRS identifies the study area as having significant groundwater resources. The FNCRS prohibits LEPs from rezoning land within significant groundwater areas if the rezoning has the potential to reduce the quality and quantity of groundwater.

Natural hazards associated with the study area are acid sulfate soils, and flooding.

Local environmental and biodiversity values identified include state significant biodiversity areas, including the SEPP 14 wetland in the eastern part of the site.

2.3.2.2 Settlement Planning Guidelines

The Settlement Planning Guidelines (Department of Planning, August 2007) have been developed to assist councils in preparing local growth management strategies to achieve the planning outcomes and actions identified in the FNCRS. A local growth management strategy will be required prior to preparing a local environmental study to zone land for residential, rural residential, commercial or industrial land uses. The subject study can help to inform a local growth management strategy for the study area.

2.3.2.3 NSW Coastal Policy

The New South Wales Coastal Policy is the Government's policy for the co-ordinated planning and management of the NSW coastline. The Coastal Policy provides a framework for the management of the coast's unique physical, ecological, cultural and economic attributes. The overriding vision for the policy is the ecological sustainability of the NSW coast. Therefore the policy is goal oriented and based on the principles of ecologically sustainable development (ESD).

The study area falls within the Coastal Zone as defined by the NSW Coastal Policy.

Development within the Coastal Zone will also require consideration of the 'NSW Coastline Management Manual', the 'North Coast: Design Guidelines' and 'Coastal Design Guidelines for NSW'.

Pursuant to the provisions of section 117 of the EP&A Act direction 2.2 requires all draft LEPs to be consistent with the policy, in addition to requiring a local environmental study for re-zonings within the coastal zone. Under the Coastal Policy the study area falls within the 'Estuarine Coastal Sub-Zone'.

2.3.3 State Legislation

2.3.3.1 Environmental Planning and Assessment Act, 1979 (EP&A Act)

The relevant state planning legislation is the EP&A Act. The EP&A Act is supplemented by a suite of Environmental Planning Instruments (EPIs), including Local Environmental Plans (LEPs), Regional Environmental Plans (REPs) and State Environmental Planning Policies (SEPPs). The EPIs made under the EP&A Act that may be relevant to the study area include:

- State Environmental Planning Policy (Major Projects) 2005;
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy No 14 – Coastal Wetlands:
- State Environmental Planning Policy No 71 – Coastal Protection;
- North Coast Regional Environmental Plan 1988; and
- Ballina Local Environmental Plan 1987.

Section 91 of the Act also identifies development requiring particular approvals as integrated development. The following Acts could be applicable for development in the study area should the criteria identified in section 91 be met:

- Fisheries Management Act 1994;
- Heritage Act 1977;
- Mine Subsidence Compensation Act 1961;
- Mining Act 1992;
- National Parks & Wildlife Act 1974;
- Petroleum (Onshore) Act 1991;
- Protection of the Environment Operations Act 1997;
- Roads Act 1993;

- Rural Fires Act 1997;
- Water Management Act 2000.

2.3.3.2 Threatened Species Conservation Act 1995

This Act provides for the protection of native plants and animals identified as threatened in NSW. The Act also provides for the listing and protection of Endangered Populations and Endangered Ecological Communities (EECs).

Sections 5A and 111 of the EP&A Act requires a determining authority to consider the effect of a development on threatened species, populations or ecological communities, or their habitats. This will include consideration in line with the assessment guidelines in force under the Threatened Species Conservation Act 1995.

This study has identified a number of EECs within the study area. The Threatened Species Conservation Act 1995 therefore applies to lands within the study area.

2.3.3.3 National Parks and Wildlife Act 1974

This Act defines the powers, duties and functions of NSW NPWS relating to all areas reserved as national parks, historic sites, nature reserves, Aboriginal areas, state and recreation parks and regional parks. This Act also guides the management of conservation areas as well as the protection of native vegetation and native fauna.

Section 111 of the EP&A Act requires the determining authority to consider the effects of development on protected fauna or protected native plants within the meaning of the National Parks and Wildlife Act 1974.

2.3.3.4 Native Vegetation Act 2003

This Act sets the legislative framework for protecting land, rivers and wildlife and is based on voluntary planning agreements between landholders and Catchment Management Authorities (CMAs). The Act applies to rural zoned lands. The modification of vegetation within rural areas may require separate approval under this Act from the CMA.

2.3.4 Local Legislation

The Ballina Local Environmental Plan 1987 currently applies to the study area. Applicable zonings within this plan include:

- Rural 1(a2) – Coastal Lands Agriculture – the western part of the study area, bounded by the 9(a) road reserve;
- Rural 1(b) – Secondary Agricultural Land;
- Rural 1(d) – Urban Investigation – eastern part of the study area, being land to the north and south of the Ballina STP;
- Residential 2(a) - Living area – applicable to two localities, one in the north east, land subject to an approval for 325 lots, and one part in the south to the west of Riverbend Village;
- Environmental Protection 7(a) – Wetlands – a triangle of land in the eastern tip of the study area, and the corridor in which Fishery Creek lies;
- Reservations 9(a)– Road – Main road proposed – this proposed road corridor extends through the middle of the study area, from the Pacific Highway in the south western corner to join with the Pacific Highway that forms the northern boundary of the study area. This road corridor is no longer reflects the Ballina Pacific Highway Bypass alignment for which it was originally created.

2.3.5 Local Strategic Planning

The Ballina Urban Land Release Strategy (BSC, May 2000) (BULRS), including its updated version of July 2003, makes provision for future projected population growth in the Ballina Shire. The BULRS identifies future housing demand and subsequently identified potential areas for future urban growth.

In relation to the West Ballina study area the following BULRS assessment and recommendations are of relevance:

- The updated BULRS indicated that population growth for West Ballina will continue at the projected rate of approximately 40 dwellings per year (being 88 persons per year). In the immediate term much of this will be accommodated in the River Oaks development which will accommodate in the order of 360 dwellings, or in recently approved mobile home parks.
- The strategy maps (contained within the BULRS) indicate that land to the immediate west of River Oaks development and a thin strip of land on the periphery of the southern extent of the STP buffer, may be considered for future residential development.

Section 3
Stakeholder Engagement

3.1 The Need for Stateholder Engagement

Consultation with stakeholders has been adopted as a fundamental requisite of this project.

There are a large number of stakeholders who have an interest in the direction of future planning for the study area. These stakeholders include:

- A large number of private landholders;
- Ballina Shire Council (planning authority and landholder);
- The Ballina Chamber of Commerce;
- Primary industry groups including the Richmond River Cane Growers Association;
- Green Groups including the Ballina Environmental Sociey;
- State government organisations including the Department of Primary Industries (DPI), the Department of Planning (DoP), the Department of Environment and Climate Change (DECC) and the Roads and Traffic Authority (RTA) (landholder and infrastructure provider);
- The Ballina community.

These stakeholders provided a valuable source of information in relation to the existing conditions and future needs and opportunities of the study area. Furthermore, they have provided the Consultant Team with important feedback in relation to local processes, community dynamics and historically or culturally significant places and events which would not ordinarily be revealed through field studies and document review alone.

3.2 Stakeholder Engagement Process

The Stakeholder Engagement Process adopted for the project is illustrated by way of Table 3.2 below:

Table 3.2 Stakeholder Engagement Process

ITEM NUMBER	ITEM	STAGE OF STUDY PROCESS	TIMING
1	Consultation with Ballina Shire Council at outset of project	Project outset	7 November 2007
2	Individual meetings with key stakeholders, including all landholders	After site analysis and identification of opportunities and constraints	December 2007
3	Evening presentation and workshop to stakeholders	After site analysis and identification of opportunities and constraints	December 2007
4	Meetings with Council and State Government departments including DOP, RTA, DEC and DPI	After site analysis and identification of opportunities and constraints	December 2007
5	Community feedback via communications with Council and 1300 hotline	During development of Draft Structure Plan	December 2007 and during 2008
6	Individual meetings with key stakeholders, including all landowners	After further development of the Draft Structure Plan	25 and 26 May 2009
7	Public Exhibition of Draft Structure Plan proposals	After being presented to and considered by Council	June and July 2009
8	Review of submissions from Public Exhibition of Draft Structure Plan and Draft Structure Plan amendments	Draft Structure Plan	2009

Items 1 to 5 above constituted the first phase of stakeholder engagement for the project. The feedback from this first phase of stakeholder engagement was used to develop a Draft Structure Plan.

Further direct stakeholder engagement was undertaken (6 above) in May 2009, following the completion of a study area specific flood assessment (BMT, WBM 2009) and associated further development of the Draft Structure Plan.

Facilitation of community comment on the Draft Structure Plan constituted the final phase of stakeholder engagement for the project. The Draft Structure Plan was presented to and considered at a meeting of Council's Environmental Committee on Tuesday 26 May 2009. It was resolved at Council's Ordinary Meeting of Thursday 28 May to place the Draft Structure Plan on Public Exhibition for a period of eight (8) weeks.

3.3 Individual Meetings with Key Stakeholders

A range of key stakeholders were identified by Council and the Consultant Team. These stakeholders comprised landholders in the study area, development organisations with interest in land in the study area, various departments of Ballina Shire Council and a number of State Government departments. All stakeholders were invited to have one-on-one meetings with the Consultant Team via written correspondence on 19 November 2007. Individual meetings with stakeholders were conducted over a three day period from 4 to 6 December 2007.

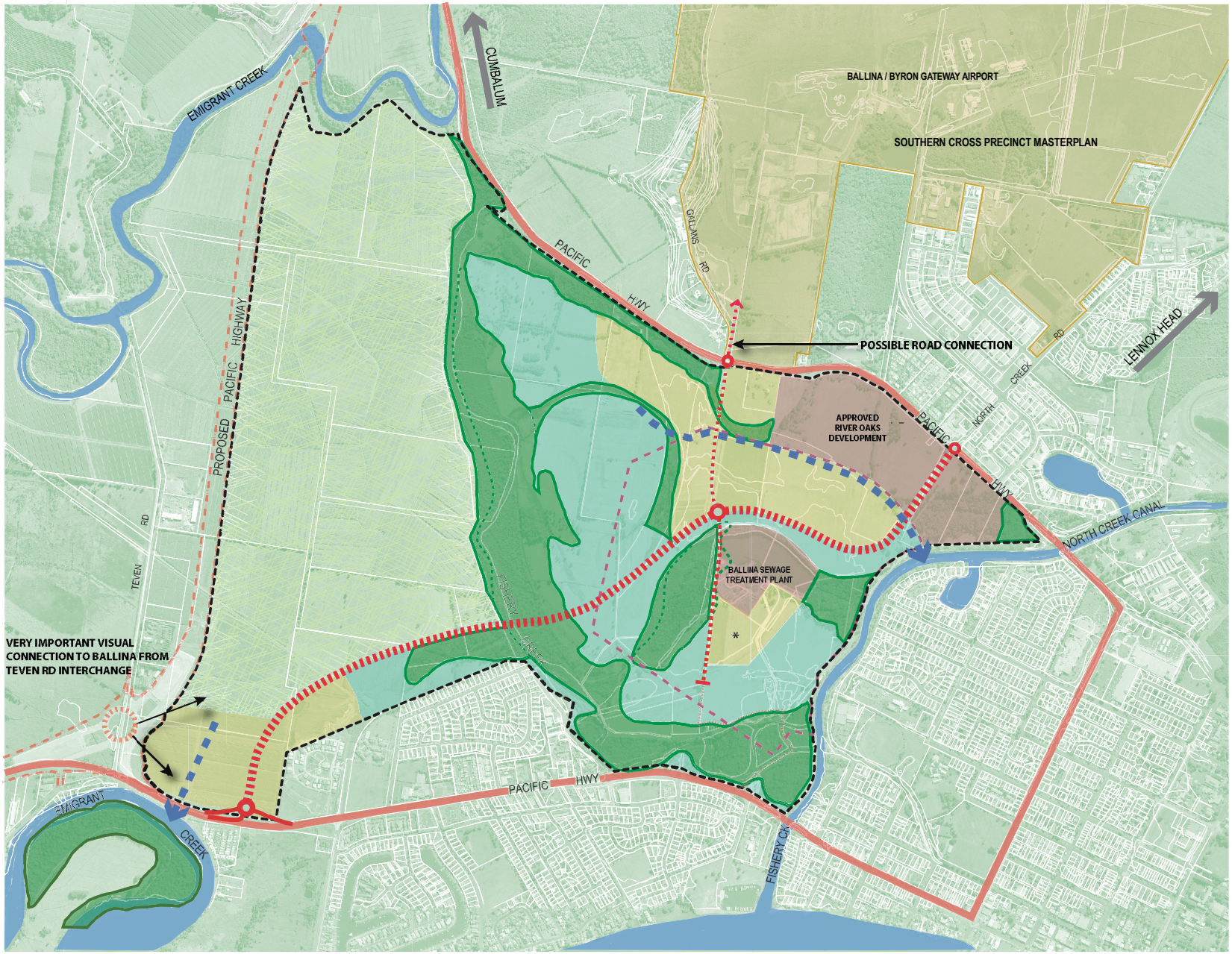
To assist in the process of stakeholder engagement, the Consultant Team compiled a series of site analysis maps, including a broad Preliminary Opportunities Constraints Map. This map is included as Exhibit 7 – Stakeholder Engagement – Potential Precinct Opportunities and Constraints. (Note: the final structure plan differs from this map as it reflects the outcome of stakeholder engagement, public exhibition and further analysis of issues).

The information provided by stakeholders was recorded in meeting minutes.

The following stakeholders were involved in one-on-one meetings with the Consultant team between 4 and 6 December 2007.

- Ms Beatrice Flood and Ms Joanne Flood
- Mr Kevin Woods
- Mr Don Cook
- Mr Stephen Connelly and Mr Christopher Condon
- Mr Geoff Rose and Mr Ken Jones

Stakeholders were further engaged in May 2009 following receipt of detailed flood investigation information and prior to presentation of the reporting to Council.



LEGEND

- AREAS OF EXISTING OR APPROVED DEVELOPMENT
- POSSIBLE DEVELOPMENT AREAS SUBJECT TO SPECIFIC SITE CONSIDERATIONS
- EXISTING ECOLOGICALLY SENSITIVE LAND
- POSSIBLE RETENTION OF CURRENT FARMING PRACTICES OR EXTENSION OF ECOLOGICAL AREAS BY DEVELOPMENT OFFSETS AND/OR BIOBANKING
- EXISTING AREA OF CANE FARMING
- FLOODWAYS: WIDTH TO BE DETERMINED THROUGH DETAILED ANALYSIS
- SEPP 14 WETLAND
- PROPOSED WESTERN ARTERIAL
- POSSIBLE NETWORK CONNECTION TO WESTERN ARTERIAL
- 400m BUFFER ZONE TO SEWAGE TREATMENT PLANT
- STUDY AREA BOUNDARY

* NOTE
AREA INDICATED AS POSSIBLE EXPANSION FOR BALLINA STP. HOWEVER, IT SHOULD BE NOTED THAT NO AREA FOR EXPANSION HAS BEEN FINALISED OR ACQUIRED BY COUNCIL. FURTHER DISCUSSIONS WITH RELEVANT LANDHOLDERS ARE REQUIRED IN RELATION TO THIS MATTER.

KING + CAMPBELL

1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie NSW 2444

PO Box 243
Port Macquarie NSW 2444

T: 02 6586 2555
F: 02 6583 4064

E: info@kingcampbell.com.au

Rev	Date	Description
A	NOV.2007	ISSUED FOR INFORMATION
B	NOV.2007	ISSUED FOR INFORMATION
C	DEC.2007	ISSUED FOR INFORMATION
D	DEC.2008	ISSUED FOR INFORMATION
E	MAR 2009	ISSUED FOR INFORMATION
E	OCT. 2009	ISSUED FOR INFORMATION

Scale 1:16000@A3 Datum AHD

0 400

Caution: The stated scale of this drawing may have been altered by copying or other means. The scale should be verified prior to using the drawing to derive measurements.

Project Number	14938
DA Number	-
Designed	-
Drawn	
Checked	DAT
Date Created	OCT. 2007

Drawing Title EXHIBIT 7: STAKEHOLDER ENGAGEMENT - POTENTIAL PRECINCT OPPORTUNITIES & CONSTRAINTS

Project WEST BALLINA STRUCTURE PLAN

Client BALLINA SHIRE COUNCIL Sheet 7 Drawing No. 14938P_EX 7Stakeholder_revE Rev E

3.4 Meetings with Government Departments

A number of Government departments were consulted on 5 and 6 December 2007 as part of the Stakeholder Engagement Process. The information provided through this consultation was recorded in meeting minutes. The following Government departments were consulted:

- Mr Pat Dwyer NSW Department of Primary Industries, Fisheries;
- Mr Rik Whitehead Resource Management Officer – Land Use NSW Department of Primary Industries, Agriculture;
- Mr Mike Baldwin and Mr Wes Stevenson NSW Roads and Traffic Authority;
- Mr Jim Clark NSW Department of Planning;
- Ms Estelle Blair NSW Department of the Environment and Climate Change.

3.5 Evening Workshop

An evening workshop with stakeholders was conducted on 5 December 2007. The Consultant Team presented the findings of their site analysis and preliminary site opportunities and constraints assessment. An open question and answer forum followed in which a number of issues were raised. The information provided through this workshop was recorded in meeting minutes. It should be noted that some participants also made written submissions which have been considered in preparing the study and Structure Plan.

Attendees at the evening workshop included:

R Greentree	Richmond River Cane Growers Association Limited
A Tickle	Richmond River Cane Growers Association Limited
Rick Beattie	NSW Sugar Milling Cooperative
Bill Walker	NSW Sugar Milling Cooperative
Peter Carmont	Ballina Chamber of Commerce
D J Cook	Land Owner
Col Dorey	Land Owner

Stewart Ford	Land Interest
Kevin Woods	Land Owner
Ken Kaehler	Land Owner
B and J Flood	Land Owners
Steve Connelly	Representing Landowners

3.6 Additional Meetings with Key Stakeholders

Following receipt of detailed flood assessment information relating to the study area, Council determined that stakeholders should be further consulted in May 2009. The main reason for this additional consultation was that a substantial length of time had elapsed since stakeholders were initially consulted, as a result of the need to undertake a study area specific flood assessment (BMT WBM, 2009), and it was considered that they needed to be informed of the results of the flood assessment and the development of the Draft Structure Plan.

The information provided by stakeholders was recorded in meeting minutes.

The following stakeholders were involved in one-on-one meetings with the Consultant Team on Tuesday 26 May 2009:

- Mr Kevin Woods
- Ms Louise Seamer and Mr Don Cook
- Mrs Kim Bayne and Mr Graham Bayne

An evening meeting was also conducted with landholders on Monday 25 May 2009. The information provided by stakeholders was recorded in meeting minutes.

3.7 Exhibition Submissions

A number of submissions were received in response to the exhibition of the draft planning study and structure plan. The submissions are the subject of a separate report.

Section 4
Future Development Opportunities and Constraints

This phase of the study involved the identification of opportunities and constraints for potential future landuses in the study area. The work undertaken in previous phases of the study, including site investigation and review of background information (Section 2 Project Analysis) and discussions with stakeholders (Section 3 Stakeholder Engagement), has informed the identification of the opportunities and constraints presented below.

This report section should be read in conjunction with Exhibit 8 – Precinct Opportunities and Constraints. This exhibit has been developed further from the findings of the stakeholder engagement process (see Exhibit 7 – Stakeholder Engagement – Potential Precinct Opportunities and Constraints).

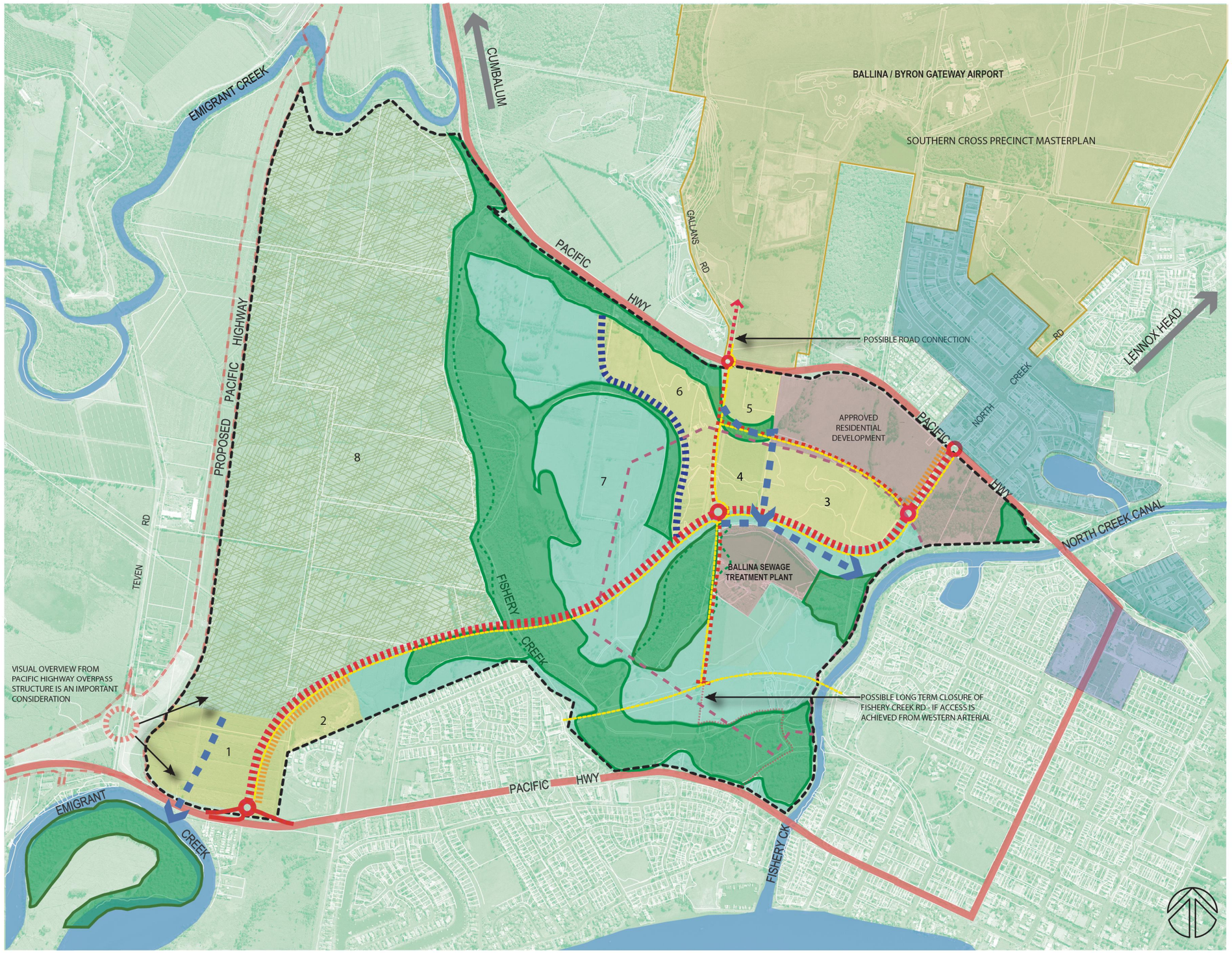
4.1 Open Space and Community Facilities

One of the general features of open space landuses that presents a distinct opportunity for the study area is that playing fields and associated car parking do not necessarily have to be flood-proof, and hence can be located on the floodplain without the need for extensive land filling and potential associated flood impacts.

Opportunities for open space and community facilities within the study area are considered to be as follows:

4.1.1 Sporting Facilities

A need has been identified for a centralised regional sports facility of approximately 13 ha in Ballina to cater for Ballina township's sporting needs, including soccer and hockey, and for hockey, athletics and minority sports Shire-wide (ERM, 2004). The facility should provide adequate parking, amenities and lighting for regional events (ERM, 2004). Possible locations for this facility are identified by ERM on Council owned land in the vicinity of the airport and the Southern Cross Precinct, or on private land within the buffer zone of the STP (ERM, 2004).



PRECINCT OPPORTUNITIES & CONSTRAINTS

1. 'GATEWAY' SITE
   - THIS SITE HAS THE POTENTIAL TO ACCOMMODATE A HIGHWAY SERVICE CENTRE
   - SITE ACCESS FROM ARTERIAL ROADS IS TO BE A KEY CONSIDERATION
   - SIGNIFICANT FLOOD CONSTRAINTS NEED TO BE ADDRESSED
   - DEVELOPMENT MUST BE SUITABLE TO THE SITES HIGH VISIBILITY & 'GATEWAY' FUNCTION
   - POOR GEOTECHNICAL CONDITIONS NEED TO BE ADDRESSED
   - ACOUSTIC ISSUES NEED TO BE ADDRESSED
   - LOSS OF CANE FARMING LAND NEEDS TO BE ADDRESSED

2. POTENTIAL EXTENSION OF ADJOINING RESIDENTIAL AREAS
   - DEVELOPMENT WILL LIKELY NEED ACOUSTIC PROTECTION FROM WESTERN ARTERIAL
   - POOR GEOTECHNICAL CONDITIONS NEED TO BE ADDRESSED
   - FLOOD CONSTRAINTS NEED TO BE ADDRESSED

3. POSSIBLE ALTERNATIVE SITE FOR REGIONAL SPORTS FACILITY
   - NEEDS TO DEMONSTRATE ITS SUITABILITY TO ITS LOCATION WITHIN THE STP BUFFER ZONE
   - NEEDS TO DEMONSTRATE ITS BENEFITS IN TERMS OF ACCESSIBILITY WITHIN THE REGION
   - THE MAINTENANCE OF FLOODWAYS MAY BE COMPATABLE WITH THIS LANDUSE
   - NEEDS TO DEMONSTRATE ITS COMPATABILITY WITH ADJOINING RESIDENTIAL LAND USES

4. POSSIBLE DEVELOPMENT AS EMPLOYMENT PRECINCT
   - ANY DEVELOPMENT WITHIN THIS ZONE NEEDS TO DEMONSTRATE ITS SUITABILITY TO ITS LOCATION WITHIN THE STP BUFFER ZONE
   - FLOOD CONSTRAINTS NEED TO BE ADDRESSED
   - GEOTECHNICAL CONDITIONS NEED TO BE ADDRESSED
   - NEEDS TO DEMONSTRATE ITS COMPATABILITY WITH ADJOINING LAND USES
   - NEEDS TO INCLUDE AN APPROPRIATE EDGE/BUFFER TO ENVIRONMENTAL LANDS

5. POSSIBLE DEVELOPMENT AS EMPLOYMENT PRECINCT
   - FLOOD CONSTRAINTS NEED TO BE ADDRESSED
   - GEOTECHNICAL CONDITIONS NEED TO BE ADDRESSED
   - NEEDS TO DEMONSTRATE ITS COMPATABILITY WITH ADJOINING LAND USES

6. POSSIBLE DEVELOPMENT AS EMPLOYMENT PRECINCT
   - FLOOD CONSTRAINTS NEED TO BE ADDRESSED
   - GEOTECHNICAL CONDITIONS NEED TO BE ADDRESSED
   - NEEDS TO INCLUDE AN APPROPRIATE EDGE/BUFFER TO ENVIRONMENTAL LANDS

7. AREAS OF EXISTING LOW INTENSITY AGRICULTURE
   - MAY RETAIN CURRENT AGRICULTURAL LAND USE
   - ALTERNATIVELY, COULD POTENTIALLY BE REVEGETATED TO REINFORCE THE FISHERY CREEK CORRIDOR BY WAY OF DEVELOPMENT OFFSETING AND/OR BIOBANKING
   - COULD BE USED FOR TEMPORARY LAND USES e.g. CONCERTS, HOME SHOWS, REGIONAL EXHIBITION SPACE

8. AREAS OF EXISTING CANE FARMING
   - ANY LONG TERM FUTURE POTENTIAL DEVELOPMENT SUBJECT TO SIGNIFICANT FLOODING & GEOTECHNICAL CONSTRAINTS
   - AREA COULD BE RETAINED FOR CANE FARMING
   - ANY LONG TERM FUTURE DEVELOPMENT WOULD NEED TO JUSTIFY ADVERSE IMPACTS ON THE CANE FARMING INDUSTRY

LEGEND

- AREAS OF EXISTING OR APPROVED DEVELOPMENT
- EXISTING RETAIL
- EXISTING INDUSTRIAL AND BULKY GOODS RETAIL
- POSSIBLE DEVELOPMENT AREAS SUBJECT TO SPECIFIC SITE CONSIDERATIONS: SEE ABOVE
- EXISTING ECOLOGICALLY SENSITIVE LAND
- POSSIBLE RETENTION OF CURRENT FARMING PRACTICES OR EXTENSION OF ECOLOGICAL AREAS BY DEVELOPMENT OFFSETS AND/OR BIOBANKING
- EXISTING AREA OF CANE FARMING
- FLOODWAYS: CONCEPTUAL ALIGNMENT ONLY, TO BE DETERMINED THROUGH DETAILED ANALYSIS.
- SEPP 14 WETLAND
- POTENTIAL CYCLEWAY ROUTE
- PROPOSED WESTERN ARTERIAL (NOTE: ALIGNMENT NOT FIXED AT DATE OF THIS PLAN - SEE STUDY TEXT)
- POSSIBLE NETWORK CONNECTION TO WESTERN ARTERIAL
- ACOUSTIC & VEGETATIVE BUFFER
- APPROPRIATE BUFFER TO ENVIRONMENTAL LANDS REQUIRED
- 400m BUFFER ZONE TO SEWAGE TREATMENT PLANT
- SITE AREA BOUNDARY

L:\14938_WEST_BALLINA\Planning\Photoshop\14938P_EX8_Opport_Con_Rev_F.psd

KING + CAMPBELL

King & Campbell Pty Ltd
www.kingcampbell.com.au
A: PO Box 243 Port Macquarie NSW 2444
T: 02 6586 2555
F: 02 6583 4064
E: info@kingcampbell.com.au

REV.	DATE	DESCRIPTION
A	NOV. 2007	ISSUED FOR INFORMATION
B	NOV. 2007	ISSUED FOR INFORMATION
C	NOV. 2007	ISSUED FOR INFORMATION
D	JAN. 2008	ISSUED FOR INFORMATION
E	MAR. 2009	ISSUED FOR INFORMATION
F	OCT. 2009	ISSUED FOR INFORMATION

DATUM: AHD SCALE: 1:16000 @ A3

0 400mm

NOTE: DO NOT SCALE OFF DRAWINGS. USE FIGURED DIMENSIONS ONLY. REPORT ANY DISCREPANCIES TO THE AUTHOR. THIS DRAWING, BEING THE PROPERTY OF KING & CAMPBELL PTY LTD, IS PROTECTED BY COPYRIGHT AND MUST NOT BE USED , REPRODUCED OR COPIED WHOLLY OR IN PART WITHOUT THE WRITTEN PERMISSION OF KING & CAMPBELL PTY LTD.

PROJECT NO:	14938
DA NO.:	-
DESIGNED BY:	DAT
DRAWN BY:	PH
CHECKED BY:	DAT
DATE CREATED:	OCT. 2009

DRAWING TITLE: EXHIBIT 8: PRECINCT OPPORTUNITIES & CONSTRAINTS

PROJECT: WEST BALLINA STRUCTURE PLAN

CLIENT: BALLINA SHIRE COUNCIL

DRAWING NO.	SHEET:	REVISION.
14938P_EX8_Opport_Con_Rev_F.psd	1	F

A potential location is within Lot 2 DP 1074242 (Precinct 3 on Exhibit 8 – Precinct Opportunities and Constraints). This location is likely to be able to provide up to 13 ha of land required for the regional sports facility. This land also presents the following advantages:

This landuse is compatible with approved neighbouring residential and open space landuses (including a single playing field) associated with the River Oaks development. The compatibility of this landuse needs to be considered alongside other (potentially less compatible) landuses, such as industrial or bulky goods retail;

- This landuse type is listed as a suitable landuse within the Ballina STP buffer (DUAP, 1989);
- This landuse will likely require minimal filling of floodprone land and may be able to be partially or wholly located within the identified floodway across the southern edge of the River Oaks development (WBM BMT, 2007);
- This landuse will likely be able to be well serviced by the potential road network, including the West Ballina Arterial and potential road connections between this road and the Pacific Highway;
- This landuse is well located in a regional context. Given the implementation of the Pacific Highway bypass and the West Ballina Arterial it will be readily accessible via arterial roads from neighbouring centres including Cumbalum, Lennox Head, Alstonville, Lismore and Byron Bay.

The area of land within the STP buffer zone has the potential to exceed that required by the regional sports facility alone. This presents the opportunity to locate additional future sporting needs within this area which may then effectively create a "sporting precinct". Additional future sporting facilities identified in the Community Facilities and Open Space Needs Analysis report (ERM, 2004) which could be considered for inclusion in this precinct, are:

- An indoor sporting facility. Issues including flooding, maintenance and management options would need to be addressed;
- Skate parks within proximity to residential areas. When selecting a location for a skate park, high visibility and the privacy of neighbouring residents are key considerations. As the West Ballina Arterial will offer good potential passive surveillance, sites alongside it and in the "sporting precinct" provide a good opportunity for the siting of a skatepark. An additional benefit of this landuse is that it would likely not require filling above flood levels.

Potential constraints to the use of Precinct 3 for this type of landuse may include odour from STP site, lighting, noise and social issues. These issues would need to be fully assessed as part of any proposed open space use.

4.1.2 Community Facility

A multi-purpose community facility is recommended for Ballina to replace the Richmond Room in the library which will be incorporated into the library, and to serve the increased population (ERM, 2004). A key consideration for this facility is the need for it to be located centrally within the Ballina community and be highly accessible, particularly with respect to public transport. This requirement has now been addressed by the Ballina Community Services Centre which was opened in April 2009. With respect to the West Ballina study area, it is considered too far removed from central Ballina for it to present a realistic opportunity for further wide scale community centre facilities.

4.1.3 Preschools

In the future two additional preschools will be required in Ballina (ERM , 2004). Geotechnical considerations and flooding would restrict to some extent any possible locations for a preschool within the study area. Proximity to residential areas is also a key consideration. A potential location that may meet these requirements could be near Riverbend Village in the south of the study area.

4.1.4 Cycleways and Footpaths

Cycleways and footpaths could potentially be incorporated in the study area. These uses could provide connections within and through the study area. This landuse type is not significantly constrained by geotechnical and flooding issues. Constraints to the establishment of such routes include the multitude of landownerships along some of the routes, and the need to ensure that construction methods do not affect flooding (ie elevated paths or cycleways have the potential to create levies). Suitable routes may include the following:

- Alongside the West Ballina Arterial;
- Along the former Ballina to Booyong railway route, including a pedestrian bridge over North Creek Canal in the east (possibly utilising the old bridge abuttments of the railway line), crossing Fishery Creek and connecting to Barlows Road and neighbouring residential areas to the south west of the study area. This component of the cycleway could potentially incorporate interpretive information, informing users of the route's history;

- A north-south cycleway connection from the Booyong railway route to the south and Gallans Road to the north;
- A cycleway connection across the southern edge of the River Oaks development.

4.2 Agriculture

Agricultural land within the study area is classified as being "locally significant" farmland (DoP, 2007) and currently supports cane farms, cattle grazing and tea tree cultivation.

Continued cane farming in the study area to the west of Fishery Creek offers the following opportunities:

- Geotechnically the land is suited for such a use (Department of Agriculture, 1998). This is not the case for other landuses, including employment and residential, where significant works would be required to address geotechnical issues, including foundation material and Acid Sulfate Soils (RCA Aust, 2004);
- Cane farming is considered a suitable use for this flood affected land, with respect to flood storage capacity or floodways. In addition, as a vigorous growing crop, it controls the depth of the groundwater table through transpiration (NSW Sugar Milling Cooperative Ltd, 2007);
- Cane Farming currently injects $230 million annually into the regional economy (NSW Sugar Milling Co-operative Ltd, 2007). This valuable economic resource could be eroded by a reduction in cane production from the study area. The cane land within the study area produces approximately 15,000 tonnes pa, which is a significant proportion of BTN Harvesting Cooperative's production (approximately 15 - 20% - Col Dorey, Stakeholder Meeting, 2007) and is considered crucial to its viability. In turn BTN Harvesting Co-operative provides 7.5 – 10% of the Broadwater Sugar Mill's annual harvest of 1,000,000 tonnes of cane, a reduction of which could compromise the viability of the sugar mill (NSW Sugar Milling Co-operative Ltd, 2007);
- The existing cane lands and Fishery Creek will provide an effective visual buffer between more intensive existing and potential landuses to the east of Fishery Creek.

Potential constraints affecting the continued use of this land for cane farming may be access arrangements for large farm machinery (such as harvesters) on either side of the Pacific Highway Ballina Bypass. The RTA have considered this issue and have indicated that larger machinery (taller than 5.3m) will be able to cross the Bypass via the proposed interchange with the Bruxner Highway and Teven Road (per comms. with RTA 10 December 2007).

Other existing agricultural landuses within the study area comprise livestock grazing and tea-tree plantations. These agricultural practices are located almost wholly on the eastern side of Fishery Creek. Some of these existing agricultural lands may be suited to alternative uses given that:

- These agricultural activities do not generate the same order of economic return as cane farming (Rik Whitehead, DPI, Stakeholder Meetings, 2007);
- The land on which these activities occur is generally considered unsuitable for more intensive forms of agricultural use (ie cane farming) (Department of Agriculture, 1998);
- Some of the land on which these activities occur, particularly towards the eastern end of the study area, does not present very poor geotechnical conditions (RCA Aust, 2004), so poses less of a constraint to other forms of development;
- Some of the land on which these activities occur, principally towards the eastern end of the study area, is slightly higher in elevation, and likely present marginally less constraints to other forms of development in terms of flooding; and
- The north eastern portion of the land is located in relatively close proximity to the existing Southern Cross Industrial Precinct. This offers some potential for future employment lands in terms of broad landuse connectivity and compatibility.

Given the above, there is an opportunity for the consideration of other landuses on existing agricultural land on the eastern side of Fishery Creek that is not significantly restricted by environmental constraints.

4.3 Employment Lands and Highway Service Centre

The study area has been carefully considered in relation to potential opportunities for employment lands. In this regard, the following background information was considered:

- Ballina Shire Council, in its Retail Strategy Report (IBECON, 2003) made the following comments:
  - *"Bulk retail locations need to be situated on or close to major roads with good access for large vehicles;*
  - *It is preferable that bulk retailing be located in quasi retail locations as distinct from industrial zones, where residents usually do not need to have easy access.*

- *In non-metropolitan areas, it is preferable to minimise the extent to which bulky goods retail is spread throughout the region. This is particularly intended to prevent alienation of areas which might be otherwise more appropriately zoned for another use... and also to ensure that locations requiring large vehicle movements are not spread throughout areas which are inappropriate such as residential zones."*

- Ballina Shire Council, in its document Retail Showrooms and Bulky Goods (Core Economics, 2004) made the following comments in relation to future demands for bulky goods retail:
  - *"Potential future demand and floor space requirements should take a long-term perspective. As at 2004 there was estimated to be approximately 39,000 square metres of LFR (Large Format Retail) floor space, with the addition of between 50,000 – 80,000 square metres required over the next 12 years. At 50% site coverage this represents a site area of between 10 -18 hectares."*

Areas considered in this study for employment lands include the "Gateway" site - a large area under existing cane farming along the eastern side of the Pacific Highway Bypass, the north eastern sector of the study area (between the existing STP site and the River Oaks development and westwards to Fishery Creek), and land to the immediate south of the existing Ballina STP. The Ballina "Gateway" site was also considered in terms of its suitability to accommodate a highway service centre.

4.3.1 The Ballina "Gateway" Site

A development application has been lodged with Ballina Shire Council for a highway service centre on Lot 11 DP 1011575, the bulk of which forms an important "Gateway" site to Ballina. The Teven Road interchange provides a significant opportunity for the establishment of a large service centre.

When discussed in 2007, the RTA indicated general support for a highway service centre in this location but has indicated that it should have a desirable minimum area of 5 ha (per comms. with RTA 6 December 2007). The RTA also provided a draft list of facilities that it considers should be included in a service centre (see below).

Draft list of Highway Service Centre Facilities (provided by RTA, December 2007)

Table 4.3.1 Highway Service Centre Facilities (RTA, December, 2007)

	Facilities	
Objective	Compulsory	Allowed
A facility operating for 24 hours per day that provides a range of services for the travelling public and commercial highway users. Encourages drivers to stop and take effective rest breaks at appropriate intervals along a highway in the interest of driver safety. Integrated and approved as part of a single development or as staged development in accord with a single approved plan.	Segregated fuel plazas for light and heavy vehicles. Segregated parking for light and heavy vehicles (25 heavy vehicle spaces as minimum). Direct egress from Highway. Service Station. Shop servicing the travelling public. Restaurant/s (sit down). Food and drink outlets (fast food). Amenities (toilets, baby change rooms, showers). Waste disposal facilities. Public telephone/s. Tourist information booth. Public obligation free rest area facility.	Vehicle maintenance and repair workshop (emergency only). Postal and banking facilities (eg ATM). Drive through food outlet. Children's play facilities. Outdoor picnic/eating area/BBQ. Overnight accommodation for commercial travellers * Other services consistent with the objectives.
* At this stage there remains conflicting views on whether overnight accommodation should be included in a service centre.		

The location of a service centre on this site is also supported by the FNCRS, which states:

> *'Highway Service Centres may be located beside the Pacific Highway at Chinderah and Ballina.'*

The opportunities and constraints relating to the use of the "Gateway" site for a highway service centre are considered to be as follows:

- The "Gateway" site represents a good potential opportunity for the location of a highway service centre. It is located on the Pacific Highway and at a major interchange adjacent to a large coastal town. Importantly, a comparable service centre is not located within approximately 100 km of this site. The proposed configuration of the interchange and service centre is such that the centre can be readily accessed by both north and southbound motorists on the Pacific Highway;
- There are likely to be very limited alternative sites along the Pacific Highway for a highway service centre of the scale proposed;
- A service centre in this location will provide employment and overall economic benefits to Ballina;
- A service centre in this location will need to address significant flooding and geotechnical constraints. In relation to flooding, the Ballina "Gateway" Site will need to incorporate a north-south floodway through the site with culverts under the Pacific Highway (BMT WBM, 2007);
- A service centre in this location will need to address visual issues, particularly relating to extensive and important views from the flyover associated with the interchange (refer to Section 2.1.9.4 Potential Views from Elevated Locations).

In summary, it is generally considered that the use of the "Gateway" site for any development presents significant challenges, most notably the management of flooding and geotechnical constraints. However, the use of the site for the purposes of a highway service centre provides significant potential opportunities, which are not necessarily available elsewhere. Other landuses that may be compatible with the "Gateway" function of the area could include short term accommodation and visitor information facilities. It is considered that the "Gateway" site is not suitable for other large footprint uses, including bulky goods, industrial and transport logistics.

4.3.2 Area to the East of the Pacific Highway Bypass

Through the stakeholder engagement phase of the project it was suggested that the large land area, currently utilised predominately for cane farming along the eastern side of the Pacific Highway Bypass, may be suitable for longer term large footprint logistics landuses, such as transport terminals. These landuses do not necessarily have to be fully flood proofed (eg parking areas) which often constitute a proportionally large area of this type of landuses could remain below peak flood level. The opportunities and constraints of this landuse type for this area are considered to be as follows:

- This area is appropriately situated in a regional context and adjacent to a major arterial road and associated interchange. Given that a major north-south link road can be aligned over this land parcel, an opportunity is presented for this landuse. It is likely that alternative sites along the Pacific Highway, offering the same level of accessibility, are limited;
- This landuse has the potential to create significant economic and employment benefits for Ballina;
- This land is significantly constrained by flooding and geotechnical issues (BMT WBM, 2007 and RCA Aust, 2004). It is noted that these issues alone may render this landuse unfeasible;
- This landuse would lead to the reduction of cane farming land and has the potential to effect the viability of the NSW Sugar Milling Co-operative (refer Section 4.2 Agriculture);
- This landuse offers a less desirable visual outlook from the Pacific Highway Ballina Bypass than does the existing landuse.

On balance, it is considered that the constraints to this landuse, and the potential impact it would have on an existing primary industry, outweigh the opportunities. However, this landuse option could be revisited after such a time as the Pacific Highway Bypass and West Ballina Arterial are operational, as there will likely be a clearer understanding of the continued operational viability of the cane farming in that location and the degree of constraint in relation to flooding. Notwithstanding this, it is considered that this landuse is not a realistic option in the foreseeable future.

4.3.3 North Eastern Sector of Study Area

Land in the North Eastern sector of the study area is identified as Precincts 3, 4, 5 and 6 in Exhibit 8 – Precinct Opportunities and Constraints. A large portion of this land is currently zoned 1(d) Rural Investigation Area and has been identified as potential Employment Lands in the FNCRS (DoP, 2006). The opportunities and constraints of employment landuse in this area are as follows:

- The land is located in relatively close proximity to similar landuses in the Southern Cross Industrial Precinct. With respect to bulky goods retail, this is generally consistent with Council's Retail Strategy Report (IBECON, 2003), in terms of its stated objective:

  "... it is preferable to minimise the extent to which bulk retail is spread throughout the region."

- There is an identified demand for additional bulky goods retail in the Ballina Shire (Core Economics, 2004);
- The land can be potentially well-serviced by arterial and sub-

arterial road networks, including the Pacific Highway, West Ballina Arterial and interconnecting roads;

- This landuse type presents potential compatability issues with the approved River Oaks development. In this regard consideration needs to be given to the suitability of specific of employment landuses (ie heavy industrial may not be suitable) and to the provision of appropriate buffers between landuse types. This effects Precincts 4 and 6, as illustrated on Exhibit 8 – Precinct Opportunities and Constraints;
- Much of this land is contained within the 400m buffer to the Ballina STP. This may limit the type of employment lands that can be located in this area. The types of facilities that can be located in the area needs to be determined by undertaking a risk assessment in accordance with the document STP Buffer Zone Land Use Planning Guidelines (Water Directorate, 2002);
- Any employment lands in this area would need to address significant flooding constraints. Of particular importance in this regard is the identification of the need for the incorporaton of east-west and north-south floodways (BTM WBM, 2009);
- Geotechnical conditions in the western sector of this land area are considered to be poor and represent a constraint to this landuse (RCA Aust, 2004);
- The western sector of this land area is bordered by areas of significant vegetation. Appropriate buffers will need to be provided between these areas and areas developed for the purposes of employment lands.

In determining which type of employment land development is most suited to a particular precinct in this sector of the study area, consideration should be given to the size of the available sites, adjoining landuse compatibility, accessibility and appropriateness within the Ballina STP buffer. This can only be determined through a detailed examination of the full range of issues which is beyond the scope of this study. However, the following preliminary observations can be made:

- Precinct 5 (Exhibit 8 – Precinct Opportunities and Constraints), is a large regular shaped land area with good proximity and exposure to arterial roads. This precinct may offer potential for light industrial or bulky goods retail development. It is noted that its potential for use as bulky goods may be limited by its separation from like uses in the Southern Cross Industrial Area;
- Precinct 3 has a large interface with the approved River Oaks development. It is possible that some forms of employment landuse may be able to be located in this Precinct however their compatability with residential development needs to be carefully considered;

- Precinct 6 may be suitable for the purposes of smaller scale industrial type landuse with a residential component (ie a live/work precinct). In this regard, this land is not constrained in terms of its proximity to the Ballina STP. Likewise Precint 6 may also incorporate a residential (live/work) component.
- Precinct 4 is constrained by its location within the 400m buffer to the STP. Unlike Precincts 6 and 7 this Precinct is unlikely to be able to have a live/work precinct.

In summary, it is considered that the majority of precincts (Precincts 4, 5 and 6 identified on Exhibit 8 – Precinct Opportunities and Constraints) are potentially suitable for employment lands development, such as bulky goods retail and industrial, given that the identified constraints are able to be addressed. It is considered however, that the use of land to the immediate south of the River Oaks development, identified as Precinct 3 on Exhibit 8 –Precinct Opportunities and Constraints, may be better utilised by a landuse which is more compatible with neighbouring residential development. In this regard, it is considered that this land may be more suited for use as a sports and recreation precinct (refer to Section 4.1 Open Space and Community Facilities), particularly if it is deemed, after further investigation, to be the preferred site for the regional sports facility. If however, Precinct 3 is not deemed to be the preferred site for the regional sports facility if may be considered for use as employment lands.

4.3.4 Area to the South of the Ballina STP

This area was considered in early assessment phases of the study for possible use as employment lands. This was initiated because the land is currently zoned 1(d) Rural Investigation Area and is identified as potential employment lands in the FNCRS (DoP, 2007). However, after a more detailed examination of the issues, the land was not considered suitable for use as employment lands for the following reasons:

- The land is not located in close proximity to existing bulky goods retail which are located within Southern Cross Industrial Precinct and on Ballina Island and hence is not considered to be consistent with Council's Retail Strategy Report (IBECON, 2003), in terms of its stated desirable criteria:

  "... it is preferable to minimise the extent to which bulky goods retail is spread throughout the region."

- This land is almost wholly contained within the existing Ballina STP buffer zone which places a level of constraint on the type of facilities which can be permitted;

- It is desirable for employment lands to be serviced by major link roads. In this regard it is considered unlikely that the land can be serviced in the future by a continuous link road between the West Ballina Arterial and Pacific Highway to the south because the existing Fishery Creek Road is likely to be unsuitable for an appropriate future road upgrade, and the probability of achieving a new crossing of Fishery Creek, over SEPP 14 wetlands, is likely to be low;
- The land presents significant flooding and geotechnical constraints (BMT WBM, 2007 and RCA Aust, 2007).

4.4 Potential Future Upgrade of Ballina STP Site

Ballina Shire Council is considering the upgrade of the existing Ballina STP which may require the construction of new infrastructure (per comms. with Council staff 12 November 2007) on privately owned land to the immediate south of the existing STP. Council initially considered that the STP would need to expand its footprint and this approach was discussed as part of the stakeholder engagement process. Factors discussed and considered at this time included:

- The location of the new facility to the immediate south of the existing facility would minimize impacts on existing residential areas to the east of North Creek Canal. The new 400m buffer would principally extend over a limited number of rural properties on Fishery Creek Road to the south of the STP and environmental lands associated with Fishery Creek;
- The location of the new facility will likely affect less landholders than would otherwise be affected by establishing a new STP facility on a new site;
- The retention of much of the existing STP infrastructure, including the settling ponds and pipe infrastructure will likely reduce the needs and costs associated with new infrastructure that would have to be provided for on a new site;
- A constraint to the expansion of the STP to the south of the existing plant is the tenure of the land, much of which is in private ownership. Ballina Shire Council would need to come to a satisfactory agreement with the current owner in order to expand southward. In addition, there are some residences (approximately five) north of Fishery Creek which may be impacted by an expansion of the STP in this direction;

Council's intended approach to the STP upgrade as at October 2009 does not require any substantial change to the current STP site footprint. However, additional land may still be required to facilitate access and/or minor increases in site area. Alternatively, Council may alter its current approach and require an enlarged STP site footprint.

- A significant consideration for the viability of this STP upgrade is the need to provide appropriate future road access. Given that the provision of future improved road access across Fishery Creek is uncertain due (principally) to ecological constraints, finding alternative road access is considered critical to the explansion plans. Such alternative access may be achieved via direct access onto the proposed Western Arterial, as illustrated on Exhibit 8 – Precinct Opportunities and Constraints.

4.5 Residential

There are two areas in the study area currently zoned 2(a) Living Area (Ballina LEP, 1987).

The first of these is the River Oaks development, which was granted Development Consent in 2002 (DA 2002/566). It is located on the larger of these residential zoned land parcels in the north eastern corner of the site. Construction of the first stages of this 380 lot development commenced in January 2008.

The second is a small triangular shaped land parcel (approximately 4 ha) located in the south western corner of the study area, adjacent to the existing Riverbend Village development. At this stage, there has been no formal application lodged to develop this land.

The Ballina Urban Land Release Strategy (BSC, 2000) identifies two additional land areas that are not currently zoned for residential living but which may be considered for residential living in the future. This additional land includes a land parcel to the immediate west of the River Oaks development and a thin strip of land on the periphery of the southern extent of the 400m Ballina STP buffer zone. The FNCRS (DoP, 2006) recognised the land parcel to the immediate west of the River Oaks development as a Potential Future Urban Release Area, but it did not similarly recognise the land on the southern periphery of the Ballina STP buffer zone.

The potential future development of the three (3) currently undeveloped portions of the study area, that have been identified as future potential urban release areas in the BULRS (BSC, 2000) and/or the FNCRS (DoP, 2006) are discussed below as follows:

4.5.1 Small Parcel of Land Adjacent to the Riverbend Village Development

The current alignment of the south western most sector of the West Ballina Arterial leaves a space, approximately 100 – 200m wide, between the existing Riverbend Village development and the West Ballina Arterial. This is represented as Precinct 2 on Exhibit 8 – Precinct Opportunities and Constraints. This space is likely to have

a very limited continuing use as agricultural land due to its small size and isolation from other agricultural areas that the West Ballina Arterial will bring. The opportunities and constraints to future residential development on and around this current land parcel are considered to be as follows:

- The (approximately) 4 ha of triangular shaped residentially zoned land (Ballina LEP, 1987) in this locality provides the expectation from both a landholder and community perspective that the land will be developed for the purposes of residential development;
- Should the above land parcel be developed for residential due to its current residential zoning then the existing agricultural land to the north and north east and between the West Ballina Arterial and existing development (the residual land identified in Precinct 2) may be considered for residential development on the grounds that it would be compatible with neighbouring residential land uses;
- Given the irregular shape of Precinct 2, its relatively small area, and the likely need for a significant buffer between any development and the West Ballina Arterial, it is considered that conventional residential subdivision may not represent the most efficient use of the land. Other forms or more intensive but low scale development, such as manufactured housing, seniors living and integrated housing may present better opportunities;
- Whilst the land is flood-prone (BMT WBM, 2007) which represents a constraint to residential development, it is located between land already filled for the purposes of flood-proofing, and the future West Ballina Arterial which will be filled for the purposes of flood mitigation, albeit not necessarily to 1 in 100 flood levels. In this regard it is likely that the potential flooding impacts resulting from the filling of this land parcel is significantly reduced;
- The residential land is located immediately adjacent to the future West Ballina Arterial road. In this regard appropriate visual and acoustic buffers will likely need to be established. It is considered that the onus for the assessment and implementation of any required visual and acoustic buffers to the West Ballina Artrial should be with the developer of this land parcel; and
- The very poor geotechnical conditions will require significant works (RCA Aust, 2004).

It is noted that neighbouring development, specifically the Riverbend Village development and the Emmanuel Anglican College have demonstrated that flooding and geotechnical constraints on this land can be appropriately managed. Given this, and the assumption that visual and acoustical exposure issues can also be addressed, it is considered that this land parcel may present an opportunity for appropriately designed residential development of a more intensive (but low scale) form than conventional subdivision.

4.5.2 Land Parcel to the Immediate West of the River Oaks Development

This land, identified as Precinct 5 on Exhibit 8 – Precinct Opportunities and Constraints, has been identified in the FNCRS (DoP, 2006) and Ballina Urban Land Release Strategy (BSC, 2000) as being potentially suitable for future urban release. The physical opportunities and constraints relating to this land parcel are similar for both residential and employment-based land use types and therefore need not be repeated. Given this, what needs to be determined is the most appropriate use of the land in consideration of the existing and future patterns of development, the availability of other suitable land elsewhere in the local government area and landuse demand. The following comments are made in relation to these considerations:

- Future residential development in this Precinct would be compatible with the River Oaks development;
- If Precinct 5 was utilised for residential development it would reduce the total area of land potentially available for employment lands (to Precincts 4 and 6). This may have the effect of making those Precincts less viable to develop as employment lands;
- Employment landuses should ideally be located on flat land and situated on or close to major road networks, and where possible, adjacent to like landuses (IBECON, 2003). This is not the case for residential landuses, which can be located on land with low to moderate topographic relief and does not necessarily have to be located on or close to major road networks. This effectively limits the options for the location of suitable land for employment, arguably making land that is suitable more valuable for that purpose;
- There is an identified demand for bulky goods retail landuses (refer to previous discussion in Section 4.3 Employment Lands and Highway Service Centre).

In summary, Precinct 5 could be used either for residential or employment lands. However, given the identified demand for employment lands, the Precinct's flat topography and relatively close proximity to the Southern Cross Industrial Estate, it is considered that the Precinct would, on balance, best be utilised for employment lands.

4.5.3 Strip of Land on the Periphery of the Southern Extent of the Ballina STP Buffer Zone

This land was originally identified as a future potential urban release area in the Ballina Urban Land Release Strategy (BSC, 2000) but has not subsequently been identified as potential residential development in the FNCRS. Rather, part of this land has been identified in the FNCRS as having potential for employment land uses.

A submission made by Tekcadl Investments (5 February 2008) lists a number of possible landuses for their land, part of which includes the strip of land identified in the Ballina Urban Land Release Strategy (BSC, 2000). Small lot rural subdivision is included in Tekcadl Investments' list of possible land uses. There is no current provision for this landuse in the Ballina LEP and Council does not have a rural residential release strategy in place.

The land is considered to have the following opportunities and constraints in relation to residential development.

Physical constraints include:

- The land is located immediately adjacent to sensitive environmental lands (SEPP 14 wetlands) associated with Fishery Creek;
- The land is flood prone (BMT WBM, 2007);
- The land is small and isolated from other residential areas by virtue of Fishery Creek, North Creek Canal and the existing 400m Ballina STP buffer zone;

Other constraints include:

- The current approach to the upgrade of the Ballina STP may not result in the expansion of its footprint into land owned by Tekcadl, as previously thought. However, there does remain the possibility that this approach will change, and part of Tekcadl's land will be acquired. Should this occur the resulting 400m buffer zone to the STP may effect this land parcel;
- As it exists this land parcel is accessed via Fishery Creek Road. This is a minimum standard road which would be difficult to realign and upgrade, given the environmental constraints presented by Fishery Creek and its associated SEPP 14 Wetlands. However, access to this area could be improved if the additional intersection suggested for the West Ballina Arterial is provided.

On balance, it is considered that this land parcel is not suitable for residential or rural residential development. However, if the Ballina STP expansion does not proceed, further investigation into the viability of small lot rural subdivision, may be considered. With respect to this, it should be noted that Council's planning framework does not enable new rural residential subdivision.

4.6 Road Infrastructure

Existing and proposed major road infrastructure has been discussed at length in Section 2.1.5 Road Hierarchy and Access. In the case of the Pacific Highway Ballina Bypass and the West Ballina Arterial, detailed environmental and economic assessment work has or is currently being undertaken. In this regard this report section will concentrate on the potential for additional road networks with linkages between the Pacific Highway and West Ballina Arterial, so as to service potential future development areas.

Ballina Shire Council has indicated that it is preferable to have minimal road intersections with the West Ballina Arterial between its end connections with the Pacific Highway, so as to maximise the road's efficiency. However, Council would consider limited access opportunities, where a definite benefit can be demonstrated (per comms. with Council 12 November 2007). In addition to the committed roundabouts at North Creek Road and connection to the River Oaks development the potential for establishing an intersection in the vicinity of the North West corner of the Ballina STP was also considered. This additional intersection provides the following opportunities:

- It provides the ability for a road connection north to Pacific Highway and Gallans Road, servicing potential development lands along that route;
- The road connection north will in turn enable an east-west road connection across the southern side of the River Oaks development;
- It provides an alternative and much improved potential southern access connection to the STP facility and existing rural properties to the south of the West Ballina Arterial. This, in turn, may also enable the possible (longer term) future closure of the Fishery Creek Road crossing of Fishery Creek;
- The above road access provisions will assist in maximising traffic flexibility throughout the developed areas in the north eastern sector of the study area.

The above potential benefits of the proposed road access provisions will need to be considered alongside the following issues:

- Flooding impacts and geotechnical constraints (BMT WBM, 2007 and RCA Aust, 2004);
- The desired need for there not to be a continuous access link across the southern side of the River Oaks development so as to maintain a quiet lifestyle for the residential area (per comms. with stakeholders December 2007). This issue needs to be weighed against the advantages that this link would provide for a full range of potential landuses (including residential, open space and employment lands) in terms of general traffic flexibility. It is further considered that the link road could be designed such that it does not present an attractive option in terms of efficiency for motorists wishing to travel eastwards from Precints 4, 5 and 6 , as illustrated on Exhibit 8 – Precinct Opportunities and Constraints.

4.7 Environmental Lands and Buffers

4.7.1 Potential Change of Use of Agricultural Lands

As discussed in Section 4.2 Agriculture, existing cane growing areas in the study area, predominantly to the west of Fishery Creek, are considered to be desirable to retain. However, agricultural lands to the east of Fishery Creek, identified as Precinct 7 on Exhibit 8 - Precinct Opportunities and Constraints, which largely comprise livestock grazing areas, are generally considered to be of lesser agricultural value and hence potentially more suitable for an alternative landuse. It is also noted that the value of this agricultural land may be further eroded by its reduction in size, and fragmentation, in the event that large portion of land to its east are taken up by other landuses.

Due to this land's close proximity to Fishery Creek and its associated flooding and ecological constraints, it is considered very unlikely that this land precinct could be utilised for landuse changes requiring land filling (ie residential or employment). However, this land precinct may be considered for the following potential landuse options:

- Continued use as livestock grazing land;
- Use for some other form of agriculture (eg tea tree or sugar cane cropping);
- Use for temporary activities such as concerts, home shows and sporting events;

- Use of land for revegetation incentive strategies which may potentially include:
    - Biobanking;
    - Carbon credits;
    - Forestry activities;
    - Developer offsets; and
    - Possible CMA funding.

In relation to the use of the land for a purpose that requires ongoing irrigation (ie agricultural cropping or revegetation) it should be noted that this could occur in conjunction with a reclaimed water reuse scheme associated with the potential upgrading of the Ballina STP site. This potential co-beneficial landuse arrangement needs to be further considered by both the effected landholders and Ballina Shire Council.

4.7.2 Potential Loss of Identified Sensitive Existing Vegetation

A small area of existing vegetation, identified as Swamp Oak Floodplain Forest (Environmental Consultants Pty Ltd, 2008), in the north eastern sector of the study area to the immediate west of the River Oaks development will be potentially impacted by the establishment of the North Canal Floodway and development in that area in the future. Wherever possible, this vegetation should be retained within the development. Alternatively, future landowners may wish to investigate options for the removal of some of the vegetation in lieu of revegetation elsewhere under development offset or biobanking schemes (also refer to Section 4.7.1 Potential Change of the use of Agricultural Lands).

4.7.3 Environmental Buffers

Given that landuse change does occur in the study area it will be necessary to consider the establishment of environmental buffers between different landuses, between development and sensitive environmental lands and between development and infrastructure, including roads and the Ballina STP. Potential environmental buffers for the study area include:

- Integrated vegetative and bushfire (asset protection zone) buffers between employment lands and existing vegetation in the north eastern sector of the study area (specifically Precincts 4 and 6, as illustrated on Exhibit 8 – Precinct Opportunities and Constraints);
- An increased vegetation buffer between the Ballina STP site and development land to the north - this vegetation buffer should ideally incorporate tall vegetation which may assist in the mitigation of potential odour nuisance;

- Visual and acoustic buffers between different landuses - this is particularly relevant to the approved River Oaks development and adjoining employment lands (Precinct 5, as illustrated on Exhibit 8 – Precinct Opportunities and Constraints);
- Acoustic buffers between major roads and residential areas - acoustic mounding and fencing will likely be required between the West Ballina Arterial and the approved River Oaks development and residential development to the immediate north and west of the Riverbend Village development and the West Ballina Arterial.

4.7.4 Rehabilitation and Recreational Opportunities for Environmental Lands

Environment lands associated with Fishery Creek have the potential for continued rehabilitation through their preservation via environmental planning controls, the establishment of environmental buffers as discussed in 4.7.3 Environmental Buffers above and public education. In terms of the latter, public education of the value of Mangrove vegetation communities may be heightened by the implementation of a boardwalk along Fishery Creek. This also doubles as a valuable recreational opportunity. This potential landuse opportunity may be undertaken at the time of the implementation of the West Ballina Arterial, which will likely require a substantial bridge structure over Fishery Creek.

Section 5
Structure Plan

5.1 Basis for Recommendation

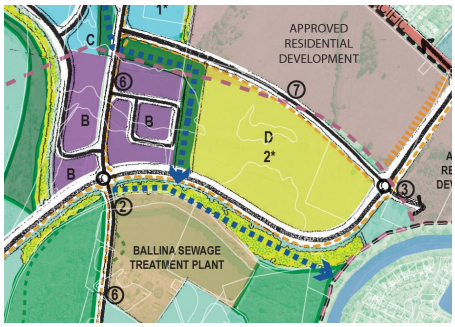
The Structure Plan, illustrated on Exhibit 9 –Structure Plan, and discussed below, is the culmination of a comprehensive study process involving the review of background studies and information, site investigation, stakeholder engagement and the identification of opportunities and constraints for various landuse options. In this regard this section of the report should not be read in isolation. The basis for the recommendations made in this report section is provided in Section 4 Future Development Opportunities and Constraints.

5.2 Structure Plan Recommendations

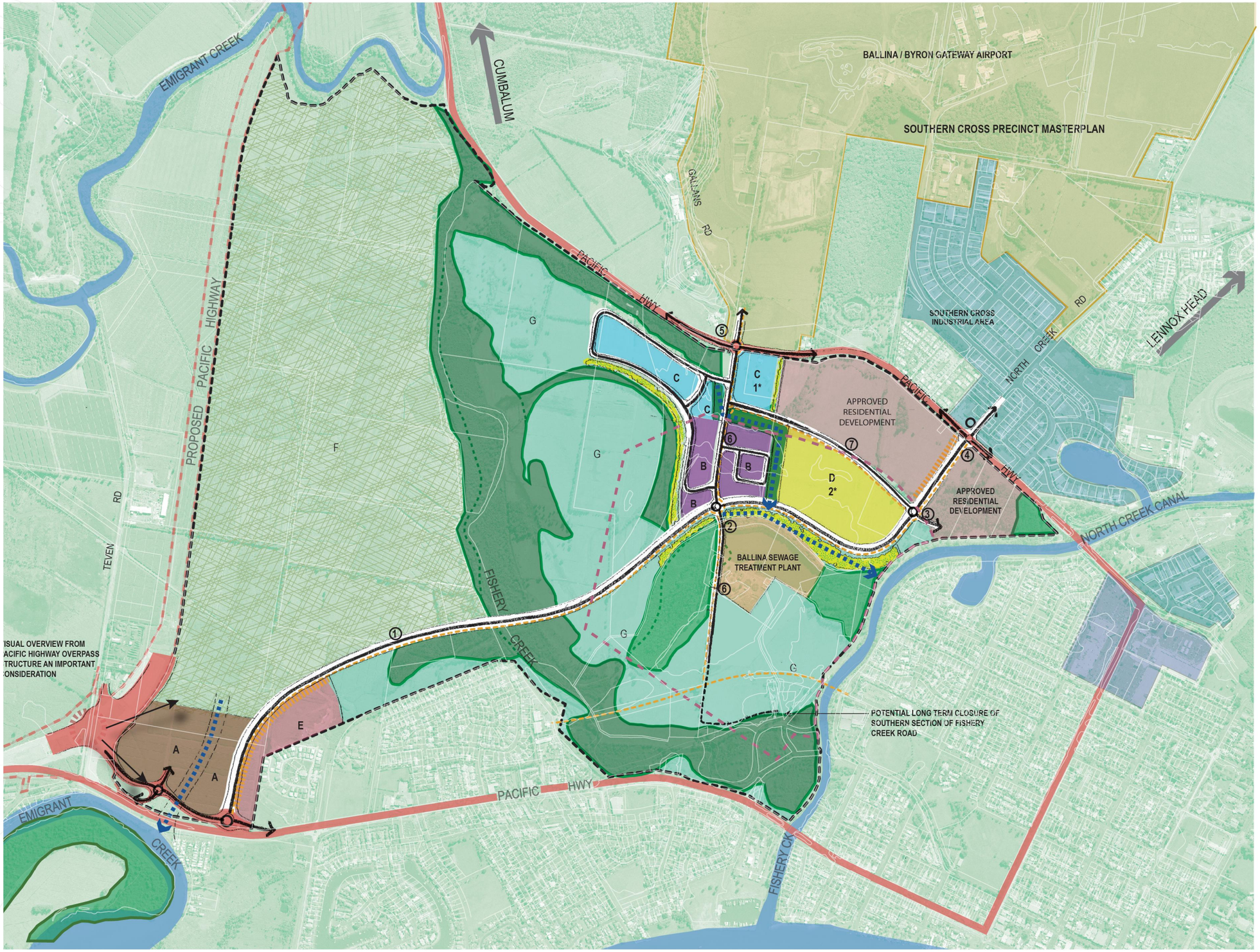
The recommendations in this report section should be read in conjunction with Exhibit 9 –Structure Plan.

5.2.1 Open Space and Community Facilities

The following recommendations should be read in conjunction with Section 4.1 Open Space and Community Facilities:



- Subject to detailed investigation, a sports precinct be located on land bounded by the River Oaks development to the north and the West Ballina Arterial to the south and east. Future sporting facilities may include the regional sports facility, and may also include an indoor sporting facility and skatepark (ERM, 2004);
- For reasons outlined in Section 4.1 Open Space and Community Facilities, and subject to detailed investigation, the land identified above is considered potentially more suitable for the citing of a sporting precinct than the land identified in the Southern Cross Precinct Master Plan;
- If this land parcel is not utilised for a regional sporting facility or open space it may be considered for use as employment lands subject to a satisfactory interface being established with the approved River Oaks development;
- Areas designated for residential purposes in this Structure Plan, in the south western corner of the study area, may, subject to detailed investigation, be suitable for the location of a preschool, to meet the needs of expanding residential areas within and around the study area (ERM, 2004);



ROAD NETWORK

1. WEST BALLINA ARTERIAL - SUBJECT TO EIS OUTCOMES
2. POTENTIAL ADDITIONAL INTERSECTION ALONG WEST BALLINA ARTERIAL
3. APPROVED ACCESS INTO RIVER OAKS DEVELOPMENT
4. WEST BALLINA ARTERIAL INTERSECTION WITH PACIFIC HIGHWAY
5. POTENTIAL ADDITIONAL (LONG TERM) INTERSECTION WITH PACIFIC HIGHWAY
6. POTENTIAL NORTH SOUTH ROAD NETWORK CONNECTION
7. POTENTIAL EAST WEST ROAD NETWORK CONNECTION

LANDUSE PRECINCTS (SUBJECT TO DETAILED INVESTIGATION)

A	HIGHWAY SERVICE CENTRE AND ASSOCIATED USES
B	EMPLOYMENT LAND (INDUSTRIAL)
C	INDUSTRIAL WITH POTENTIAL FOR RESIDENTIAL COMPONENT ie. LIVE/WORK PRECINCT
D	OPEN SPACE / SPORTING FACILITIES
E	RESIDENTIAL EXTENSION
F	EXISTING CANE FARMING
G	EXISTING AGRICULTURAL LANDS (TEMPORARY LAND USES)
1*	ALTERNATIVE FOR USE AS RESIDENTIAL LANDS MAY CONSIDERED
2*	IF THIS LAND PARCEL IS NOT UTILISED FOR A REGIONAL SPORTS FACILITY IT MAY BE CONSIDERED FOR USE AS EMPLOYMENT LANDS

LEGEND

- EXISTING VEGETATION AREAS
- EXISTING RETAIL
- EXISTING INDUSTRIAL AND BULKY GOODS RETAIL
- FLOODWAYS: CONCEPTUAL ALIGNMENT ONLY, TO BE DETERMINED THROUGH DETAILED ANALYSIS.
- CORRIDOR CREATED FOR FLOODWAY - MAXIMISE RETENTION OF EXISTING SWAMP OAK FLOODPLAIN FOREST
- SEPP 14 WETLAND
- CYCLEWAY \ WALKWAY (POTENTIAL)
- REVEGETATION BUFFER
- ACOUSTIC BUFFER
- 400m BUFFER ZONE TO SEWAGE TREATMENT PLANT
- STUDY AREA BOUNDARY

L:\14938_WEST_BALLINA\Planning\Photoshop\14938P_Ex9_Draft_Struct_Plan.psd

KING + CAMPBELL

King & Campbell Pty Ltd
www.kingcampbell.com.au
A: PO Box 243 Port Macquarie NSW 2444
T: 02 6586 2555
F: 02 6583 4064
E: info@kingcampbell.com.au

REV.	DATE	DESCRIPTION
A	JAN. 2008	ISSUED FOR INFORMATION
B	MAR. 2009	ISSUED FOR INFORMATION
C	OCT. 2009	ISSUED FOR INFORMATION

DATUM: AHD SCALE: 1:15000 @ A3

0 750

NOTE: DO NOT SCALE OFF DRAWINGS. USE FIGURED DIMENSIONS ONLY. REPORT ANY DISCREPANCIES TO THE AUTHOR. THIS DRAWING, BEING THE PROPERTY OF KING & CAMPBELL PTY LTD, IS PROTECTED BY COPYRIGHT AND MUST NOT BE USED , REPRODUCED OR COPIED WHOLLY OR IN PART WITHOUT THE WRITTEN PERMISSION OF KING & CAMPBELL PTY LTD.

PROJECT NO:	14938
DA NO.:	-
DESIGNED BY:	DAT
DRAWN BY:	PH
CHECKED BY:	DAT
DATE CREATED:	OCT. 2009

DRAWING TITLE:	EXHIBIT 9: DRAFT STRUCTURE PLAN
PROJECT:	WEST BALLINA STRUCTURE PLAN
CLIENT:	BALLINA SHIRE COUNCIL

DRAWING NO.	SHEET:	REVISION:
14938P_Ex9_Draft_Struct_Plan.psd	1	C

- Subject to detailed investigation, a comprehensive cycleway network is recommended. Sections of the network may be as follows:
    - Alongside the West Ballina Arterial;
    - Along the former Ballina to Booyong railway route, including a bridge over North Creek Canal (possibly utilising the old bridge abuttments of the railway line), a crossing of Fishery Creek to Barlows Road and neighbouring residential areas to the south west of the study area. This component of the cycleway could incorporate interpretive signage, informing users of the route's history;
    - A north south cycleway connection from the former Booyong railway route to the south and Gallans Road to the north;
    - Cycleway connection across the southern edge of the River Oaks development.

5.2.2 Agricultural and Environmental

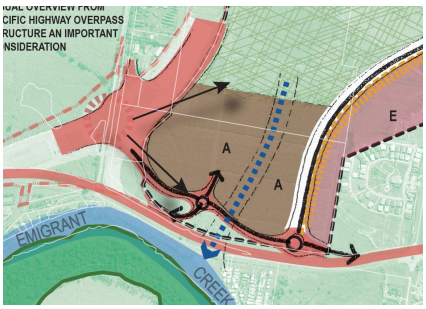
The following recommendations should be read in conjunction with Sections 4.2 Agriculture and 4.7 Environmental Lands and Buffers:

- Subject to detailed investigations, existing cane farming operations to the west of Fishery Creek should be retained. Every effort should be made by the RTA to provide cane growers appropriate access for farm machinery so as to maintain the viability of farming practice;
- In existing agricultural lands to the east of Fishery Creek that are not identified for alternative landuses, options that may be considered for the continued use of the land are:
    - Continued use as, largely, livestock grazing land;
    - Utilised for more intensive agricultural use ie tea tree or sugar cane cropping;
    - Use of temporary activities such as concerts, home shows and sporting events;
    - Revegetation via an incentive strategy (refer to Section 4.7.1 Potential Change of Agricultural Lands);
- The potential use of reclaimed water in the event that the Ballina STP is upgraded may provide an added incentive for utilisation of the above land for agricultural cropping or revegetation;

- Subject to detailed investigations, the following environmental buffers are recommended:
    - Integrated vegetation and bushfire (asset protection zone) buffers between employment lands and existing vegetation in the north eastern sector of the study area.
    - An increased vegetation buffer between the Ballina STP site and development land to the north;
    - Visual and possible acoustic buffers between the River Oaks development and land to its immediate west in the event that it is utilised for employment lands;
    - Acoustic barriers, that may include vegetated buffer zones, between the West Ballina Arterial and the River Oaks development and potential residential development to its immediate west and north of the Riverbend Village development;
- Potential exists for a boardwalk to be established along Fishery Creek, possibly in conjunction with the construction of the future West Ballina Arterial.

5.2.3 Employment Lands and Highway Service Centre

The following recommendations should be read in conjunction with 4.3 Employment Lands and Highway Service Centre:



- Subject to detailed investigations, the area to the east of the Pacific Highway Bypass, which is currently utilised predominantely for cane farming should be retained for cane farming. The opportunities to develop this land for the purposes of large footprint logistics type landuses (ie transport terminals) may be revisited in the future;
- Subject to detailed investigations, and resolution of various technical and environmental issues, land in the "Gateway" site area is generally considered suitable for the purposes of a highway service centre. It is considered that the "Gateway" site is not suitable for other large footprint uses, including bulky goods, industrial and transport logistics;
- Subject to detailed investigations, a portion of land in the northeastern sector of the study area is recommended to be designated for employment lands. The exact nature of these uses should be resolved through a detailed investigation of existing and future demands for different types of employment landuses, a determination of the range of landuses that can be permitted within the Ballina STP buffer zone and a full assessment of physical constraints. For the purposes of

stimulating further discussions in this regard, a notional layout of different employment land types is illustrated on Exhibit 9 – Structure Plan. Uses could include general industry, live/work industrial areas and bulky goods retailing. It is likely that industry which does not incorporate a living component is better suited to locations within the Ballina STP buffer zone.

- Land identified for open space/sporting facilities, to the immediate south of the approved River Oaks development may be considered for use as employment lands if it is determined not to be the preferred site for the regional sports facility.

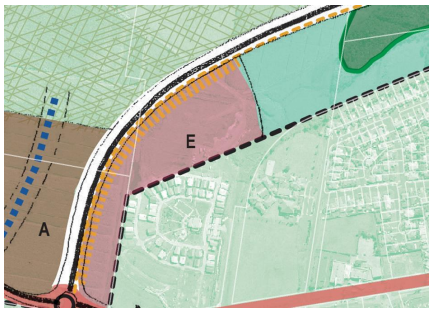
5.2.4. Potential Future Upgrade of Ballina STP Site

The following recommendation should be read in conjunction with Section 4.4 Potential Future Upgrade of Ballina STP site:

- The future upgrade of the Ballina STP may necessitate supporting general revegetation or constructed wetland plantings for either water reuse or improvement of water quality. The exact nature of this requirement will be dependent on the final approach adopted for the STP upgrade works. What is understood however, is that it is unlikely that any large areas of additional land will be required for the augmentation of the STP itself.
- Generally, there are numerous potential areas in the study area, including the eastern side of Fishery Creek, which are not constrained by ecological issues and would be suitable for water reuse or improvement of water quality. In this regard, the area to the north of the Ballina STP has been identified by Council as a potential location. Although it is considered suitable for water reuse/quality improvement, this land has also been identified in the DSP as having potential for urban uses, including employment lands and open space (refer to 5.2.3 and 5.2.1.)

5.2.5 Residential

The following recommendations should be read in conjunction with Section 4.5 Residential:



- Land in the south western corner of the study area, between the existing Riverbend Village development and the West Ballina Arterial may, subject to detailed investigations, be considered suitable for appropriately designed residential development. Given the irregular shape of this land parcel, its relatively small area and the nature of neighbouring development to the east, it is considered that it may be best utilised for intensive but low scale development such as manufactured housing, seniors living and integrated housing. It is also considered that the onus for the assessment and implementation of any required visual and acoustic buffers to the West Ballina Arterial should be with the

developer of this land parcel;

- Land to the immediate west of the River Oaks development has been nominted as employment lands on Exhibit 9 –Structure Plan. Subject to a detailed investigation of the relative demand and potential sites of employment and residential lands, the use of this land parcel for residential land may be considered;
- At this point in time, no other land in the study area is considered potentially suitable for residential development. Any future proposals for residential lands elsewhere in the study area will need to demonstrate the appropriateness of this development in terms of other landuse options and will need to address all environmental issues.

5.2.6 Road Infrastructure

The following recommendations should be read in conjunction with Section 4.6 Road Infrastructure:

- Subject to detailed investigations, an additional intersection along the proposed West Ballina Arterial is recommended. This intersection location is adjacent to the north western corner of the Ballina STP.
- Subject to detailed investigations, additional recommended major road connections within the study area that link to the Pacific Highway and the West Ballina Arterial are:
    - A road connection north from the West Ballina Arterial (from the intersection discussed above) to the Pacific Highway at Gallans Road;
    - A road connection south from the West Ballina Arterial (from the intersection discussed above) connecting the Ballina STP and existing rural properties;
    - An east west road connection across the southern side of the River Oaks development.

5.3 Recommended Testing of Structure Plan Proposals

The recommendations and discussions contained in this report section and in Section 4 Future Development Opportunities and Constraints, have been provided by the Consultant Team on the basis of its research of background studies and information made available during the course of the study, site analysis and discussions with stakeholders conducted at the outset of the project. Given that the study is at a structure planning level it will be necessary however, to test the recommendations made through a more rigorous assessment process.

The assessment process from this initial Structure Plan to any possible implementation on the ground is extensive and will necessitate a detailed investigation of all issues pertaining to the site and its environment. However, it is recommended that a number of studies that are considered critical to the feasibility of the Structure Plan be undertaken at the outset of the next phase of assessment. These studies should include, but should not necessarily be limited to:

- A further flood assessment should be undertaken using flood modelling recently undertaken by BMT WBM, to refine information regarding flooding with respect to specific development types and footprints;
- An analysis of the implications of sea level rise with respect to potential changes in the land use and infrastructure development having regard for government endorsed sea level rise and climate change policy. This should be carried out with regard for, or in association with, further flood assessment undertaken in relation to potential development in the study area;
- A comprehensive study regarding the demands for different types of employment landuses, and where they are best located. This could build on Council's Industrial and Commercial Land Use Review (BSC, 2008);
- The feasibility of the road and cycleway network proposed as part of the Structure Plan should be further examined. This may be able to be undertaken in conjunction with the West Ballina Arterial Environmental Impact Statement;
- A risk assessment of suitable landuse options that can be located in the 400m buffer zone of the Ballina STP be undertaken in accordance with the document STP Buffer Zone Land Use Planning Guidelines (Water Directorate, 2002);
- A detailed ecological investigation of the study area, including an assessment of the impacts that will likely result from the potential development recommended in this study.

5.4 Outcome Progression and Timing

The Structure Plan proposals contained in this report are subject to a detailed investigation and planning process. These detailed investigations and planning processes will likely involve an extended timeframe for completion and may necessitate alterations to the Structure Plan. In summary, the progress of Structure Plan outcomes is subject to the following key steps:

- Adoption by Council of the Structure Plan outcomes into Council's Growth Management Strategy;
- Amendment to the FNCRS to enable development of areas outside the currently defined Town and Village Growth

Boundary. This will require agreement from the NSW DoP;

- Amendment of the LEP to accord with the Structure Plan, subject to further investigation and analysis. This may include the preparation of local environmental studies. Amendment to the LEP requires agreement from the NSW Minister for Planning;
- Lodgement and assessment of Development Applications for proposed uses. This process may be via either the Council or the NSW State Government depending on the type, intensity and location of proposed land uses contained in an application.

The above steps may result in amendments to the Structure Plan set out in this report, given the findings of further investigations and the requirements of other agencies such as the NSW DoP. However, upon adoption of the Structure Plan, it is intended that it will provide the overarching direction for land use in the study area.

The timing of the implementation of the majority of the Structure Plan proposals is also dependant to a large degree on the timing of the delivery of major road infrastructure in the study area, as follows:

- The RTA has advised that it has funding for the Pacific Highway Bypass project from July 2009, and that it is anticipated that construction will take approximately 4 - 5 years to complete (per comms. with RTA 6 December 2007);
- Ballina Shire Council has indicated that construction of the West Ballina Arterial will not commence until the completion of the Pacific Highway Bypass (per comms. with Council 12 November 2007) and will be subject to funding and other necessary resources at that time. Council's planning approach is that the arterial will not be constructed until after 2020. It is also noted that the timing of the implementation of this road section will be dependant on its demand from a broad community perspective and the demand to service future development. These two demands will not necessarily coincide.

The timing of the implementation of the Structure Plan proposals will also be dependant on the timing of decisions relating to the upgrade of the Ballina STP. In this regard it will be difficult to progress any further testing of the Structure Plan proposal until details of STP upgrade works are finalised and the implications of those works in relation to buffer requirements are determined.

Given the above, it is considered unlikely that the majority of the urban landuse elements of the Structure Plan will be able to commence for a minimum 5 - 10 years. However, some proposals given their nature and current status, may be able to be implemented prior to this time. These include:

- Service centre and associated development in the south western corner of the study area. This will likely be able to be implemented prior to the construction of the West Ballina Arterial, as access to this facility from the West Ballina Arterial is not required;
- Minor residential extension to the Riverbend development, in the south eastern corner of the study area;
- Employment lands directly adjacent to the Pacific Highway in the north eastern sector of the study area may be able to commence prior to the completion of the West Ballina Arterial. It is considered unlikely however that the RTA will grant an additional access point off the Pacific Highway to service this development prior to the completion of the Pacific Highway Bypass.

Section 6
Conclusion

This West Ballina Planning Study and Structure Plan has evolved out of a comprehensive study process, involving a review of background studies and information, site investigations and stakeholder engagement. The purpose of the Structure Plan is to assist Council in defining a direction for the future of this land over the next 15 – 20 years.

The study has found that whilst the majority of the study area presents significant environmental constraints to future development there does exist, in some limited areas, the potential for future landuse change. These landuses are varied and include a highway service centre, limited residential lands, employment lands, road and STP infrastructure and open space facilities.

Whilst these recommendations have been the result of a careful consideration of a multitude of issues, they need to be further tested through a detailed investigation process. Detailed studies which are recommended as a first step in this process include flood assessment, further employment lands demand assessment, an assessment of road and cycleway network needs, a risk assessment of landuse options that may be located within the Ballina STP buffer zone and an ecological assessment. These detailed studies will further inform the Structure Plan and may necessitate its modification.

This West Ballina Planning Study and Structure Plan is an important first step in defining the potential pattern of future landuse in the West Ballina area and providing for the future needs of the local government area generally.

Reference Documents

Reference Document	Text Reference
• *Ballina Local Environmental Plan 1987*, Ballina Shire Council, February 2005	(LEP)
• *Far North Coast Regional Strategy*, Department of Planning, 2006	(FNCRS)
• *Ballina Urban Land Release Strategy 2000*, Ballina Shire Council, May 2000, including the *Update Addendum*, Ballina Shire Council, July 2003	(BSC, 2000) (updated, 2003)
• *Regional Industry and Economic Plan for the Northern Rivers*, Northern Rivers Regional Development Board, November 2005	(NRRDB, 2006)
• *Ballina Flood Study Update, Draft public Exhibition Version*, BMT WBM, December 2007	(BMT WBM, 2007)
• *Ballina Flood Study* Presentation to Council, BMT WBM, August 2007	(BMT WBM, June 2007)
• *Flood Impact Assessment for the West Ballina Master Plan,* February 2009	(BMT WBM, 2009)
• *Ballina Shire Industrial Land Audit*, Ballina Shire Council, March 2003	(BSC, 2003)
• *Ballina Retail Strategy*, prepared by *Ballina* Shire Council Strategic Services in conjunction with IBECON Pty Ltd, 2003	(IBECON, 2003)
• *Retail Showrooms and Bulky Goods* prepared for Ballina Shire Council, Core Economics, September 2004	(Core Economics, 2004)
• *Ballina Homemaker Centre Economic Impact Assessment,* MapInfo Dimasi, June 2007	(MapInfo Dimasi 2007)
• *Community Facilities and Open Space Needs Analysis,* Planning Studies for Ballina Shire Council, ERM, February 2004	(ERM, 2004)

Reference Document	Text Reference
• *Draft Strategic Road Network Study and Traffic Modelling,* Cardno Eppell Olsen, 2007	(Cardno Eppell Olsen, 2007)
• *Industrial and Commercial*	
• *Ballina Pacific Highway Bypass EIS*, Connell Wagner, September 2004	(Connell Wagner, 1998)
• *Ballina Bypass Environmental Impact Statement - Visual Assessment and Landscape Recommendations*, GeoLINK, 1997	(GeoLINK, 1997)
• *West Ballina Arterial Road/Industrial Estate Expansion: Precinct Planning Discussion Paper* Ballina Shire Council Strategic Services, April 2005	(BSC, 2005)
• *Geotechnical Assessment of Route Alternatives, West Ballina Arterial,* prepared for Ballina Shire Council, RCA Australia, February 2004	(RCA Aust, 2004)
• *West Ballina Arterial, Assessment of Option 2 Sub-options and Option 2A,* SKM November 2006	(SKM 2006)
• *West Ballina Arterial EIS – Flood Modelling and Route Options Assessment*, WBM Oceanics Australia, March 2004	(WBM 2004)
• *Proposed West Ballina Arterial Road, Route Options Assessment Report* prepared for Ballina Shire Council, SKM, April 2004	(SKM, 2004)
• *Farmland of State and Regional Significance on the NSW Far North Coast,* section 117, direction 5.3, Farmland Protection Mapping, NSW Department of Planning, 2007	(DoP, 2007)
• *Agricultural Land Class Map 3.7*, NSW Department of Agriculture, 1998	(Dept of Ag, 1998)
• *Written Response to Stakeholder Engagement*, NSW Sugar Milling Co-operative Ltd, December 2007	(NSW Sugar Milling Co-operative Ltd, 2007)
• Planning Circular E-3, *Guidelines for Buffer Areas around Sewage Treatment Plants,* NSW Department of Urban Affairs and Planning, March 1989	(DUAP, 1989)

Reference Document	Text Reference
• *STP Buffer Zone Landuse Planning Guidelines* Water Directorate 2006	(Water Dir., 2006)
• *Report for Ballina, Lennox Head WRAAP – RWR Concept Design: Preliminary Site Investigation – West Ballina and Barrett Sites*, GHD, November 2007	(GHD 2007)
• *Southern Cross Precinct Master Plan, Issues Paper*, Prepared for Ballina Shire Council, GeoLINK, March 2007	(GeoLINK, 2007)
• *Draft Southern Cross Business Park Master Plan,* Prepared for Ballina Shire Council, GeoLINK, September 2007	(GeoLINK, Sep 2007)
• *Various Reports for Proposed Industrial Land Rezoning, prepared for Watpac Pty Ltd & Paradise Way,* Aspect North, 2005	(Aspect North, 2005)
• *Ballina Waterways Pty Ltd Proposed Subdivision, lots 17 and 26, Cnr Teven Rd and Pacific Hwy West Ballina*, Soil Surveys, June 2007	(Soil Surveys, 2007)
References used by Peter Parker Environmental Consultants Pty Ltd	Text Reference
• Department of Environmental and Climate Change 2004, *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities.*	(DEEC, 2004)
• Walker, J. and M. S. Hopkins 1990 *Vegetation* (In) Australian soil and land survey field handbook ed by R.C. McDonald, R.F. Isbell, J.G. Speight, J. Walker and M.S. Hopkins. Inkata Press: Melbourne	(Walker and Hopkins, 1990)